

Boxted Bridge - Summary of considerations to date

Boxted Bridge, which was built in 1897, was assessed in 1992. The assessment found the deck to have a live load capacity of 3 Tonnes but this rating was with reservations. A Principal Inspection of the structure was undertaken in 2018. The Principal Inspection noted small patches of moderate corrosion, delamination and loss of section on the edge beams, and severe deflection was noted to girder plates edges of the transverse girders, being worse at corners. The beams have moderate corrosion at the edges, delamination and loss of section in isolated areas.

Option study considerations

An Option Study was completed in 2018. The Options considered were:

- Option 1 - 'Do nothing' – bridge structure, vehicle loading/type and network remain unchanged
- Option 2 - Environmental weight and width restrictions on the existing bridge and highway network
- Option 3 - Permanent weight restriction of 3 tonnes gross vehicle weight on the current structure
- Option 4 - Permanent closure of the structure to motorised vehicles
- Option 5 - Enhancing edge girder bending moment capacity by improved U-frame restraint
- Option 6 - Constructing a new deck, with the same plan dimensions as the current superstructure, on the existing bridge foundations and abutments
- Option 7 - Reconstruct the bridge either to the same plan dimensions as the current bridge or to greater width to enable Heavy Goods Vehicles (HGVs) to safely negotiate the bridge and make the Sky Hall Hill with Lower Farm Road junction manoeuvre

Options 1 and 5 were not recommended while Options 2, 3 and 4 were considered as only viable in the short/medium term and were not recommended as a permanent solution.

Options 6 and 7 were further divided into sub-options as detailed below:

Option 6A – Provide a replacement deck with a form and constructed in materials similar to the present structure

Option 6B – Provide a replacement deck with a ‘slab’ type construction form

Option 7A - Full bridge reconstruction on current bridge footprint

Option 7B – Full bridge reconstruction on widened footprint incorporating highway alignment and junction ‘improvements

The Option Study recommended the first three Options to be investigated at feasibility stage but not the fourth one.

Following the completion of the Option Study and prior to moving on to the next stage of the project where we would assess the feasibility of the proposed Options, we undertook a review of the Option Study and re-examined options 6A, 6B, 7A and 7B; the advantages, disadvantages and drawings provided along with the wider concerns over the adjacent junction. There have been multiple incidents of HGVs impacting a privately owned wall at the junction, despite a traffic survey undertaken during the Option Study stage indicating that the number of HGVs using the junction are very low.

Technical approval considerations

Recent changes to design standards, publicised following the completion of the Option Study, have brought into consideration the resilience and security of a structure as part of the Technical Approval process. Option 6A could not meet the new requirements of the code as the form of construction proposed with half-through edge girders would be at risk from a vehicle impact which could undermine the structural integrity of the deck. Also, retaining the existing foundations, where cracks were noted in the Principal Inspection, brought into question the resilience and design life of the proposed structure.

Option 6B would resolve the security issues that Option 6A was presenting but would alter significantly the appearance of the Area of Outstanding Natural Beauty (AONB). In addition, the questions about resilience would still remain. Neither of the aforementioned options would consider nor resolve the issues of the junction alignment and visibility.

We looked further into Options 7A and 7B, especially focusing on the reasons on why 7B was not recommended as this was the only option that would address the issues at the junction.

A decision was made to investigate the feasibility of Option 7B and determine if any of the disadvantages listed on the Option Study could be mitigated or eliminated. The feasibility study would investigate a structure that would retain the appearance of the original structure, akin to Option 6A, however, on a slightly widened footprint and with considerations regarding resilience.

In order to determine the feasibility to reconstruct the bridge we have been undertaking and are planning to undertake further studies which include ecological, arboricultural, geotechnical and archaeological surveys. They will also highlight the potential impact to the AONB, the environment, highway safety and flood risk.

Ongoing studies and investigations

One of the desk studies we undertook was an investigation on the ability of different types of vehicles to manoeuvre at the junction. The vehicles that were investigated included a refuse vehicle, a fire engine and an articulated vehicle. The study indicated that none of the aforementioned vehicles could safely manoeuvre the junction under the current footprint of the bridge, which indicates that based on the current information the advantages of Option 7B outweigh the advantages of Option 7A. It was decided that we will propose to widen the structure by the minimum to allow the junction issues to be eased – at present, we have been investigating to accommodate the turning movements of a fire engine but not necessarily the movements of articulated vehicles as we believe this would create a significant impact to the AONB by widening to the extents required.

The results of the ground investigations carried out during November 2020 will inform our future design and foundations options for a replacement bridge. They will help us finalise the structural considerations for the proposed option and help us understand possible improvements to resolve the existing road alignment and visibility constraints at the junction.

Artist impression of proposed bridge design

A computer-generated artist impression of how we envisage a new bridge will look is included below (image 1), which can be compared to a photograph of the existing bridge (image 2).

Boxted Bridge is in an Area of Outstanding Natural Beauty (AONB) and as such we are designing a replacement bridge to be as similar as possible to the existing bridge with as minimal change as possible to the aesthetics of the area, while improving safety for passing vehicles.



Above - Image 1 Computer generated artist impression of proposed bridge design
Below – Image 2 Existing structure



Public information

It is our full intention to keep the community informed as the project develops including updates on the Essex Highways website [‘Boxted Bridge, Wick Road, Boxted, Colchester’](#) as information becomes available, and to address any frequently asked questions.

We will also share key information directly with the local parish council, residents and businesses as appropriate.



Should you have a question directly relating to Boxted Bridge not already answered by the information contained within our webpage, you may wish to contact the project team by email: boxtedenquiries@essexhighways.org. Use of this email address is preferred as it will enable the project team to manage and respond to incoming enquiries as efficiently as possible.

