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

Document SCC/LLTC/EX/93: Response to Northumbrian Water Limited and NWES' Oral Submissions at 7-8 March 2019 Hearings

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

PINS Reference Number: TR010023

Author: Suffolk County Council

Document Reference: SCC/LLTC/EX/93

Date: 15 March 2019

This page is intentionally left blank

CONTENTS

Response to Northumbrian Water Limited and NWES' Oral Submissions at 7-8 March Hearings (includes written summary of Applicant's oral submissions at those hearings)

1.1 Response to Northumbrian Water Limited's (NWL) Oral Submissions at Issue Specific Hearing 7 March 2019

Northumbrian Water Limited Comment	Applicant's response
Indication that progress was being made in relation to noise issues in respect of agreeing a programme of pre and post opening monitoring and a trigger for the requirement of mitigation.	As the Applicant set out at the hearing, the Applicant's noise consultants continue to engage with NWL's noise consultants, and a methodology for noise monitoring and definition of adverse noise effects has been shared between the parties. The Applicant is positive that a methodology, with corresponding language in an agreement between the parties, will be able to be finalised in the near future.
Statement that NWL are still concerned about business interruption arising during construction of the Scheme, and that they continue to seek an indemnity in relation to this.	The Applicant continues to discuss this issue with NWL in the hope that a compromise position can be reached. As set out at the Hearing and in previous submissions however, the Applicant considers that NWL already have adequate protection through the operation of the DCO protective provisions for the benefit of the statutory undertakers whose apparatus servicing Trinity House may be affected and that an indemnity is not required.
Concern that the existing signalised junction is under capacity and works and that the suggestion	The Scheme overall provides a clear and material improvement to the highway network within Lowestoft. The scheme will ensure the highway network is

Northumbrian Water Limited Comment	Applicant's response
of the Waveney Drive/New Access Road junction being a priority junction will lead to a worsening. This needs to be seen in context that the Scheme is supposed to be an improvement. Claim that the Applicant is creating a material worsening at this junction in the context of a Scheme which is supposed to be promoting resilience. It is not enough to say that it will borderline 'work'.	resilient if issues occur at the other bridge crossings and ensure future growth in traffic can be accommodated. In the context of the existing signalised junction of Riverside Road / Waveney Drive / Durban Road, there is no entitlement for NWL to have the existing capacity preserved. The Applicant has demonstrated the New Access Road is capable of accommodating a substantial increase in traffic beyond the existing traffic which emanates from Riverside Business Park. The Scheme leads to a substantial increase in traffic on Waveney Drive, the current proposals can be demonstrated as the most appropriate solution to balance the needs of through traffic on Waveney Drive and vehicular traffic from land uses which directly access onto Waveney Drive. It should be noted an additional priority access junction would be in place on Waveney Drive by 2037 related to the Jeld Wen development. This would be located between Kimberley Road and Waveney Crescent; at the current site access for the existing land use. In combination, the two proposed priority junctions would provide sufficient capacity to allow traffic from the Jeld Wen site and Riverside Business Park to access onto Waveney Drive.
Concern that although the Applicant has undertaken two sensitivity tests, the figures still show that the traffic flows are above the DMRB threshold for a priority junction, and that it should instead be a roundabout or similar. This is important given the Stage 1 RSA identified the junction as a problem.	As the Applicant set out at the Hearing, the DMRB guidance (TD42/95) is 20 years old and therefore not current. The capacity assessment using Junctions8 software and based upon peak hour flows provides a much more reliable assessment of the junction capacity and performance. This assessment indicates that the priority junction proposed by the Applicant would be operate well within capacity based upon 2037 forecast flows from the second sensitivity test. Details of this capacity assessment based upon flows

Northumbrian Water Limited Comment	Applicant's response
	taken from the second sensitivity test were provided to NWL's consultant PBA on 6th March and are included with this document as Appendix A.
Suggestion that the Applicant's modelling is not robust, having been undertaken on one day in July, and that there are differences between figures done by NWL's consultants over a longer period in a non-summer month.	It is acknowledged the traffic count data which has been relied upon for the 2016 base year flows on Riverside Road is based on a Manual Classified Count (MCC) from a single day in July 2016 commissioned by WSP on behalf of SCC. The strategic model has in the main been validated using ATC data which was laid for a minimum of two weeks. Average traffic flows were then calculated based on weekdays (excluding Fridays). Therefore, the available traffic data within the SATURN model is considered robust and based on multiple days of observations, particularly within the vicinity of the area of interest around Waveney Drive. It should also be noted the Mobile Network Data (MND) which underpins the 2016 traffic demand within the SATURN model includes data on traffic movements from 23 separate days. At the Hearing, NWL compared the WSP flow with the highest flow observed over the duration of the count. This is misleading. It is standard practice to use the average of the observed data when multiple days of observations have been collected. The highest flow should not be used for comparative purposes. The purpose of collecting traffic data across several days is to determine an average which takes into account day to day variations in traffic flows. This therefore means the comparison of flow between the July 2016 MCC and December 2018 ATC should be as follows:

Northumbrian Water Limited Comment	Applicant's response

Data Source / Comparison	AM peak hour	PM peak hour
2016 MCC	294	204
2018 ATC	315	233
Absolute difference	21	28
Percentage difference	7%	14%

This comparison is consistent with what is shown in Table 1 of the "Transport / Highways Supporting Evidence for NWL" submitted at Deadline 3 by NWL (REP3-12). An absolute difference of 21 vehicles in the AM peak and 28 vehicles in the PM peak in terms of the observed two-way flow at Riverside Road is not considered to be significant and shows the two traffic data sources are broadly consistent.

As reported in Appendix H of the Applicant's Deadline 4 Responses to Written Representations (Document Reference SCC/LLTC/EX/51, PINS Reference REP4-014), the increased two-way flows from Riverside Business Park were modelled as 611 pcus in the AM peak, and 429 pcus in the PM peak. The table below presents what percentage the count data differences represent compared to the sensitivity test flows. If the December 2018 ATC data were used as the basis of the 2016 demand from which the sensitivity test flows were derived, these percentage differences would be the increase which would occur compared to what has currently been modelled.

