

### 3 Tonnes Weight Limit & Strengthening

#### 3 Tonnes Weight Limit

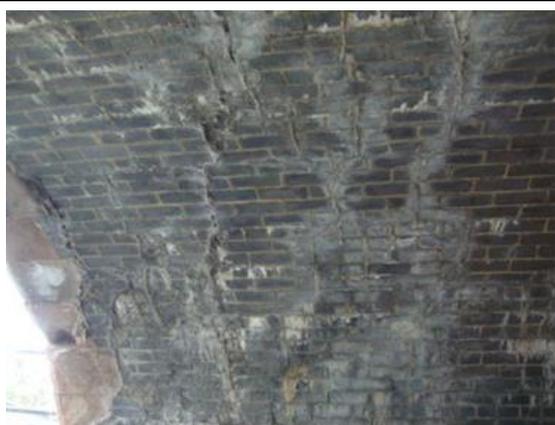
Oundle North Bridge (Structure No 1093) is Grade II listed and comprises 13 arch spans (Single and multi-span arches) in brick/stonework with stone headwalls/spandrels/cutwaters and parapets.

According to the Listed Building details, the bridge was rebuilt in 1571 and 1835 (although a tablet next to span 4 says 1855) and rebuilt and widened in 1912.



**FIGURE 1 – VIEW OF OUNDLE NORTH BRIDGE**

Northamptonshire Highways has an inspection and structural assessment regime for the entire county's highway structure both of which feed into the maintenance regime. The inspection regime consists of a general inspection every 2 years and a principal inspection every 6 years. Structural assessments are generally carried every 12 years.



**FIGURE 2 - EXTENSIVE CIRCUMFERENTIAL CRACKING WITH LEACHING**

Oundle North was assessed, to determine its load carrying capacity, in October 2014. The bridge assessment concluded that 7 of the 13 arches of this Listed Grade II structure were deficient in their loading capacity; the viaduct was assessed to have a capacity of 3 tonnes.

Initial structural assessments are generally carried out using simple but conservative analytical methods. Where the adequacy of a structure cannot be confirmed, or falls short of requirements using simple methods, progressively more precise and advanced methods are used to determine capacity.

# Oundle North

Since the 2014 assessment the structure has been monitored remotely through a system known as Moniteye. This system accurately measures the structural movement and wirelessly transmits the data which is reviewed daily by Northamptonshire Highways. Over recent months the data is showing that considerable movements have been occurring. We have also used a remote camera to detect the type and size of vehicles causing the movement, however this has found to be unreliable.

The recent data identified that the condition is deteriorating and whilst there is not an immediate risk of collapse which would result in a full closure, action does need to be taken in the short term to prevent more damage

As Northamptonshire Highways has a duty, not only to safeguard members of the public, but to manage its structures that they do not pose an unacceptable risk to public safety it was decided to implement a permanent 3 Tonnes Weight Limit to prevent any further deterioration to the condition of the bridge.

The process of implementing a permanent restriction requires that we notify affected parties of our intention.

We have had the statutory consultation with regards to the above and a delegated decision report has been prepared. Once the delegated decision report has been signed we will move to the public consultation stage of the

process. This will take approximately 6 weeks.

There are four bus and coach services that use the bridge along with twelve to eighteen school busses. NCC is currently in discussion with the bus and coach companies on how to mitigate the effects of the proposed 3 tonnes weight limit on their service.

The restriction would be self-enforcing, so traffic width restriction and appropriate signage from either direction would be put in place, the intention would be to continue to allow 2 way car traffic to reduce the overall loading of the arch structures on the bridge whilst minimising traffic



**FIGURE 3 - CIRCUMFERENTIAL CRACKING WITH LEACHING**



**FIGURE 4 - WEATHERED STONE AND CRACK ALONG THE EDGE OF THE VOUSSIORS**



**FIGURE 5 - LONGITUDINAL CRACKING IN ARCH**

disruption and delay.

