

DECISION MAKER:	EXECUTIVE COUNCILLOR NAME:
	Councillor Martin Hill OBE
DATE OF MEETING:	04/01/2010
SUBJECT:	Capital Brief And Appraisal, Re-Decking To Network Rail Bridge, Dunston Road, Metheringham
DECISION REFERENCE:	01655
REPORT BY:	Assistant Director (Highways & Traffic)
NAME OF CONTACT OFFICER:	Dave Walton, Client Services Manager
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IS THE REPORT EXEMPT?	No
IS REPORT CONFIDENTIAL?	No

IS IT A KEY DECISION?	YES
DIVISION(S) AFFECTED	Billinghamay & Metheringham / Branston & Navenby

SUMMARY

Dunston Road Rail Bridge (Network Rail Bridge No.21), on the parish boundary between Dunston and Metheringham, is currently weight restricted at 13 tons GVW but the theoretical capacity is 7.5 tons GVW based on a County Bridge Assessment. The bridge is a potential liability to the County Council, due to the potential for the failure of the brittle cast iron beams that form part of the deck.

The proposal is to reconstruct the deck and provide parapets that comply with current containment standards. The work will be carried out under a temporary road closure utilising

overnight weekend track possessions and a separate footbridge will be provided for the duration of the works for pedestrians.

This is the last of the four Network Rail owned bridges that contain cast iron beams that failed the County Bridge Assessment.

This Capital Appraisal of £860,000 is based on the lowest submitted tender assessment for the works. The costs will be funded from the Asset Protection Block.

DISCUSSION & OPTIONS

BACKGROUND

1. Network Rail Bridge No.21, on the parish boundary between Dunston and Metheringham, carries C355 over the Sleaford to Black Carr junction line and is owned by Network Rail. The C355 (Dunston Road) connects the villages of Dunston and Metheringham. (Location Plan attached)
2. The existing three span bridge was built in 1881 and has a skew of 42.1 degrees. The skew spans are 7.33, 12.51 and 7.77m and the deck consists of cast iron girders and brick jack arches. The deck is supported on brick abutments and the parapets consist of mass brickwork.
3. The bridge carries a 5.7m wide carriageway with a variable width grass verge to the west and a 1m wide blacktop strip, which is delineated from the carriageway by a white line, which acts as a footway to the east. The existing width between parapets is 7.78m.
4. The C355 is used by two commercial bus services (including an Interconnect service) along with a school bus and is a winter salted maintenance route.
5. The existing headroom to the rail lines is 4.22m
6. The bridge was assessed by British Rail as part of the County Bridge Assessment Programme in 1994 to the current assessment code BD21.
7. The bridge has been weight restricted at 13 tons gross vehicle weight (GVW) since 1969 as part of the Bridgeguard exercise in 1969.

NEED

8. The bridge was assessed under the County Bridge Assessment Programme in 1994, which determined a theoretical capacity of 7.5 tonnes GVW. The critical elements are the internal cast iron girders on the main span. A reduction in the weight restriction was not pursued in 1994 since there was no suitable alternative route. The only other suitable route into Dunston village is via Lincoln Road from B1188 but headroom is restricted to 14' 0" by another Network Rail bridge. There is another route into Dunston via Metheringham Fen but this is deemed unsuitable for diverted traffic due to the lack of width.
9. The limit of Network Rail liability is to maintain the existing bridge to 13 tons GVW based on the weight restriction imposed under the original Bridgeguard exercise in 1969.
10. The parapets do not comply with current containment standards.
11. There is no dedicated footway over the bridge to cater for pedestrian traffic between Dunston and Metheringham.

12. The strengthening of this bridge has been identified as the top outstanding priority from the list of bridge assessment failures identified in the Local Transport Plan 2. The presence of cast iron beams, a material known to be brittle that could lead to sudden failure without prior warning, is the overriding factor that determines the need for intervention.
13. There is cause for concern that an overweight vehicle could cause the failure of the bridge deck. Despite a weight restriction order being in place, it is known that the weight limit signs are often ignored and the enforcement of the order relies on the police, who do not have adequate resources to enforce the limit. In this particular case, the situation is exacerbated by the fact that the theoretical capacity is less than the actual weight restriction in place and that there is no suitable alternative route for certain vehicles.
14. The combination of the above factors would suggest that the existing bridge is no longer safe for further use and places an unacceptable risk on the County Council to keep in its present state.
15. This is the last of four Network Rail owned bridges with a deck supported by cast iron beams that failed the County Bridge Assessment Programme. The previous three Network Rail owned bridges have now been strengthened.

