

The Planning Inspectorate
National Infrastructure Directorate
Crown Building Cathays Park
Cardiff
South Glamorgan
CF10 3NQ

Our ref: WA/2015/120640/05-L01

Int. Party ID: 10031668

Your ref: TR010019

Date: 08 October 2015

Dear Sir/Madam

**Summary Of Written Representations
Development Consent Order Application M4 - Junctions 3-12 (Smart Motorway)**

Our written representations build on the detail of the Relevant Representations (RR-249) submitted by the Environment Agency in July 2015. They reflect the current position of the Environment Agency (EA) on the application.

We support the need for the M4 Smart Motorway to alleviate the traffic problems along the existing route and provide an efficient national transport link.

Although we have no objection to the application in principle we still have some significant outstanding concerns. Our main concerns at this stage relate to flood risk management, navigation, protection of water quality (including compliance with the Water Framework Directive) and biodiversity.

We consider it is vital that Highways England (HE) and their consultants enter into detailed discussions with us as a matter of urgency to try to resolve these. In some cases our concerns relate to information which has still not been supplied for us to consider despite being requested. In others they relate to identifying and/or agreeing an appropriate legal means of protecting our position.

Within our RR submission to the Examining Authority (ExA) we included an 'issues tracker table' which identified the issues, potential impacts on people and the environment and the possible solution or information required that may address our concerns. A copy of the RR and the 'issues tracker table' was also provided to HE on 2 July 2015. The tracker has been updated and is included within our written representations. It provides a simplistic overview of the progress made to date and the outstanding issues.

We will continue to progress matters with the applicant as quickly as possible and keep the Examining Authority (ExA) informed of our progress. We hope to make significant progress before the scheduled issue specific hearings in November 2015.

To summarise we still awaiting further information to demonstrate that the proposed development will not be increasing flood risk via providing satisfactory floodplain storage compensation. We require further information on the proposed mitigation ecological

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measures that may be required as a result of works to culverts. Furthermore, we seek reassurance that the Water Framework Directive Compliance Assessment has appropriately considered all of the relevant water bodies and the impacts of the scheme upon them.

Due to the programming of the design stages that HE follow, a subsequent detailed design phase is scheduled to follow the publication of any DCO. As a result, a number of our representations relate to the need to address concerns through this design phase. However, the basis and evidence for being able to achieve the required mitigation measures within the design stage should be clearly demonstrated through the current application.

Should the ExA or HE require further clarification on any of the issues noted please feel free to contact me.

Yours faithfully

Mr Jonathan Fleming
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Dear Sir/Madam

**Written Representations
Development Consent Order Application M4 - Junctions 3-12 (Smart Motorway)**

Introduction

These Written Representations build on the detail of the Relevant Representations (RR-249) submitted by the Environment Agency in July 2015. They reflect the current position of the Environment Agency (EA) on the application.

We support the need for the M4 Smart Motorway to alleviate the traffic problems along the existing route and provide an efficient national transport link.

Although we have no objection to the application in principle we still have some significant outstanding concerns. Our main concerns at this stage relate to flood risk management, navigation and protection of water quality (including compliance with the Water Framework Directive) and biodiversity.

We consider it is vital that Highways England and their consultants enter into detailed discussions with us as a matter of urgency to try to resolve these. In some cases our concerns relate to information which has still not been supplied for us to consider despite being requested. In others they relate to identifying and/or agreeing an appropriate legal means of protecting our position.

We will continue to progress matters with the applicant as quickly as possible and keep the Examining Authority (ExA) informed of our progress. We hope to make significant progress before the scheduled issue specific hearings in November.

Our written representations are set out in the following sections:

- Introduction and Overview – page 1
- Summary of progress on issues – page 3
- Flood risk – page 7
- Works to culverts – page 16
- Water Quality – page 20
- Further Information – page 26
- Draft DCO, ExA 1st written questions and Land interests – page 27



Where relevant the numbered issues correspond to those raised within our Relevant Representations (RR) (Examination Library reference RR-249).

Overview

As noted within our RR we have previously provided responses to the EIA Scoping Opinion and Section 42 (Planning Act 2008) consultation. On two occasions (5 February 2015 and 18 June 2015) we have also offered to engage with HE through our cost recovery pre-application service. This was declined.

We have also been contacted by the applicant to develop a joint Statement of Common Ground (SoCG) and will continue to progress this throughout the application process. On several occasions we sought updates from Highways England (HE) on the creation of the draft SoCG. In July 2015 we were informed that a first draft was still being prepared for our consideration but had been delayed for undisclosed reasons. We initially received a first draft of the SoCG between HE and the Environment Agency on 14 September 2015. We are continuing to work on this document. We have provided a revised draft SoCG to HE for their consideration.

Within our RR submission to the ExA we included an 'issues tracker table' which identified the issues, potential impacts on people and the environment and the possible solution or information required that may address our concerns. A copy of the RR and the 'issues tracker table' were also provided to HE on 2 July 2015. We advised HE that these documents may help them to establish what information and measures may be required to address our concerns.

Currently, there are still a number of important outstanding issues that have been submitted as part of the draft DCO and accompanying information that require further attention or resolution. Due to the programming of the design stages that Highways England follow, a subsequent detailed design phase is scheduled to follow the publication of any DCO. As a result, a number of our representations relate to the need to address concerns through this design phase. However, the basis and evidence for being able to achieve the required mitigation measures within the design stage should be clearly demonstrated through the current application.

Should the ExA or HE require further clarification on any of the issues noted please feel free to contact me.

Yours faithfully

Mr Jonathan Fleming
Sustainable Places | Planning Specialist

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Summary of Progress on Issues

Table 1 (below) provides a visual aid as to the issues we have raised both to the applicant during pre-application consultation and also through our Relevant Representations we made to the submission of the Development Consent Order.

For ease of reference we have highlighted each issue in terms of the current position and identified the means through which we consider it could be addressed.

Key to Table 1.	
Red	Principle issues ave not been addressed. Awaiting further information.
Amber	Principles issues have been discussed but further resolution required.
Green	Issues resolved

Our Statement of Common Ground summarises our current position with Highway's England. The following paragraphs provide further detail on our current position and what information may be required to address our concerns. We will, of course, update the ExA as to any outcomes resulting from these discussions.

Issue Ref	Issue	How Addressed
1.1	The importance of floodplain compensation (FpC) as a pre-commencement activity needs to be included in the FRA.	Parties agree that FpC is required. Mechanism to secure and implement to be agreed.
1.2	Section 4.11 and 5.1.51 of the Flood Risk Assessment (FRA) states that all of the proposed widening is within flood zone 1. This does not appear to be the case as some appears to be within flood zones 2 and 3.	Awaiting further information/details on FpC from HE.
1.3	Scheme widening works at junctions 5 to 9 and junctions 12 – 11. We do not know the amount of land raising within the floodplain. Mitigation is proposed but only for surface water run-off. If losses of floodplain storage have not been properly quantified and have not assessed downstream impacts then we cannot be certain that flood risk will not increase as a result of the proposed works.	Awaiting further information/details on FpC from HE.
1.4	The proposed works to Ascot Road and Ascot Road overbridge include a new earthwork embankment within the 1 in 100 with an allowance for climate change flood extent. The FRA does not demonstrate that floodplain compensation can be achieved on a level for level basis.	Awaiting further information/details on FpC from HE.

