

A14
**Cambridge to Huntingdon
improvement scheme**
Development Consent Order Application

HE/A14/EX/90

TR010018

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Response to ExA's Second Written Questions:

Principal Issue 13 Water Issues

August 2015

The Infrastructure Planning (Examination Procedure) Rules 2010

A14 Cambridge to Huntingdon improvement scheme

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13 Water Issues

Question 2.13.1

As the 2001 flood event has been said to be the result of blocked culverts and insufficient maintenance, would the scheme increase the number of culverts on the eastern Award Drain? If so, how would the maintenance of the additional culverts be regulated. (REP2-014, para3)

Response

1. The scheme would require the construction of three additional culverts on the Hilton Drain, referred to in section 11 of the *Flood Risk Assessment* (Applicant reference 6.3, Appendix 17.01, PINS reference APP-744) as the Eastern Award Drain. One of the culverts would convey the Drain under the new A14 mainline. Two additional short culverts would be required to convey the Drain under access tracks. These culverts are shown on *General Arrangement Sheet 11* (Applicant reference HE/A14/EX/11 PINS reference APP-774).
2. Maintenance of Highways England's operational assets in the region of the scheme is currently managed under a system of Asset Maintenance and Operational Requirements (AMOR) which are secured under contract with the asset support contractor. This is an outcome focussed approach to maintenance of drainage and other assets which seeks to match the maintenance supplied to the maintenance needs, including the sensitivity of a location to flooding, of any given asset. This accords with industry led sector guidance published as part of the Highways Maintenance Efficiency Programme. Contractor performance against the AMOR is kept under review and sanctions apply for poor performance.
3. As an ordinary watercourse the local drainage authority, Huntingdonshire District Council (HDC), is responsible for the regulation of the proper flow of water through the Eastern Award Drain in accordance with the Land Drainage Act 1991. As such HDC has powers (pursuant to section 25A) to require persons in control of the watercourse to remedy any impediment to the flow of water and these powers would not be affected by the DCO.

Question 2.13.2

Please explain the rationale behind the addition of a climate change allowance to some 1% AEP event water levels, such as in Table 13-2, and not others, such as in Table 13-4? (REP2-014, para18)

Response

4. The predicted impact of climate change on flood risk has been assessed on all watercourses across the scheme as stated in Section 1.8.12 of the *Flood Risk Assessment* (Applicant reference 6.3, PINS reference APP-744). All proposed floodplain compensation areas include an allowance for the predicted impact of climate change on fluvial flood risk.
5. Table 13-4 of Highways England's *Response to ExA's First Written Questions: Report 13 Water Issues* (Applicant reference HE-A14-EX-40, PINS reference REP2-014) refers to the 1% (1 in 100-year) annual exceedance probability (AEP) event without the impact of climate change because the assessment of the magnitude of the scheme's impact upon flood risk as defined in the Design Manual for Roads and Bridges (DMRB) (HD45/09) is based on that event.
6. The 'with climate change' 1% (1 in 100-year) AEP water level has been adopted to assess the volume of floodplain loss and therefore the equivalent floodplain compensation required across the scheme. Table 13-2 demonstrates the change in flood risk threshold to properties at Buckden Marina. Highways England has provided additional information on the risk of flooding in excess of the return period that the DMRB requires for the assessment of scheme impact. These four properties experience no change in flood risk threshold at the 1% (1 in 100-year) AEP.