PROPOSAL

16. The proposal is to re-deck the bridge with a continuous deck, with steel beams and a reinforced concrete infill slab, utilising permanent formwork, supported on new reinforced concrete bearing shelf located onto the existing brick abutments. Very high containment steel parapets with anti access cladding will be provided, along with vehicle restraint systems (safety fence) on all corners except the south east due to the presence of trees on private land. The bridge will be designed for the 40/44 tonne European Vehicle.
17. The scheme will provide a 6.3m wide carriageway with a 1.2m wide footway to the east and a 1m wide hardened verge to the west. The total width between parapets will be increased by 702mm to 8.5m. The highway alignment and sight stopping distances will still not comply with standards but the scheme will offer slight improvements to the sight stopping distances in both directions.
18. The proposal is to provide a clearance to the rail lines of 4.444m which has been approved by Network Rail.
19. The proposal is to carry out the works utilising a road closure with a diversion route of 4.2Km. No HGV's should be affected since a 13 tons GVW is currently in place. A pedestrian footbridge will be provided for the duration of the works located to the west of the road on land secured via an essential licence. Provision will be made to maintain the commercial bus services by operating a bus shuttle service.
20. The proposed start date is April 2010 with a proposed contract period of 15 weeks. The road closure will be restricted to around 11 weeks.
21. The Local Councillors from both affected Electoral Wards have been kept informed of the proposals.

EVALUATION OF OPTIONS

22. A Feasibility Study dated 3 October 2008 has been prepared which identifies five alternative deck construction types. The proposed solution has the thinnest deck and consequently the lightest and is the only option to satisfy Network Rail and LCC requirements. i.e. provides a height clearance to rails to Network Rail standards and improves upon the highway alignment and sight stopping distances for LCC. The

proposed scheme is the only option that reduces the weight of the new deck on the existing foundations and is the most cost effective solution.

23. Strengthening schemes are not considered practical for a bridge consisting of cast iron beams.
24. The proposed scheme represents the most economical solution with the ease of construction and shortest construction period a contributory factor.
25. Stopping up of the County Maintained Highway has been considered. This process is dealt with in a Magistrates Court and any objection may stop the process. Dunston Parish Council has in the past sought assistance in removing the highway restrictions to Dunston and are likely to object to a stopping up order. Physical works would be required to stop up the road consisting of vertical concrete barriers with minimal cost. On this basis there would seem to be little chance of succeeding with a Stopping Up Order.
26. The consequence of not proceeding with the scheme is that the existing weight limit of 13 tons GVW would have to be retained and the residual risk to the County Council would need to be reviewed given that the theoretical capacity is 7.5 tons GVW. Permanent measures would be required to restrict overweight vehicles from crossing the bridge and due to the poor visibility over the bridge a restriction in width could not be safely achieved without additional measures, likely to consist of traffic signals. Traffic signals could not be installed safely without creating additional width on the approach road to allow two vehicles to pass, which in turn would require a retaining wall and additional safety fence on the approaches to the bridge. A review of the alternative routes would need to be carried out to deal with overweight vehicles and this is likely to consist of significant highway improvements to the road to Metheringham via the Metheringham Fens and over the recently strengthened Network Rail Bridge.