A working group will be set up to discuss the implication of the 3t prohibition on the traffic movements in the area with Oundle Town Council and the surrounding parishes.

### Strengthening the Bridge

Alongside monitoring of the bridge an options study was commissioned to consider strengthening solutions that ensures minimal

- visual impact to the structure (as a Grade II listed structure);
- Impact to those using the bridge both pedestrian and vehicular;
- Excavation;
- impact on the statutory undertaker's plant and
- reduce structural temporary works

Following on from the recommendations of the options study a feasibility study was recently carried out to investigate options for the strengthening / refurbishment of the existing structure and develop viable options with approximate costing's and identify a preferred option.

Account has been taken of planning constraints, traffic management implications, safety implications, the requirements of the operational delivery team, land licensing, environmental implications and utility company apparatus.

The strengthening has to take into account the following:

- Heritage issues
- Potential archaeological impact
- Ease of construction
- Temporary works
- Possible diversion and/or support of Statutory Undertakers plant
- Future maintenance of the Statutory Undertakers plant
- Traffic management during construction
- Access to the site
- Duration of construction works
- Possible phasing of works
- Aesthetics – retention of the appearance of the structure



**FIGURE 6 - LONGITUDINAL CRACKING AND SPALLING**



**FIGURE 7 - LONGITUDINAL CRACKING BETWEEN VOUSSOIRS AND ARCH**

Of the various options considered, those requiring the complete closure of Oundle North to all traffic for the duration of the works or pose an archaeological risk to the works were discounted and only two options are being considered for further development both of which are both proprietary systems.

The cost of strengthening/repairing the bridge was estimated at £750,000 in the feasibility study. However, the estimate may have to be revisited as a more recent Principal Inspection (W/C 30/04/2018) indicated that the structure had deteriorated further.

We are currently working with a designer/contractor to put a budget price together. The likelihood that the sum required for the repairs/strengthening will be closer to the £1,000,000 mark when taking everything into consideration.

Given the current financial challenges the availability of additional funding has been severely restricted and therefore any exceptional and priority works now have to be accommodated from within the available budget envelope.

The bridge strengthening all depends on when we can secure funding to carry out the works.

### **Scheme preparation work has commenced to address all issues caused by the impact damage**

As part of the scheme preparation works there are a number of consents / surveys / approvals that are required

- An Environmental assessment including ecological constraints appraisal and survey is required before any works can commence. Depending on the time of year, the survey can take 1-2 months and will look for evidence of protected species within the vicinity of the bridge. Should evidence be found then further studies/mitigation works could be required
- Environment Agency Consent is required for the structure, as we are working over main river, the



**FIGURE 8 – CRACKING AND DAMAGED STONWORK**



**FIGURE 9 – CRACKING AND TWISTING OF PARAPET WALL**



**FIGURE 10 – GENERAL VIEW OF STEEL JOIST AND STONE CORBEL**



**FIGURE 11 – DAMAGE EAST END CORBEL**

EA have 2 months from receipt of our application to approve our proposals Temporary works design and approval

- Listed Building Consent is required due to the bridge's Grade II Listing. East Northamptonshire's Planning office have 2 months from receipt to approve our proposal for the repairs/strengthening of the bridge.

### **Traffic Management during the Works**

The intention would be to continue the 3 tonne weight limit and allow the 2-way car traffic to continue thus minimising traffic disruption and delay in Oundle.

### **General**

Damage caused by water, the deterioration of materials, burrowing mammals and invasive plant species cause significant damage to a multitude of structures across our network.

This scheme is part of planned maintenance programme added to which we have the ongoing major vehicular impact damage schemes.

All of which is being undertaken with very limited resources.

We are aware that the bridge provides an important access; we are expediting the works as much as is possible.

We will keep all affected parties informed as the scheme progresses.

[Liaison@kierwsp.co.uk](mailto:Liaison@kierwsp.co.uk)

01604 883400