<table>
<tr><th>Northumbrian Water Limited Comment</th><th>Applicant's response</th></tr>
<tr><td></td><td>
<table>
<tr><td>Data Source / Comparison</td><td>AM peak hour</td><td>PM peak hour</td></tr>
<tr><td>Sensitivity Test flows</td><td>611</td><td>429</td></tr>
<tr><td>Difference from count data sources</td><td>21</td><td>28</td></tr>
<tr><td>Percentage of sensitivity test flows</td><td>3%</td><td>6%</td></tr>
</table>

These percentage increases are not considered to be significant and given the New Access Road junction is shown to operate within capacity in the junction capacity model, increasing the flows by these percentages would not materially change the conclusion that the junction would continue to operate within capacity.</td></tr>
<tr><td>Raised concern as to veracity of model used for the sensitivity tests as it assumes visibility splays on the New Access Road bigger than what would be delivered under DMRB.</td><td>The Applicant considers that it has modelled the junction in PICADY in accordance with the user guidance.

The Applicant can confirm that the junction is being designed in accordance with DMRB guidance (TD 42/95) which requires visibility splays of 90m, which can be accommodated within the land subject to permanent acquisition. The detailed design of the junction is subject to the approval of the County Planning Authority.

The Applicant does not consider than the nominal mismatch in visibility splays between the Picady input and the proposed design alters the assessment of functionality of the junction.</td></tr>
<tr><td>Veracity of model within TA and sensitivity tests questioned as it does not appear to include any</td><td>HGV turning proportions have been included in the latest sensitivity test reported in Technical Note SM6, provided to PBA on 6 March 2019 and</td></tr>
</table>

<table>
<tr><th>Northumbrian Water Limited Comment</th><th>Applicant's response</th></tr>
<tr><td>HGVs in the turning movements, given the Jeld Wen development is a mixed use development site.</td><td>appended at Appendix A. These HGV turning proportions relate to through traffic on Waveney Drive, and 3 pcus (approximately 1 vehicle) leaving Riverside Business Park in the PM peak.

Trip rates have been derived from TRICS for OGVs (HGVs) based on the gross floor area assumptions detailed below in order to determine the potential HGV trip generation the Jeld Wen site:

- B2 Industrial Estate; 7,000sqm
- B8 Warehousing; 4,000sqm

The OGV (HGV) trip rates (per 100sqm) derived from TRICS are as follows:

<table>
<tr><th rowspan="2">Land Use</th><th colspan="3">AM Peak</th><th colspan="3">PM Peak</th></tr>
<tr><th>Dep (Orig)</th><th>Arr (Dest)</th><th>Two-Way</th><th>Dep (Orig)</th><th>Arr (Dest)</th><th>Two-Way</th></tr>
<tr><td>B2</td><td>0.020</td><td>0.015</td><td>0.035</td><td>0.006</td><td>0.005</td><td>0.011</td></tr>
<tr><td>B8</td><td>0.021</td><td>0.024</td><td>0.045</td><td>0.022</td><td>0.021</td><td>0.043</td></tr>
</table>

Applying the above HGV trip rates to the assumed employment land uses leads to the following HGV trip generation

<table>
<tr><th rowspan="2">Land Use</th><th colspan="3">AM Peak</th><th colspan="3">PM Peak</th></tr>
<tr><th>Dep (Orig)</th><th>Arr (Dest)</th><th>Two-Way</th><th>Dep (Orig)</th><th>Arr (Dest)</th><th>Two-Way</th></tr>
<tr><td>B2</td><td>1</td><td>1</td><td>2</td><td>0.5</td><td>0.5</td><td>1</td></tr>
<tr><td>B8</td><td>1</td><td>1</td><td>2</td><td>1</td><td>1</td><td>2</td></tr>
</table>
</td></tr>
</table>

Northumbrian Water Limited Comment	Applicant's response
	This additional HGV traffic is not considered at a level which will have a material effect on the junction capacity modelling for the New Access Road. The sensitivity tests which have been present so far represent a robust assessment of the likely traffic generation which will emanate from the Jeld Wen development.
Concern raised that although the Applicant may show that the Waveney Drive/New Access Road junction may work, the Applicant has not explained what the effect of the traffic movements now said to arise from the development site and using this junction would have on the two southern roundabouts.	The details of this sensitivity test are documented in Technical Note SM6 – 'Sensitivity Testing for Modelling of Proposed Waveney Drive/New Access Road Ghost Island Priority Junction'. This was sent to PBA on 6th March and is included as Appendix A. Clarifying the adjustment which was made to the speed and capacity on Kirkley Run, the purpose of this change was specifically to re-route traffic away from this road in order to increase the proportion of right turn movements at the New Access Road / Waveney Drive junction in the strategic model. This adjustment has resulted in right turn movements being more prevalent than left turn movements at this junction, further ensuring the robustness of the capacity assessment at the new junction. This adjustment should not be taken as an omission that the strategic model has an error or is not robust. SATURN as a strategic modelling software is not able to precisely replicate the impact of parked cars causing vehicles to have to give way to oncoming traffic. The capacity constraint applied in the further sensitivity test is considered a worst case, and has resulted in traffic to/from Riverside Business Park either opting to use Victoria Road or the A12 Tom Crisp Way as its strategic route. However, in reality it may well be attractive for a proportion of traffic associated with Riverside Business Park to route via Kirkley Run as an alternative, particularly in a 2037 forecast scenario in which

Northumbrian Water Limited Comment	Applicant's response
	the level of delays currently experienced on other routes will change from the present base year situation. In essence this could mean the balance of traffic which opts to use Kirkley Run over other strategic routes may fall somewhere between what is shown in the two sensitivity tests which have been undertaken (the first of which was submitted as part of the Applicant's Response to Written Representations – Appendix H). Notwithstanding the qualifications relating to the sensitivity tests noted above, the Applicant is nevertheless proposing to re-assess the capacity of the following junctions using the flows from the latest strategic model sensitivity test described in SM6; • J6 Waveney Drive/A12 Tom Crisp Way • J7 Waveney Drive/Kirkley Run/Victoria Drive • J8a, 8b and 8c – A12 Tom Crisp Way / Blackheath Road signalised junction; Kirkley Run / Blackheath Road / Long Road priority junction; and Blackheath Road / Carlton Road priority junction • J18 Southern Scheme Junction This assessment will therefore represent a 'worse possible case' in terms of additional traffic that will use the Southern Junction and Waveney Drive to access the Business Park. The Applicant notes that upon a review of the junction capacity model for the Southern roundabout for the Scheme in anticipation of undertaking the sensitivity test, an error has been identified whereby the forecast flows from the SATURN model for two arms - the approach from Riverside Road and the approach from Waveney Drive East had been incorrectly input to the Junction8

Northumbrian Water Limited Comment	Applicant's response

capacity model. This has now been corrected and the results shown in the Table below. These results should therefore supersede the results originally presented in the TA.