1.5	The FRA states 'Widening of the Thames Bray underbridge would result in a total river bed displacement of 50m ² . The impact of this displacement is considered to be negligible. We disagree with this conclusion and seek further evidence to reach an agreed outcome.	Awaiting further information/details on FpC from HE.
1.6	Side road works – Marsh Lane. The FRA does not explain what these works are and what the loss of floodplain storage could be.	Awaiting further information/details on FpC from HE.
1.7	Side road works – Monkey Island Lane. The FRA does not demonstrate that compensation can be achieved on a level for level basis.	Awaiting further information/details on FpC from HE.
1.8	Junctions 7 – 6 Side road – Wood Lane. The FRA does not demonstrate that compensation can be achieved on a level for level basis.	Awaiting further information/details on FpC from HE.
1.9	M4 junctions 6 – 5 Side Road – Ridings Court Road. The FRA does not demonstrate compensation can be achieved on a level for level basis.	Awaiting further information/details on FpC from HE.
1.10	M4 junctions 5 – 4b Side road – Old Slade Lane. The FRA states 'The works at Old Slade Lane were assessed against EA flood modelling which shows that there are no significant changes between existing and proposed road alignment extent and as such mitigation measures will not be required.' The FRA does not quantify 'significant'. The NPPF and the NPS on National Networks requires there to be no increase in flood risk.	Awaiting further information/details on FpC from HE.
2.1	Section 5.1.61 Indicates that work is needed on the Frogs ditch (Main River) proposed between junctions 4 and 3. The Frogs ditch is classified as a main river, Highways England will require a Flood Defence Consent to carry out any works within 8m of the watercourse. The FRA states that the existing ditch can be made hydraulically contiguous with upstream and downstream ditches by installing pipe culverts where required.	Confirmation from HE if culverting at this location is still required. If no, issue removed. If yes, require further details on FpC, proposed works, etc...
2.2	Chalvey culvert - We do not know the extent of the works on the culvert so do not know whether there could be any potential impacts and whether any mitigation would be required to ensure that there was no increase in flood risk.	General issues discussed – require further clarification on compensation/mitigation measures and how these will be secured.
2.3	The Ashley Arch on Datchet Common	General issues

		Brook is proposed to be extended. We do not know the extent of the works on the culvert so do not know whether there could be any potential impacts and whether work would be required to mitigate for an increase in flood risk.	discussed – require further clarification on compensation/mitigation measures and how these will be secured.
	3.1	Out of a number of WFD water bodies identified as potentially being impacted, only three were scoped into this assessment and will be taken forward to Stage 4. The reasons for scoping out most of the WFD water bodies needs to be included.	Some information has been provided however, further clarification is required from HE. Awaiting response.
	3.2	Table 5.1 of the WFD Compliance Assessment shows the WFD 2009 legal baseline data as “Current” ecological status. The WFD Compliance Assessment should account both for the legal baseline and for the current status.	A comparative assessment has been provided based on the 2009 and 2014 data. Overall conclusions may not yet be agreed but this issue has been addressed.
	3.3	The WFD Compliance Assessment does not include an assessment as to whether the proposed works will inhibit the implementation of measures being undertaken/recommended by the EA to address ecological failures.	Principles discussed but further details about measures required. Securing/implementation mechanism also to be agreed.
	3.4	There are two WFD Chalvey Ditch water bodies.GB106039023470 is the one scoped in for further assessment but it is GB106039023550 that actually flows under the M4.	Clarification sought. Awaiting response
	3.5	We do not agree that the effects on habitats and plants is neutral, given that there will be loss of river habitats (channel bed, margins and banks) as a result of bridge widening and culvert lengthening.	Further information required
	3.6	Confirmation is required as to whether there will be any permanent loss of water vole habitat	Awaiting confirmation
	3.7	Section 9.4.87, Otters. No evidence of otters were found between junctions 7 and 3 and therefore otters have not been considered further between these links, even though there is potential otter habitat present. Given the mobile nature of otters and their large territories, a precautionary approach should be taken, by implementing mitigation measures during construction at all watercourse crossings.	Principles of the issue have been discussed with HE. Securing mechanism yet to be agreed.
	3.8	Section 9.4.113. We welcome the proposed use of otter fencing but think	Principles of the issue have been discussed

		that it should not just be restricted to areas where evidence of otters has been recorded. It should be extended to include all areas where otters could potentially cross	with HE. Securing mechanism yet to be agreed.
	3.9	Table 9.5: Ecology and nature conservation impact summary. The permanent loss of river habitats through the enlarging of bridges and culverts has not been addressed in this table. Environment Agency consent will be required for these works and according to our culvert policy, where we do allow culverting, we require adequate mitigation.	Further information and discussion required
	3.10	Dewatering of excavations has the potential to damage the receiving watercourses.	This will be dealt with at Detailed design stage. Securing mechanism yet to be agreed.

1.0 Flood Risk Overview

- 1.0.1 The Environment Agency has made formal comments regarding flood risk in response to all formal consultations. After reviewing the Environmental Statement and accompanying FRA we continue to have a number of issues.
- 1.0.2 As noted within our Relevant Representations (RR) the submitted information within the flood risk assessment (FRA) is inadequate. It does not fully assess the impacts of the scheme with regards to flood risk. Specifically, the applicant has not satisfactorily assessed the impacts of the proposed works in relation to upstream and downstream flood risk. Furthermore, they have not properly quantified the loss of floodplain storage and the associated compensation that may be required as a mitigation measure.
- 1.0.3 The applicant is proposing works within the floodplain without demonstrating that 'level for level' compensation is achievable. Therefore the applicant has failed to demonstrate that there would not be an increase in flood risk elsewhere as a result of the proposed works as required by paragraph 5.99 of the NPS for National Networks (NPSNN).
- 1.0.4 Flood storage compensation is required to mitigate for loss of storage for all flood events up to and including the 1% annual exceedance probability (AEP) (1 in 100 year) with an allowance for climate change flood event.
- 1.0.5 The FRA explains that compensation will be provided for and assessed at the detailed design stage. The applicant has suggested that there is the required compensatory storage volume for the proposed earth embankment works but have only supplied volumes. We do not know whether this will be on a level for level basis or volumetric compensation. It could even be provided on a mixture of the two but this is not confirmed. If volumetric compensation is the only option for providing mitigation there could be an increase in flood risk in the higher order events.
- 1.0.6 The earth embankment work totals 6300m². It appears that HE are also proposing some small sections of land raising for the Emergency Refuge Areas (ERAs) which is 400m² per Junction. Without further details about these from the outset, it is unclear if the applicant will be able to satisfactorily provide the required floodplain compensation or how they propose to implement/secure them.
- 1.0.7 Paragraph 5.96 of the NPS states that If the Environment Agency has concerns about the proposal on flood risk grounds, *'the applicant is encouraged to discuss these concerns with the Environment Agency and look to agree ways in which the proposal might be amended, or additional information provided, which would satisfy the Environment Agency's concerns'*.
- 1.0.8 In summary we require:
- A revised FRA and associated drawings, which include all the evidence requested within the issues detailed below. This will allow us to fully assess the flood risk issues relating to the scheme. These issues mainly relate to floodplain concerns and flood compensation areas;

- Written confirmation that HE will not be seeking to disapply our flood defence consenting regime as set out under the Water Resources Act 1991 and land drainage byelaws. If HE seek to disapply this consenting regime additional protective provisions within the DCO will be sought as it is important for us to retain our ability to approve any works affecting main rivers in order to ensure that there will be no increase in flood risk elsewhere and no adverse impact on the status of the relevant Water Framework Directive (WFD) waterbodies.

