The Lake Lothing (Lowestoft) Third Crossing Order 201[*]

Document SCC/LLTC/EX/81: Applicant's Responses to Interested Parties' Representations Submitted at Deadline 4

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Examination Procedure) Rules 2010

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Foreword

This report is the Applicant's Responses Applicant's Responses to Interested Parties' Representations Submitted at Deadline 4 (Document reference SCC/LLTC/EX/81). It relates to an application ("the Application") submitted by Suffolk County Council ("the Applicant") to the Secretary of State (through the Planning Inspectorate) for a development consent order ("DCO") under the Planning Act 2008.

If made by the Secretary of State, the DCO would grant development consent for the Applicant to construct, operate and maintain a new bascule bridge highway crossing, which would link the areas north and south of Lake Lothing in Lowestoft, and which is referred to in the Application as the Lake Lothing Third Crossing (or "the Scheme").

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Abbreviations

ABP	Associated British Ports
CftS	Case for the Scheme
CoCP	Code of Construction Practice
DCLG	Department for Communities and Local Government (now referred to as the Ministry of Housing, Communities and Local Government)
DCO	Development Consent Order
dDCO	Draft Development Consent Order
DfT	Department for Transport
DGM	Design Guidance Manual
DML	Deemed Marine Licence
DMRB	Design Manual for Roads and Bridges
DR	Design Report
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
GI	Ground Investigation
HRA	Habitats Regulations Assessment
HGV	Heavy Goods Vehicle
LPA	Local Planning Authority
MMO	Marine Management Organisation
NMC	Non Material Change
NMU	Non-motorised user
NNNPS	National Networks National Policy Statement
NRA	Navigational Risk Assessment
NSIP	Nationally Significant Infrastructure Project
OAR	Options Appraisal Report
OBC	Outline Business Case
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PNPS	Ports National Policy Statement

RR	Relevant Representation
SCC	Suffolk County Council
SoCG	Statement of Common Ground
SoS	Secretary of State
SSSI	Site of Special Scientific Interest
SRN	Strategic Road Network
SuDS	Sustainable Drainage System
TA	Transport Assessment
WDC	Waveney District Council
WFD	Water Framework Directive
WQ	Written Questions
WSI	Written Scheme of Investigation
WR	Written Representations

1 Introduction

1.1 Purpose of this report

1.1.1 This report, submitted for Deadline 5 of Examination, contains the Applicant's response to Interested Parties' representations submitted to the Examination for Deadline 4 on 29 January 2019.

1.1.2 Where these submissions were repeated at the Issue Specific and Compulsory Acquisition Hearings on 13 February, the Applicant has responded in its written summary of its oral submissions at those hearings (SCC/LLTC/EX/75 and 76).

1.1.3 Representations were submitted by the below parties:

- Associated British Ports (ABP) [REP4-029 to REP4-033]
- Brookhouse Group on behalf of North Quay Retail Park [REP4-026]
- Howes Percival LLP on behalf of Overseas Interests Inc, Waveney Fork Trucks Limited, Lift Truck Rentals Limited, Nexen Lift Trucks Limited, Oakes Recruitment Limited, Team Oakes Limited and Hitech Grand Prix Limited [REP4-034]
- Lowestoft Cruising Club [REP4-025]
- Northumbrian Water [REP4-027]
- Marine Management Organisation (MMO) [REP4-028]

1.1.4 Responses have been provided in this document to ABP's non DCO issues, and Brookhouse Group.

1.1.5 The Applicant has not provided a tabular response to Northumbrian Water's Deadline 4 representation, as this was a holding response re-making their points made at Deadline 3. However, at Appendix A to this document, the Applicant has included a paper dealing with an issue raised by Northumbrian Water Limited in their Deadline 3 submissions, mirroring the submissions of SCC/WDC in their Local Impact Report, namely concerns as to the potential effects of noise arising from the operation of the new bridge's operating signals. This concludes that no likely significant effects would arise from these alarms; however the draft DCO has been amended at Deadline 5 that will enable this to be confirmed at detailed design.

1.1.6 The report provides Suffolk County Council's, as the Applicant, response to the issues raised, thereby providing a reference document for all interested parties and the Examining Authority.

1.1.7 In doing so, the Applicant has sought to bring together similar points that are made across different submissions by Interested Parties to ensure that a response is provided to all major points.

2 ABP [REP4-029 to REP4-033]

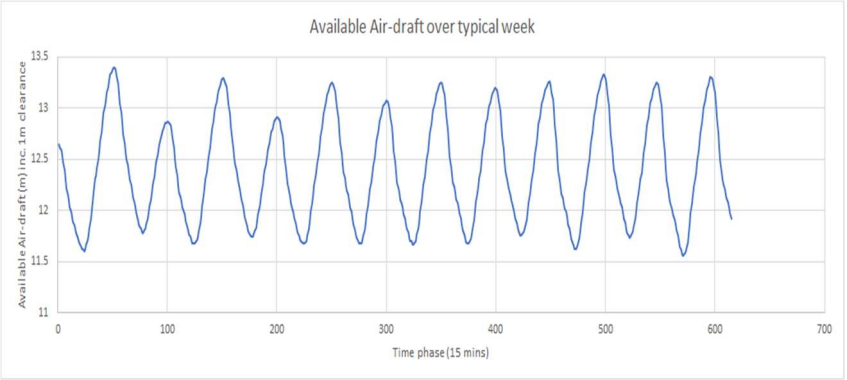
2.1 Summary and response to Representations

Reference	Extract / Summary	Applicant's response
Scheme of Operation		
Comments on the draft Scheme of Operation	**Scheme of Operation: General Comments and Section 1** Generally, ABP has maintained the position that the Scheme of Operation for the LLTC must be equivalent to the existing operating regime applied at the A47 Bascule Bridge - and in this respect, ABP has noted the Applicants somewhat ambiguous answer to the specific question addressed to them by the ExA, Question 2.26. In this regard, the most recent operating procedures are set out in the 'Small Craft and Yachts Notice 2018' ("2018 Notice"), which ABP implemented on 3 December 2018. The Applicant has advised that the draft Scheme of Operation was informed by the 2018 Notice (see paragraph 4.3 of the NWG Workshop 3 Meeting Notes). ABP cannot agree to the restriction on LLTC openings for commercial vessels proposed by the Applicant, or the qualification relating to "tidally restricted vessels". These are clearly more restrictive than the current regime operated by ABP in respect of the A47 Bascule Bridge.	In parts 3, 4 and 5 of the Port Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015), the Applicant has explained why a peak hour restriction on opening of the new bridge is appropriate, and has also explained that, given the way that the existing bridge is currently operated, this will not cause a detriment to ABP's operations in the Port. It also explains that the existing exercising of the harbour master's discretion results in regular openings in peak traffic hours.

Reference	Extract / Summary	Applicant's response
	Although the procedures currently in place for the exiting bridge enable the Harbour Master, exercising his reasonable discretion, to open the bridge for commercial vessels during peak traffic periods, his practice is to try to avoid this occurring as far as practicable. This fact is underlined in Paragraph 4.10 of ABP's Written Representations, which explains that during the last 12 months, the A47 Bascule Bridge has only been opened on limited occasions during the rush hour for commercial vessels, the Harbour Master acting responsibly in the exercise of his powers so as to minimise the impact on vehicular traffic.	
Comments on the draft Scheme of Operation Comments on Applicant's Response to ABP RRs	**Scheme of Operation: Comments on Section 2 Comments on response to RRs: Issue MP8** ABP will be unable to operate the port on a commercially viable basis if the proposed time restrictions on opening of the LLTC as stated by the Applicant (i.e. 08:00 – 9:00 and 17:00 to 18:00) remain in place which incidentally do not even reflect the current position for the existing A47 Bascule Bridge - i.e. 8:15 – 9:00 and 17:00 – 17:45 - and ignores the exercise of the harbour Master's discretion. ABP considers that the Applicant's concept of a "tidally restricted vessel" is too prescriptive and narrowly defined, and must be broadened to include other, as yet unspecified, circumstances. In line with the existing bridge operating regime, the Harbour Master must have discretion to open the bridge for commercial vessels,	ABP has not provided any evidence to demonstrate that the commercial viability of the Port would suffer from the proposed restrictions. The Applicant has set out in the Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015) that any vessels requiring passage through both bridges would adjust their passage time to take account of the restrictions on both bridges (as they currently do so for the A47 Bascule Bridge) rather than treating both bridges as separate entities.

Reference	Extract / Summary	Applicant's response
	whether or not they fall within the definition of 'tidally restricted'.	
Comments on the draft Scheme of Operation	**Scheme of Operation: Comments on Section 4** As noted above, ABP cannot accept the prescriptive nature of this provision, particularly given: • the 'in-combination' impact with the LLTC and the A47 Bascule Bridge (described above); and • the requirement for a 'double-lift' of one or both of the bridges, where there is two-way vessel movements at the A47 Bascule Bridge. For example, if the A47 Bascule Bridge is opened at 11:15am, it will require the LLTC to be opened approximately 10 minutes later to allow the vessel access the western end of Lake Lothing (this also applies to the reverse situation). If such a lift is not allowed (i.e. due to scheduled opening restrictions), such vessels would have to either moor or 'mill about' in the Inner Harbour until the next LLTC scheduled opening at 14:30 – over three hours later. The ExA should note that the Applicant did consider addressing this issue by including the word "approximately" as follows: "opening at approximately the following times, having regard to the concurrent demand at the A47 Bascule Bridge" (see paragraph 4.3.5 of the NWG Workshop 3 Meeting Notes). This flexibility, however, was deleted by the Applicant after the NWG Workshop and instead replaced with "opening	The drafting was altered following a suggestion made by the Lowestoft Cruising Club subsequent to the NWG meeting. The Applicant does not envisage that the bridges would be operated in such a way as to "trap" vessels and even without the addition of wording would be interpreted as "or thereabouts" in reference to timings.

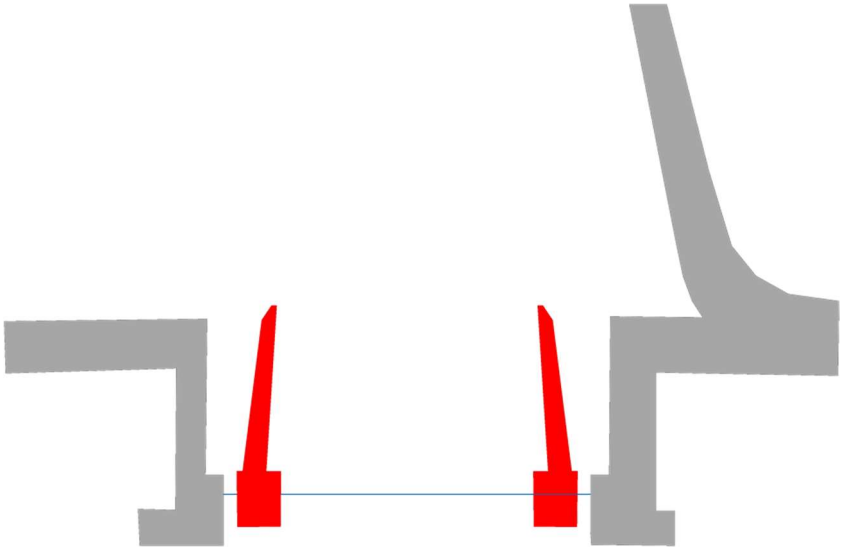
Reference	Extract / Summary	Applicant's response
	at the following times, which may be amended having regard to concurrent demand at the A47 Bascule Bridge." As currently drafted, the clause is deficient. This insertion does not clearly state who an amendment can be made by, and in what circumstances.	
Comments on the draft Scheme of Operation	**Scheme of Operation: Comments on Section 8 (Vessel Height)** In the absence of a comprehensive Navigation Risk Assessment having been undertaken (and formally approved by the Statutory Harbour Authority), ABP cannot agree to any of the requirements set out in this clause for a number of reasons, including the following: • ABP has real concerns, based on decades of experience, that vessels Masters often do not precisely know the air draft of their vessel. • Further, vessels Masters are often unaware of additional pieces of equipment (such as radio masts, aerials, etc) that may increase the air draft of their vessel. • Recreational vessels are often under the control of persons without expansive, or even any, prior experience of the vessel. • It may be that a real-time clearance display is not sufficient to act as a measure designed to mitigate the risk of a vessel strike on a bridge. Accordingly, this section requires further consideration by ABP, as Statutory Harbour Authority, following	Whilst ABP's concerns are understood, the DCO already provides for: a) the recommendations of the final NRA must be carried out (Requirement 11(2)(4)) which would include issues relating to managing air draft risk); and b) the provision of additional navigation markings if determined to be required by ABP pursuant to their protective provisions. Chapter 7 of the Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015) indicates that the pNRA was taken forward on the basis of the design of the Scheme as it had progressed to the time of the application. The DCO (Document Reference SCC/LLTC/EX/78) has been amended at Deadline 5 to explicitly provide for ABP to approve the final NRA for the Scheme - requirement 11(2)(4), and as noted above, the Applicant must carry out the recommendation measures set out in that final NRA. The requirements for a safety clearance under the bridge during vessel passages with the bridge in the lowered position is well understood by the Applicant. All assessments of anticipated numbers of openings have been based on the inclusion of such a