Arm	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	2022 DS					
Riverside Road	1.50	4.43	0.60	1.98	5.03	0.67
Waveney Drive WB	1.14	3.86	0.53	2.54	7.01	0.72
Waveney Drive EB	1.26	6.13	0.56	0.82	5.08	0.45
	2037 DS					
Riverside Road	2.22	5.93	0.69	2.91	6.75	0.75
Waveney Drive WB	1.42	4.46	0.59	4.89	12.67	0.84
Waveney Drive EB	2.57	10.07	0.72	1.19	6.31	0.55

The corrected results demonstrate that Junction 18 will operate within operational capacity in the 2022 and 2037 scenarios, with a maximum RFC of 0.84 on Waveney Drive WB in the PM Peak in 2037. The outputs of the sensitivity test will therefore be evaluated against the results above.

The results of the four junction capacity assessments using the sensitivity test forecasts will be provided to PBA for further discussion in anticipation of seeking to reach an agreed position and submitting this information to the Examining Authority in due course.

Northumbrian Water Limited Comment	Applicant's response
Suggestion that the changes in the traffic model should be interrogated by the ExA and in particular whether the changes in traffic movements should require re-assessment in the ES to be undertaken to take account of increases.	The Applicant considers that the results of the sensitivity tests undertaken to date do not and forthcoming sensitivity tests will not indicate a need for re-assessment within the ES which rely on traffic flows. The Air Quality assessment has shown that in the DS scenario (Figure 8.9 of the ES) all receptors modelled have NO2 concentrations below 20ug/m3 with the exception of a cluster around Station Square and the A47 Bascule Bridge. As road traffic is the fundamental source of NO2 any change in road traffic emissions that would breach the objective level of 40ug/m3 would need to be of such considerable addition to the modelled DS flows to be unfeasibly unlikely in the context of traffic in Lowestoft – this is not the case with the sensitivity testing. With regard to noise, a 3dB increase in road traffic noise is attributable to a doubling of the noise source i.e. a doubling in the AAWT flows that have been modelled. Clearly the change in flow in additional modelled scenarios do not lead to a doubling (or halving) of road traffic flow and therefore minor changes in flow can be assumed to have very limited changes in resulting traffic noise levels. As the ES has already identified that there are significant beneficial and significant adverse effects from road traffic noise arising from the Scheme, there is no change to the nature of the conclusions that has already been presented and any additional study is not warranted. With regard to highway runoff, the HAWRAT assessment (Appendix 17B of the Environmental Statement (Document Reference 6.3, PINS Reference APP-200), and utilises AADT flows to calculate the risk to receiving waters which in the case of the Scheme is Lake Lothing. The assessment concluded that there would be a negligible impact upon Lake Lothing even without the

Northumbrian Water Limited Comment	Applicant's response
	embedded mitigation in the form of SUDS. It is therefore accordingly concluded that minor changes to the flow of traffic along the Scheme could not materially affect the conclusions presented in the Environmental Statement.
Concluded by stating that the Applicant is accepting errors and carrying out various sensitivity tests, indicating that their TA was not robust in the first place – the ExA should take this into account.	As set out at the Hearing, the Applicant does not agree that the requirement for sensitivity testing implies an inherent weakness with the modelling or demonstrates there are errors. Sensitivity testing is an integral part of the transport modelling process in recognition of the uncertainty inherent in the forecasting process. Advice on Forecasting and Uncertainty is provided in WebTAG Unit M4 (May 2018) and typically involves undertaking sensitivity testing around a core scenario. The forecasts prepared for the Outline Business Case and the TA were based upon the latest National Trip End Model (NTEM) forecasts published by the DfT. This represents the Department's central assumption of growth in travel demand between any two given years. In line with guidance set out in WebTAG Unit M4 ' Forecasting and Uncertainty', when modelling for business cases is submitted to the Department, scenarios assuming central growth in demand (such as the core scenario, described in section 3) must be controlled to the growth in travel demand in the NTEM dataset at an appropriate spatial area (usually Local Authority / District level). In particular, attention should be drawn to Table A2 of WebTAG Unit M4 (May 2018) which gives clear guidance on how to classify forecast development inputs based on their planning status and their inclusion in the Core Scenario.

Northumbrian Water Limited Comment	Applicant's response

Table A2 Classification of Future Inputs

Probability of the Input	Status	Core Scenario Assumption
Near certain: The outcome will happen or there is a high probability that it will happen.	Intent announced by proponent to regulatory agencies. Approved development proposals. Projects under construction.	This should form part of the core scenario
More than likely: The outcome is likely to happen but there is some uncertainty.	Submission of planning or consent application imminent. Development application within the consent process.	This could form part of the core scenario [Refer to Section Developing the Core Scenario]
Reasonably foreseeable: The outcome may happen, but there is significant uncertainty	Identified within a development plan. Not directly associated with the transport strategy/scheme, but may occur if the strategy/scheme is implemented. Development conditional upon the transport strategy/scheme proceeding. Or, a committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty	These should be excluded from the core scenario but may form part of the alternative scenarios
Hypothetical: There is considerable uncertainty whether the outcome will ever happen.	Conjecture based upon currently available information. Discussed on a conceptual basis. One of a number of possible inputs in an initial consultation process. Or, a policy aspiration	These should be excluded from the core scenario but may form part of the alternative scenarios

The strategic modelling which supports the LLTC is based on a core scenario which has been defined on the basis of future developments which can be classified as "Near Certain" or "More Than Likely". The core scenario presented is therefore WebTAG compliant and an appropriate basis from which to assess the impacts of the LLTC scheme.