1.0.9 So long as the additional information required evidences that sufficient floodplain compensation areas are available and indicates what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

Specific issues are looked at in more detail below.

1.1 RR Issue 1.1 - Floodplain Compensation (FpC) commencement prior to relevant road construction.

1.1.1 Our RR state:

'The flood risk assessment (FRA) needs to explain why it is so important that the FpC areas are constructed prior to the commencement of the construction of the relevant road sections, to prevent an overall loss of floodplain.

During construction if there is loss of floodplain and the FpC has not been contoured and there was a flood event, this could result in floodwater moving elsewhere and increase the risk of flooding to others. It could also hamper the works as flood water will try to take its natural route and move into these areas which may be under construction.

Construction activity will result in the compaction of soils which will increase the velocity of surface water run-off. Compensation areas are therefore required to prevent this run-off causing deterioration to water quality in receiving watercourses.

EA proposed solution: *We seek that an agreement is set out within the FRA that ensures the phasing of each relevant section of road will trigger the flood compensation to be constructed prior to its commencement. This principle would feed into the phasing plan for the scheme. This should be required to be conducted as part of the detailed design phase.'*

1.1.2 The submitted FRA (APP-077) states that FpC will be required.

1.1.3 We still require more detailed information on this topic to ensure satisfactory compensation can be provided and that flood risk will not be increased. This is explained further within other issues and paragraphs of our written representations.

1.1.4 The submitted FRA, outline CEMP and draft DCO do not appear to include any agreement mechanism to ensure that the required FpC for each phase of the scheme will be implemented and completed prior to other construction work commencing. Section 14.7 of the outline CEMP does refer to flood risk. However,

there is no mention of the need to provide flood storage compensation and how this will be incorporated within the phasing of works programme.

1.1.5 As stated in our RR's without the completion of appropriate FpC prior to the commencement of the remaining works it is likely that the proposed development would result in increasing flood risk onsite or elsewhere. Additionally, construction works alone without the appropriate compensation may increase flood risk through the impendence of flood water flows. We view any increase in flood risk or impendence of flood water flows to be detrimental to people and the environment. Our position is supported by paragraphs 5.99 and 5.109 of the NPSNN. If flood risk is not appropriately addressed it may lead to an increase in the frequency of flooding in areas already susceptible to flooding or place areas that were located within flood zone 1 (low probability of flooding from rivers) at risk of flooding. Flooding can result in negative economic and social impacts including travel disruption and in more significant events pose a risk to people's lives.

1.1.6 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.2 RR Issue 1.2 - The Flood Risk Assessment (FRA) states that all of the proposed widening is within flood zone 1.

1.2.1 Our RR state:

'Section 4.11 and 5.1.51 of the Flood Risk Assessment (FRA) states that all of the proposed widening is within flood zone 1. This does not appear to be the case as some appears to be within flood zones 2 and 3.'

The FRA has not adequately assessed the impact of the proposed works on flood risk between junctions 4b and 5. If development is proposed within flood zone 3 then this has the potential to increase flood risk downstream if any works are not appropriately mitigated for.

EA proposed solution: *More detailed information/plans are required to demonstrate whether the proposed works are within the floodplain or not. If works are within the floodplain then they will need to be compensated for on a level for level basis. Information on floodplain compensation needs to be provided as part of the FRA which supports the Development Consent Order application.'*

1.2.2 As noted in paragraphs 1.1.2 to 1.1.6 of this statement development within flood zones 2 and 3 without the appropriate FpC measures can result in increasing flood risk both on site and elsewhere.

1.2.3 Paragraphs 5.92 to 5.93 of the NPSNN states that applications for projects in flood zones 2 and 3 should be accompanied by a FRA. *'This should identify and assess the risks of all forms of flooding to and from the project and demonstrate*

how these flood risk will be managed, taking climate change into account'. Furthermore, NPSNN paragraph 5.99 states that 'when determining an application the Secretary of State should be satisfied that flood risk will not be increased elsewhere and only consider development appropriate in areas at risk of flooding where it can be demonstrated that: development is appropriately flood resilient and resistant...and that any residual risk can be safely managed.'

1.2.4 HE requested detailed flood modelling for various sections along the route from our Customers and Engagement team in August 2015. This information was collated as soon as possible and was issued to HE on the 10, 11 and 29 of September 2015. From liaising with HE we understand that this data will now be used to calculate and provide information on the areas where the proposed works will be located within flood zones 2 and 3. Additionally it will be used to help calculate what FpC is required. At a meeting between HE and the EA on 25 September 2015 it was agreed that some of this information would be provided to us for review by 30 September 2015 with the rest to follow as soon as possible. We are still awaiting this information. Upon receipt of it we will review the details to confirm if they address our concerns.

1.3 RR Issue 1.3 – Scheme widening works at junctions 5 to 9 and junctions 12 to 11

1.3.1 Our RR state:

'The FRA states the scheme widening works do not change the route or levels of the existing carriageway but the exceptions to this are the Emergency Refuge Areas (ERAs). The FRA states the additional impermeable areas are approximately 400m² per ERA. The submitted FRA states that 'The extent of widening works is not significant compared to the existing motorway. The impact on flood extent flood levels and fluvial flood risk elsewhere is not anticipated to be significant.' However, this is not quantified. We do not know the amount of land raising within the floodplain. Mitigation is proposed but only for surface water run-off. If losses of floodplain storage have not been properly quantified and have not assessed downstream impacts then we cannot be certain that flood risk will not increase as a result of the proposed works. The increase in built footprint may reduce flood storage and impact on flood conveyance thereby increasing the risk to others.'

EA proposed solution: *Where these areas are within the floodplain and land raising is occurring the flood risk assessment should quantify the amount of floodplain storage lost to the development and provide compensation to mitigate on a level for level basis. The compensation areas should be provided in a hydrologically and hydraulically linked area to ensure that there is no increase in flood risk upstream or downstream.'*

1.3.2 It was agreed at our meeting on the 25 September 2015 that further FpC information and assessments would need to be provided as part of the application. The new information will seek to determine whether there is an increase in flood risk and if so, what location and type of compensation will be provided. We understand that this work is ongoing. We look forward to reviewing the forthcoming information. However, at the time of writing we have not yet received any additional information and therefore our position must remain as stated above.

1.3.3 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.4 RR Issue 1.4 – Junctions 8/9 side road works – Ascot Road

1.4.1 Our RR state:

'The proposed works to Ascot Road and Ascot Road overbridge include a new earthwork embankment within the 1 in 100 with an allowance for climate change flood extent. This has been estimated to be approximately 1400m² of works to the new embankment within the floodplain. This is proposed to be mitigated for by removal of part of the existing Ascot Road embankment. The indicative flood storage area available by removal of the existing embankment is 3800m².

The FRA does not demonstrate that floodplain compensation can be achieved on a level for level basis. The FRA states 'the precise arrangement of any required floodplain compensation will be confirmed following further assessment during the detailed design phase.