Reference	Extract / Summary	Applicant's response
	completion and approval of the comprehensive Navigation Risk Assessment, to determine what types of restrictions may need to be imposed. As a practical issue, the ExA should note that the LLTC does not have a clearance of 12 m at HAT in terms of the passage of vessels. Subject to the completion of the formal navigation risk assessment, ABP anticipates that the actual height for safe passage will be 11 m at HAT (incorporating the vessel air draft clearance value) – this vertical clearance will itself be reduced through predicted sea-level rise over the life of the LLTC bridge. That this fact has not been recognised simply goes to underline the Applicant's lack of understanding of port operational issues and matters of safe navigation.	requirement. The effects of sea-level rise have been considered within the ES. ABP's response makes no mention of the very infrequent nature of water levels reaching HAT and that for significant proportions of the time the air draft available will be greater than 12m. Furthermore, HAT is a measure of predictions based on average atmospheric conditions, the water level does sometimes go above this level. The below graph shows the variation of available clearance (including a 1m safety margin) over a typical week (during 2017) derived from tide gauge data.  *Figure 2-1 Variation of available clearance (including a 1m safety margin) over a typical week (during 2017)*

Reference	Extract / Summary	Applicant's response
Comments on the draft Scheme of Operation	**Comments on Scheme of Operation: Section 9** ABP does not oppose this section, provided that it is clear that the Harbour Master has the discretion to determine which bridge will need to be opened to accommodate two-way vessel movements. Accordingly, the current uncertainty as to how the Scheme of Operation will work in practice reinforces ABP's need to be able to make small changes to the Scheme of Operation without any involvement by the Secretary of State.	The Applicant agrees that the selection of which bridge will need to open twice during two-way vessel movements would rest with the Harbour Master and there is nothing in the DCO which would prevent this. The Applicant notes that there is nothing in the DCO which prevents ABP from suggesting changes to the Scheme of Operation. The Applicant would be able to bring those forward pursuant to the provision of Article 40. However, as a highway scheme, it is not appropriate that ABP should be able to change the Scheme unilaterally.
Comments on the draft Scheme of Operation	**Comments on Scheme of Operation: Section 10** ABP is concerned, however, that any potential restriction on the Harbour Masters' discretion to open the LLTC may result in circumstances where the LLTC has to be closed to vessel traffic in weather conditions where the A47 Bascule Bridge is still operable. This would, consequently, result in a detrimental impact to the operation of the harbour.	Limitations on the ability to operate the Scheme bridge in adverse weather conditions are required to protect the structure from potential damage. It is understood from ABP that the A47 Bascule Bridge is generally operational up to maximum wind gust speeds of 50kts from any direction, which equates to a peak gust wind speed of 25.7m/s or 92.5 km/h. The Applicant is therefore seeking to provide a similar level of operational performance for the Scheme Bridge with a requirement that the bridge be designed to be operational for gust speeds up to 50kts from any direction. The Applicant has one year's worth of wind data (recorded by an anemometer on the roof of the Council offices). During that period, the maximum recorded peak gust wind speed is 23.2 m/s (45.1kts).

Reference	Extract / Summary	Applicant's response
Comments on the draft Scheme of Operation ABP's comments on Applicant's Answers to First WQ	**Comments on Scheme of Operation: Section 11 Comments on Applicant's response to FWQ 2.38** ABP, as the Statutory Harbour Authority, is of the firm view that an emergency berth must be provided within the Inner harbour, between the existing bridge and proposed LLTC, in order to mitigate the serious risks that will arise should a vessel become trapped between the two bridges – for example, where one or both of the bridges fails (stuck down or partially closed), the vessel itself fails or is caught by unfavourable weather conditions. ABP has serious concerns with these amendments for the following reasons: • The Harbour Master's discretion in respect of navigational safety should not be limited in this way, otherwise it will impede his ability to comply with his statutory duties: • The Sequential Mitigation Flowchart is not operationally practicable in that it fails to recognise port operational and navigational safety imperatives. In addition, it is overly prescriptive (not to mention nearly illegible and incomprehensible) and as a consequence, is not capable of realistic application without serious risk – the very risk that the provision of an emergency berth is designed to avoid; and • The amendments should not have been included in the draft Scheme of Operation without both prior	The Applicant has, in section 7 of the Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015), indicated why an emergency berth is not needed in response to the Scheme. The Sequential Mitigation Flowchart, as presented in the Scheme of Operation (Document Reference SCC/LLTC/EX/41, PINS Reference REP3-033), was not intended to be an absolute fixed process that had to be followed for every passage. It was designed to show the hierarchy of responses that the Pilot, in conjunction with the Harbour Master, could consider during the formulation of a vessels passage plan.

Reference	Extract / Summary	Applicant's response
	consultation with the Statutory Harbour Authority, and a formal Navigational Risk Assessment so as to justify the amendments sought.	
Port Operations		
ABP's comments on Applicant's Answers to First WQ 1.3	**Construction Compounds** Suggests that the Applicant hasn't fully considered the following in regard to the construction compounds on Port land: • operations within the Ports; • blight inhibiting ability of ABP to negotiate with potential customers; • access from Commercial Road; • diversionary routes; and • safety impacts with Dudman's marshalling yard.	The effect of the Scheme's construction compounds on the Port's operations is set out in chapter 9 of the Port Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015) and concludes that the effect on the operations is either minor, or will be able to be managed. As set out in chapter 11 of the Port Impact Paper, the Applicant has committed to developing a Traffic Management Action Plan to deal with access issues.
Comments on Applicant's Response to ABP RRs LD1 (c) - (f) and LD2	**Prospects west of the Scheme** ABP claims that: (c) Scheme will result in loss of berth utility west of Scheme. (d) an emergency berth is needed. (e) CTVs will not be able to pass under the bridge. (f) commercial clients are already suggesting that they couldn't countenance the delays caused by the Scheme. LD2: The statement (at paragraph 6.1.12.2 of the SoR) that 'an infinite air-draft will also not constrain a vessel of any height that wants to navigate west of the	The Applicant has set out its position in regard to the particular claims within the Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015). LD2: The design requirements for ship's helidecks are covered by a number of different standards (depending on the vessel classification society), typically they relate to the overall length of the largest helicopter the deck is designed for plus a safety netting requirement. The applicant believes the vessel shown on the submitted photograph is the Ievoli Ivory, from available technical details on this vessel the helideck is approximately 24m wide, significantly narrower than the 32m available navigation channel at the Scheme bridge.

Reference	Extract / Summary	Applicant's response
	Scheme bascule bridge' is also incorrect. Unfortunately, this again underlines the Applicant's clear lack of familiarity with port operations. Large vessels with over-hangs which can currently access the Port by clearing the bridge leaves of the existing A47 bascule bridge, for example, vessels with heli-decks – see image at Annex 2, will not be able to transit through the LLTC by virtue of the very large rolling-lift single bascule leaf. This imposes an additional constraint on the Port, as these types of vessel, which would normally be located at the North Quay 6 and 7 berths, will need to be moored between the two bridges.	Below is a silhouette overlay derived from the Scheme engineering section drawings showing the relative scales of the structural envelopes at the scheme bridge (grey) in comparison to the A47 bridge (red). This shows that any vessel capable of passing the A47 would be able to pass the scheme bridge as well, even allowing for a significant high-level overhang, therefore the assertion that certain vessels, e.g. those with helidecks, could not access NQ6 & 7 is incorrect.  *Figure 2-2 Silhouette overlay derived from the Scheme engineering section drawings*

Reference	Extract / Summary	Applicant's response
Comments on Applicant's Response to ABP RRs Issue MP1	**Mitigation Measures** The mitigation measures sought by ABP are solely designed to offset the detrimental impact of the LLTC and are based on the principle of 'equivalence', such that the Port will be neither better nor worse off as a result of the mitigation works. The mitigation measures proposed are not designed to facilitate ABP's wider or long-term commercial aspirations. ABP is encouraged by the statement that the Applicant would like to agree mitigation measures as early as possible during the Examination. As the ExA will have noted, ABP has sought to assist the Applicant in this process and has continued to engage with the Applicant in relation to the required measures of mitigation. Unfortunately, however, as at the date of this submission, no assurances have been given by the Applicant as to whether it is prepared to contemplate the provision of any mitigation and ABP must, therefore, record that it has serious misgivings as to the true intent of the Applicant in this respect.	The Applicant has set out its approach to the assessment of the need for mitigation based on the various factors raised by ABP within the Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015). The Applicant continues to discuss potential alternative mitigation measures with ABP that it feels may more reasonably remove the perceived negative impacts they feel arise from the scheme.
Navigation Risk Assessment		

Reference	Extract / Summary	Applicant's response
ABP's comments on answers to First WQ 2.24 and comments on Draft DCO v1 Requirement 11	ABP raises concern that the wording of the DCO does not provide for its approval of the NRA, which goes to its fundamental legal responsibility as Statutory Harbour Authority. It questions the precedents suggested by the Applicant for its approach to the NRA and the interaction with the harbour authority, and suggests the example of Tidal Lagoon Swansea Bay as a potentially appropriate approach. ABP also indicates that it has indicated to the Applicant on countless occasions that a full and formal NRA of port impacts should be brought forward by the Applicant.	Whilst it was already implied within the terms of the Protective Provisions for ABP's benefit, the Applicant has amended the DCO (Document Reference SCC/LLTC/EX/78) at Deadline 5 to explicitly provide that ABP will approve the updated NRA for the Scheme, and that the Applicant will be responsible for the costs of importing the results of that NRA into ABP's wider Port of Lowestoft NRA, if this is required. As the Applicant noted in the Ports Impact Paper ((Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015), The Scheme pNRA (Document Reference 6.7, PINS Reference APP-208) has been undertaken on the basis of the risk assessment methodology set out in section 4 of A Guide to Good Practice on Port Marine Safety (Dft/MCA). The Scheme NRA has been developed as preliminary on the basis that full detailed design has yet to be carried out and therefore a final NRA cannot be produced at this stage. This is in line with the practice in DCOs that a 'preliminary' or 'reference' scheme design is brought forward for consent, which has been assessed to show that it can be built, and to create the parameters by which the detailed design would be brought forward (such as, in the case of the NRA, the recommended measures in part 7). It is not the role of the DCO regime (and thus the documents brought forward to inform decisions upon DCOs) to consent fully detailed applications. As such the Applicant strongly refutes any suggestion that this Scheme has been brought forward 'prematurely' (as ABP has suggested with regard to the NRA but

Reference	Extract / Summary	Applicant's response
		also throughout its responses). Further comments on Requirement 11 and the role of ABP and NWG in respect of the NRA are contained in the Applicant's written summary of its oral submissions at the Issue Specific Hearing on the DCO (Document Reference SCC/LLTC/EX/75). Finally, the Applicant would note that, despite ongoing engagement throughout the development of the Scheme, ABP has at no point provided the full NRA for the Port of Lowestoft, meaning that even if the Applicant had been in a position in design terms to do a full NRA, it would not have not been able to do so because it needs to align with existing risks. It would submit that ABP's submission should be seen in this context.
Environmental Statement (ES)		
ABP's comments on Applicant's Answers to First WQ 1.4	**Cofferdams** The Applicant's response to this question is very unclear – in ABP's view, not installing cofferdams and piers would lead to a greater effect on marine environment, not lesser. ABP also notes that it is imperative that any final detailed construction methodology must fall within scope of ES assessment, i.e. within the assessed 'worst case' scenario.	The environmental effects of the construction phase of the Scheme have been identified in the ES (Document Reference 6.1, PINS Reference APP-136) and mitigated as appropriate. The parameters of the construction phase that have informed the assessments within the ES have been clearly identified within the ES. The Applicant notes that the installation of cofferdams would fall within the ambit of the ancillary works within Schedule 1, and thus would be subject to the wording of that Schedule that the effects of such works must not give rise to any materially new or materially different effects than those assessed in the ES.

Reference	Extract / Summary	Applicant's response
		Furthermore, the detail of these measures will be approved by ABP and the Environment Agency pursuant to their Protective Provisions, who would be able to ensure that the effects are within the scope of the ES.
ABP's comments on Applicants Answers to First WQ 1.6	**Maintenance** As far as ABP is concerned, the Applicant's response is far from clear and it is suggested that the answers need to be tested. ABP does not understand to what the Applicant is referring in relation to - "any effect on navigation …. arising in either of the scenarios described above." Without a clear explanation as to the precise scenarios contemplated, ABP is far from certain whether such impacts on navigation could be controlled by ABP's protective provisions. Paragraph 15.5.18 of the ES states that: "The structure will require maintenance inspection and replacement of parts (see Paragraph 5.7.2) over its lifetime. These will be infrequent and coordinated with ABP." There does not appear, however, to be any further consideration of the potential scope of the impacts on navigation that may arise from such maintenance activities – such as partial or full closure of the navigational channel. The ES goes on to conclude that, in terms of the impact on the navigational channel during operation of the LLTC scheme, "the Scheme has no greater than Slight	Paragraph 53 of the Protective Provisions provides that ABP must approve any use of a power in the Order which will involve the Applicant temporarily using any Port land. Therefore, if the Applicant did want to access land to maintain the authorised development, ABP would be able to control this. As noted in the ES (Document Reference 6.1, PINS Reference APP-136), the activities that would be carried out would be within the Order limits, and involve activities similar to construction; as such they do not need to be separately assessed. ABP state in their response that there is no consideration of partial or full closure of the navigational channel. This is incorrect as the likely requirements for closure are included in 5.7.2 and paragraph 15.5.18 therefore demonstrates that this has been factored into the operational assessment. A slight adverse impact has been identified in the construction phase and as any closure of the navigation channel in the operational phase will be for a shorter duration, a no greater than slight adverse (see paragraph 15.5.32) impact is concluded.