For the sensitivity test modelling, the following proposals have been considered for future development of Riverside Business Park (as identified in

Northumbrian Water Limited Comment	Applicant's response
	Appendix H to REP4-014 (Document Reference SCC/LLTC/EX/51): - NWL; additional 72 jobs by 2022, 286 jobs by 2037 - Nexen; additional 99 jobs by 2022, 397 jobs by 2037 - WDC; additional 70 jobs by 2022, 281 jobs by 2037 All of the Riverside Business Park proposals can be classified either as "Reasonably Foreseeable" or "Hypothetical" as they do not have a relevant planning application nor is an application imminent. In relation to the Jeld Wen development, the associated housing and employment is considered "More Than Likely" given a planning application related to this site is imminent. Within the core scenario forming the main DCO submission, housing associated with the Jeld Wen development was included as part of the overall Kirkley Waterfront SUN assumptions. The sensitivity test modelling includes an increased trip generation for the purposes of stress testing the Waveney Drive junctions and adds the employment land uses which now (following submission of the application for the Scheme) form part of the proposals for this site. All of these proposals are not appropriate to consider as part of a core scenario forecast for the LLTC. As such, their omission as the part of the modelling to the support the DCO / ES is fully in line with DfT WebTAG guidance. The Applicant therefore does not accept the assertion it is an error to have not considered future expansion of Riverside Business Park in previous modelling which has been undertaken. The purpose of the sensitivity test is to provide a further stress test of the New Access Road / Waveney Drive junction, under a number of assumptions that take into account the

Northumbrian Water Limited Comment	Applicant's response
	inherent uncertainty. The initial sensitivity test reported in REP4-014 added additional employment land uses at Riverside Business Park which carry far more uncertainty than the developments included when the Uncertainty Log was produced in 2017. It was undertaken specifically to provide a robust test of the capacity of Access Road / Waveney Drive Priority Ghost Island Junction, as a response to the representation made by NWL. A further sensitivity test was carried out in response to a query raised in relation to that sensitivity test by PBA, on behalf of NWL, on 28th February 2019 relating to the routeing of business park traffic via Kirkley Run / Colville Road and how this could impact on the balance of turning movements at the New Access Road / Waveney Drive junction. Technical Note SM6, provided to PBA on March 6th 2019 and appended at Appendix A, provides details of the model validation for Kirkley Run which, as has previously been noted, demonstrated an excellent match between modelled and observed base year (2016) flows. It demonstrates that the model validates well in this location. The sensitivity test was based upon the application of a constraint on Kirkley Run as it is acknowledged the SATURN model is assuming free flow conditions along Kirkley Run which could result in this road being more attractive to development traffic. It is noted that the routeing of traffic to and from the business park and the south of Lowestoft is finely balanced between Kirkley Run and A12 Tom Crisp Way during peak periods and will be influenced by congestion within the network. The second sensitivity test was therefore carried out as a response

Northumbrian Water Limited Comment	Applicant's response
	to a specific query raised by PBA to assess the impact on the Access Road junction in the event that the balance of traffic using Kirkley Run and A12 were to change. The decision to carry out sensitivity testing was undertaken by the Applicant in the spirit of a positive engagement with NWL and PBA to meet the various requests for data and supporting analysis. This has demonstrated that the design of the proposed new Access Road junction will accommodate future predicted flows assuming a 'Worse Case' scenario.

1.2 Response to Nexen's submissions at the Issue Specific Hearing on 7 March 2019

Nexen comment	Applicant's response
To avoid repetition, the Applicant has responded to Nexen's comments in its consultation report on the proposed Non-Material changes (Document Reference SCC/LLTC/EX/92)	

1.3 Response to NWES' submissions at Open Floor Hearing 8 March 2019

NWES comment	Applicant's response
Raised concern that the Applicant has not properly engaged with NWES and has not shared information with them.	As explained at the Hearing, the Applicant engaged with NWES prior to the Open Floor Hearing on 8th March 2019, as most recently set out in the Compulsory Acquisition Negotiations Tracker (Document Reference SCC/LLTC/EX/77, PINS Reference REP5-008), and this engagement continues. NWES has had access to all the relevant plans for the Scheme since August last year, which explain the land take, physical relationship between the Scheme and the building and physical appearance of the Scheme.
Raised concern that whilst noise monitoring may be carried out; the NWES building is different from NWL and so practically mitigation will not be able to be undertaken. Also concerned that the Scheme will make their building unviable financially both during construction and operation as a result of the noise issues.	The Applicant has shared the methodology for noise monitoring and definition of adverse noise effects proposed for NWL with NWES. As noted at the Hearing, the Applicant acknowledges that the NWES building has different acoustic properties from NWL and is closer to the Scheme and that therefore the mechanisms for dealing with noise issues will need to be different. The Applicant aims to work with NWES to understand the attenuating properties of its building and from this develop a proposal for dealing with its noise concerns related to the results of monitoring that is carried out. In doing so, the Applicant is aware of the tight financial constraints within which NWES operates, and will shape its proposal in light of that context. The Applicant awaits further information from NWES in this respect.
Agree with NWL's concerns in relation to traffic impacts	Please see the Applicant's response to these concerns above.

Appendix A sensitivity test reported in Technical Note SM6, provided to PBA on 6 March 2019

TECHNICAL NOTE: LAKE LOTHING THIRD CROSSING DCO SUBMISSION – STRATEGIC TRAFFIC MODELLING

TECHNICAL NOTE SM6 – SENSITIVITY TEST FOR MODELLING OF PROPOSED WAVENEY DRIVE / NEW ACCESS ROAD GHOST ISLAND PRIORITY JUNCTION

QM

Job Number	Date	Version	Author	Checked	Authorised
62240712	06/03/2019	1.0	Michael Johns	Steven Wood	

BACKGROUND

WHY THIS NOTE HAS BEEN PRODUCED

This note has been produced focusing on the New Access Road / Waveney Drive Ghost Island Priority Junction which is associated with the Lake Lothing Third Crossing (LLTC). In response to written representation from Northumbrian Water, WSP undertook sensitivity testing using the SATURN model which included revised future housing and employment growth assumptions associated with the Kirkley Waterfront Sustainable Urban Neighbourhood (SUN) and Riverside Business Park. Outputs from the SATURN model was used to inform a PICADY model of the new junction.