If not appropriately compensated for the increase in built footprint may reduce flood storage and potentially also impact on flood conveyance thereby increasing the risk to others. If losses of floodplain storage have not been properly quantified then we cannot be certain that flood risk will not increase as a result of the proposed works.

EA proposed solution: *Where land raising is proposed within the floodplain then the flood risk assessment should quantify the amount of floodplain storage lost to the development and provide compensation to mitigate for this on a level for level basis. The compensation areas should be provided in hydrologically and hydraulically linked areas to ensure that there is no increase in flood risk upstream or downstream.'*

1.4.2 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.5 RR Issue 1.5 – Widening of the Thames Bray underbridge

1.5.1 Our RR state:

'The FRA states 'Widening of the Thames Bray underbridge would result in a total river bed displacement of 50m². The impact of this displacement is considered to be negligible. However, to minimise the impact on any hydraulic conveyance capacity of the river, if required, mitigation measures such as

floodplain compensation may be provided. The need for such floodplain compensation will be confirmed during the detailed design phase.'

If not appropriately compensated for the increase in built footprint may reduce flood storage and also impact on flood conveyance thereby increasing the risk to others. If losses of floodplain storage have not been properly quantified then we cannot be certain that flood risk will not increase as a result of the proposed works.

EA proposed solution 1.5: *The applicant in the FRA should quantify losses of floodplain storage and demonstrate that there is sufficient space on site to be able to provide level for level compensation to demonstrate no loss of floodplain storage up to the 1 in 100 year with an allowance for climate change flood level.'*

- 1.5.2 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.6 RR Issue 1.6 – Side road works – Marsh Lane

- 1.6.1 Our RR state:

'The FRA states 'The works at Marsh Lane were assessed against EA flood modelling which shows that there will not be a significant change between existing and proposed flood extent.' The FRA does not explain what these works are and what the loss of floodplain storage could be. The FRA only states this will 'not be significant', the NPPF and the NPS on National Networks requires there to be no increase in flood risk.

If no mitigation is proposed then the works could potentially increase flood risk upstream and downstream.

EA proposed solution 1.6: *The proposed works need to be explained fully. The FRA also needs to adequately demonstrate that there will be no increase in flood risk.'*

- 1.6.2 As noted in our RR the FRA does not clearly state what the works will be or how it is deemed not to result in significant change between existing and proposed flood extents. Any increase in flood risk is generally not acceptable. Even if it is deemed to be a small increase in flood risk at this location, the scale of the works the potential cumulative impacts on flood risk need to be taken into consideration and satisfactory mitigation must be proposed and implemented.
- 1.6.3 Without the appropriate assessment and subsequent completion of satisfactory FpC prior to the commencement of the remaining works it is likely that the proposed development would result in increasing flood risk onsite or elsewhere. Additionally, construction works alone without the appropriate compensation may increase flood risk through the impendence of flood water flows.

- 1.6.4 We view any increase in flood risk or impendence of flood water flows to be detrimental to people and the environment. Our position is supported by paragraphs 5.99 and 5.109 of the NPSNN.
- 1.6.5 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.7 RR Issue 1.7 – Side road works – Monkey Island Lane

1.7.1 Our RR state:

'The proposed works to Monkey Island Lane and Monkey Island Lane overbridge include works within the within the 1 in 100 with an allowance for climate change flood extent. These works include a new earthwork embankment for Monkey Island Lane and the associated realignment of the flood relief channels running parallel to the M4.

The FRA state 'Current designs indicate that 2000m² of works to the new embankment are located within the floodplain. Mitigation is proposed by removal of the existing embankment is 3300m². However, the FRA does not demonstrate that compensation can be achieved on a level for level basis. The FRA states 'the precise arrangement of any required floodplain compensation will be confirmed following further assessment during the detailed design phase.

If not appropriately compensated for the increase in built footprint may reduce flood storage and potentially impact on flood conveyance thereby increasing the risk to others. If losses of floodplain storage have not been properly quantified then we cannot be certain that flood risk will not increase as a result of the proposed works.

EA proposed solution 1.7: Where land raising is proposed within the floodplain then the flood risk assessment should quantify the amount of floodplain storage lost to the development and provide compensation to mitigate for this on a level for level basis. The compensation areas should be provided in hydrologically and hydraulically linked areas to ensure that there is no increase in flood risk upstream or downstream.'

- 1.7.2 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.8 RR Issue 1.8 – Side road works – Wood Lane

1.8.1 Our RR state:

'The proposed works to Wood Lane and Wood Lane overbridge include a new earthwork embankment within the 1 in 100 with an allowance for climate change flood extent. Current designs indicate that 2100m² of works to the new embankment is located within the floodplain.'

The FRA states 'Mitigation to compensate for any loss of floodplain as a result of these works can be provided by removal of part of the existing Wood Lane embankment to create floodplain compensation. The indicative flood storage area available by removal of the existing embankment is 4000m². The FRA does not demonstrate that compensation can be achieved on a level for level basis. The FRA states 'the precise arrangement of any required floodplain compensation will be confirmed following further assessment during the detailed design phase.'

If not appropriately compensated for the increase in built footprint may reduce flood storage and potentially impact on flood conveyance thereby increasing the risk to others. If losses of floodplain storage have not been properly quantified then we cannot be certain that flood risk will not increase as a result of the proposed works.'

EA proposed solution 1.8: *Where land raising is proposed within the floodplain then the flood risk assessment should quantify the amount of floodplain storage lost to the development and provide compensation to mitigate for this on a level for level basis. The compensation areas should be provided in hydrologically and hydraulically linked areas to ensure that there is no increase in flood risk upstream or downstream.'*

1.8.2 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.9 RR Issue 1.9 – Side road works – Ridings Court Road

1.9.1 Our RR state:

The proposed works to Riding Court Road and Riding Court Road overbridge include a new earthwork embankment within the 1 in 100 with an allowance for climate change flood extent.'

The FRA states 'Current designs indicate that 800m² of works to the new embankment are located within the floodplain. The proposed works to Wood Lane and Wood Lane overbridge include a new earthwork embankment within the 1% climate change AEP flood extents. Current designs indicate that 2100m² of works to the new embankment are located within the floodplain. Mitigation to compensate for any loss of floodplain as a result of these works can be provided by removal of part of the existing Wood Lane embankment to create floodplain

compensation. The indicative flood storage area available by removal of the existing embankment is 4000m².’

The FRA does not demonstrate compensation can be achieved on a level for level basis. The FRA states ‘the precise arrangement of any required floodplain compensation will be confirmed following further assessment during the detailed design phase.

If not appropriately compensated for the increase in built footprint may reduce flood storage and also potentially impact on flood conveyance thereby increasing the risk to others. If losses of floodplain storage have not been properly quantified then we cannot be certain that flood risk will not increase as a result of the proposed works.

Where land raising is proposed within the floodplain then the flood risk assessment should quantify the amount of floodplain storage lost to the development and provide compensation to mitigate for this on a level for level basis. The compensation areas should be provided in hydrologically and hydraulically linked areas to ensure that there is no increase in flood risk upstream or downstream.’

