Our ref: AE/2022/127507/05-L01 & Interested Party Ref: 20033155
Your ref: TR010060

Date: 11 April 2023

Submitted via portal

APPLICATION BY NATIONAL HIGHWAYS FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE A12 CHELMSFORD TO A120 WIDENING

Please find below the response from the Environment Agency to the Examining Authority's written questions and requests for information (ExQ2), issued 20 March 2023

18 Water Environment

18.5 to the Applicant, EA
From submissions to the Examination, it appears that there is a fundamental difference of opinion between the EA and the Applicant with regards to the proposed use of culverts and the design of the extensions to bridges on the 6 new and extended main river crossings.
Can the parties explain if/how they are working towards resolving this? Is it possible that this will remain an outstanding area of disagreement at the close of Examination? In answering this question, we would refer the parties to Paragraph 5.227 of the NNNPS. In any further submissions, it would be helpful to reference this paragraph.

We have worked closely with the Applicant on a range of issues throughout the pre-application period for this scheme. As highlighted in our previous representations, we raised concerns with the nature of the proposed watercourse crossings in our response to the EIA Scoping consultation (Nov 2020), and the Preliminary Environmental Information Report (PEIR) (Aug 2021). We have met with the Applicant to specifically discuss the watercourse crossings on 15/09/21; 22/11/21 and most recently 02/02/23. At this time there are no further meetings proposed.

Despite early engagement on this issue, and restating our concerns throughout the pre-application consultation, the proposed design of the watercourse crossings does not appear to have sufficiently considered how a loss of riparian habitat and river

habitat connectivity will be avoided. Where culverts are proposed on ordinary watercourses, we've previously raised concerns that there is inadequate provision for mammal passage. The Lead Local Flood Authority, as the consenting body for those structures, will need to be satisfied that protected species legislation is complied with. But it is the proposed main river crossings that continue to cause us concern, both the two new culverts and the extensions to the existing crossings.

In the Applicants comments on our Written Representation [REP3-009], the Applicant does not propose any revisions to the proposed culverts. The Applicant states that the design of the culverts follows current best practice, and that the new culverts are sized to be larger than recommended by the withdrawn DMRB nature conservation advice. It is also stated that over-sized culverts incorporating mammal ledges may achieve similar results to open span bridges, where these are considered impractical.

Whilst well designed culverts may be suitable in some cases for very small streams and drains, we do not believe that they are a suitable or sustainable treatment for main river ecosystems. Culverts have many detrimental impacts not least on the integrity of the whole ecological catchment by interrupting and damaging natural habitat and processes along its length. These Essex main rivers are amongst the most important ecological networks in the county. By confining the main rivers into treatment like drains this project risks severing the main wildlife corridors across Essex and inflicting long term harm on the natural ecosystems. While the Applicant has noted our concerns during the pre-application engagement, they have not implemented the key requests for options such as clear span bridges to be incorporated, in particular at the proposed new crossings of Rivenhall Brook and Domsey Brook. Such structures have clear multiple benefits and have been the focus of our national Culverting Policy which has been in place not only since the formation of the Environment Agency, but also with predecessor organisations.

The Applicant has stated [REP3-009] that it would not be possible to incorporate a clear span bridge as an alternative to the proposed Domsey Brook (east) culvert, as a bridge would need to be disproportionately wide to accommodate the existing bank profile. We would highlight that as part of the approved National Highways A47 North Tuddenham to Easton dualling scheme in Norfolk (TR010038), a clear span bridge with a 5m minimum riparian buffer is being provided to cross the River Tud. The River Tud is a relatively small main river, and the bridge formed part of the design for the scheme from an early stage. Main River crossings should always be significantly wider than the width of the water flow channel to allow natural banks and riparian habitat to ensure the delivery of the whole ecosystem approach for the long-term.

For the Rivenhall Brook crossing, the Applicant suggests that the clearance under a clear span bridge would be less than with a culvert, negating the benefits of any additional width. For this and the Domsey Brook east crossings in particular, we would welcome a full exploration of alternative options, especially those which include ecologically enhanced features with natural banks and native vegetation on buffer strips on either side of the channel. This is not something that we have previously seen or fully discussed with the Applicant. Whilst raising the invert height of a clear span bridge may require some road level raising, we would expect to see this explored as part of the mitigation hierarchy process.