Question 2.13.3

More than 4 properties are located on the eastern side of Buckden Marina. Notwithstanding that property threshold levels are said to be typically between 100-150 millimetres above ground level, do the additional properties have particularly elevated floor levels? How do the existing and with-scheme water levels relate to the actual floor levels of these properties? (REP2-014, para18)

Response

7. For clarity, there are only four properties that are affected. A property threshold level survey has been undertaken to confirm the threshold / floor level, ground level and height above ground of the properties on the eastern side of Buckden Marina. Four properties are predicted to experience a change in flood risk band as summarised in Highways England's response to written question 1.13.4 (*Response to ExA's First Written Questions: Report 13 Water Issues*, Applicant reference HE/A14/EX/40, PINS reference REP2-014). The four properties are indicated in Table 13.1.
8. The predicted change in water depth is above ground level and not property threshold, and therefore the properties would not be flooded.
9. The majority of properties in this area will not experience a change to peak flood levels and consequently flood risk threshold as a result of the new crossing as indicated by the grey shading in Figure 13.1. Four properties will experience a change in flood risk threshold as indicated in Highways England's response to written question 1.13.4 based on ground levels. However these four properties have threshold levels at least 0.6 metres above the 1% (1 in 100) Annual Exceedance Probability Event (AEP) peak flood level plus climate change under both existing and with-scheme scenarios. An updated table 13-2 from Highways England's written question 1.13.4 is augmented below with the threshold levels and the freeboard between the peak flood level and the property threshold levels for the existing and with-scheme scenarios.

Table 13.1: Properties to experience increase in flood risk threshold from 1% plus Climate Change event

Property Ref	Ground Level	1% + CC AEP Event Water Level		Threshold Level	Height Above Flood Level (mm)		Change in Water Level (mm)
		Existing	With-scheme		Existing	With-scheme	
A	11.85	11.985	11.988	12.72	0.735	0.732	3
B	11.9	11.989	11.994	12.75	0.761	0.756	5
C	11.98	11.989	11.994	12.8	0.811	0.806	5
D	11.88	11.996	12.002	12.62	0.624	0.618	6