Reference	Extract / Summary	Applicant's response
	Adverse impact upon commercial vessel movements." ABP does not agree with that assessment – as it has explained in its own Written Representations. In addition, and it is suggested significantly in this respect, the ES does not appear to provide any assessment of the impact on maintenance of ABP's operations, apart from those within the navigational channel – such as displacement of tenants, use of quay space, land impacts etc. It is unclear why this has not been assessed as part of the ES.	
ABP's comments on Applicant's Answers to First WQ 1.9	**Approach to Mitigation** For clarity, the Mitigation Route Map and the Interim Code of Construction Practice(CoCP) must be updated to reflect the latest version of the DCO, particularly in respect of the Article 20 requirements. For the avoidance of doubt, the DCO provides that the navigational channel cannot be closed by the Applicant without it first obtaining ABP's consent. That said, in relation to operational impacts of the LLTC on Port Operations, which the Applicant – incorrectly in ABP's opinion - identifies as 'Slight Adverse', no specific mitigation measures whatsoever have been proposed by the Applicant. The Applicant has stated that it - "remains willing to provide mitigation to ABP on a reasonable and proportionate basis based on robust evidence of	The Applicant does not intend to update the Interim CoCP to mirror the DCO. As noted in the Deadline 3 version of the CoCP (Document Reference SCC/LLTC/EX/28, PINS Reference REP3-043), that document has been stripped back to avoid duplication with the DCO given the broad scope of ABP's protective provisions. As the Applicant has assessed the impact of the Scheme as slight adverse, there is no direct requirement for specific mitigation measures. The Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015) considers the mitigation measures suggested by ABP to date and sets out why, in the main, they are not needed or appropriate, noting in particular that there is no evidence that serious detriment has been caused to a Port which already deals with restrictions arising from the A47 Bascule Bridge.

Reference	Extract / Summary	Applicant's response
	necessity and is willing to collaborate with ABP in identifying what mitigation may be necessary in this context" (Document Reference SCC/LLTC/EX/2, PINS Reference AS-013). The reality, however, is that the Applicant has first, failed properly to assess and second make any offer of mitigation to offset the serious detriment that will be caused to the Port by the LLTC scheme. As the ExA is aware, ABP has sought to engage the Applicant in relation to the mitigation measures. As at the date of this submission, however, no assurances have been given by the Applicant and ABP has misgivings as to the true intent of the Applicant in this respect. ABP's analysis of the mitigation measures required to offset some of the serious detriment that the LLTC scheme will cause to the Port is set out in Section 15 of ABP's Written Representations.	
ABP's comments on Applicant's Answers to First WQ 2.23 Comments on Applicants Response to ABP RRs Issue	**Temporary Closures** It is ABP's duty, as Statutory Harbour Authority, to make decisions with respect to navigational safety issues within the its jurisdiction – for example, at what point the installation of the bridge span becomes a safety issue which requires the closure of the navigational channel. Although ABP agrees that certain activities will require such a closure, it is important that	The Applicant acknowledges that there will be impacts to the Port during temporary closures, and has made various amends to Article 20 over the course of the Examination to ensure that the Port can organise its business during the time of the closure.

Reference	Extract / Summary	Applicant's response
MP10	such a conclusion is only reached on the basis of a robust risk assessment, which has been approved by the Statutory Harbour Authority. Given that the final construction methodology and detailed design of the new bridge has not yet been produced by the Contractor, ABP queries whether the 3 week worst-case scenario stated by the Applicant is accurate. It is self-evident that any closure of the port will cause serous detriment to ABP's ability to undertake port operations. That impact will be felt, however, not just by ABP, but also its tenants and other users of the port. In addition, if the period of closure were to increase, bearing in mind the somewhat speculative nature of the Applicant's [proposals to date, this would simply compound the detrimental impact. The response from the Applicant to these questions merely underlines the fact that, in ABP's view, this entire project has been brought forward prematurely. It is clearly not defined – designs are uncertain – impacts have not been mitigated – and construction methodology and timing distinctly ambiguous.	
Comments on Applicant's Response to ABP RRs: Issue LD1	**Berthing Information** As set out in ABP's response to Issue Number LD2 (below) and with reference to Paragraphs 21.2 to 21.17 of ABP's Written Representations, it is ABP's view that	The assessment has been based upon the information that was available to the Applicant at the time of the assessment and the Applicant has identified in the ES the reasoning behind the assessment of impacts upon the Port. Should ABP provide further information that could inform the assessment, which they

Reference	Extract / Summary	Applicant's response
	the Applicant's assessment of the real impact that the LLTC scheme will have on the Port is incorrect and that the ES, as a consequence, fails in its principal objective – namely to provide an impartial objective assessment of the project. In particular, the Applicant appears only to have assessed the impact of the loss of berth space on the "current usage of the Port and the amount of berth space to be taken". This is a defective and in the circumstances a totally inappropriate applied methodology which takes no account of the fact that shipping is cyclical within each given year, subject to the influence of tidal cycles, natural fluctuations in the shipping market and political uncertainty. ABP considers that at least 5 years of berthing information would be required to provide even a basic indication of the previous average usage level of the – and even that would be misleading, in that it would take no account of what can often be a rapid change in the nature and type of operations being undertaken at any Port – the sudden surge in offshore energy being an obvious case in point. As can be seen, it is naïve for the Applicant to attempt to assess the impact of the loss of berth space within the statutory port estate, based simply on current usage of the Port. Such a limited exercise will never be able to provide an accurate representation of port activities – and this is true of every port in the country.	have not made available to date, then the Applicant will consider the nature of this information in light of the conclusions within the ES (Document Reference 6.1, PINs Reference APP-136). The Ports Impact Paper (Document Reference SCC/LLTC/EX/59, PINS Reference REP4-015) in any event considers the data available and a port growth scenario to demonstrate that no serious detriment arises to the Port either now or in the future from the Scheme. However, the Applicant would note that it has asked ABP for berth occupancy data throughout the gestation and development of this Scheme, and it has not provided it. The information presented at the appendices to ABP's comments does not help in this regard.

Reference	Extract / Summary	Applicant's response
Transport Assessment (TA)		
ABP's comments on Applicants Answers to First WQ	**Comments on response to FWQ 2.9** In relation to Q2.6 of the Applicant's response to first WQ, ABP included a note on the revised Transport Assessment (TA), (Annex 1 of REP4-032). ABP raise a number of concerns on the TA including: • Stating that until the operating regime specified in the draft Scheme of Operation is confirmed, there can be no confidence that the closure times assessed in the TA are robust. • The traffic modelling and the impact it has on the OBC and optionioneering • That the updated TA was originally delayed pending a new model because the Applicant considered the original modelling to be inadequate to test the chosen scheme • Stating the modelling process is not at all consistent with the Webtag guidance and is not acceptable	Appendix B provides the Applicant's response to the issue raised about the TA (Document Reference SCC/LLTC/EX/23, PINS Reference REP3-056).

3 Brookhouse Group on behalf of North Quay Retail Park

3.1 Summary and response to Representations

Reference	Extract	Applicant's response
Submitted technical note on Transport Assessment	The representation consists of a technical note from Mode Transport Planning on behalf of Brookhouse Group. The Technical Note presents their findings from a review of the highways analysis presented in the revised Transport Assessment (TA) (Document Reference SCC/LLTC/EX/23, PINS Reference REP3-056) prepared by the applicant in January 2019. A summary of the findings following the review are as follows: • The results of the junction capacity modelling within the TA demonstrate that the retail park will be adversely impacted on as a result of the LLTC during the Saturday peak period; • The projected increase in queuing and delay as a result of the LLTC on the retail park arm of the Barnards Way/ Denmark Road/ Peto Way roundabout is likely to cause gridlock within the car park. The delays will have a negative impact on the customer shopping experience which has the potential to adversely affect retail operators trading; • Based on the level of traffic entering the retail park, the stacking capacity of the entrance arm could be exceeded as a result of the LLTC, causing queuing onto the local highway network within approximately one minute of the retail park mini-roundabout being	A note has been prepared to the Technical Note prepared by Mode Transport Planning on behalf of Brookhouse Group. This is found in Appendix C. In responding to the issues raised by in Brookhouse Group's representation, some small inconsistencies in the TA were identified. An explanation to these points can be found in an errata table in Appendix D.

Reference	Extract	Applicant's response
	blocked; • The traffic flows used within the TA junction capacity modelling suggests that the increased accessibility of the retail park, and subsequent potential increase in vehicle trips, has not been taken account; • There is a large increase in vehicles entering the retail park from the Lidl/ Wickes/ Health Club arm of the Barnards Way/ Denmark Road/ Peto Way roundabout, which is unexplained in the TA; and • HGV factors have been applied to only two movements within the modelling without explanation. In conclusion the note stated that without improvements to the Barnards Way/ Denmark Road/ Peto Way roundabout, there will be an adverse impact on the North Quay Retail Park as a result of the LLTC. Mode Transport Planning recommended that a mitigation scheme be included with the LLTC to address the adverse impact on the operation of the retail park.	

Appendix A Response to Northumbrian Water Limited regarding new bridge operating signals

MEMO

DATE	**11 February 2019**	**CONFIDENTIALITY**	**Public**
SUBJECT	**Lake Lothing Third Crossing – New bridge operating signals**		

INTRODUCTION

The detailed design of the proposed bascule bridge for the third crossing will require the provision of appropriate audible warning alarms ('wig wags') for use during the raising of the bridge. Whilst these warning alarms need to be clearly audible in the vicinity of the bridge and the approach to the bridge, it is desirable that they do not cause a significant environmental noise impact at residential areas away from the bridge.

To this end, a calculation exercise has been undertaken to determine the levels of noise (from the wig wags) that are likely to be experienced at residential locations in the vicinity of the scheme. The methodology and results of these calculations are reported below, together with an assessment of the potential noise impacts.

METHODOLOGY

The methodology was proposed to, and agreed with, Mark Seaman, Environmental Protection Officer for Suffolk Coastal and Waveney District Councils. In summary, the methodology is to:

- Adopt a source sound emission term based on current DoT / Highways England guidance for wig wags;
- Using standard acoustic propagation models, predict the levels of noise from the wig wags as experienced at a number of representative sensitive receptors; and
- Assess the predicted noise levels via a comparison with measured background noise levels at each receptor location, in a manner similar to the method set out in British Standard (BS) 4142: 2014: *Methods for rating and assessing industrial and commercial sound* (although noting that a strict interpretation of this standard is not applicable to noise from wig wags).

Further details of the methodology are described below.

SOURCE SOUND EMISSION TERMS FOR THE WIG WAGS

The assumed source sound level for the wig wags is based on the requirements set out in the (former) HA document TR2513 *Performance Specification for Wig Wag Signal Control Equipment, Appendix C: Moveable Bridges and Tunnels*. This requires that:

> *"An audible warning to pedestrians adjacent to the barrier shall be sounded when the barrier is changing positions up or down.*
>
> *Audible warning signals shall be provided at each end of the bridge structure and should persist from the commencement of the vehicle crossing signal until the barrier is in the fully lowered position.*
>
> *The audible signal (not the same as used at pedestrian crossings) shall be an appropriate constant tone at 10 dBA above the ambient noise between the limits of 50 dBA and 110 dBA measured at a distance of 1 metre of (sic) the sound source"*

The ambient noise local to the wig wags cannot be measured at this stage as the local noise climate will change upon scheme opening. However, the ambient noise climate in the vicinity of the wig wags after scheme opening will be

dominated by road traffic, and it is therefore possible to determine the ambient noise level by calculation, using the procedures set out in *The Calculation of Road traffic Noise* (CRTN).

The $L_{A10,1hour}$ *Basic Noise Level* (BNL, as defined in CRTN) at a distance of 10m from the carriageway is calculated to be 76.8 dB, based on the worst-case hourly traffic flows (for the peak PM hour in the design year of 2037), the design speed of 50km/h and 10% heavy vehicles.

The equivalent $L_{Aeq,1hour}$ ambient noise level, calculated using the procedure set out in the TRL (Transport Research Laboratory) report *Converting the UK Traffic Noise Index LA10 to EU Noise Indices for Noise Mapping* (TRL Project Report PR/SE/451/02) is calculated to be 73.0 dB.

