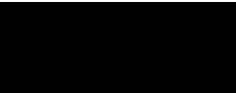


From: [REDACTED]
To: [Great Yarmouth Third River Crossing](#)
Cc: [REDACTED]
Subject: Response to Written Questions
Date: 13 January 2020 17:08:37
Attachments: [REDACTED]

Dear Sir/ Madam

As requested please find attached our response the ExA's Second Written Questions.

Please contact me should you have any queries in relation to this.



Barbara Moss-Taylor | Sustainable Places Planning Specialist
Environment Agency | Icen House, Cobham Road, Ipswich, Suffolk IP3 3JD



My working pattern is Monday to Friday in my absence please call +44203 025 5475



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The Planning Inspectorate
National Infrastructure Directorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Our ref: AE/2019/124219
Our PINS ref: 200022819
Your ref: TR010023

Date: 13 January 2020

Via email:

Dear Sir/Madam

**APPLICATION BY NORFOLK COUNTY COUNCIL FOR GREAT YARMOUTH
THIRD RIVER CROSSING. THE EXAMINING AUTHORITY'S SECOND WRITTEN
QUESTIONS AND REQUESTS FOR INFORMATION**

This response relates to the Examining Authority's further written questions (exQ2) dated 18 December 2019, in relation to the proposed development a river crossing. This letter contains a response to the question directed to the Environment Agency (REF 2.4.1) only.

This representation summarises the review of the revised flood models that were submitted to the Environment Agency and available to view as of 10th December 2019; and the Flood Risk Assessment (FRA) as submitted to the ExA Ref: 6.2- Environmental Statement Appendix 12B which was partially updated by the memorandum referenced GY3RC- Environment Agency Further Sensitivity Flood Modelling (additional review comments) dated 28 November 2019. The additional information submitted does not appear to be available to view on the National Infrastructure Planning Application webpage. Whilst many of the conclusions of the FRA are reasonable and adequately evidenced, there are some areas of concern that remain.

The purpose of our representation is to assist the ExA in making an informed decision about flood risk affecting the proposal, and the change in risk or hazard to receptors (third parties) in the area as a result of the changes brought about by the proposed development. To assist the ExA our main findings and concerns are outlined in this letter with further detail given in the Appendix.

Summary

- The most recent modelling submitted is considered adequate to inform the FRA.
- We are concerned that the effects of the tidal residual (breach) risk impacts to the site and offsite impacts have not been assessed. Assessment of tidal residual (breach) risk is standard practice and necessary to reach an informed opinion about the impacts of the proposal.
- We are concerned that the FRA does not appear to account for all receptors that might be affected by the proposed development. It is possible that many of the missing receptors are dwellings.

- Notwithstanding the point above, the FRA highlights that flood risk is increased to two properties.
- It is unclear whether the figures supporting the FRA are still correct.
- The FRA states that the proposed development should remain operational in an emergency event. However, other sections of the FRA suggest that this is not achievable.
- Should the proposal be approved, measures should be put in place to ensure that a flood management plan is in place during construction.

Due to the above factors there remains a lack of clarity and evidence in respect of the complete flood risk of this development and, this fact considered in conjunction with the fact that the development is within flood zone 3 is a real cause of concern to the Environment Agency to the extent that we feel we must maintain our objection to the development as it currently stands.

Tidal residual (breach) risk

The effects of the tidal residual (breach) risk impacts to the site and offsite impacts have not been assessed in the FRA. The consideration of tidal residual (breach) is an important element in an FRA because in the event of defences being breached, the inundation characteristics to the land, dwelling, and businesses located behind the defences could be altered or increased and impacts changed when compared to the current baseline. It is important to be able to assess if the proposed structure will have an effect on the behaviour of flood waters if this situation were to occur so that the impacts on third parties may be properly understood. It is possible that neither risk nor hazard level changes in the event of breach but, this has not been demonstrated. It is standard practice to assess breach risk and the issue of breach modelling was first raised in our discussions with Applicant's representatives in October 2018.

To adequately assess breach risk the Applicant should assess a number of breach locations on both banks of the River Yare and including locations upstream and downstream of the proposed development. These locations should be used to assess both the depth and hazard in the event of breach and then any changes that would result from the proposed development.