All levels are in metres above ordinance datum

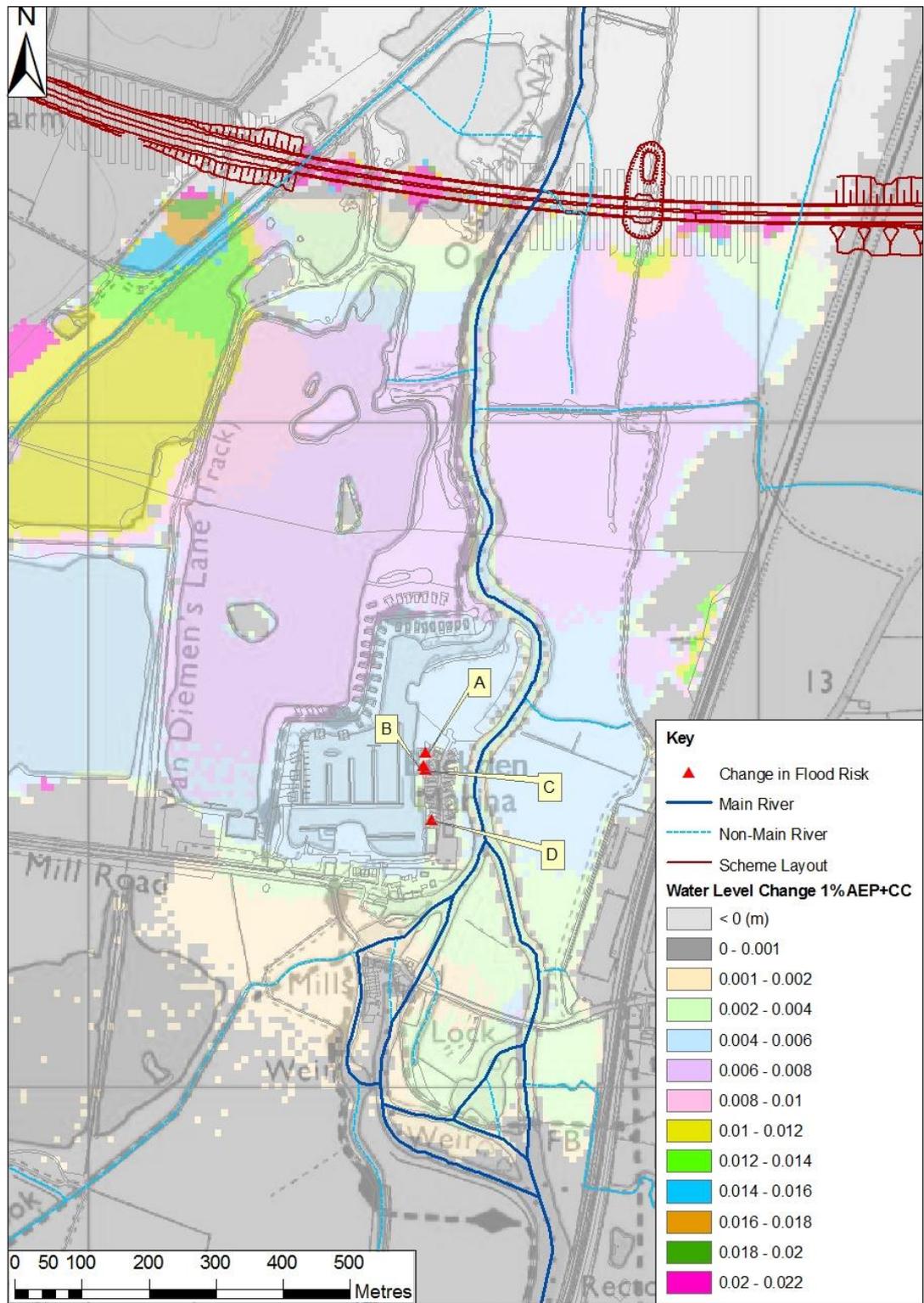


Figure 13.1: The predicted change in peak water level on the river Great Ouse for the 1% AEP plus climate change event

Question 2.13.4

What is the current status and content of the documents which set out the change in flood risk from Ellington Brook, Brampton Brook and River Great Ouse to the various landowners concerned? (REP2-014, para29)

Response

10. Highways England is producing technical papers, which will be provided to affected landowners, to show how the scheme is expected to change the predicted flood risk at the three watercourses. The papers will summarise the change in flood risk for their holdings, in terms of flood frequency, depth and duration, as agreed with the Environment Agency. The intention is that this will enable the landowner to make an informed decision when discussing the change with Highways England.
11. The document summarising the change in flood risk on the Ellington Brook has been reviewed and agreed with the Environment Agency. The final version of this document will be sent to the landowner by the end of August 2015 to be followed by discussions to reach an agreement between Highways England and the landowner.
12. The document on the change in flood risk on Brampton Brook will be drafted following completion of the revision to the Brampton Brook model which is currently ongoing. Highways England anticipates submitting the document to the affected landowner in September 2015 following its review by the Environment Agency.
13. The document covering changes to flood risk on the River Great Ouse has been drafted and will shortly be submitted to the Environment Agency for review. Highways England anticipates submitting this to the landowner for agreement by the end of August 2015.

Question 2.13.5

When is the on-going discussion with the landowner expected to conclude? Is it envisaged that the resulting works will be identified during the course of the Examination? Would the resulting works be undertaken under powers within the DCO, and if so how? If not, how would they be undertaken? (REP2-014, para37)

Response

14. Paragraph 37 of Highways England's response to question 1.13.6 (*Response to ExA's First Written Questions: Report 13 Water Issues*, Applicant reference HE/EX/A14/40, PINS reference REP2-014) refers to predicted water level change at Ellington Brook.
15. A technical paper summarising the change in flood risk on the Ellington Brook has been agreed with the Environment Agency. The final version of this document will be sent to the landowner by the end of August 2015 and discussions will follow.
16. Highways England anticipates that these discussions will be concluded during the course of the Examination and the position on the change to flood risk agreed during the course of the Examination, as stated in paragraph 37 of Highways England's *Response to ExA's First Written Questions: Report 13 Water Issues*.
17. Highways England's position, as approved by the Environment Agency subject to the landowner's thoughts, is that no works are justified. If, despite that, further discussions with the landowner and the Environment Agency result in works being required, the extent and nature of any works will only be known coming out of those discussions and the landowner's views. Any consenting route would depend on the nature of the works: if they could be validly pursued within the terms of the DCO they would; if not, they would be pursued via a separate consent outside of the DCO.