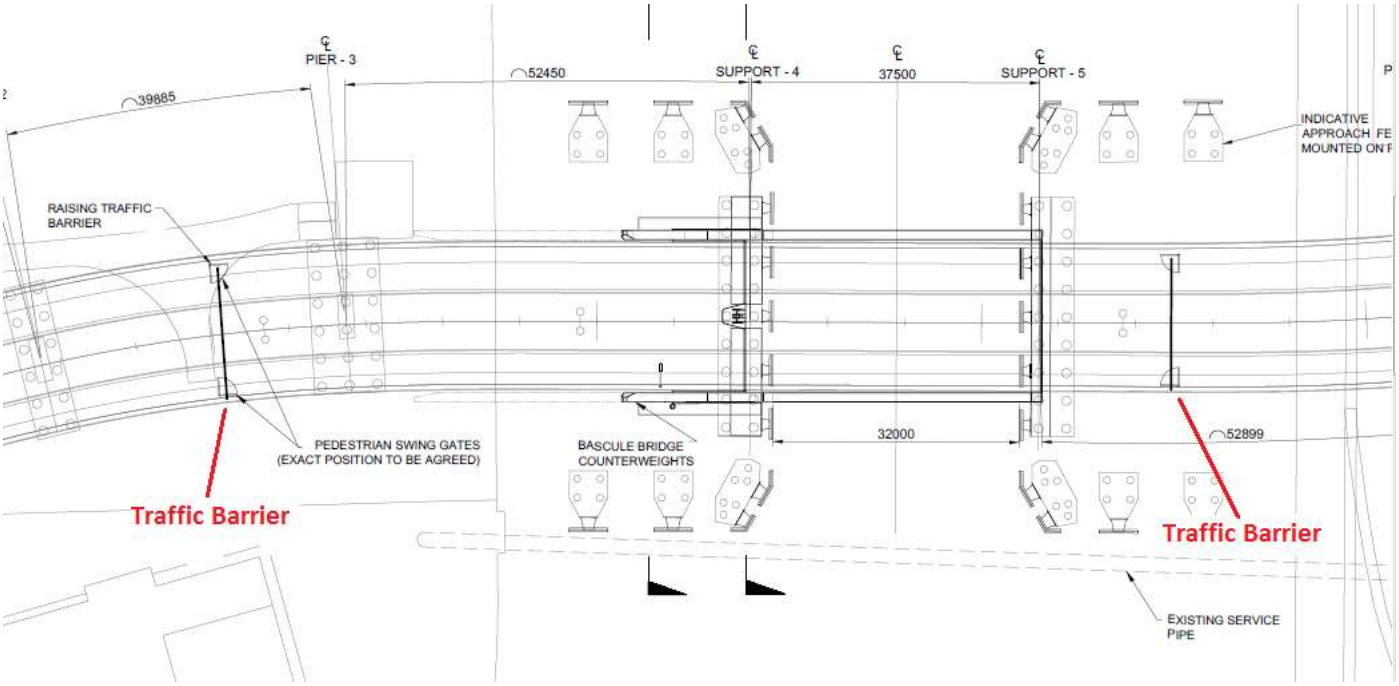
As noted in the Environmental Statement (ES) Chapter 5: *Scheme Description*, there will be a safety strip between the footway and carriageway on the eastern side of the bridge and also a safety strip between the carriageway and footway / cycleway on the western side of the bridge. On this basis, the noise level at a distance of 10m from the carriageway is considered to be representative of the ambient noise climate in the vicinity of the wig wags.

Based on the requirement that the sound emission from the wig wags is to be 10 dB above the ambient noise level (as measured at a distance of 1m from the wig wag), the source noise value for use in the calculations is taken to be 83 dB $L_{Aeq,T}$ at 1m.

LOCATION OF THE SOUND SOURCE

The sound source associated with the wig wags are assumed to be located adjacent to the traffic barriers as identified in Figure 5.3 of the ES (extract reproduced with annotations below).

Figure 1: Assumed Location of Wig Wags



RECEPTOR LOCATIONS

Calculations have been undertaken for the following receptor locations, which are the same as those used in the ES and for which background / baseline noise measurement data is available:

Table 1: Receptor Locations

Receptor	Location
A	Denmark Road / Rotterdam Road (representing residential receptors on Denmark Road to the west of Rotterdam Road)
B	Denmark Road / Hervey Street (representing residential receptors on Denmark Road to the east of Rotterdam Road and Hervey Street)
C	Riverside Children and Family Centre (representing residential receptors on Waveney Drive and Waveney Crescent)
D	Waveney Drive / Riverside Road (representing residential receptors on Waveney Drive west of Waveney Crescent)
E	Denmark Road / Trafalgar Street (representing residential receptors on Denmark Road to the east of Clemence Street)
F	Waveney Drive / Waveney Crescent (representing residential receptors on the A12)
G	Durban Road (representing residential receptors on Durban Road)
H	Trinity House (office)

PROPAGATION ASSUMPTIONS

The calculation methodology is based on a standard acoustic propagation model, similar to that used in BS 5228-1: *Noise and Vibration Control on Construction and Open Sites*. The assumptions used are:

- The wig wags act as an omnidirectional point source;
- Attenuation due to geometric spreading is based on hemispherical propagation;
- The intervening ground between the source and receptor location is acoustically “hard” such that there is no excess attenuation due to ground effects (a worst case assumption);
- Where there are intervening buildings between the source and receptor location, an acoustic barrier correction of -5 dB is applied where the building(s) just obstruct line-of-sight between source and receptor, and a correction of -10 dB is applied where the building(s) fully obstruct line-of-sight between source and receptor;
- There is no attenuation due to atmospheric absorption (a worst case assumption); and
- Atmospheric conditions are neutral such that there are no meteorological effects affecting the propagation of sound (i.e. no strong wind or temperature gradients).

CALCULATION OF ACTIVITY NOISE LEVELS AT RECEPTOR LOCATIONS

Activity Noise Levels (i.e. the noise levels from the wig wags when in operation) have been calculated for each of the receptor locations detailed above, in terms of the free-field $L_{Aeq,T}$ noise level, where T is the time period when the wig wags are operating. Calculations have been undertaken in terms of the free-field noise level to allow comparison with the free-field background noise levels measured at each receptor location, as presented in the ES. The predicted noise levels, together with a breakdown of the calculation steps, are presented in the following table.

Table 2: Calculated Activity Noise Levels at Receptor Locations

Receptor	Source Noise Level (dB(A) at 1m)	Source-Receptor Distance (m)	Distance Attenuation (dB)	Barrier Correction (dB)	Activity Noise Level at Receptor (dB)
A	83	230	-47.2	0	35.8
B	83	165	-44.3	0	38.7
C	83	295	-49.4	-10	23.6
D	83	455	-53.2	-10	19.8
E	83	360	-51.1	0	31.9
F	83	425	-52.6	-10	20.4
G	83	310	-49.8	-5	28.2
H	83	240	-47.6	-10	25.4

CALCULATION OF RATING NOISE LEVELS AT RECEPTOR LOCATIONS

Following the guidance set out in BS 4142, the 'Rating Noise Level' is calculated from the predicted activity noise levels by applying suitable corrections to take into account:

- The duration of noise exposure; and
- The subjective influence of special characteristics to the noise, such as tonality.

BS 4142 requires that the noise assessment is based on the $L_{Aeq,1hour}$ during the daytime (taken to be 07.00 to 23.00 hours) and the $L_{Aeq,15minutes}$ during the night-time (taken to be 23.00 to 07.00 hours). As the wig wags will only sound during the closing or opening of the traffic barriers, the activity noise levels will not occur for the whole of the assessment period, during either the daytime or night-time periods. It is therefore appropriate that a suitable correction, in accordance with the methods set out in BS 4142, is applied.

As the wig wags will only sound during the opening or closing of the traffic barriers, it is assumed for the purposes of this assessment that the duration of the noise exposure will be 1.5 minutes (90 seconds) during any 15 minute period or 6 minutes during any hour. An appropriate correction in accordance with the guidance set out in BS 4142 has therefore been applied (the correction, in dB, is the same for both the 15 minute night-time period and the 1 hour daytime period).

With regards to the subjective influence of special characteristics to the noise, BS 4142 allows for a "penalty" to be applied to the predicted noise level. For noise with tonal characteristics, this penalty can range from 0 to 6dB. On the basis that the wig wags are specifically designed to be noticeable to pedestrians and other road users in the vicinity of the crossing, it is appropriate that the maximum "tonality penalty" be applied.

On this basis, appropriate Rating Noise Levels, for both the daytime and night-time, have been calculated for each receptor location. These are shown in the following table.

Table 3: Calculated Rating Noise Levels at Receptor Locations

Receptor	Activity Noise Level at Receptor (dB)	Duration Correction (dB)	Tonality Correction (dB)	Rating Noise Level at Receptor (dB)
A	35.8	-10	+6	31.8
B	38.7	-10	+6	34.7
C	23.6	-10	+6	19.6
D	19.8	-10	+6	15.8
E	31.9	-10	+6	27.9
F	20.4	-10	+6	16.4
G	28.2	-10	+6	24.2
H	25.4	-10	+6	21.4

ASSESSMENT

The assessment involves a comparison of the calculated Rating Noise Levels with the measured background noise levels (measured as the $L_{A90,T}$ noise level) at each receptor location. For the purposes of this assessment, and in order to present a worst case, the *lowest* measured background noise levels at each receptor location have been used for the comparison. Note that for the daytime period (07.00 to 23.00 hours) these were often recorded during the evening (i.e. when traffic volumes were relatively low) and for both the daytime and night-time periods, were often recorded at the weekend (when road traffic and other sources of background noise are generally at their lowest).

The background noise levels used in the assessment are taken from those presented in the ES, as follows:

Table 4: Background Noise Levels

Receptor	Lowest Recorded Background Noise Level – Daytime (07.00 -23.00 hours) dB $L_{A90,T}$	Lowest Recorded Background Noise Level – Night-time (23.00 -07.00 hours) dB $L_{A90,T}$
A	41.2 (see notes 1 and 2)	33.8
B	42.6 (see note 1)	34.9
C	37.9 (see notes 1 and 2)	31.6
D	43.5 (see notes 1 and 2)	35.1 (see note 2)
E	47.0 (see note 1)	41.6 (see note 2)
F	47.0 (see notes 1 and 2)	38.1 (see note 2)
G	52.7	42.7 (see note 3)
H	53.0 (see note 4)	N/A (see note 5)

Notes to Table 4:

(1) Measured during the evening period.
(2) Measured at a weekend.
(3) Noise measurement data for the night-time period is not available for this receptor location. The night-time background noise level is assumed to be 10 dB lower than the daytime.
(4) Background noise level estimated from the graphs presented in the PBA report dated January 2018, submitted as part of representations on behalf of Northumbrian Water Ltd, the owners / occupiers of the office building identified as Receptor H. These results are not presented in the ES.
(5) A night-time noise assessment is not applicable to office buildings.

BS 4142 advises that, when undertaking this comparison (by subtracting the measured background noise level from the Rating Noise Level):

(a) Typically, the greater the difference, the greater the magnitude of the impact.

(b) A difference of around +10 dB or more (i.e. when the rating level is around 10 dB or more greater than the background level) is likely to be an indication of a significant adverse impact, depending on the context.

(c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

(d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

A comparison of the predicted Rating Noise Levels against the measured background noise levels, together with an assessment based on the BS 4142 guidance is presented in the following tables (for the daytime and night-time periods separately).

Table 5: Assessment - Daytime

Receptor	Rating Noise Level at Receptor (dB)	Background Noise Level at Receptor (dB)	Difference (dB)	Assessment
A	31.8	41.2	-9.4	Very low impact
B	34.7	42.6	-7.9	Very low impact
C	19.6	37.9	-18.3	Very low impact
D	15.8	43.5	-27.7	Very low impact
E	27.9	47.0	-19.1	Very low impact
F	16.4	47.0	-30.6	Very low impact
G	24.2	52.7	-28.5	Very low impact
H	21.4	53.0	-31.6	Very low impact

Table 6: Assessment – Night-time

Receptor	Rating Noise Level at Receptor (dB)	Background Noise Level at Receptor (dB)	Difference (dB)	Assessment
A	31.8	33.8	-2.0	Low impact
B	34.7	34.9	-0.2	Low impact
C	19.6	31.6	-12.0	Very low impact
D	15.8	35.1	-19.3	Very low impact
E	27.9	41.6	-13.7	Very low impact
F	16.4	38.1	-21.7	Very low impact
G	24.2	42.7	-18.5	Very low impact
H	Night-time noise assessment is not applicable as this is an office building			

DISCUSSION

The assessment detailed above has been undertaken in a manner based on the methodology set out in BS 4142: 2014. However, it should be noted that a strict interpretation of this standard is not applicable to noise from wig wags. BS 4142 is most often used, and primarily intended, for the assessment of noise from industrial premises (e.g. factories or workshops) or commercial premises (e.g. office buildings with ventilation plant or retail units with goods loading areas) that operate for large periods of the daytime or at night. Applying the BS 4142 methodology to a sound source such as the wig wags, which would be used for a short period of time on an infrequent basis, may tend to produce an overly pessimistic assessment.