This sensitivity test modelling was reported in Appendix H – 'Sensitivity to re-assess capacity of Access Road / Waveney Drive Priority Ghost Island Junction.' This Appendix was contained within document SCC/LLTC/EX/51 – 'Applicants Response to Written Representations and Interested Parties Responses to Written Questions' submitted by Suffolk County Council (SCC) at Deadline 4 on 29th January 2019.

Subsequent to this submission, PBA acting on behalf of Northumbria Water Limited, requested further information in relation to the sensitivity test modelling. WSP provided this additional information to PBA on 25th February 2019.

PBA provided an email on 28th February 2019 which raised a query in relation to the SATURN select link analysis which was issued on 25th February 2019. This select link analysis provided information on the routing of traffic to and from Riverside Business Park. In particular, PBA queried the routing of business park traffic via Kirkley Run / Colville Road which resulted in a small proportion of traffic opting to use the A12 Tom Crisp Way particularly in the AM peak and the resultant balance of turning movements at the New Access Road / Waveney Drive junction.

WSP have undertaken a further sensitivity test constraining the capacity of Kirkley Run in the SATURN model. This sensitivity test has been undertaken as it is acknowledged the SATURN model is assuming free flow conditions along Kirkley Run which could result in this road being more attractive to development traffic than it would otherwise be if an

appropriate capacity constraint were applied. Kirkley Run in reality is a residential fronted road where certain sections are restricted in terms of its capacity due to cars parked on both sides of the road, effectively leading to traffic having to pull over to allow oncoming traffic to pass in some instances. The example in Figure 1 taken from Google Street View illustrates where this occurs on a specific section of Kirkley Run.

Figure 1 – Kirkley Run (between Edgerton Road and Birds Lane), facing south-east bound (Source: Google Street View)

Alternatively, other sections of Kirkley Run allow cars in opposite directions to travel past one another without one vehicle required to stop, but would still result in one direction having to cross the centre line to keep a safe distance from parked vehicles. This would result in traffic slowing down and reduce capacity. Figure 2 taken from Google Street View an example of where this occurs on Kirkley Run.

Figure 2 – Kirkley Run (between Notley Road and Victoria Road), facing north-east bound (Source: Google Street View)

The additional sensitivity test has been undertaken to constrain the capacity along Kirkley Run to reflect the impact of parked cars and the general nature of Kirkley Run to ensure the SATURN model does not show a free flow situation

along this local road. This has resulted in traffic re-routing away from Kirkley Run, affecting the direction which traffic from Riverside Business Park opts to access the New Access Road via Waveney Drive. These revised turning movements at the New Access Road / Waveney Drive junction have been utilised to re-run the PICADY model.

In summary this note sets out the following:
— 2016 base year validation performance on Kirkley Run
— Revised flows on Kirkley Run following a further sensitivity test which has been carried out
— Revised turning flows at the New Access Road / Waveney Drive junction
— PICADY model results

2016 BASE YEAR MODE VALIDATION

The base year validation on Kirkley Run is presented in order to demonstrate the underlying base year model which underpins all forecasting associated the LLTC provides an appropriate level of fit on this key local road.

KIRKLEY RUN 2016 VALIDATION

The underlying 2016 base year model which informs the forecasting being undertaken for the LLTC includes an Automatic Traffic Count (ATC) on Kirkley Run. The validation of the SATURN model at this location is presented by direction for all time periods in Table 1. This shows that in terms of GEH and flow validation, (as required within DfT TAG), the base year model matches closely between observed and modelled flow on Kirkley Run.

Table 1 – Kirkley Run traffic count – 2016 base year validation by direction and time period

Time Period	Direction	Observed flow (vehicles per hour)	Modelled flow (vehicles per hour)	GEH	Flow Pass
AM peak	North-westbound	161	162	**0.086**	**Yes**
AM peak	South-eastbound	93	91	**0.216**	**Yes**
Inter peak	North-westbound	133	133	**0.016**	**Yes**
Inter peak	South-eastbound	110	109	**0.085**	**Yes**
PM peak	North-westbound	218	218	**0.028**	**Yes**
PM peak	South-eastbound	182	179	**0.209**	**Yes**

The level of fit between observed and modelled flow shows the SATURN model provides a suitable basis from which to forecast future levels of traffic growth on Kirkley Run.

KIRKLEY RUN TRAFFIC GROWTH

COMPARISON BETWEEN SENSITIVITY TESTS

Kirkley Run was previously modelled as a 40kmph link with no link capacity restraint which is typical for strategic modelling in an urban environment where junction capacity is considered the main constraint on traffic. Link capacity constraints are typically applied in the SATURN model for rural links over 1km in length. In the revised sensitivity test, a speed flow curve was applied which restricted speeds to 34kmph and link capacity to a maximum of 600 pcus per hour. This has been applied to reduce the attractiveness of Kirkley Run which as previously acknowledged shows free flow conditions in the SATURN model. It is considered this change will better reflect the likely routing of strategic traffic which opts to use alternative links such as the A12 Tom Crisp Way rather than Kirkley Run, particularly development traffic to/from Riverside Business Park.

Table 2 shows the change in two-way flow on Kirkley Run between the latest model run and the previously reported sensitivity test in Appendix H of document SCC/LLTC/EX/51. This shows a significant reduction in the level of traffic which opts to route via Kirkley Run as a result of the capacity restraint which has been applied.

Table 2 – Comparison of revised traffic flows on Kirkley Run

Time Period	Forecast Year	Latest Modelled Flow – Two Way (pcu/hr)	Previous Modelled Flow – Two Way (pcu/hr)	Absolute change in Flow – Two Way (pcu/hr)	% change in Flow – Two Way (pcu/hr)
AM peak	2022	395	597	-202	-34%
AM peak	2037	521	906	-385	-42%
PM peak	2022	437	634	-197	-31%
PM peak	2037	524	905	-381	-42%

REVISED TURNING FLOW MOVEMENTS

Table 3 to Table 6 presents a comparison of the change in the balance of turning movements to/from the New Access Road between the previous sensitivity test and the latest test with the Kirkley Run capacity adjustment.