We have previously highlighted the importance of these rivers for eels. We do not agree with the Applicants statement that “appropriately designed culverts …would not preclude migratory salmonids and eel passing through these structures” [REP3-009]. It is our view that elver and eel would not be able to negotiate the new culverts during periods of high flows, due to the uniformity of the structure causing increased velocities with no natural bank to provide shelter.

The Applicant has stated in REP3-009 that the installation of mammal ledges into the two new culverts (Rivenhall Brook & Domsey Brook east crossing), coupled with their larger size compared to the previous crossings constitutes an overall improvement for mammals. However, the previous crossings will additionally remain in place and there is uncertainty as to whether the mammal ledges will be used in new crossings of this length. Reducing the migration and dispersal of mammals (species such as water vole, badger and otter which are all species whose behaviour is heavily influenced by territorial scent marking) to reliance on a provided artificial ledge is forcing all species of predator and prey to use the same space in times of high flow. For many species if the mammal ledge is not a 100% success the culvert crossings will separate protected species populations up and downstream and could in time prevent the genetic diversity that is needed for long term survival of a viable population.

The Applicant has acknowledged the lack of data on mammal ledges use and has proposed monitoring as part of this scheme. We welcome the suggestion and agree that monitoring ledges on the ordinary watercourses could if carefully designed with mammal ecologists have ecological value. However, culverting the main rivers will cause multiple problems and it is not appropriate to risk the integrity of the ecological network of these catchments, which is why we wish to see larger lighter alternative designs of bridges with natural banks and buffer strips of native vegetation incorporated.

We have also previously raised concerns about reliance on otter fencing, given the uncertainty over the use of ledges, and the effect of rigid central concrete safety barriers on the ability of any mammals that do enter the road to exit safely. To keep mammals off the road, fencing will require high initial design and installation costs, regular 6 monthly inspections and repairs and replacement over the lifetime of the project. The Applicant has stated that rigid concrete safety barriers are most appropriate for the safety of users. It appears that little if any research has been done on the effects on mammal populations where concrete barriers are in place. An EUPAVE document ‘Concrete Safety Barriers: A Safe and Sustainable Choice’ (May 2018) is one of the few that mentions wildlife. It acknowledges the impact of such barriers on reducing or preventing wildlife dispersal and the associated severance of wildlife territories and habitats. It goes on to stress the importance of getting appropriate mitigation in place so that species do not have to go over the top of roads. Unfortunately, the river crossings on this project do not currently appear to have been designed following the mitigation hierarchy to primarily avoid detrimental impacts on wildlife and river habitats.

Regarding the proposed extensions to the existing Domsey Brook west and Roman River crossings, our Written Representation [REP2-053] outlined some specific concerns for the Applicant to address in respect of the new elements of the

crossings. We also highlighted that enhancements to the existing structures should be considered. The retrofitting of mammal ledges is proposed for each crossing, and further enhancement measures are proposed for the Roman River, which are welcomed. However, the Applicant should demonstrate a further assessment of possible improvements to each of the existing structures, with a view to seeking to resolve the existing issues.

For the extension to the River Brain bridge, we previously highlighted that the riverbed where the A12 currently crosses the River Brain consists of a wide expanse of concrete which harms ecological connectivity and river processes. The Applicant has stated that it is not possible to remove this concrete sill as it forms part of the structure of the existing bridge [REP3-009]. We believe that there is the potential to incorporate ecological improvements as recommended by the Design Manual for Roads and Bridges to mitigate for the damaging existing design without removing the concrete sill. There are a number of options to deliver a range of enhancements and allow a preferential summer channel underneath the bridge to encourage safe fish movement up and downstream reducing exposure to predation. We wish to see a feasibility study to explore options to enhance the existing section of river bed. This could include in-channel features including baffles, a series of resting pools, improved vegetation cover and other enhancements to aid safe fish passage. Any proposals will have to consider overall flood risk, but the ecological enhancements could be advised on by the Environment Agency's Fish Pass Panel to help bring about an overall improved ecological outcome at this location.

We are generally supportive of the proposed extension to Ashmans Bridge which crosses the River Blackwater but have previously highlighted that opportunities to retain natural banks should be taken where possible to benefit mammals. Innovative design measures should be investigated to deliver the optimum result.