- 1.9.2 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided (‘level for level’, ‘volumetric’, etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

1.10 RR Issue 1.10 – M4 junctions 5 to 4b side road – Old Slade Lane

- 1.10.1 Our RR state:

‘The FRA states ‘The works at Old Slade Lane were assessed against EA flood modelling which shows that there are no significant changes between existing and proposed road alignment extent and as such mitigation measures will not be required.’ The FRA does not quantify ‘significant’. The NPPF and the NPS on National Networks requires there to be no increase in flood risk.

If no mitigation is proposed then the works could potentially increase flood risk upstream and downstream. This is contrary to national planning policy.

EA proposed solution 1.10: *The proposed works need to be explained fully. The FRA also needs to adequately demonstrate that there will be no increase in flood risk.’*

- 1.10.2 As noted in paragraph 1.10.1 the FRA does not clearly state how the works are deemed not to result in significant change between existing and proposed flood extents. Any increase in flood risk is generally not acceptable. Even if it is deemed to be a small increase in flood risk at this location, the scale of the works the potential cumulative impacts on flood risk need to be taken into consideration and satisfactory mitigation must be proposed and implemented.

- 1.10.3 Without the appropriate assessment and subsequent completion of satisfactory FpC prior to the commencement of the remaining works it is likely that the proposed development would result in increasing flood risk onsite or elsewhere. Additionally, construction works alone without the appropriate compensation may increase flood risk through the impendence of flood water flows.
- 1.10.4 At the time of writing we are still waiting to receive the additional information. Providing the new information demonstrates that flood risk will not be increased and that sufficient floodplain compensation areas are available, including what form of compensation will be provided ('level for level', 'volumetric', etc...) we anticipate that we will be able to agree a mechanism to secure the implementation and completion of the required flood water storage within the appropriate phasing timetables during the course of the examination. We will jointly provide a copy of these to the ExA once finalised.

2.0 Works to Culverts Overview

- 2.0.1 Within our relevant representations (RR-249) we sought clarification and additional evidence regarding the proposed works to existing culverts associated with the scheme.
- 2.0.2 We noted that *'the applicant is proposing work to existing culverts but has not specified the extent of work required. They explain they will be extending them but the supplied information does not explain the lengths or design. If extensions to culverts are not designed appropriately they can increase flood risk and impact on biodiversity.'*

The detailed design needs to show that the culverts will be accessible and allow passage for the wildlife that needs to use them. This should include otters that are likely to be using all watercourses, including small or dry ditches. We would want to see improvements to any existing culverts, e.g. to make them passable to fish if they are not already.

Culverts should be designed in accordance with Ciria C689. There is also the following guidance, which we recommend is used in the design process:

- *'Structural modification of culverts design guidance' at <http://evidence.environment-agency.gov.uk/FCERM/en/SC060065/MeasuresList/M7/M7T1.aspx?pagenum=2>*
- *Chapter 8.6 of the Environment Agency 'Fluvial Design Guide', which is at <http://evidence.environment-agency.gov.uk/FCERM/en/FluvialDesignGuide/Chapter8.aspx?pagenum=6>*

In addition, any additional hard bank protection such as sheet piling, where there was previously natural bank, will also require our consent (if main river) and will also need to be mitigated/compensated for. We would therefore wish to be able to review all final proposals through the detailed design phase.'

- 2.0.3 Within the submitted application documents including '7.3 Engineering and design report', dated March 2015, revision 0 (APP-096), there is the misuse and interchanging of terms widening, extending and lengthening. This has resulted in

some confusion of what works are intended at each culvert location. For example, 7.6.34 of the Engineering and design report refers to Chalvey culvert being symmetrical widening 4m (a total distance of 8metres) where-as 7.7.44 of the same document refers to Ashley's Arch culvert being lengthened by 1.5m to the north.

- 2.0.4 The widening of any culvert without appropriate mitigation can lead to an increase in flood risk downstream as a larger volume of water can pass through the opening in a shorter time. Similarly the lengthening of a culvert can result in increased flood risk upstream as the water is contained within the culvert/pipe for a longer period and consequently 'backs-up' behind the surcharged opening. In either case, in accordance with paragraphs 5.99 and 5.109 of the NPSNN it is for the applicant to clearly assess and demonstrate that they are not increasing flood risk elsewhere.
- 2.0.5 Furthermore, the extension of culverts will result in the loss of river bed, channel and bank that provide a natural habitat for various species. These often form vital parts of green and blue infrastructure corridors. If appropriate off-setting and/or other measures are not proposed and implemented this could result in a net loss of natural habitat. This would be contrary to the aims of paragraphs 5.20 to 5.26 of the NPSNN.
- 2.0.6 Following discussions with HE, including at a meeting on 25 September 2015, it was verbally clarified that in all such instances, they are proposing to lengthen culverts rather than widening them. Furthermore, the requirement of providing further evidence and assessment of the impacts of the lengthened culverts on flood risk, loss of river bed, channel and banks, mammal passage and the provision of suitable off-setting measures and culvert maintenance plan were discussed.
- 2.0.7 We anticipate that upon receipt of further information and satisfactory evidence as referred to within the section 2.1 to 2.3, we will be able to agree appropriate off-setting and/or alternative mitigation measures. We expect that these may be secured through the DCO or other appropriate consents. We will jointly provide a copy of our agreed position to the ExA once finalised.

Specific culverting issues are considered below.

2.1 RR Issue 2.1 – Frogs Ditch (Junctions 4 and 3)

2.1.1 Our RR state:

'Section 5.1.61 of the FRA indicates that work is needed on the Frogs ditch located between junctions 4 and 3. The Frogs ditch is classified as a main river, Highways England will require a flood Defence Consent to carry out any works within 8m of the watercourse. The FRA states that the existing ditch can be made hydraulically contiguous with upstream and downstream ditches by installing pipe culverts where required. We are generally opposed to the culverting of watercourses.'

Other than the paragraph in section 5.1.61 we cannot find any further information on the proposed works to the Frog's ditch (Main River). Culverts if not designed appropriately can increase flood risk.

EA proposed solution 2.1: *Justification needs to be provided as to why culverting is required in this location. If culverting is the only option then the impact that this will have on flood risk needs to be considered within the FRA e.g. the length of culverting proposed, the dimensions of the proposed culvert supported by hydraulic analysis, culvert maintenance plan and mammal passage.'*

2.1.2 At our meeting on 25 September 2015 HE stated that they believed they would no longer need to carry out culverting works at Frogs Ditch. This position was based on information they had received from further land survey work. It indicated that the current landscape was able to facilitate the proposed works. However, this was subject to a further site inspection. It was agreed that if this position was confirmed, HE would confirm this in writing to us and the ExA. At the time of writing, no confirmation has been received.

2.2 RR Issue 2.2 – Chalvey culvert

2.2.1 Our RR state:

'The submitted FRA states that 'The Chalvey culvert on the Chalvey Ditch is to be extended to accommodate the Scheme. As the works involve extending the existing culvert, the impact on the surrounding floodplain will be negligible and as such mitigation measures will not be required.' Furthermore, the Engineering and design report (APP-096) notes in paragraphs 7.6.34 to 7.6.35 that this culvert will be lengthened by a total of 8 metres (4m either side of the existing highway).