Cells highlighted in bold represent the right turning movements at the junction. This comparison shows the relative balance of right turn movements at the New Access Road / Waveney Drive junction has increased, with this becoming the more dominant movement compared to the left turn movements. The split of movements between trips arriving at Riverside Business Park in the AM peak, and leaving in the PM peak is also shown to be a closer match. It should be noted that as the SATURN peak hour assignments are independent of each other, this will naturally result in a difference in the balance of flows between the AM and PM peak.

Table 3 – AM 2022 revised split in turning movements to/from New Access Road

Arm to/from New Access Road	2022 AM - Sensitivity Test		2022 AM - Sensitivity Test Update	
	Arrivals	Departures	Arrivals	Departures
Waveney Drive W	68%	30%	38%	30%
Waveney Drive E	32%	70%	62%	70%

Table 4 – PM 2022 revised split in turning movements to/from New Access Road

Arm to/from New Access Road	2022 PM - Sensitivity Test		2022 PM – Sensitivity Test Update	
	Arrivals	Dep	Arrivals	Dep
Waveney Drive W	45%	48%	45%	42%
Waveney Drive E	55%	52%	55%	58%

Table 5 – AM 2037 revised split in turning movements to/from New Access Road

Arm to/from New Access Road	2037 AM - Sensitivity Test		2037 AM - Sensitivity Test Update	
	Arrivals	Dep	Arrivals	Dep
Waveney Drive W	55%	14%	36%	13%
Waveney Drive E	45%	86%	64%	87%

Table 6 – PM 2037 revised split in turning movements to/from New Access Road

Arm to/from New Access Road	2037 PM - Sensitivity Test		2037 AM - Sensitivity Test Update	
	Arrivals	Dep	Arrivals	Dep
Waveney Drive W	21%	36%	18%	30%
Waveney Drive E	79%	64%	83%	70%

Appendix A contains a comparison of turning movement matrices between the original sensitivity test and revised model run, also showing the absolute change in flow between the two sets of turning flow matrices.

It is considered the revised turning movement matrices provide an appropriate basis from which to further test the capacity of the New Access Road / Waveney Drive junction.

JUNCTION MODELLING RESULTS

The revised turning movements were applied to the PICADY model. HGV percentages were allocated by turning movement within the PICADY model based on the proportion of HGVs in pcus within the SATURN assignment. Table 7 shows the HGV percentages which were applied in the AM and PM 2022 junction models

Table 7 – AM 2022 and PM 2022 HGV percentages applied in revised PICADY model

		To		
		A	B	C
From	A	0.0	0.0	4.3
	B	0.0	0.0	0.0
	C	2.8	0.0	0.0

		To		
		A	B	C
From	A	0.0	0.0	2.4
	B	1.1	0.0	1.6
	C	0.5	0.0	0.0

Table 8 presents the HGV percentages applied within the AM and PM 2037 junction models

Table 8 – AM 2037 and PM 2037 HGV percentages applied in revised PICADY model

		To		
		A	B	C
From	A	0.0	0.0	3.6
	B	0.0	0.0	0.0
	C	2.8	0.0	0.0

		To		
		A	B	C
From	A	0.0	0.0	2.0
	B	1.0	0.0	0.9
	C	0.3	0.0	0.0

Table 9 details the results from the PICADY junction model for both 2022 and 2037. The junction modelling shows the priority junction continues to operate within capacity in both forecast years.

Table 9 – PM 2037 revised split in turning movements to/from New Access Road

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	KW RBP - 2022 DS							
New Access left turn	0.09	6.78	0.08	A	0.28	7.42	0.21	A
New Access right turn	0.07	12.74	0.07	B	0.33	12.23	0.25	B
Waveney Drive WB right turn	0.55	9.63	0.36	A	0.03	5.32	0.03	A
	KW RBP - 2037 DS							
New Access left turn	0.49	11.09	0.33	B	0.83	11.62	0.45	B
New Access right turn	0.16	25.77	0.14	D	0.67	22.02	0.41	C
Waveney Drive WB right turn	2.08	22.17	0.68	C	0.20	6.49	0.16	A

CONCLUSIONS

The analysis within this note presents the results from an adjustment to the SATURN model, recognising the level of traffic to/from Riverside Business Park routing via Kirkley Run should be adjusted. The subsequent revised sensitivity test has resulted in an increase in the number of right turning movements at the New Access Road / Waveney Drive priority junction. The turning movements from the SATURN model have been applied in a PICADY model including HGV proportions. The results of this analysis show the junction operates within capacity in both the scheme opening year for LLTC (2022) and future forecast year (2037). It is considered this analysis demonstrated it is appropriate for the New Access Road / Waveney Drive junction to be specified as a Ghost Island Priority Junction.

Appendix A

2022 AM - Sensitivity Test

		A	B	C	Total
Waveney Drive W	A	0	206	519	725
New Access Road	B	18	0	43	61
Waveney Drive E	C	262	98	0	360
	Total	280	304	562	1146

2022 AM - Sensitivity Test Update

	A	B	C	Total
A	0	115	556	671
B	18	0	43	61
C	253	189	0	442
Total	271	304	599	1174

2022 AM - Diff

	A	B	C	Total
A	0	-91	37	-54
B	0	0	0	0
C	-9	91	0	82
Total	-9	0	37	28

2022 PM - Sensitivity Test

		A	B	C	Total
Waveney Drive W	A	0	17	305	322
New Access Road	B	101	0	110	211
Waveney Drive E	C	664	21	0	685
	Total	765	38	415	1218

2022 PM - Sensitivity Test Update

	A	B	C	Total
A	0	17	289	306
B	89	0	122	211
C	650	21	0	671
Total	739	38	411	1188

2022 AM - Diff

	A	B	C	Total
A	0	0	-16	-16
B	-12	0	12	0
C	-14	0	0	-14
Total	-26	0	-4	-30

2037 AM - Sensitivity Test

		A	B	C	Total
Waveney Drive W	A	0	253	787	1040
New Access Road	B	21	0	129	150
Waveney Drive E	C	329	208	0	537
	Total	350	461	916	1727

2037 AM - Sensitivity Test Update

	A	B	C	Total
A	0	166	799	965
B	21	0	146	167
C	316	297	0	613
Total	337	463	945	1745

