Introduction of temporary 30mph speed limit at Berkeley Rail Bridge

Berkeley Rail Bridge is located on the A38 just south of the junction with the B4066 Berkeley Road. A routine inspection of the northbound bridge by Gloucestershire Highways engineers raised potential problems with the structure and so further, more detailed inspections were carried out. As a result, the decision was taken that the bridge would need to be replaced and work is now ongoing in respect of this.

The bridge replacement works cannot be carried out immediately due to the processes involved. Detailed surveys are required before the design process can begin and at each stage, liaison with Network Rail must also take place. Relevant funding streams for the work also need to be identified.

The assessment process that has been followed to date indicates that the bridge is not at immediate risk of failure and that there are steps that can be taken to reduce the risk of further deterioration. One of these steps is reduce the speed of the traffic travelling onto and over the bridge as this reduces the impact and stress on the structure at the point of contact between the vehicle and the structure. This is particularly relevant in the case of Heavy goods Vehicles. Therefore it is proposed that a temporary 30mph limit is introduced along a short section of the northbound A38 extended to cover either side of the bridge. The speed limit will be reinforced with physical measures which will narrow the road to a point where drivers should feel that they need to slow down to travel through this section of road (see plan for extent of limit and physical measures). The 30mph speed limit is being introduced as a Temporary Traffic Order and will be revoked once the bridge works are underway.

A weight restriction is not being considered as this is an important strategic route for goods vehicles travelling through the County and provides the alternative route in case of a closure on the M5 Motorway.

Engineers will monitor the bridge whilst the detailed design and liaison with Network Rail continues. If further deterioration of the bridge becomes apparent then the alternative measure will be to close the northbound bridge and divert traffic over the south bound bridge under traffic light controls.

Below is a statement from the County Bridge Engineer that provides further technical information regarding the factors used in the assessment process.

"We apply factors of safety to all of the loads used in the assessment process to address unknowns in material quantities, and to allow for mix of vehicles in traffic, overloading of vehicles, the condition of the road surfacing and various other items. These factors of safety allow us to be conservative, but confident, in our results. The more unknowns we can eliminate, the less conservative we are forced to be. Separate factors are applied to allow for the condition of the structure. These factors are set out in national standards published by the Highways Agency, which are based on extensive research and analysis.

Part of the live loading for any bridge comes from the speed of the traffic using it. This is due to the impact that a vehicle applies to the bridge from any unevenness in the surface or profile of the road. This will be increased by any potholes in the road or steps at the expansion joints at the end of the bridge.

The assessment factors of safety are used for Motorway and Trunk Road bridges which have HGVs travelling at 60mph (and sometimes faster) on them. Whilst we cannot easily quantify the specific

effect of reducing the speed limit, we are confident that that the reduction in speed would reduce the impact of HGVs on the bridge to a point where the reduced factor of safety would be justified

The critical elements of the bridge are the top members of the Truss – which are currently in reasonably good condition; and the transverse members at the ends of the bridge – which are not in good condition. These transverse members cannot easily be inspected, however we have established their condition during possessions of the railway to closely inspect the underside of the bridge, and have applied a condition factor of 0.7 to them. If the condition factor of the transverse members drops to 0.6, then we will have to take further measures – which would probably result in a full closure of the truss bridge; and transfer of all traffic to the arch bridge, under traffic signal control.

The road condition also has an impact on the assessment of the bridge. The surfacing is considered to be in poor condition for the purposes of the assessment, but if any further defects emerge in the surfacing over the bridge, then they should be addressed as soon as possible – even if they do not class as potholes under the normal highway defect assessment, to ensure impact loading on the bridge is not increased."