Question 2.13.6

Will the consultation with landowners include consultation related to the additional four properties on the eastern side of Buckden Marina affected by the 1% AEP plus climate change event? (REP2-014, para40)

Response

18. With reference to Highways England's response to written question 2.13.3, the hydraulic modelling undertaken to assess the impact of the scheme identifies that flood risk will only affect the four properties at Buckden Marina under the 1% (1 in 100) Annual Exceedance Probability (AEP) plus an allowance for climate change event.
19. A property threshold level survey was undertaken in August 2015 and has identified that under the existing and with-scheme scenarios, the four properties will retain a minimum of 600 millimetres between the 1% (1 in 100) AEP plus climate change peak water level and their property threshold level. The properties will not flood under either scenario.
20. While the properties will experience a rise in peak water levels for the 1% (1 in 100) AEP event of up to 6 millimetres this is considered to be a Neutral flood risk impact under the Design Manual for Roads and Bridges impact assessment methodology.
21. Consequently Highways England does not consider that additional consultation is required on this change, given the extreme event, the minimal change in predicted flood level and its findings that the properties will not be flooded.

Question 2.13.7

What are the 'minor outstanding issues' with the applicant referred to by the Environment Agency at the draft DCO Hearing?

Response

22. This question is not directed to Highways England and a response is therefore not provided. However, Highways England will comment on any response from the Environment Agency (as necessary) at Deadline 8.

Question 2.13.8

The Environment Agency has requested submission of the revised FRA (as detailed in their Written Representation REP2-154). How is the applicant responding to this request?

Response

23. Highways England is progressing the update of the *Flood Risk Assessment* (FRA) to address comments received directly through consultation with the Environment Agency and from their Written Representations. A delivery programme has been agreed between the two parties and is included as Appendix C to the Statement of Common Ground between them.
24. Interim extracts from the updated FRA are being submitted for review to the Environment Agency between July and September 2015. The extracts will address the Environment Agency's comments by watercourse or specific issue. These submissions will be combined into a single updated FRA which will be re-submitted to the Environment Agency at the start of October 2015.
25. It is anticipated that agreement will be reached between Highways England and the Environment Agency on the interim FRA extracts of individual watercourses or specific items as they are submitted through the programme prior to the submission of the overall updated FRA. As such, Highways England anticipates that agreement by the Environment Agency to the combined updated FRA submitted in October 2015 will in effect have already been established and that therefore the updated FRA will be agreed before the end of the examination.

Question 2.13.9

During the ExAs accompanied site visit in July 2015, the location of an attenuation pond was noted to the south east of Lodge Farm (General Arrangement Regulation 5(2)(o) 6 of 24.) adjacent to the emergency only access. What is the justification for the location of the attenuation pond in this location? What would be the effects on the scheme if the attenuation pond was relocated to the north of the A14 at this point?

Response

26. The attenuation pond, as per Sheet 6 of the *General Arrangement Plans* (Applicant reference 2.02, PINS reference APP-022), would be located close to the low point of the vertical alignment of the A14. It would serve as the drainage point for the A14 from the high point near the realigned B1514 Buckden Road to the high point on the River Great Ouse West Viaduct.
27. Locating the attenuation pond to the north of the A14, opposite its current location would not be possible because the pond would be in the flood plain of the River Great Ouse, there being negligible space above the flood level and the eastern boundary of the Buckden Landfill site in this locale.
28. There would also be insufficient width on the north side of the A14, slightly further to the west, adjacent to the southern edge of the landfill site, for the volume of flood storage required and rising ground levels further reduce the volume available for the attenuation pond while maintaining safe slopes.