Identification of flood risk receptors

Figure 12B.1 of the Appendix shows the flood risk receptors identified within the assessment study area. We have concerns that this figure appears to be missing a substantial amount of receptors that are relevant to the site. It is likely that a significant number of these missing receptors are dwelling properties. This issue was raised with the Applicant in April 2019. If this figure is showing the receptors that have been used in the FRA, then the Applicant will at least need to account for why significant numbers of receptors in areas close to the scheme are not accounted for and it may be necessary to re-assess those receptors.

Identified risk to dwellings in the FRA

Notwithstanding the concerns regarding the identification of receptors, Sections 7.2.2 highlights that flood risk is increased to two properties by 0.13 metres depth in the present day 0.5% (1 in 200) annual exceedance probability event and by 0.07 metres depth in the 0.5% (1 in 200) annual exceedance probability, plus climate change event. Section 7.2.3 then states that it is impractical to provide mitigation to these properties. It states that the baseline flood depths in the area of these two properties is 0.5 metres deep and so would be flooding internally already and that the scheme does not increase the flood hazard to any properties.

Supporting information in the FRA

The FRA was submitted to the ExA before the additional modelling and sensitivity testing was undertaken. It is unknown whether the figures supporting the FRA referenced at the beginning of the response are still correct and applicable for use in determining the flood risk to the site and the surrounding off-site impacts. We have concerns as this memo covering the updated modelling shows changes in flood level and the memo states that "There are localised increases of 10mm compared to the values given in the Flood Risk Assessment".

Safety Critical operation of the proposal in an emergency event

The FRA has assessed that the proposed development is deemed as "Safety Critical" and so should remain open / operational in an emergency event, as stated in section 3.1.4 of the FRA. However, section 7.2.7 of the FRA states that this is not achievable due to flooding of the access roads. Section 7.2.7 proposes that no part of the scheme is to be opened to the public during a tidal flood event, until an emergency preparedness and response plan is developed and approved.

Flood Management Plan

Section 8.1.3 states that a flood management plan specific to the construction phase will need to be prepared to ensure that measures are in place to minimise flood damage during a tidal flood event. We note that this is referenced in the Code of Construction Practice section 7 and that the DCO identifies that the Environment Agency is to be consulted on this document.

Yours faithfully


MRS BARBARA MOSS-TAYLOR
Sustainable Places - Planning Specialist


APPENDIX

Summary of Actual Risk – present day

- The memo updates table 6.9, which changes the information detailed in section 6.2.33 of the FRA. In the present day in-channel 5% (1 in 20) annual exceedance probability (AEP) event, the memo details increases in the flood level by 0.04 metres depth to the south of the site and decreases in the flood level by 0.10 metres depth to the north of the site.

Section 6.2.35 of the FRA states that these in-channel changes for the present day 5% AEP event have no impact on the floodplain as all the flood water is retained in the channel.

- The memo updates table 6.9, which changes the information detailed in section 6.2.34 of the FRA. In the present day in-channel 0.5% (1 in 200) annual exceedance probability event the memo details increases in the flood level by 0.04 metres depth to the south of the site and decreases in the flood level by 0.13 metres depth to the north of the site.

The FRA (section 6.2.36 & 6.2.37) states that these in-channel changes for the present day 0.5% AEP event have impacts on the flood level / depth in the floodplain and the receptors impacted are detailed in Table 6.10. Table 6.10 is updated in the memo and the key points are detailed below:

1. An unknown number of more vulnerable residential properties on the West bank of the River Yare South of the scheme (Queen Anne's Road) would flood by 0.22 metres depth and post scheme would flood by an additional 0.071 metres depth.

For the South of the scheme on the West Bank, section 6.2.38 of the FRA states "the areas shown as 'Danger for some' and Danger for most' increase slightly but no properties are impacted by this".

2. An unknown number of more vulnerable residential properties on the East bank of the River Yare North of the scheme (between Sutton Road and Alma Road) would flood between 0.21 & 0.47 metres depth and post scheme would flood by an additional 0.01 metres depth.

For the North of the scheme, section 6.2.39 of the FRA states "the water levels are predicted to reduce for the 0.5% AEP present day event with the Scheme in place compared to the Baseline scenario, the flood hazard rating improves for a number of properties with some being moved to a lower hazard category with the Scheme in place".