2.2.2 *However the application documents have not assessed the potential impacts of the proposed works on the culvert and whether any mitigation would be required to ensure that there would be no increase in flood risk or loss of important habitat. The details noted above and in paragraph 3.3.35, annex 1-A of EIA appendix 9.1 and sheet 46 of drawing 9.2 refer to the bank vegetation in the locality and do not appear to consider the potential loss of channel bed and how this will be addressed.*

2.2.3 *Justification needs to be provided as to why culverting is required in this location. If culverting is the only option then the impact that this will have on flood risk needs to be considered within the FRA. For example, the length of culverting proposed, the dimensions of the proposed culvert supported by hydraulic analysis, culvert maintenance plan and mammal passage.'*

2.2.4 Without evidence demonstrating that flood risk will not be increased elsewhere as a result of culvert works it is difficult to ensure that people and the environment will not be placed at risk. As noted in paragraph 2.0.4 of this statement the lengthening of a culvert can result in increased flood risk upstream as the water is contained within the culvert/pipe for a longer period and consequently 'backs-up' behind the surcharged opening. In accordance with paragraphs 5.99 and 5.109 of the NPSNN it is for the applicant to clearly assess and demonstrate that they are not increasing flood risk elsewhere. Flooding can result in negative economic and social impacts including travel disruption and in more significant events pose a risk to people's lives.

2.2.5 Furthermore, without an appropriate assessment of the permanent loss of river habitats resulting from the lengthening of the culvert it is unclear what biodiversity

off-setting and/or other mitigation measures may be required to compensate for such losses.

- 2.2.6 River beds, channel and banks provide a natural habitat for various species. These often form vital parts of green and blue infrastructure corridors. If appropriate off-setting and/or other measures are not proposed and implemented this could result in a net loss of natural habitat. Paragraph 5.25 of the NPSNN states that *'development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity off-setting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated.'*
- 2.2.7 We anticipate that upon receipt of further information and satisfactory evidence demonstrating that lost habitat will be compensated for and that flood risk will not be increased that we will be able to agree appropriate off-setting and/or alternative mitigation measures for these culvert works. We expect that these may be secured through the DCO or other appropriate consents. We will jointly provide a copy of our agreed position to the ExA once finalised.

2.3 RR Issue 2.3 – Ashley Arch culvert

- 2.3.1 Our RR state:
'The Ashley Arch on Datchet Common Brook is proposed to be extended. The FRA states 'As the works involve extending the existing culvert, the impact on the surrounding floodplain will be negligible and as such mitigation measures will not be required.' Furthermore, the Engineering and design report (APP-096) notes in paragraphs 7.7.44 that this culvert will be lengthen by a total of 1.5 metres.
- 2.3.2 However the application documents have not satisfactorily assessed the potential impacts of the proposed works on the culvert and whether any mitigation would be required to ensure that there would be no increase in flood risk or loss of important habitat. The details noted above and in 3.3.35, annex 1-A of EIA appendix 9.1 and sheet 54 of drawing 9.2 refer to the bank vegetation in the locality and do not appear to consider the potential loss of channel bed and how this will be addressed.
- 2.3.3 Justification still needs to be provided as to why culverting is required in this location. If culverting is the only option then the impact that this will have on flood risk needs to be considered within the FRA. For example, the length of culverting proposed, the dimensions of the proposed culvert supported by hydraulic analysis, culvert maintenance plan and mammal passage.
- 2.3.4 We anticipate that upon receipt of further information and satisfactory evidence demonstrating that lost habitat will be compensated for and that flood risk will not be increased that we will be able to agree appropriate off-setting and/or alternative mitigation measures for these culvert works. We expect that these may be secured through the DCO or other appropriate consents. We will jointly provide a copy of our agreed position to the ExA once finalised.

3.0 Water Quality Overview

- 3.0.1 As specified in our RR's and repeated in paragraphs 3.0.1 to 3.0.4 below the Environment Agency is the key regulatory authority for implementing and delivering the requirements of the Water Framework Directive (WFD). The purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. This directly concerns aquatic and wetland ecosystems, and terrestrial ecosystems dependent on water.
- 3.0.2 The WFD promotes sustainable water use, based on long term protection of available water resources. It aims to enhance the protection of the aquatic environment, through specific measure for the progressive reduction of discharge, emissions and losses of the priority hazardous substances. It ensures the progressive reduction on pollution of groundwater, as well as contributing to the mitigation of flood and droughts.
- 3.0.3 The Environment Agency has a duty to exercise its functions so as to secure compliance with the requirements of the WFD. We provide advice and assistance to other bodies to help ensure delivery of the objectives of the WFD. All public bodies have a duty to have regard to the River Basin Management Plan when exercising their functions.
- 3.0.4 River Basin Management Plans covering specific river basin districts (of which the Thames is one) are produced by the Environment Agency and approved by the Secretary of State every 6 years (the first plan runs from December 2009 to December 2015, the second from December 2015 to December 2021). The River Basin Management Plan sets out the environmental objectives for each water body in the river basin district and the measures to be taken to deliver those objectives over the plan cycle.
- 3.0.5 In addition, NPSNN paragraph 5.220 states that 'the planning system should contribute to and enhance the natural and local environment by, amongst other things, preventing both new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by water pollution. Furthermore, paragraph 5.222 of the NPSNN notes that the applicant should seek to deliver opportunities for WFD through the detailed design of the scheme.
- 3.0.6 We anticipate that upon receipt of the further information required, so long as it shows that water quality status will not be reduced, we will be able to agree adequacy of the WFDCA and if required, satisfactory mitigation. If any mitigation is required we expect that this could be secured through the DCO or other appropriate consents. If agreement is reached through the course of the examination, we will jointly provide a copy of our agreed position to the ExA once finalised.

Specific WFD issues are considered below.

3.1 RR Issue 3.1 – WFD water bodies taken to stage 4 assessment

- 3.1.1 We acknowledge that 19 surface water bodies and three groundwater bodies have been identified as potentially being impacted by the proposed development.

However, within the submitted Water Framework Directive (WFD) compliance assessment (WFDCA) only three of the 19 surface water bodies were taken forward to a stage 4 assessment.

- 3.1.2 We accept that section 7.1.1 of the WFDCA lists a number of criteria used that was used to reach the current number of three. However, the reasons for not taking each of the remaining 16 water bodies to stage 4 assessment needs to be included as part of this application.
- 3.1.3 Without these reasons we consider the WFDCA is not adequate as there may be water bodies and protected areas that are not sufficiently assessed. If those water bodies are not sufficiently assessed then we cannot be certain that appropriate mitigation will be provided, if required. This could lead to a deterioration in WFD status. This would be contrary to paragraphs 5.225 to 5.227 of the NPSNN.
- 3.1.4 We anticipate that upon receipt of the further information required, so long as it shows that water quality status will not be reduced, we will be able to agree adequacy of the WFDCA and if required, satisfactory mitigation. If any mitigation is required we expect that this could be secured through the DCO or other appropriate consents. If agreement is reached through the course of the examination, we will jointly provide a copy of our agreed position to the ExA once finalised.

3.2 RR Issue 3.2 – WFDCA table 5.1 – use of up-to-date data

3.2.1 Our RR state:

'Table 5.1 of the WFD Compliance Assessment shows the WFD 2009 legal baseline data as "Current" ecological status. We are now within cycle 2 of River Basin Management Planning and will be publishing the second RBMP at the end of this year (using the legal 2015 baseline). The WFD Compliance Assessment should account both for the legal baseline and for the current status (2014 data is available using the Catchment Data Explorer online). This includes using the cycle 2 water body boundaries instead of the cycle 1 boundaries.'