It should also be noted that BS 4142 uses a different terminology to describe impacts than those usually adopted for an ES. It does not define a sound level threshold below which it can be assumed that there is no impact, or for which an impact can be considered negligible. BS 4142 merely advises that *'where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact'*. In the case of this assessment, all of the predicted sound levels from the wig wags, as experienced at the receptor locations, do not exceed the background sound level, so the impact can be described as "low". For many of the receptor locations, the predicted sound level from the wig wags is substantially lower than the background sound level, by up to 32 dB during the daytime and 20 dB at night. For these receptor locations, noise from the wig wags might even be inaudible; a subjective interpretation would certainly find that the impact would be insignificant. As BS 4142 does not use the word "insignificant", the impact at these locations, as presented in the assessment tables detailed above, has been described as "very low".

The calculation methodology used to predict the sound levels from the wig wags has adopted a number of worst case assumptions (e.g. no attenuation from ground effects or atmospheric absorption). As a further worst case, the predicted sound levels have been assessed by comparison with the lowest measured background sound levels at each receptor location (often recorded at weekends and not mid-week).

Given that the calculations have been undertaken using some worst case assumptions and that the assessment methodology is likely to overestimate the potential impact, the assessment detailed above should be considered to be conservative (i.e. representing a worst case).

On this basis, it is concluded that sound from the operation of the wig wags would result in, at worst, a low to very low impact at residential areas in the vicinity of the scheme.

Calculations and assessment undertaken by:

Keith Jefferson
Associate Director – Acoustics

Appendix B Applicant's response to ABP's issue raised about the Transport Assessment

MEMO

DATE	**22 February 2019**	**CONFIDENTIALITY**	**Public**
SUBJECT	**Lake Lothing Third Crossing – Response to ABP Review of Revised Transport Assessment**		

1.1. This note has been prepared in response to the issues raised by ABP on the Revised Transport Assessment as set out in Annex 1 of **ABP's comments on the Applicant's Answers to the Examining Authority's First Written Questions (ABP ref – 20013261).**

2. ABP'S POINT 1 AND 2

ABP 1. *ABP's consultant team has reviewed the revised Transport Assessment (PINS Document Reference REP3-056) ("TA") submitted at Deadline 3 (8 January 2019). Of particular concern is that the most basic input assumptions have not yet been determined. In this case, Table 7.1 sets out a number of scenarios against which the scheme is assessed in terms of assumed opening and closing times of the various bridges. The supporting text confirms that:*

"7.3.3 The operating regime for the Scheme remains to be determined, however the scenarios listed in Table 7.1 are considered to provide a robust range of assessments from which the impact of the Scheme can be determined. A 6 minute Scheme lift would accommodate the one-way transit of a single or two vessels, and a 10 minutes Scheme lift would accommodate the transit of a larger commercial vessel in bad weather.

7.3.4 If both the Scheme Bridge and the Bascule Bridge are required to lift, it is likely that there will be an offset in the timing of the lift of each bridge. Within the VISSIM model, Scenario 5 includes a bridge lift offset of 1.5 minutes, i.e. the Scheme begins to lift 1.5 minutes after the A47 Bascule Bridge reopens to traffic. This is the average offset taken from the Vessel Simulation Report. For further testing, scenarios 5a, 6 and 7 assume that the A47 Bascule Bridge and the Scheme lift at the same time, with vehicular traffic stopped at both bridges together."

ABP 2. *Clearly until the operating regime specified in the draft Scheme of Operation is confirmed, there can be no confidence that the closure times assessed are indeed robust.*

3. APPLICANT'S RESPONSE

3.1. The duration of a bridge opening will be a facet not only of the detailed design of the Scheme, but also of course of the size and number of vessels moving through the Scheme at any one time, which will evidently be variable.

3.2. Therefore, having regard to the findings of the Vessel Survey (appended to document APP-208) and the reference design of the Scheme as modelled in the Vessel Simulation (reported in document APP-198), the Applicant considers that the traffic effects of the Scheme are best understood through modelling a number of scenarios to provide a range of assessments for the operation of the Scheme.

4. ABP'S POINT 3

ABP 3. *That could have a fundamental and substantive impact on the overall assessment of scheme benefit. In that regard, ABP has serious concerns that the modelling in any event is counter intuitive. By way of example, Table 7.38 shows higher average travel time savings (111s vs 37s in the PM Peak) for SC 7 (when both bridges are closed for 10 minutes) than Sc 9 when the scheme bridge is assumed not to lift.*

5. APPLICANT'S RESPONSE

5.1. The economic appraisal of the scheme has been undertaken in accordance with current WebTAG guidance, including TAG Unit A1 cost-benefit analysis and TAG Unit A2 economic impacts and in reported in the Economics Report (Document Reference 7.3, PINS Reference APP-106).

5.2. The Applicant considers that the SATURN model is robust in various scenarios (such as reported in the Justification and Traffic Effects of draft Scheme of Operation paper, Document SCC/LLTC/EX/60: PINS Ref REP4-016). For the purpose of a robust Economics Report, it was assumed that the operation of the Scheme Bridge would mirror that of the A47 Bascule Bridge. The bridges are each therefore assumed to lift once every hour during each time period, AM, interpeak, and PM, with the A47 Bascule Bridge assumed to open for 5 minutes and the Scheme Bridge for 6 minutes.

5.3. This means the Economics Report overestimates the number of times the Scheme Bridge would need to open as it takes no account of the fact that the Scheme bridge is located to the west of the majority of quays in the Port, and it provides a significantly higher air draft than the existing A47 Bascule Bridge. With the draft Scheme of Operation in place, and considering the scale of peak hour bridge lifts this would permit, the Applicant considers that the economic assessment is robust.

5.4. As noted above, the model used for the detail operational assessment was developed using VISSIM software. VISSIM is a traffic microsimulation modelling package that simulates the movements and interactions of individual vehicles, in discrete time steps, as they travel through a road network. VISSIM is more suited than SATURN to a detailed operational assessment of conditions in Lowestoft and the congestion caused by delays associated with bridge lifts. However, its localised coverage means that, unlike SATURN, it does not capture the longer distance transfer to the scheme and therefore is not used for the economic appraisal.

5.5. The operational assessment of the scenarios for the operation of the Scheme as identified in Table 7.1 of the TA was described in Section 7.5 of the TA. This contained a comparison of journey times for the Do Minimum and Do Something scenarios for a number of routes and selected origins/destinations.

5.6. Table 7.38 of the TA, reproduced as Table 1 below, sets out the predicted average journey times for all vehicles on the network across the peak period.

Table 1 Average Journey Time Savings per Vehicle (Sec) – From Figure 7.38 of TA

Scenario	Operating Regime	AM	PM
DS_2022_SC-5	Scheme Lifted (6 mins); A47 Bascule Bridge Lifted (5 mins) (bridge lift offset of 1.5 minutes westbound)	154	100
DS_2022_SC-5a	Scheme Lifted (6 mins); A47 Bascule Bridge Lifted (5 mins) (as scenario 5 with bridges lifted simultaneously)	128	36
DS_2022_SC-6	Scheme Lifted (6 mins); A47 Bascule Bridge Lifted (10 mins)	117	59
DS_2022_SC-7	Scheme Lifted (10 mins); A47 Bascule Bridge Lifted (10 mins)	117	111
DS_2022_SC-8	Scheme Open; A47 Bascule Bridge Open	143	108
DS_2022_SC-9	Scheme Open; A47 Bascule Bridge Lifted (5 mins)	162[1]	37
DS_2022_SC-10	Scheme Open; A47 Bascule Bridge Lifted (10 mins)	145	114

5.7. ABP provides an example of the predicted savings in Scenario 7 (with both the Scheme Bridge and Bascule Bridge lifted for 10 mins) being higher than Scenario 9 (with Scheme Bridge open and Bascule Bridge lifted for 5 mins) to support their contention that the results are 'counter intuitive'.

5.8. The Applicant has undertaken further examination of the model outputs underpinning the journey time analysis and the following points are identified of particular relevance when interpreting the results of the journey time savings:

I. The journey time savings for Scenarios 7 and 9 are based upon a comparison against different Do Minimum scenarios and therefore this is not directly comparable. Scenario 7 is compared against a Do Minimum based on a 10 minute lift of the A47 Bascule Bridge [DM_2022_10MIN], whereas Scenario 9 is compared against a Do Minimum with a 5 minute lift of the A47 Bascule Bridge [DM_2022_5MIN]. The Do Minimum journey times are higher for 10 minute lift reflecting the higher levels of congestion associated with a longer bridge lift. If Scenario 9 (which includes a 5 minute lift of the A47 Bascule Bridge, with the Scheme in place, and open to traffic) is compared against a Do Minimum with a 10 minute lift of the A47 Bascule Bridge [DM_2022_10MIN] this results in additional journey time savings than when compared with a 5 minute lift of the A47 Bascule Bridge [DM_2022_5MIN]. This is illustrated in Table 2 below.

II. The PM journey time savings reported for Scenario 9 in the TA do not include an optimisation of signal timings at A12 Tom Crisp Way/Blackheath Road junction (which is proposed as part of the Scheme and secured by Requirement 12 of the DCO). Paragraph 7.5.37 of the TA notes that in the Do Something scenarios, queuing occurs at the A12 Tom Crisp Way/ Blackheath Road junction resulting in congestion when compared to the Do Minimum scenario where less traffic uses the route. A sensitivity test to amend the traffic signal timings at the A12/Blackheath Road junction was carried out for Scenarios 8, 9 and 10 to demonstrate the effect of optimising the signal timings to accommodate the additional traffic as a result of the Scheme. The results are reported in Section 7.5 of the TA. When the optimised signal timings at Blackheath Road junction are included in Scenario 9, average journey time increases. This results in an increase in average journey time savings from 37 to 84 sec in the PM peak (compared against a Do Min with 5 min bridge lift [DM_2022_5MIN]). This is also illustrated in Table 2.

Table 2 Average Journey Time Savings – Options 7 and 9

	AM Peak		PM Peak		
	Option 7	**Option 9**	**Option 7**	**Option 9**	**Option 9 Optimised**
DM 5min	-56	-127	-54	-37	-84
DM 10min	-117	-188	-111	-94	-141

III. A comparison of average journey time savings can be misleading as it masks the significant variation in modelled journey times. A reduction in journey time variability is an important consideration in evaluating the benefits of the scheme.

The journey times are derived from an average of a total of 20 runs (iterations) of the VISSIM traffic model. One of the characteristics of traffic micro-simulation models including VISSIM is the use of stochastic modelling procedures to take account of the variability in day to day conditions. This may result in significant variations in modelled journey times for individual model runs for a particular scenario, particularly where there is congestion and delays.

An analysis of the PM peak journey times for each of the 20 runs of the Do Minimum and Do Something scenarios is presented in Figure 1.

[1] The AM peak journey time saving for DS_2022_SC-9 (162sec) is incorrect. It should be 127sec. This error is explained in Appendix D

Figure 1 Journey Time Variability for Do Minimum and Scenarios 7 and 9

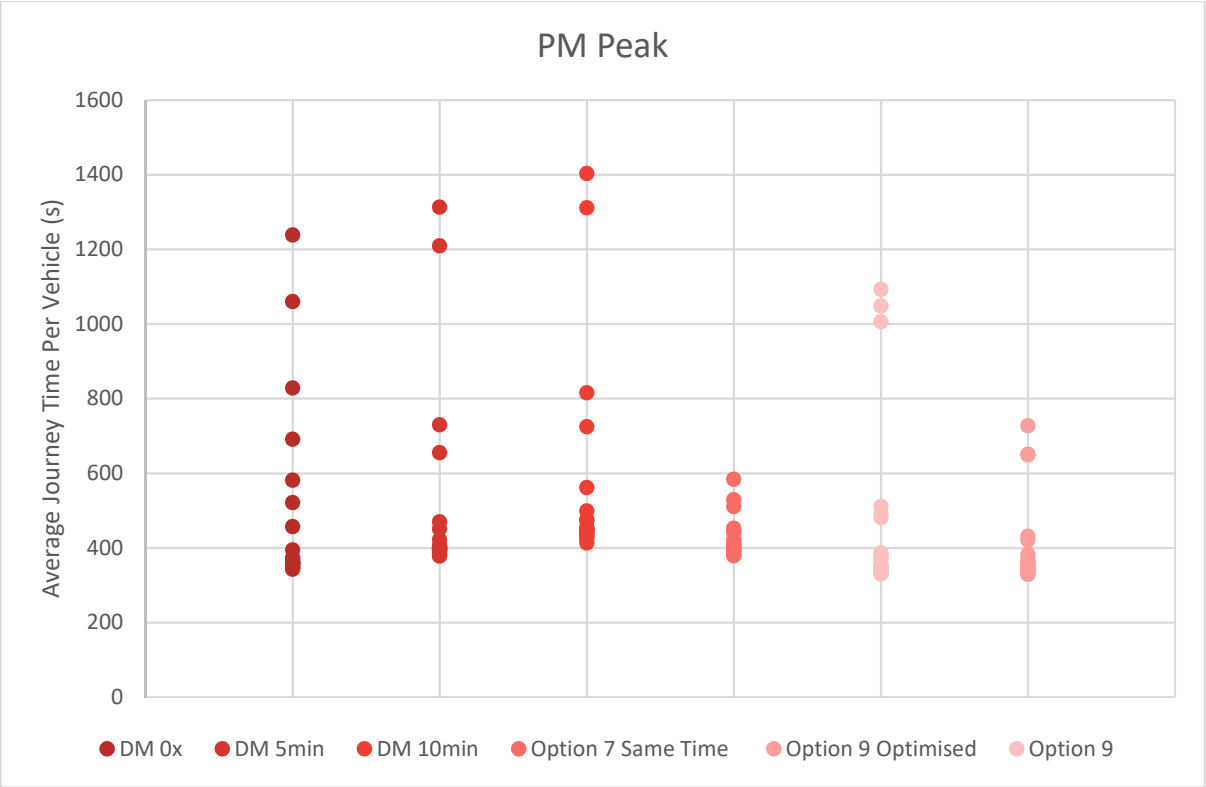


Figure 1 demonstrates that in the Do Minimum for both a 5 and 10 minute lift of the Bascule Bridge, there is a significant variation in journey times and reflects the congestion associated with the bridge lifting.