2037 AM - Diff

	A	B	C	Total
A	0	-87	12	-75
B	0	0	17	17
C	-13	89	0	76
Total	-13	2	29	18

2037 PM - Sensitivity Test

		A	B	C	Total
Waveney Drive W	A	0	21	406	427
New Access Road	B	118	0	213	331
Waveney Drive E	C	858	77	0	935
	Total	976	98	619	1693

2037 PM - Sensitivity Test Update

	A	B	C	Total
A	0	21	396	417
B	102	0	235	337
C	866	99	0	965
Total	968	120	631	1719

2037 AM - Diff

	A	B	C	Total
A	0	0	-10	-10
B	-16	0	22	6
C	8	22	0	30
Total	-8	22	12	26

Applicant's witnesses for Lake Lothing Third Crossing Hearings on 7 & 8 March 2019

1.1 Ian Baker, Technical Director, Economics at WSP, BSc (Hons) MSc CMILT

1.1.1 **Role on LLTC**: Ian was Technical Director and transport lead for all transport and economic inputs required for the production of the OBC for the Scheme

1.1.2 **Membership**: Chartered Member of the Institute of Logistics and Transportation

1.1.3 **Background**: Ian has extensive experience in the production of business cases. He has a thorough understanding of Government strategy, transport policy and funding mechanisms, understanding the requirements and interpretation of the economic appraisal methods to maximise the capture of benefits and the management of stakeholders in delivering schemes.

1.1.4 **Experience**: Ian has secured funding for a portfolio of business cases including a £30m bus hub, multi-storey car park and associated development in Lincoln, an Integrated Transport Package in Shrewsbury, and new roads to unlock development in Shrewsbury and Bournemouth. Ian is currently acting as assurer for the £1.4b Highways England A303 tunnel scheme through the Stonehenge World Heritage Site.

1.1.5 **Role at WSP**: Ian leds a team of transport consultants and economists specialising in the production of business cases for public sector funding acquisition.

1.2 Jon Barnard, Project Manager at Suffolk County Council

1.2.1 **Role on LLTC**: Jon is the Project Manager for Lake Lothing Third Crossing.

1.2.2 **Background:** Jon is a civil engineer and has worked on infrastructure projects for over fifteen years throughout the UK, working for international design consultancy, major civils contractors and local authorities in infrastructure delivery. Jon's specialism is delivery of Bridges, Highway and Flood protection projects particularly for local authority promoters

1.2.3 **Experience:** Most recently Jon led the Norfolk County Council project team through the successful NSIP application and examination of the Norwich Northern Distributor Road (NDR), a 22km dual carriageway which opened for traffic in 2018

1.3 Stephen Horne, Principal Engineer (Maritime) at WSP, BEng (Hons

1.3.1 **Role on LLTC**: Maritime lead managing assessments of port and navigation related aspects.

1.3.2 **Background:** Stephen has 20 years' experience in the maritime field, including 15 years with Mersey Docks & Harbour Company and Peel Ports

1.3.3 **Experience:** Stephen has experience across a range of maritime sectors, including container ports, general and bulk cargo terminals, cruise and Ro-Ro terminals, oil and bulk liquid terminals and small craft berths in both tidal waters and impounded docks. Site supervision responsibility on numerous contracts has given Stephen an excellent knowledge of health and safety implications of construction activities in high risk port environments.

1.3.4 **Role at WSP**: Stephen is one of WSP's expert maritime engineers, undertaking maritime design and consultation works. He has been supported by Captain Geoff Nicholson in relation to navigation matters, whose CV is presented at the end of this document.

1.4 Robbie Owen, Solicitor and Parliamentary Agent, Partner of Pinsent Masons LLP

1.4.1 **Role on LLTC**: Robbie is leading the drafting of the Development Consent Order

1.4.2 **Membership**: Robbie is the founder, a Board member and Secretary of the National Infrastructure Planning Association (NIPA). He was a member of the Executive Group for National Needs Assessment: A Vision for UK Infrastructure set up in summer 2015 and which reported in October 2016. He is a member of the UK's National Infrastructure Commission's Expert Advisory Group and is also regularly active in a number of other infrastructure bodies and groups.

1.4.3 **Background**: Robbie has over 30 years' experience of promoting and opposing a wide range of nationally significant and major transport and other infrastructure projects for public and private sector clients, including in the heavy and light rail, urban transit, roads, ports & harbours, aviation, water and waterways sectors. He is also a "Roll A" Parliamentary Agent: one of a small number of practising lawyers authorised by the Westminster Parliament to act as agent for those promoting and opposing Private and Hybrid Bills in Parliament.

1.4.4 **Experience**: Most of Robbie's work relates to the planning and consenting process for large UK infrastructure projects, whether through Development Consent Orders, Transport and Works Act Orders, Hybrid Bills or other means. Robbie's ongoing projects include the promotion of planning and other consents for Heathrow's Expansion and for Tilbury2. Over the last few years he has advised on a broad range of projects which have included the promoters of the proposed Silvertown Tunnel in London, recently consented and now in procurement; the promoters of London's Northern line extension to Battersea and the A14 improvement scheme in Cambridgeshire, now both under construction; the promoters of London Gateway Port and Park and the Nottingham Express Transit extensions and Workplace Parking Levy scheme, all now operational; and various public bodies, landowners and others on the High Speed 2 Phase 1 proposals.

1.4.5 **Role at Pinsent Masons**: Robbie is Head of Infrastructure Planning and Government Affairs at Pinsent Mason

1.5 Hywel Roberts, Associate Environmental Consultant at WSP

1.5.1 **Role on LLTC**: Hywel has been the environmental lead for the scheme since 2015.

1.5.2 **Memberships**: Hywel is a member of IEMA and a Chartered Environmentalist and holds a BSc in Environmental Science.

1.5.3 **Background**: Hywel an environmental scientist and at WSP he is responsible for the preparation of Environmental Statements and specialises in highway development for local authority clients.

1.5.4 **Experience**: Hywel has significant experience of managing environmental matters at all stages of new highway development and has been involved in EIA for over 15 years.

1.5.5 **Role at WSP**: Hywel manages the delivery of environmental statements, coordinating environmental specialists to ensure that environmental impacts are identified, appropriately mitigated and clearly presented within submission documents.