3. An unknown number of less vulnerable commercial properties on the West bank of the River Yare south of the scheme would flood by 0.17 metres depth and post scheme would flood by an additional 0.024 metres depth.

For the south of the scheme on the West Bank, section 6.2.38 of the FRA states "the areas shown as 'Danger for some' and Danger for most' increase slightly but no properties are impacted by this".

4. An unknown number of less vulnerable commercial properties on the East bank of the River Yare North of the scheme (between Sutton Road and Alma Road) would flood between 0.18 & 0.34 metres depth and post scheme would flood by an additional 0.02 metres depth.

For the North of the scheme, section 6.2.39 of the FRA states “the water levels are predicted to reduce for the 0.5% AEP present day event with the Scheme in place compared to the Baseline scenario, the flood hazard rating improves for a number of properties with some being moved to a lower hazard category with the Scheme in place”.

5. An unknown number of water compatible commercial properties on the West bank of the River Yare south of the scheme (within port area) would flood between 0.22 & 0.45 metres depth and post scheme would flood by an additional 0.042 metres depth.

For the south of the scheme on the West Bank, section 6.2.38 of the FRA states “the areas shown as ‘Danger for some’ and Danger for most’ increase slightly but no properties are impacted by this”.

- The memo updates table 6.9, which changes the information detailed in section 6.2.34 of the FRA. In the present day in-channel 0.1% (1 in 1000) annual exceedance probability event the memo details increases in the flood level by 0.07 metres depth to the south of the site and decreases in the flood level by 0.07 metres depth to the north of the site.

Summary of Actual Risk – climate change

- In the in-channel 5% (1 in 20) annual exceedance probability (AEP) plus climate change event, the FRA (section 6.2.43) details increases in the flood level by 0.12 metres depth to the south of the site and minor decreases in the flood level by 0.04 metres depth to the north of the site.

Section 6.2.45 of the FRA states that these in-channel changes for the 5% (1 in 20) AEP plus climate change event have less impact on the floodplain than the changes in the current day event. However figure 12.8 shows that the baseline 5% (1 in 20) + AEP plus climate change event is flooding the floodplain, when the current day 5% (1 in 20) AEP event shows that the floodwater remains in channel. No figure has been provided showing the change in flood level or hazard on the floodplain for the 5% (1 in 20) AEP plus climate change event, so any change in risk in the floodplain is unknown.

- In the in-channel 0.5% (1 in 200) annual exceedance probability (AEP) plus climate change event, the FRA (Table 6.11) details increases in the flood level by 0.10 metres depth to the south of the site and minor decreases in the flood level by 0.06 metres depth to the north of the site.

Section 6.2.45 of the FRA states that these in-channel changes for the 0.5% (1 in 200) AEP plus climate change event have less impact on the floodplain than the current day event. Figure 12.9 shows that to the south scheme there are increase in flood risk of up to 0.3 metres depth, and also shows that to the north of the scheme that there are small areas with an increase to flood risk of over 0.3 metres depth.

Table 6.12 details the impacts on receptors from the 0.5% (1 in 200) AEP plus climate change event. Table 6.12 is updated in the memo and the key points are detailed below:

1. An unknown number of more vulnerable residential properties on the West bank of the River Yare South of the scheme (Queen Anne's Road) would flood by 3 metres depth and post scheme would flood by an additional 0.07 metres depth in this climate change event.

 2. An unknown number of less vulnerable commercial properties on the West bank of the River Yare south of the scheme would flood by 3 metres depth and post scheme would flood by an additional 0.05 metres depth in this climate change event.

 3. An unknown number of water compatible commercial properties on the West bank of the River Yare south of the scheme (within port area) would flood between 2 & 3.2 metres depth and post scheme would flood by an additional 0.07 metres depth in this climate change event.
- In the in-channel 0.1% (1 in 1000) annual exceedance probability (AEP) plus climate change event, the FRA (Table 6.11) details increases in the flood level by 0.02 metres depth to the south of the site and minor decreases in the flood level by 0.05 metres depth to the north of the site. Section 6.2.45 of the FRA states that these in-channel changes for the 0.1% (1 in 1000) AEP plus climate change event have less impact on the floodplain than the changes in the current day event.