The Journey time variability is significantly reduced for both Scenarios 7 and 9, and the benefit of optimising the A12 Tom Crisp Way/Blackheath Road junction is also clear.

It is noted that that this complements the analysis of journey time variability presented in Section 3.4 of the 'Justification and Traffic Effects of draft Scheme of Operation' Document SCC/LLTC/EX/60 prepared by the Applicant. It demonstrates the significant variability in journey times that occur with a 10 minute lift of Bascule Bridge and shows the improvement in journey time variability that would result from the Scheme.

6. ABP'S POINT 4

ABP 4. *This further supports ABP's position that, fundamentally the location of the bridge needs to be revisited as follows:*

7. APPLICANT'S RESPONSE

7.1. The journey time savings as reported in the TA are intended to inform the operational regime of the Scheme. It does not provide any evidence to support ABP's assertion that the location of the Bridge needs to be reassessed.

7.2. As noted in the response to ABP 7 below, a technical report has been produced 'Lake Lothing Third Crossing, Technical Report: Review of central and western bridge options' dated January 2019, submitted as Appendix B to Document SCC/LLTC/EX/51: Applicant's Responses to Written Representations and Interested Parties Responses to Written Questions (PINS Ref REP4 – 014). This compared the relative merits of central and western crossings options using the Suffolk County Transport Model (SCTM). This was prepared to address concerns raised by ABP that the previous Outline Business Case (OBC)/Options Appraisal Report (OAR) analysis was sub-standard, and the western crossing was a superior (or preferable) option for the Port compared to a central option. This concluded that the central crossing option remained superior to a western option across a range of criteria: cost, affordability, value for money (economic benefit), alignment to scheme objectives, public support and acceptability.

8. ABP'S POINT 5

ABP 5. *The decision on which option to pursue was made on the basis of the 2015 Outline Business Case. That business case was supported by a Transport Assessment and model based on work undertaken at the time.*

9. APPLICANT'S RESPONSE

9.1. The decision on which scheme option to pursue was based upon the findings of a DfT / WebTAG compliant OAR which undertook multi-criteria analysis to assess and appraise scheme options. Options that progressed through an initial sift against scheme objectives were later appraised using outputs from the Suffolk County Council's SATURN based Lowestoft Transport Model (LTM), and economic appraisal software to enable the relative Cost Benefit Analysis of the options to be derived. The assessment of scheme options was summarised within the OBC with the OAR provided in full as Appendix A to the OBC.

9.2. This option appraisal process including the OBC was scrutinised by the DfT and the scheme was subsequently granted Programme Entry with provisional funding of £79.5m allocated to the scheme.

9.3. No specific Transport Assessment (TA) was submitted with the OBC as Transport Assessments are only usually required as part of the planning process. A TA was produced after the submission of the OBC as part of the preparation for the application for development consent.

10. ABP'S POINT 6

ABP 6. *The updated TA was originally delayed pending a new model because the Applicant considered the original modelling to be inadequate to test the chosen scheme.*

11. APPLICANT'S RESPONSE

11.1. ABP's assertion is incorrect.

11.2. As noted in the response to Q6 above, there was no requirement for a TA to accompany the submission of the OBC.

11.3. The LTM SATURN model used to assess scheme impacts at the time of producing the OBC has been updated since Programme Entry was granted. This is normal practice since models and/or scheme designs are often updated and developed further during progression through the business case and planning process (from Outline to Full Business Case) as more information becomes available and schemes are refined. The Department for Transport (DfT) were satisfied with the model during the period of engagement with the scheme promoter (the Applicant) (2015-16) and were not expecting to re-engage and scrutinise an updated model until after the DCO decision, in 2019 i.e. at Full Business Case stage, in line with standard practice.

11.4. The 2015 LTM scheme model had been developed to focus on the area of Lowestoft and needed to be adapted, as part of an updated and geographically expanded county-wide strategic model for Suffolk County Council (SCC) – the Suffolk County Transport Model (SCTM) - to support a range of different projects for which SCC require a traffic modelling evidence base. For this reason and also taking into account the passage of time between the model validation year (2015), which used 2015 traffic data, and the requirement for a future review of the model by the DfT in 2019, the decision was taken by the Applicant to use this updated Suffolk County Transport Model (SCTM) to assess and appraise the scheme as part of the DCO analysis and evidence base as part of the LLTC DCO submission.

11.5. There are differences between the two models used for OBC scheme appraisal and DCO scheme appraisal. The original strategic model was developed from a strategic model focussed on Lowestoft and used ANPR data to determine the traffic demand, utilising DIADEM. This was considered proportionate at the time to support the OBC and was scrutinised and accepted by the DfT as a suitable evidence base from which to award Programme Entry and allocate provisional funding for the scheme. Following this it was therefore appropriate to change to using a model which provided a greater representation of long distance strategic trip movements.

11.6. The Applicant considers the original modelling to be robust and fit for purpose for supporting the OBC. The model passed a range of WebTAG validation criteria, which is fully documented in the Local Model Validation Report (LMVR). The model and supporting documentation were scrutinised by the DfT and deemed acceptable for use to appraise the scheme impacts.

11.7. It should be noted that the DfT have reviewed modelling to support a scheme for the Large Local-Majors in 2017/2018 which utilised the county model (SCTM). No concerns or comments were raised in relation to the base year modelling in the LMVR, Traffic Data Collection Report and Demand Model Validation Report.

11.8. The decision to update the model was therefore taken for logical reasons as highlighted above and does not imply that the previous modelling was unsound.

12. ABP'S POINT 7

ABP 7. *In ABP's view, that must undermine the original options appraisal and overall OBC.*

13. APPLICANT'S RESPONSE

13.1. As noted in the response to ABP 6 above, the original 2015 model was approved by the Department for Transport, who on the strength of the OAR, the OBC *and* supporting model analysis granted the scheme Programme Entry. The view taken by ABP that the "original options appraisal and overall OBC" is undermined is therefore unsubstantiated.

13.2. The initial sifting process of options against the project objectives, the aggregate view of the majority of the public, the relative costs of different scheme options and their subsequent affordability and their impact on a range of social and environmental criteria all demonstrated that the central option was the best all round scheme option.

13.3. These conclusions are supported by the model analysis which shows that the proposed Scheme results in the maximum reduction in traffic on the existing congested A47 Bascule Bridge. They also concur with the results of the economic appraisal, which shows a scheme in a central location provides the highest Benefit to Cost Ratio (BCR) and Value for Money.

13.4. The Applicant notes that the OBC considered a wider range of considerations, including the Scheme's strategic fit, technical feasibility, constraints, value for money, financial affordability, commercial viability, and deliverability which provided a sound and completing evidence base to support the proposed Scheme option.

13.5. As noted in the response to ABP 4 above, the technical report 'Lake Lothing Third Crossing, Technical Report: Review of central and western bridge options' issued in January 2019 compared the relative merits of central and western crossings options using the new model. This was prepared in response to concerns raised by ABP that the previous OAR / OBC analysis was sub-standard, and the western crossing was a superior compared to a central option.

13.6. The conclusion of that report was consistent with the original findings. That the central crossing option is superior to a western options across a range of criteria: cost, affordability, value for money (economic benefit), alignment to scheme objectives, public support and acceptability. The conclusions of that reported are reproduced below:

The clear conclusion of this review is that the choice of a central option for the Scheme is still justified.
An alternative western alignment for the bridge would be less satisfactory for several key reasons:

- *It would be up to 17% more expensive than the Scheme*
- *It would attract about 8% less traffic to the new bridge than the Scheme*
- *It would not connect effectively to A12 Tom Crisp Way and would therefore not work so well as part of Lowestoft's main road network*
- *It would be difficult to resolve the issue of access to properties where the Western option connects to Waveney Avenue*
- *It would provide less traffic relief to the A47 Bascule Bridge and roads within the town centre*
- *It would lead to a very large increase in traffic using Kirkley Run – more than 100%.*
- *It would offer lower economic value for money, as measured by the benefit-cost ratio*

These findings supplement the evidence from the original assessment that

- *A western option would have significantly less support amongst local people*
- *A western option would have a greater environmental impact.*

13.7. This provides further supporting evidence to demonstrate the superiority of the central crossing option and corroborates the previous work reported in the OAR.

14. ABP'S POINT 8

ABP 8. *In line with the guidance set out in Webtag Proportionate Update Process Document section 1.3, there is significant risk to the decision making process being found unsound. ABP wrote to the Applicant on 12 April 2018 and 28 June 2018 requesting confirmation on how that would be dealt with alongside the detailed modelling outputs. A response has not been provided.*

15. APPLICANT'S RESPONSE

15.1. The applicant has reviewed section 1.3 of the DfT's 'Principles of the WebTAG Proportionate Update Process' and is unable to find anything to support ABP's contention that there is a risk of the decision making process being deemed unsound. The applicant seeks clarification from ABP relating to the specific concern raised. A copy of this extract is included in Annex B-1 at the end of this appendix.

15.2. The Applicant responded to ABP's letters on 11 June 2018 and 8 August 2018. That latter letter offered to make the Applicant's modelling specialists available to discuss matters with ABP, but this offer was not taken up. The Applicant sought clarification from ABP most recently in its workshop of 19 November 2018 as to whether there were any outstanding traffic queries, and ABP indicated it would confirm and put these requests in writing, though no such request/letter has been received.

16. ABP'S POINT 9

ABP 9. On 8 August 2018, the Applicant confirmed to ABP, in direct response to the request for an updated alternative assessment that:
"However, as you will have noted in my Chief Executive Officer's letter of 12 July 2018 to Paul Ager, I have undertaken a brief verification exercise applying the current traffic model to historic options, which reaffirmed the superior performance of the central option. I will not be doing any further reanalysis of discounted options."

17. APPLICANT'S RESPONSE

17.1. As noted in the response to ABP 4 above, the technical report 'Lake Lothing Third Crossing, Technical Report: Review of central and western bridge options' issued in January 2019 compared the relative merits of central and western crossings options using the new model. Although not required by any part of the process, this document was prepared in response to concerns raised by ABP in its representations to date that the previous OAR / OBC analysis was sub-standard, and the western crossing was a superior compared to a central option.

18. ABP'S POINT 10

ABP 10. *That process is not at all consistent with the Webtag guidance and is not acceptable. There is a complete lack of clarity in the TA in relation to issues such as the change in flows arising from the scheme on key routes. The focus on a high level journey time saving completely fails to consider the wider benefits and options available to the authority in terms of a scheme going forward.*

19. APPLICANT'S RESPONSE

19.1. The applicant would seek further explanation as to why ABP considers that the process is not consistent with WebTAG.

19.2. As noted in the response to Questions 5 to 7, an OAR was undertaken for submission to the DfT and the process is consistent with WebTAG. The model, supporting analysis and conclusions that led to the selection of the proposed Scheme were all scrutinised and approved by the DfT.

19.3. It is noted that the TA provides an analysis of flow changes, a detailed operational assessment of the various scenarios as well as an assessment of junction capacity. The changes in traffic flows as a result of the scheme based upon an analysis from the SATURN model is clearly described in Section 6.2 of the TA. The change in flows on the strategic road network is presented in Figure 6.1.

20. ABP'S POINT 11

ABP 11. *Importantly, in terms of the TA now submitted there is no direct comparison between the two models provided in the LMVR (Appendix E of TA). There is no report setting out the changes in the flows other the headlines in the TA and those presented in Appendix G which is the Operational Model report (Vissim rather than Saturn). That information was requested and has not been provided.*

21. APPLICANT'S RESPONSE

21.1. As noted in Section 5.2 of the TA, strategic and local models were developed to in order to assess the strategic and local impacts of the Scheme respectively.

21.2. The LMVR (Appendix E of the TA) documents the development and validation of the SATURN model used for the strategic assessment, while Appendix G describes the development of the VISSIM traffic microsimulation model used for the assessment of local impacts, including journey times.