1.6 Michael Wilks, Consenting Manager at Suffolk County Council

1.6.1 **Role on LLTC**: Michael is responsible for landowner and statutory consultee engagement, and planning matters for the Lake Lothing Third Crossing for Suffolk County Council.

1.6.2 **Qualifications and memberships**: Michael has three first class degrees in geography (BSc), ecology (MSc) and planning (MA). He joined the National Infrastructure Planning Association (NIPA) Council in 2014 and the Board in 2016 and is the NSIP subject specialist for the Planning Officers Society and a regular contributor to conferences, articles and discussions on NSIP matters. He was until recently the vice-chairman of his parish council and chairman of its Planning Committee.

1.6.3 **Background**: Michael has worked in the planning and transport strategy teams at Suffolk County Council for over 10 years, principally in relation to the consenting of nationally significant infrastructure projects.

1.6.4 **Experience**: In the role of statutory consultee, Michael has advised promoters on a range of projects through pre-application to implementation across a range of sectors, including new nuclear (Sizewell C); electricity transmission (Bramford-Twinstead) and various offshore windfarms (including the East Anglia Array and Galloper) and their associated onshore infrastructure. Michael was the local authorities' lead advocate in the examinations of East Anglia ONE offshore windfarm and Progress Power Gas-Fired Power station.

1.6.5 **Role at Suffolk County Council**: During his time at SCC, Michael has sought and secured directions under s35 of the Planning Act for Lake Lothing Third Crossing and Upper Orwell Crossings highway schemes for Suffolk County Council and consequently switched roles from a statutory consultee to a promoter of NSIP schemes.

1.7 Steven Wood, Technical Director at WSP, CMILT, MCIHT.

1.7.1 **Role on LLTC**: Steven leads on traffic and transport issues covered within the Transport Assessment with a particular focus on the traffic and operational impacts of the scheme.

1.7.2 **Memberships**: Steven is a Chartered Member of the Institute of Logistics and Transport (CMILT), and a Member of the Chartered Institute of Highways and Transportation (M.

1.7.3 **Background**: Steven is a transport planner with significant experience in the application of transport modelling and economic appraisal for the assessment of major transport schemes

1.7.4 **Experience**: Steven has significant experience in the development and application of strategic and local transport models for forecasting, operational and economic appraisal for numerous transport infrastructure and development projects. These have included assessing the highways and operational impacts of major land use developments, new road schemes, traffic management schemes and local road improvements.

1.7.5 **Role at WSP**: Steven provides a range of specialist transport planning services to a portfolio of Public Sector clients including Highways England, Transport Northern Ireland and numerous local authorities in support of infrastructure and regeneration projects throughout the UK.

Marine Consultant / Pilot

Core Skills and Experience

Master Mariner, Pilot and Harbour Master with widespread knowledge of all aspects of shipping and ports along with extensive general and people management skills. Experienced in dealing with many stakeholders. Excellent IT and communications skills.

Qualifications and Affiliations

- **Master Class 1** (Foreign Going - Unlimited)
- **Lead Auditor** OHSAS 18001 Health & Safety,
- **Trained Auditor** ISO9001(Quality) ISO14001 (Environment)
- **Harbour Master**. UK Harbour Masters Association - MCA Approved
- **Pollution Control** O.P.R.C. Level 5 (On Scene Commander)
- **ISPS Port Facility Security Officer**
- **Vessel Traffic Services** VTS V103 Operators Certificate

National Committee of the UK Harbour Masters Association

Employment

- Portia Management Services
- Shipmove
- Port of Tyne
- Seaham Harbour
- Humber Pilots
- Shell

International Experience

- UK
- Worldwide - Seagoing

Languages

- English

Michael Nicholson

Project experience (selected)

2015 - Ongoing, Shipmove Marine Consultancy

Specialising in Port Marine Safety Code issues and Harbour Operations.

2003 - 2015 Port of Tyne, Harbour Master and Head of Security

Part of the Executive Management Team and responsible for a Maine Department of 70 staff and a multi-million pound budget, this included;

- Vessel Traffic Services, Pilotage and Conservancy
- Fleet of 4 launches, plough dredger and debris vessel
- Port Security Department, in-house and contract security at 4 locations
- PFSO and Chair of the Port Security Authority

2002 -2003, Seaham Harbour - Harbour Master and Pilot

- Responsibility for navigation, marine safety and conservancy.
- Staff of pilots and dock-head staff including the operation and maintenance, of two pilot boats and Tug/Workboat.

1994 to 2002 Humber Pilots, Pilot

1st Class Pilot, piloting a large range of vessels from small coasters to VLCC's and Capesize bulkers and berths ranging from creeks to Single Buoy Moorings.

1979 - 1994 - Seagoing Career, Apprentice to Master

Shell Tankers on their varied fleet of crude and clean tankers and LNG carriers. Third officer on product tankers. Chief Officer with Buries Markes on chemical tankers & deep-sea geared and gear-less bulk carriers, then Master for James Fisher of Barrow on their Heavy Lift Ro-Ro vessel.

Health Safety and Assurance Accreditation, Port of Tyne

ISO 18001 (Safety), ISO 14001 (Environment), and ISPO (International Standards for Pilotage Organisations) accreditation (Safety & Quality). Reviewed and upgraded all mooring bollards, inc. devising a simple mooring verification process used by pilots.

Contingency & Emergency Planning

Production of Port Marine Safety Code, Emergency Response Plans (both Marine & Land), Business Continuity, Protest, Waste Management, & Pollution Prevention Plans (all completed without recourse to external consultants). Devised an electronic business (and asset) risk assessment tool, which was adopted by the company and now informs the board on business and asset risk.

HR / Training / Organisation Structure

Successfully re-organised several departments, introduced new staff contracts where appropriate, all at zero added cost but with increased productivity. Profitability from pilot services trebled in ten years as a result of re-organisation.

Security

Ensured the port achieved compliance with the ISPS code on time, and substantially under budget (organising a training course locally produced a profit). Introduced and then chaired the port-wide Tyne Port Security Authority.

Made business case, specified, tendered and commissioned two new vessels, a pilot launch (£0.7M) and a Multi-cat workboat / plough dredger (£1.0m GBP).