Omission of cycle 2 water bodies will mean that the incorrect water bodies are assessed in the Compliance Assessment and therefore the risks are not fully assessed. A number of biological elements have deteriorated since the 2009 baseline data, again this means that the risks cannot be fully assessed. If the risks are not appropriately assessed then mitigation cannot be provided to prevent deterioration.

EA proposed solution 3.2: *The WFD Compliance Assessment should be updated with the most up to date baseline data this will help to inform whether watercourses need to be scoped into or out of the assessment. It will also help to inform the appropriate level and location of any ecological compensation that will be required to prevent deterioration. The conclusions within the ES should be revised accordingly, to enable the decision maker to assess the application fully, with the support and advice of the Environment Agency.'*

- 3.2.1 Following our meeting with HE on the 25 September 2015, using the 2014 data available HE have undertaken a comparative review of the 2009 and 2014 data for the 19 surface waterbodies assessed within the WFDCA. In some instances

the baseline data has changed. However, HE have ascertained that the conclusions of the WFDCA remain the same when taking into account the mitigation measures outlined in the 2009 Thames River Basin Management Plan.

3.2.2 Providing the new information is submitted as part of the application, we are satisfied that issue 3.2 has been addressed. Until further clarification and evidence is provided relating to other associated water quality issues detailed below we cannot agree the conclusions of the WFDCA at this time. If agreement is reached through the course of the examination, we will jointly provide a copy of our agreed position to the ExA once finalised.

3.3 RR Issue 3.3 – WFDCA – will the scheme inhibit the implementation measures being undertaken/recommend by the EA to address ecological failures.

3.3.1 Our RR state:

'The WFD Compliance Assessment does not include an assessment as to whether the proposed works will inhibit the implementation of measures being undertaken/recommended by the EA to address ecological failures.'

If the proposed works do inhibit the implementation of measures to address ecological failures, then there is the potential that improvements on WFD may not be achieved.

EA proposed solution 3.3: *An assessment should be included in the WFD Compliance Assessment as to whether the proposed works would inhibit the implementation of measures to address ecological failures. If they are likely to do so then mitigation/compensation will be required to address this.'*

3.3.2 Chapter 7.2 of the WFDCA (APP-134) is titled WFD mitigation assessment. It concludes within paragraph 7.2.4 that providing the scheme specific mitigation measures are in place during and post construction, the scheme is not expected to prejudice the implementation of further mitigation measures identified in the Thames River Basin Management Plan. Table 7.1 of the same document provides a very generic indication to what these scheme specific mitigation measures may be but does not clarify how these will be agreed/secured and implemented or if more enhanced compensation mitigation measures will be required.

3.3.3 Furthermore, some of the details of the proposed works are incorrect and this may impact the conclusions of the assessment report. For instance paragraph 7.2.3 refers to Chalvey Ditch culvert being lengthened by 1.5 metres at each end when other application documents including 7.6.34 to 7.6.35 of the Engineering and design report (APP-096) state that this culvert will be lengthening a total of 8 metres – 4 metres on either side.

3.3.4 The principles of this issue have been discussed with HE. However, further clarification and a mechanism to ensure delivery of the required mitigation and/or compensation measures have yet to be finalised. Proceeding with the proposed development without ensuring that the WFDCA is appropriate and that satisfactory measures will be in place could lead to a deterioration in WFD status. This would be contrary to paragraphs 5.225 to 5.227 of the NPSNN.

3.4 RR Issue 3.4 – WFDCA – Chalvey Ditch water bodies

3.4.1 Our RR state:

‘There are two WFD Chalvey Ditch water bodies:

- *GB106039023550 - Chalvey Ditches at Slough*
- *GB106039023470 - Chalvey Ditches (lower reaches to River Thames confluence)*

GB106039023470 is the one scoped in for further assessment but it is GB106039023550 that actually flows under the M4.

Potentially the wrong watercourse is scoped in for further assessment. If the wrong watercourse and associated data is used then we cannot be certain that the conclusions of the WFD Assessment or any further assessment will be accurate. This could potentially lead to an impact on WFD status.

EA proposed solution 3.4: *Confirmation is required as to whether GB106039023470 is the correct water body to scope in and if not, then the data for GB106039023550 needs to be included instead.’*

3.4.2 We have sought clarification from HE on this matter on several occasions including at our meeting on 25 September 2015 and most recently in email correspondence on 2 October 2015. We still await confirmation on this issue.

3.5 RR Issues 3.5 and 3.9 – Ecology and Nature Conservation

3.5.1 Our RR state:

‘We do not agree that the effects on habitats and plants is neutral, given that there will be loss of river habitats (channel bed, margins and banks) as a result of bridge widening and culvert lengthening.

If appropriate mitigation is not provided then there will be a loss in habitat and its connectivity. This could directly impact on whether the watercourses affected will be able to meet ‘good ecological status’ or ‘good ecological potential’ as required by the WFD.

EA proposed solution 3.5: *In accordance with paragraph 5.25 of the NPS ‘Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought’. Therefore, such losses will need to be compensated for. Further information is required on the compensation proposed to ensure that it mitigates for any impact on the water environment’*

[Furthermore] Table 9.5: Ecology and nature conservation impact summary. The permanent loss of river habitats through the enlarging of bridges and culverts has not been addressed in this table. Environment Agency consent will be required for these works and according to our culvert policy, where we do allow culverting, we require adequate mitigation. This often involves the opening up of an equal amount of culvert elsewhere. The table does not adequately assess the impact of the proposal on ecology if the permanent loss of river habitats is not included.

EA proposed solution 3.9: *Table 9.5 should be updated to include the permanent loss of river habitats. The conclusions within the ES should be revised accordingly, to enable the decision maker to assess the application fully, with the support and advice of the Environment Agency.'*

- 3.5.2 In correspondence with us, HE have noted that *'the loss of river habitats (channel bed, margins and banks) is very small and results in a negligible magnitude of impact.'* However, there will be a loss.
- 3.5.3 Updates to the ecology and nature conservation assessment and further information on the proposed compensation measures are sought from HE to ensure that any impact on the water environment is appropriately addressed. Furthermore, clarification is sought on how these measures will be secured – through the DCO, other consenting regimes, etc...?

3.6 RR Issue 3.6 – Water Vole habitat

- 3.6.1 Our RR state:
'Water Vole habitat sections 9.4.79 -9.4.84. Confirmation is required as to whether there will be any permanent loss of water vole habitat, e.g. where bridges or culverts are to be enlarged.'

If appropriate mitigation is not provided then there will be a loss in habitat and its connectivity.

EA proposed solution 3.6: *Such losses will need to be compensated for. Further information is required on compensation proposed to ensure that it mitigates for any impact on the water environment. Compensation proposed should in accordance with the NPPF and the NPS look to enhance the natural environment.'*

- 3.6.2 We still await confirmation on this matter from HE. If there is any permanent loss of water vole habitat then this should be compensated for within the scheme. If appropriate off-setting and/or other measures are not proposed and implemented this could result in a net loss of natural habitat. Paragraph 5.25 of the NPSNN states that *'development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity off-setting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated.'*
- 3.6.3 Depending on which confirmation is provided may depend on the likelihood of this issue being resolved. If there is no result of permanent loss or if satisfactory compensation is proposed and appropriately secured within either requirements or other consent regimes then it is likely that we will be able to reach agreement on this issue. We will notify the ExA of any resolution to this issue.