21.3. Since the models were developed for different purposes and used different software packages, a direct comparison between the two models would not be very meaningful and therefore has not been undertaken. For example, VISSIM is a microsimulation modelling package that models the actions and interactions of individual vehicles, in simulated time steps, as they travel through a road network. It is therefore more suited to a detailed operational assessment of conditions in Lowestoft and the congestion caused by delays associated with bridge lifts. SATURN on the other hand is a primarily a strategic modelling tool. It assigns a matrix of trips to a network calculating average journey times across a 1 hour period, using empirical relationships between flow and theoretical capacity. It is well suited to model re-routeing over a wider area based upon changes in predicted travel times, but is less suited to modelling congested urban road networks.

21.4. While there will inevitably be differences between the two models, due to their different characteristics as highlighted above, steps were taken to ensure consistency between the data underpinning the models. For example, the trip matrices for the VISSIM model were based upon the SATURN matrices and were developed through a cordoning of the SATURN Origin/Destination matrices to the local area covered by the VISSIM model. This process was carried out for the Base, Do Minimum and Do Something scenarios. In addition during the process of model development, checks were carried out to ensure consistency of network coding.

21.5. The Applicant considers it has presented sufficient information to facilitate an understanding of the traffic effects of the Scheme, though if ABP considers further detail is necessary, the Applicant remains receptive to those requests.

22. ABP'S POINT 12

ABP 12. *Whilst the TA provides changes in flows on two bridges in terms of AADT, it does not provide comparable numbers for the AM and PM peaks as per the table above. The changes are described qualitatively only (Para 7.7.1 of the TA):*
"In both AM and PM peaks there is a decrease in traffic volume on the key strategic route of A47 Battery Green Road and the Bascule Bridge in both directions. In the AM and PM peak the queues extending from the junction of Denmark Road and A47, as a result of the lifting of the Bascule Bridge, are comparatively less in the DS scenario."

23. APPLICANT'S RESPONSE

23.1. The AM and PM peak figures for Battery Green Road and Bascule Bridge for 2022 and 2037 are presented in Tables 3 and 4 respectively.

Table 3 2022 AM Flows

Road Name / Direction	AM 2022 DM	AM 2022 DS	Abs Diff	%Diff
A47 Bascule Bridge SB	949	462	-487	-51%
A47 Bascule Bridge NB	1372	790	-582	-42%
A47 Battery Green Road SB	454	267	-187	-41%
A47 Battery Green Road NB	601	510	-91	-15%
A1117 Bridge Road (Mutford Bridge) SB	1156	779	-377	-33%
A1117 Bridge Road (Mutford Bridge) NB	1213	819	-394	-32%
Road Name / Direction	**IP 2022 DM**	**IP 2022 DS**	**Abs Diff**	**%Diff**
A47 Bascule Bridge SB	1316	671	-644	-49%
A47 Bascule Bridge NB	912	626	-286	-31%
A47 Battery Green Road SB	621	358	-263	-42%
A47 Battery Green Road NB	479	504	25	5%
A1117 Bridge Road (Mutford Bridge) SB	1178	904	-273	-23%
A1117 Bridge Road (Mutford Bridge) NB	1373	769	-604	-44%
Road Name / Direction	**PM 2022 DM**	**PM 2022 DS**	**Abs Diff**	**%Diff**
A47 Bascule Bridge SB	1895	1177	-718	-38%
A47 Bascule Bridge NB	951	398	-553	-58%
A47 Battery Green Road SB	877	587	-290	-33%
A47 Battery Green Road NB	528	392	-136	-26%
A1117 Bridge Road (Mutford Bridge) SB	1344	1045	-299	-22%
A1117 Bridge Road (Mutford Bridge) NB	1347	936	-410	-30%

Table 4 2037 Flows

Road Name / Direction	AM 2037 DM	AM 2037 DS	Abs Diff	%Diff
A47 Bascule Bridge SB	1057	607	-450	-43%
A47 Bascule Bridge NB	1487	885	-602	-40%
A47 Battery Green Road SB	523	366	-157	-30%
A47 Battery Green Road NB	642	591	-50	-8%
A1117 Bridge Road (Mutford Bridge) SB	1282	886	-395	-31%
A1117 Bridge Road (Mutford Bridge) NB	1424	965	-459	-32%
Road Name / Direction	**IP 2037 DM**	**IP 2037 DS**	**Abs Diff**	**%Diff**
A47 Bascule Bridge SB	1553	873	-680	-44%
A47 Bascule Bridge NB	920	746	-174	-19%
A47 Battery Green Road SB	782	476	-307	-39%
A47 Battery Green Road NB	518	593	76	15%
A1117 Bridge Road (Mutford Bridge) SB	1304	1004	-299	-23%
A1117 Bridge Road (Mutford Bridge) NB	1527	992	-535	-35%
Road Name / Direction	**PM 2037 DM**	**PM 2037 DS**	**Abs Diff**	**%Diff**
A47 Bascule Bridge SB	2057	1418	-640	-31%
A47 Bascule Bridge NB	1038	497	-541	-52%
A47 Battery Green Road SB	970	740	-230	-24%
A47 Battery Green Road NB	594	496	-98	-16%
A1117 Bridge Road (Mutford Bridge) SB	1520	1153	-367	-24%
A1117 Bridge Road (Mutford Bridge) NB	1480	1074	-405	-27%

23.2. Tables 3 and 4 demonstrate that the peak hour reduction on A47 Bascule Bridge as a result of the Scheme ranges between 40 to 50% in the AM peak and from 30 to 60% in the PM peak (depending on direction). Flow reductions on A47 Battery Green Road range between 10 and 40% in the AM peak and 15 to 35% in the PM peak.

24. ABP'S POINT 13 & 14

ABP 13. *ABP has not, therefore, been able to undertake a comprehensive review of the impacts arising at this stage. The Applicant has confirmed that no further information requested during last year will be made available.*

ABP 14. *As a headline position, however, it is stated that flows on Battery Green Road to the north of Bascule Bridge are said to reduce by 5.5% and 10% in the AM and PM peak respectively with a 5 min closure. That is significantly below the 30+% levels suggested in the OBC.*

25. APPLICANT'S RESPONSE

25.1. The Applicant considers that the information that ABP has sought is presented in the Application, as submitted in July 2018, but as noted above, if ABP has identified a need for further information the Applicant remains willing to discuss this.

25.2. The reduction on Battery Green Road to the north of Bascule Bridge, based upon AADT's is 28% in 2022 and 21% in 2037 according to Fig 6.1 of the TA.

25.3. No figures were provided for in the TA for the AM and PM peak. However, the flows presented in Tables 3 and 4 taken from the SATURN model demonstrate a reduction in 2-way traffic flows on Battery Green Road of 26% in the AM peak and 30% in the PM peak in 2022, and 18% and 21% for the AM and PM peak respectively in 2037.

25.4. The reference made to the 5.5 to 10% reduction is therefore incorrect.

26. ABP'S POINT 15

ABP 15. *That is a significant shift in position and likely benefit of the scheme. ABP would ask the ExA to consider whether the significance in the shift of position justifies a reassessment of the options.*

27. APPLICANT'S RESPONSE

27.1. Throughout this process the applicant has ensured that modelling and appraisal methods have adhered to best practice, resulting in approval of the OBC by the DfT. The decision to adopt the updated Suffolk County Transport Model (SCTM) following submission of the OBC, was taken so as to ensure that that all subsequent work to support the DCO (and ultimately the Full Business Case) would be based upon the best model currently available. The re-assessment of the central and western crossings options using the new model re-affirmed the results of the previous work.

Annex B-1
TRANSPORT ANALYSIS GUIDANCE - The Proportionate Update Process

1.3 The principles of proportionate updating

1.3.1 While sound planning of business case development, assisted by the Orderly Release Process, can minimise the cost, resource, and time needed to ensure a business case remains in step with latest evidence, it is nonetheless reasonable for project sponsors to decide what updates to business cases it is proportionate to make when WebTAG, or other guidance / evidence changes.

1.3.2 The Department expects that such decisions should be made on a scheme by scheme basis, and be based on balancing the need to ensure decisions are based on up-to-date evidence with the need to support decision makers in delivering their programme. This should involve reasonably balancing (a) the greater time, cost, and/or resource needed to deliver programmes, with (b) the quality of the analysis submitted to assist the decision required, including its robustness against potential challenge from all sources.

Who should decide?

1.3.3 The decision on this balance should be taken by the scheme sponsor[2], making proper use of the governance framework overseeing the work and resulting decision advice (e.g. an Investment Board), seeking advice and agreement from relevant centres of excellence (e.g. the appropriate analytical team in the overseeing organisation) and legal advisors.

How should this be decided?

1.3.4 It is difficult to set down overarching guidance on what this balance should be for different types of project, decision points, or WebTAG changes and the relevant considerations and factors for each project may be different. However, it is reasonable to presume that the case for not adopting latest evidence would be stronger the more it can be shown that:

- the changes are not material to the decision at hand;
- adopting the change would require significant increase in the resources, cost, and/or time needed to prepare the decision advice; and
- the risk of successful legal challenge is low; and,
- the risk of damage to the reputation of the analysis supporting the scheme, or the Department's wider portfolio, is low.

1.3.5 This approach has been developed primarily for sponsors inside DfT. To the extent that sponsors outside of the Department take decisions such as these, and apply the above reasoning, they should satisfy themselves that the decision taken on balancing these elements is appropriate. Moreover, decisions by sponsors outside the Department whether or not to adopt guidance changes is taken entirely at their own risk and the Department cannot be held responsible for any loss of damage flowing from that decision.

1.3.6 When considering this balance, scheme sponsors should be aware there could also be the option of adopting the changes to WebTAG in an additional sensitivity test. This could sometimes be delivered at lower time/resource cost, while helping to mitigate some of the risks from not fully updating the central case analysis.

When to update

1.3.7 Updates to analytical models and appraisals, where they are deemed to be material, should be programmed to coincide with forthcoming decision-points within a project. The Department would not expect work to be undertaken to update analysis as a general necessity where it will not be used. Promoters should therefore plan when changes should be implemented for their work programme, considering the balance of factors described above.

1.3.8 It is also worth noting explicitly that the Department would not expect promoters to retrospectively revisit transport analyses used to inform final funding decisions in light of guidance changes.

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[2] 1 The scheme sponsor is defined here as the party responsible for funding the proposed transport scheme from a central resource. In more simple terms, the sponsor is the party that receives a transport investment business case, where the promoter is responsible for preparing the business case and the supporting analysis.

Appendix C Applicant's Response to Technical Note prepared by Mode Transport Planning on behalf of Brookhouse Group

MEMO

DATE	**22 February 2019**	**CONFIDENTIALITY**	**Public**
SUBJECT	**Lake Lothing Third Crossing – Response to Technical Note prepared by Mode Transport Planning on behalf of Brookhouse Group regarding North Quay Retail Park**		

1. INTRODUCTION

1.1. This note has been prepared in response to the Technical Note prepared by Mode Transport Planning on behalf of Brookhouse Group and submitted as part of its representations to Deadline 4. The Technical Note presents their findings from a review of the highways analysis presented in the revised Transport Assessment (TA), prepared by the applicant in January 2019.

2. TRANSPORT ASSESSMENT MODELLING REVIEW

2.1. Mode have correctly reported the results of the junction capacity modelling for the Barnards Way/ Denmark Road/ Peto Way roundabout as reported in Table 8.15 of Section 8.13 of the TA. This demonstrates that the North Quay Retail Park arm was predicted to operate above its practical capacity and close to its theoretical capacity in the Saturday peak period.

2.2. However, in subsequent correspondence between the Applicant and Axis, it was identified that upon a more detailed review of the traffic flows used for the junction modelling carried out by Mode, significant differences in the Saturday peak flows to those recorded on-site by the Applicant were highlighted. Mode acknowledged that the AM and PM peaks were comparable and within acceptable parameters.

2.3. Following the receipt of the Technical Note prepared by Mode and the further correspondence, the Applicant has therefore carried out a review of the inputs used for the junction modelling. This corroborated the findings of Mode, and demonstrated that flows had been incorrectly referenced within the Junctions8 model input for the Saturday assessments. This resulted in all flows entered into the Saturday model being allocated to the incorrect arms of the roundabout.

2.4. The HGV proportions were also reviewed by the Applicant and some minor discrepancies were identified in all scenarios which have now been corrected.

2.5. The junction model has now been revised with the amended HGV proportions for all movements, as informed by SATURN for the AM and PM scenarios and by traffic survey data for the Saturday peak.

2.6. The revised Saturday model also includes the flows correctly assigned to the respective approaches.

2.7. The revised results are presented in Table 1 below.

Table 1 Revised Junction Capacity Assessment Barnards Way/ Denmark Road/ Peto Way roundabout

	AM			PM			Sat		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	DM - 2016 DN								
Peto Way	0.34	2.65	0.25	0.34	2.60	0.26	1.11	5.53	0.53
Bamards Way	0.09	3.72	0.09	0.15	3.68	0.13	0.33	5.43	0.25
North Quay Retail Park	0.10	3.32	0.09	0.42	4.26	0.30	2.19	11.20	0.70
Denmark Rd	0.37	3.44	0.27	0.52	4.02	0.34	2.68	14.64	0.74
Development access	0.03	2.10	0.03	0.04	2.16	0.04	0.25	2.58	0.20
	DM - 2022 DM								
Peto Way	0.40	2.90	0.29	0.36	2.75	0.27	0.78	3.83	0.44
Bamards Way	0.12	4.09	0.11	0.16	3.83	0.13	0.35	5.85	0.26
North Quay Retail Park	0.12	3.51	0.10	0.48	4.54	0.33	1.83	9.38	0.65
Denmark Rd	0.55	3.87	0.36	0.79	4.66	0.44	1.29	6.91	0.57
Development access	0.04	2.21	0.04	0.04	2.26	0.04	0.31	3.21	0.24
	DM - 2022 DS								
Peto Way	1.49	5.25	0.60	0.95	3.92	0.49	1.10	4.54	0.53
Bamards Way	0.18	5.97	0.135	0.21	5.05	0.17	0.40	6.62	0.29
North Quay Retail Park	0.19	5.18	0.16	0.74	6.58	0.43	2.26	11.64	0.70
Denmark Rd	1.93	7.25	0.66	3.29	10.93	0.77	3.60	14.10	0.79
Development access	0.05	2.57	0.05	0.06	2.71	0.05	0.37	3.81	0.27
	DM - 2037 DM								
Peto Way	0.53	3.18	0.34	0.42	2.87	0.30	0.82	3.91	0.45
Bamards Way	0.17	4.45	0.14	0.18	4.05	0.15	0.36	5.94	0.26
North Quay Retail Park	0.14	3.75	0.12	0.59	4.99	0.37	1.88	9.61	0.66
Denmark Rd	0.74	4.41	0.42	1.10	5.59	0.52	1.41	7.28	0.59
Development access	0.05	2.29	0.05	0.05	2.41	0.05	0.32	3.26	0.24
	DM - 2037 DS								
Peto Way	2.34	7.19	0.70	1.26	4.52	0.56	1.20	4.76	0.55
Bamards Way	0.28	7.21	0.22	0.27	5.68	0.21	0.41	6.85	0.29
North Quay Retail Park	0.26	6.16	0.21	1.02	8.09	0.51	2.41	12.40	0.71
Denmark Rd	3.37	11.00	0.78	6.34	19.50	0.87	4.87	18.18	0.84
Development access	0.06	2.84	0.06	0.07	2.97	0.07	0.39	3.98	0.28

2.8. The results of the revised assessment presented in Table 1 and also appended in an errata table, demonstrates that for the 2022 DS scenario during the Saturday peak, the North Quay Retail Park arm would operate with an RFC of 0.70 (compared to 0.92 as reported in the TA) with queues of 2.3 vehicles (9.49 in the TA) and delays of 11.6 seconds (compared to 38.61 in the TA). For the 2037 Saturday peak, the North Quay Retail Park approach would operate with an RFC of 0.71 compared to 0.98 as reported in the TA.

2.9. The revised AM and PM peak results show virtually no change from those presented in the TA, as the HGV proportions have little noticeable effect on the results when working with PCUs, unless an approach is shown to be operating close to an RFC of 1.0.

2.10. The revised results demonstrate that the Scheme has very little impact on the retail park arm. More specifically, queuing would not tail back from the junction and extend beyond the internal mini-roundabout.

3. TRAFFIC FLOW DISPARITIES

3.1. The Technical Note raises 3 questions relating to the traffic flows that underpin the capacity assessment. The Applicant's response to these questions is set out below.

Question 1 (Para 3.1.1):

A review of the peak hour traffic flows entering and exiting the retail park confirm that there is only a marginal increase between the Do Minimum and Do Something scenarios. This indicates that additional traffic has not been assigned to the retail park as a result of the LLTC's potential to alter the retail catchment area and customer journey times from the south of Lake Lothing.

On this basis, the reduction in capacity and increase in queuing demonstrated by SCC's modelling is therefore as a result of increased traffic on the local highway network and not from an increase in traffic associated with the retail park.

Applicant's Response

3.2. There are small increases in traffic accessing/egressing the retail park in the AM and PM peak as a result of the Scheme, with no change in the Saturday peak.

3.3. The small changes between Do Minimum and Do Something for the retail park traffic is attributed to the Variable Demand process that is applied to the weekday AM and PM peak SATURN models. The Variable Demand process is a mechanism whereby demand is responsive to changes in travel costs. It is a requirement of WebTAG as part of the appraisal process, particularly where a scheme is predicted to result in changes in travel times.

3.4. The magnitude of flow changes between the Do Minimum and Do Something is in line with expectations. For example, the VDM process will typically result in modest changes in matrix totals of around 5%, depending upon the nature of the scheme. While the Scheme will reduce journey times for the retail park to and from the south of Lake Lothing, the change in trip totals to and from individual zones within the model will be modest.

3.5. In order to determine how the retail catchment area for North Quay Retail Park is affected by the scheme a form of gravity model or land use modelling would be required. This is not considered proportionate to demonstrate the impacts of the LLTC scheme. The scheme is a transport intervention which has been appropriately appraised to DfT WebTAG requirements.

3.6. As the revised results have demonstrated, the junction is predicted to operate well within capacity by 2037 with potential for further growth from the retail park.

3.7. It should be noted that since the SATURN model does not cover the Saturday peak period, flows for the junction model for Saturday peak were derived from a manual classified count traffic survey undertaken at the junction on Saturday 17th June 2017 which were then manually factored up to account for background growth and the impacts of the Scheme. The Variable Demand procedure was not applied to the Saturday flows.

Question 2 (Para 3.1.2):

A review of the modelling inputs shows an increase in vehicles exiting the Lidl/ Wickes/ Health Club site and entering the retail park between the Do Minimum and Do Something scenarios. An increase from 141 to 268 vehicles in 2022 and 157 to 300 vehicles in 2037 has been noted, without any explanation.

Applicant's Response.

3.9. The anomaly of an increase in vehicles egressing the Lidl/ Wickes/ Health club and accessing the retail park was a result of the incorrect allocation of flows within the junction model as described in section 2 above.

3.10. This has now been corrected and the flows for this movement (E to C) remain at 48 PCU in all scenarios. This is included in the errata table.

Question 3 (Para 3.1.3):

Heavy vehicle percentages have been applied to two movements in SCC's modelling, Peto way to Denmark Road and Barnards Way to Peto Way. There is no explanation as to why these movements require HGV factors and none of the other movements on the same arms or other arms do.

Applicant's Response.

3.11. The HGV proportions for the AM and PM peak models were derived from the SATURN model. Since the Saturday peak has not been modelled in SATURN, the HGV proportions were derived from the June 2017 manual classified count undertaken at the junction.

3.12. Minor inconsistencies were identified with the HGV proportions used in the AM, PM and Saturday peak assessments for Junction 12. These have been amended to match the latest modelled HGV proportions for the AM and PM peak assessment, and the June 2017 manual classified count data for the Saturday peak assessment.

3.13. It should be noted that the June 2017 traffic survey showed that HGV movements were only observed from Peto way to Denmark Road and Barnards Way to Peto Way with very few HGVs at the junction during the peak Saturday hour.

4. MITIGATION SCHEME

4.1. The results of the updated capacity assessment presented in section 2 above, demonstrate that the Barnards Way/ Denmark Road/ Peto Way roundabout operates within practical reserve capacity in the Saturday peak and the Scheme has a negligible impact on the North Quay Retail Park access.

4.2. The Applicant therefore concludes that there is no requirement for mitigation at this junction or within the retail park.

Appendix D Errata Table

D.1. This errata table has been prepared by the Applicant to correct and update traffic analysis relating to two specific items. The first relates to the results of the Junction Capacity Assessment for Junction 12 - Barnards Way/ Denmark Road/ Peto Way/North Quay Retail Park roundabout. The second relates to the journey time analysis for Scenario 9.

D.2. This analysis relating to both items was presented in both the original version of the Transport Assessment published in July 2018 (Document Reference 7.2/PINS document reference APP-093) and the revised version of the Transport Assessment published in 2019 PINS document reference REP4-056 and Appendix I to the TA – Junction Modelling outputs, PINS document reference REP4-055.

D.3. The changes are summarised as follows:

Item	Details
Para 7.6.1. Table 7-38	Correction to average journey time saving for Scenario 9 (2022 AM peak). The corrected AM peak average journey time savings for Scenario 9 is 127 sec and not 162 sec as reported in Table 7-38. The updated table is presented in Annex 1 Below.
Section 8.13. Table 8.15	A review of the inputs to the junction capacity model for Junction 12 - Barnards Way/ Denmark Road/ Peto Way/ North Quay Retail Park roundabout, highlighted that flows had been incorrectly referenced within the Junctions8 model input for the Saturday assessments. This resulted in all flows entered into the Saturday model being allocated to the incorrect arms of the roundabout. In addition, HGV proportions were also reviewed by the Applicant and some minor discrepancies were identified in all time periods. Both items were corrected and the models for all time periods were re-run. The original assessment showed that the North Quay Retail Park arm was predicted to operate above its practical capacity and close to its theoretical capacity in the Saturday peak period. The results of the revised assessment showed that for the 2022 DS scenario during the Saturday peak, the North Quay Retail Park arm would operate with an RFC of 0.69 (compared to 0.92 as reported in the TA) with queues of 2.2 vehicles (9.49 in the TA) and delays of 11.4 seconds (compared to 38.61 in the TA). For the 2037 Saturday peak, the North Quay Retail Park approach would operate with an RFC of 0.71 compared to 0.98 as reported in the TA. The revised AM and PM peak results show virtually no change from those presented in the TA, as the HGV proportions have negligible effect on the results. The revised results demonstrate that the Scheme has very little impact on the retail park arm and operates below practical capacity. The updated results of the capacity assessment of Junction 12 are presented in Annex 2. This replaces Table 8.15 of the revised TA.

ANNEX 1 - AVERAGE TRAVEL TIME SAVINGS

Table 3.1: Average Travel Time Savings per Vehicle (s) - Network wide

	AM	PM
DS_2022_SC-5	154	100
DS_2022_SC-5a	128	36
DS_2022_SC-6	117	59
DS_2022_SC-7	117	111
DS_2022_SC-8	143	108
DS_2022_SC-9	127	37
DS_2022_SC-10	145	114

ANNEX 2 - JUNCTION CAPACITY ASSESSMENT (J12)

Table 8.15: Junction 12 – Barnards Way / Denmark Road / Peto Way roundabout

	AM			PM			Sat		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	DM - 2016 DN								
Peto Way	0.34	2.65	0.25	0.34	2.60	0.26	1.11	5.53	0.53
Bamards Way	0.09	3.72	0.09	0.15	3.68	0.13	0.33	5.43	0.25
North Quay Retail Park	0.10	3.32	0.09	0.42	4.26	0.30	2.19	11.20	0.70
Denmark Rd	0.37	3.44	0.27	0.52	4.02	0.34	2.68	14.64	0.74
Development access	0.03	2.10	0.03	0.04	2.16	0.04	0.25	2.58	0.20
	DM - 2022 DM								
Peto Way	0.40	2.90	0.29	0.36	2.75	0.27	0.78	3.83	0.44
Bamards Way	0.12	4.09	0.11	0.16	3.83	0.13	0.35	5.85	0.26
North Quay Retail Park	0.12	3.51	0.10	0.48	4.54	0.33	1.83	9.38	0.65
Denmark Rd	0.55	3.87	0.36	0.79	4.66	0.44	1.29	6.91	0.57
Development access	0.04	2.21	0.04	0.04	2.26	0.04	0.31	3.21	0.24
	DM - 2022 DS								
Peto Way	1.49	5.25	0.60	0.95	3.92	0.49	1.10	4.54	0.53
Bamards Way	0.18	5.97	0.135	0.21	5.05	0.17	0.40	6.62	0.29
North Quay Retail Park	0.19	5.18	0.16	0.74	6.58	0.43	2.26	11.64	0.70
Denmark Rd	1.93	7.25	0.66	3.29	10.93	0.77	3.60	14.10	0.79
Development access	0.05	2.57	0.05	0.06	2.71	0.05	0.37	3.81	0.27
	DM - 2037 DM								
Peto Way	0.53	3.18	0.34	0.42	2.87	0.30	0.82	3.91	0.45
Bamards Way	0.17	4.45	0.14	0.18	4.05	0.15	0.36	5.94	0.26
North Quay Retail Park	0.14	3.75	0.12	0.59	4.99	0.37	1.88	9.61	0.66
Denmark Rd	0.74	4.41	0.42	1.10	5.59	0.52	1.41	7.28	0.59
Development access	0.05	2.29	0.05	0.05	2.41	0.05	0.32	3.26	0.24
	DM - 2037 DS								
Peto Way	2.34	7.19	0.70	1.26	4.52	0.56	1.20	4.76	0.55
Bamards Way	0.28	7.21	0.22	0.27	5.68	0.21	0.41	6.85	0.29
North Quay Retail Park	0.26	6.16	0.21	1.02	8.09	0.51	2.41	12.40	0.71
Denmark Rd	3.37	11.00	0.78	6.34	19.50	0.87	4.87	18.18	0.84
Development access	0.06	2.84	0.06	0.07	2.97	0.07	0.39	3.98	0.28