3.7 RR Issues 3.7 and 3.8 – Otters

- 3.7.1 Our RR state:
'No evidence of otters were found between junctions 7 and 3. Therefore otters have not been considered further between these links, even though there is

potential otter habitat present. The application documents state that pre-construction surveys will be carried out but otter signs can be missed and otters do not always spraint (the most conclusive field sign) in their territories. Given the mobile nature of otters and their large territories, a precautionary approach should be taken, by implementing mitigation measures during construction at all watercourse crossings.

If no mitigation is provided and otters should be present during construction, this could lead to the disturbance, injury or death of otters. Therefore, we strongly recommend that appropriate mitigation measures are in place for otters during construction at all watercourse crossings (including ditches).'

3.7.2 We welcome the proposed use of otter fencing as noted in section 9.4.113. However, we believe it should not just be restricted to areas where evidence of otters has been recorded. It should be extended to include all areas where otters could potentially cross as otters are very mobile, cover large areas and may increase in numbers and range in the future. In addition, mammal tunnels or ledges should be included in all suitable bridge crossings where otters are likely to try to cross via the road in times of high flows. These measures would be some of the enhancements that the scheme could deliver as supported by NPSNN paragraphs 5.23, 5.33 and 5.36.

3.7.3 Failing to implement appropriate measures such as fencing may result in otters trying to access the road from a watercourse where otter fencing has not been installed. Consequently they could be injured or killed and/or pose a health and safety risk to road users.

3.7.4 We anticipate that the proposed use and location of otter fencing could be secured by an appropriately worded requirement if consent is granted. We will continue to liaise with HE and the ExA on these matters.

3.8 This issue is addressed within section 3.7 above.

3.9 This issue is addressed within section 3.5 above.

3.10 Water Resources - Dewatering of excavations

3.10.1 Our RR state:

'Dewatering of excavations has the potential to damage the receiving watercourses. We strongly recommend that HE implement suitable pollution prevention controls where dewatering activities occur, for example, settlement ponds, sediment traps and visual checks. We acknowledge that some of these measures are noted within the outline CEMP however, the mechanism for securing/implementing this document is not clear within the draft DCO.'

3.10.2 *Dewatering activities are required to comply with the Environment Agency's Regulatory Position Statement (RPS): Temporary water discharges from excavations*

<https://www.gov.uk/government/publications/temporary-water-discharges-from-excavations>

- 3.10.3 *Where dewatering activities do not fall within the criteria of the RPS then the discharge will require an environmental permit for a bespoke water discharge activity. Dewatering activity is currently exempt from regulatory requirements.'*
- 3.10.4 ES Sub-section 15.4.42 - The need for an abstraction licence, if water abstraction is required, has been recognised. The applicant must be aware that any abstraction licence granted will be done so in such a way so as to avoid derogation of existing abstractors. Any licence granted may be subject to constraints limiting/preventing abstraction under low-flow conditions. It is important that they contact the Environment Agency at an early stage due to the regulatory procedures that might apply (time constraint imposed by these procedures) where a licensing situation arises.

3.11 Abstraction Licences

- 3.11.1 The scheme, primarily in the design/construction stage, may impact upon water abstraction operations and infrastructure relating to public water supply. The applicant must determine what, if any, abstractions the scheme will conflict with, and liaise with the custodians of said abstractions to establish how to best mitigate against any negative impacts. Of particular concern are the abstractions at Beenham's Heath and Bray, which sit within 100m of the centreline of the scheme. The public water supply abstractions deemed to be at risk, the precise impacts and the mitigation measures must be assessed, agreed with the abstractor(s) and documented.
- 3.11.2 ES Sub-section 15.4.46 – Actions are highlighted which will be undertaken if there is any requirement to dewater the groundwater. The potential concern for dewatering relates to the abstraction of any contaminated/polluted water. These poor quality waters (where identified) may be due to more than just a heavy silt content. This needs to be carefully monitored and assessed as the discharge of such water into controlled water could result in a pollution incident. Information from any water quality sample, and land survey data needs to be assessed to flag potential issues, and adequate measures incorporated into the method statement for this activity.
- 3.11.3 We would request that proposed areas for dewatering be discussed through the detailed design phase.

4.0 Further Information

- 4.0.1 Sections 4.1 to 4.4 are comments previously included on our RR. We do not wish to add anything further to these remarks at this time. They have been included for reference.

4.1 Groundwater Quality and Contaminated Land

- 4.1.1 The Environmental Statement appears to have addressed most of the issues with respect to protecting aquifers and source protection zones within Chapter 15. It also covers potential sources of contamination (eg. landfills) in chapter 10.
- 4.1.2 In Chapter 10, within the list of receptors in many of the tables it has "Persons abstracting water without a licence". Under "locations" it puts "Unknown theoretical only". However, we are aware of a number of domestic and private abstractions below 20m³/day (these would not require a licence) within the zone

of investigation along the motorway. We are not responsible for keeping a record of these abstractors but the Local Authority will have records of potable abstractions. We strongly recommend that HE obtain a record of these from the relevant Local Authorities.

4.2 Flood Defence Consent

4.2.1 Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Environment Agency is required for any proposed works or structures in, under, over or within 8 metres of the top of the bank of the River Thames, classified as 'main river'. 'Flood Defence Consent' is separate to planning permission.

4.3 Enforcement of Environmental Protection Legislation

4.3.1 Legislative enforcement and investigatory powers by authorised Officers of the Environment Agency must be legally afforded to ensure powers of environmental protection remain enforceable within the entire footprint of the scheme regardless of land ownership rights, i.e. Crown exclusion. Access should be provided for our officers to investigate any environmental incidents or resulting effects that take place during construction and post completion.

4.4 Construction

4.4.1 Construction site(s) must all times adhere to Environmental Legislation and Duty of Care. Construction contractors and Stakeholders involved in operational implementation are strongly advised to contact our Environment Agency Office to seek advice, guidance and legislative input to any site activities that may have an impact on the environment or have obligation to specific regulatory control, such as, but not limited to the Environmental Permitting Regulations, 2010.

5.0 Draft DCO, ExA 1st written questions and Land Interests

5.0.1 Draft DCO – We have several issues and concerns regarding the draft DCO as submitted. However, we are seeking clarification from HE and have sent various comments and questions to them on this matter. We are currently awaiting responses to our queries prior to suggesting amendments to the DCO. We will endeavour to submit our suggestions as soon as possible upon receipt of the appropriate information.

5.0.2 ExA 1st written questions – We have responded to several of the ExA 1st round of written questions. Our comments have been submitted to the ExA as separate document.

5.0.3 Land Interests – The Environment Agency have several land and/or asset interests on various ground associated with the proposed works. Our estates team are currently exploring what implications the proposed works may have on the Environment Agency's interests and how we may work together with HE to ensure all parties are accommodated. Amongst other things they are currently considering if there are any rights that belong to us that are being compulsorily acquired, are there any proposed street closures that may result in us not being able to access land/assets for maintenance purposes, etc... We will endeavour to keep the ExA informed of any issues or suggestions in the near future.