LINCOLNSHIRE COUNTY COUNCIL LIABILITY

27. A Nationally agreed document (Strengthening of Railtrack Owned Highway Bridges, Guidance for Implementation, dated March 1999, sponsored by CSS) states that the limit of liability for Railtrack (Network Rail) is a BE4 assessment failure or a weight restriction that was in force under the Bridgeguard assessment programme in 1969, whichever is the lower. Since the bridge was weight restricted at 13 tons GVW in 1969, then the County Council will be responsible for the full cost of strengthening the bridge to achieve the current standard of 40/44 tonnes.
28. Network Rail completed a bridge re-decking of West Helpringham Railway Bridge on C350 in 1999 and completed Swaton Road Railway Bridge on B1394 in 2008. In both these cases BE4 failures dictated that the schemes were fully funded by Network Rail.
29. Network Rail and Lincolnshire County Council signed a Works Agreement dated 2008 to cover the design, work and future maintenance of the structure, all in accordance with the Strengthening of Railtrack Owned Highway Bridges, Guidance and Implementation.
30. There is cause for concern in respect to the County Council liability in the event of overweight vehicles causing failure of the bridge deck. Legal advice has been sought and the view is that Lincolnshire County Council would initially be joined into a claim for damages based upon neglect.
31. Legal advice has been sought in relation to closing a County Maintained Highway to traffic. Under Section 116 of the Highways Act 1980 an application for a Stopping Up Order to a Magistrates Court would be required on the basis that this section of highway is no longer necessary for public use. The decision to proceed with a Stopping Up Order is an 'Officer' decision for the Council as Highway Authority. A

consultation period of two months is required that would include the Parishes and District Council. If either of these authorities objects to the proposed Order, the whole process would come to an end, as the Council would be unable to proceed with its application to the court. It is also highly unlikely an objection would not be made by any of the statutory consultees which includes statutory undertakers and adjoining landowners or members of the public who see the statutory notices; and even more unlikely that it would be withdrawn. In that event, the magistrates may well decide not to make an Order on the basis that the bridge is still necessary as a public highway. There is no part of the process which could require a Public Inquiry.

FINANCIAL STATEMENT

32. The Capital appraisal of £860,000 is based on the lowest returned tender.

33. The returned tenders for the works are significantly lower than those returned for the re-decking of the Network Rail Bridge at Heighington in April 2009. The works at Dunston Road Rail Bridge are more extensive since a separate pedestrian access bridge will be provided. The returned works tenders reflect the current competitive nature of the Civil Engineering market.

34. The fees include Network Rail Project Management and Possession Management costs.

35. The total scheme costs for the bridge will be funded from the 2008/09 and 2009/10, 2010/11 and 2011/12 Asset Protection Blocks. It is proposed to create a budget of £768,000 from the Asset Protection Block for 2010/11 for the scheme, to facilitate budgetary control.

FUNDING AND CASH FLOW

36. Capital Costs

	2008/09 £000's	2009/10 £000's	2010/11 £000's	2011/12 £000's	TOTAL
WORKS	-	-	702.0	10.0	712.0
LAND	-	-	6.0	-	6.0
FEES	22.0	60.0	60.0	-	142.0
TOTAL	22.0	60.0	768.0	10.0	860.0

Net cost per head of population £1.24
(Estimated population 696,000 2007/08)

Option A –	Proposed scheme to re-deck the bridge.
Advantages	Will provide a bridge capable of sustaining 40/44 European vehicle with parapets to standard. Will include a dedicated footway over the bridge. Will remove weight restriction and remove access restriction to Dunston village. Will remove risk of liability to County Council.
Disadvantages	Will incur initial capital outlay.
Option B –	Stop up Highway.
Advantages	No capital outlay.
Disadvantages	Highly unlikely to proceed without objections which may stop the process. None of the benefits of proposed Option A realised.
Option C –	Do not proceed with scheme.

Advantages	Network Rail will retain liability for maintaining strength of the bridge at 13 tons GVW.
Disadvantages	Significant capital outlay still required to retain existing weight restriction but reducing risk by restricting access over bridge. Access to Dunston village constrained and permanent measures to reinforce restriction likely to cause further access problems.

MONITORING OFFICER COMMENTS

The Council's Constitution states that capital scheme appraisals are required where a scheme is over £500,000 in value and forms part of the already approved capital programme. These should normally be approved by the Executive Councillor for Resources. This decision is therefore lawful and within the remit of the Executive Councillor.

DIRECTOR OF RESOURCES COMMENTS

Approval of this report will commit the Council to £860,000 of expenditure to re-deck the Network Rail Bridge, Dunston Road, Metheringham. £22,000 has already been incurred in 2008/9 and the remaining £838,000 will be funded from the existing Highways and Transportation capital programme.

RECOMMENDATIONS

That Option A is approved as an Executive Councillor (Resources) Decision.

REASONS FOR RECOMMENDATIONS

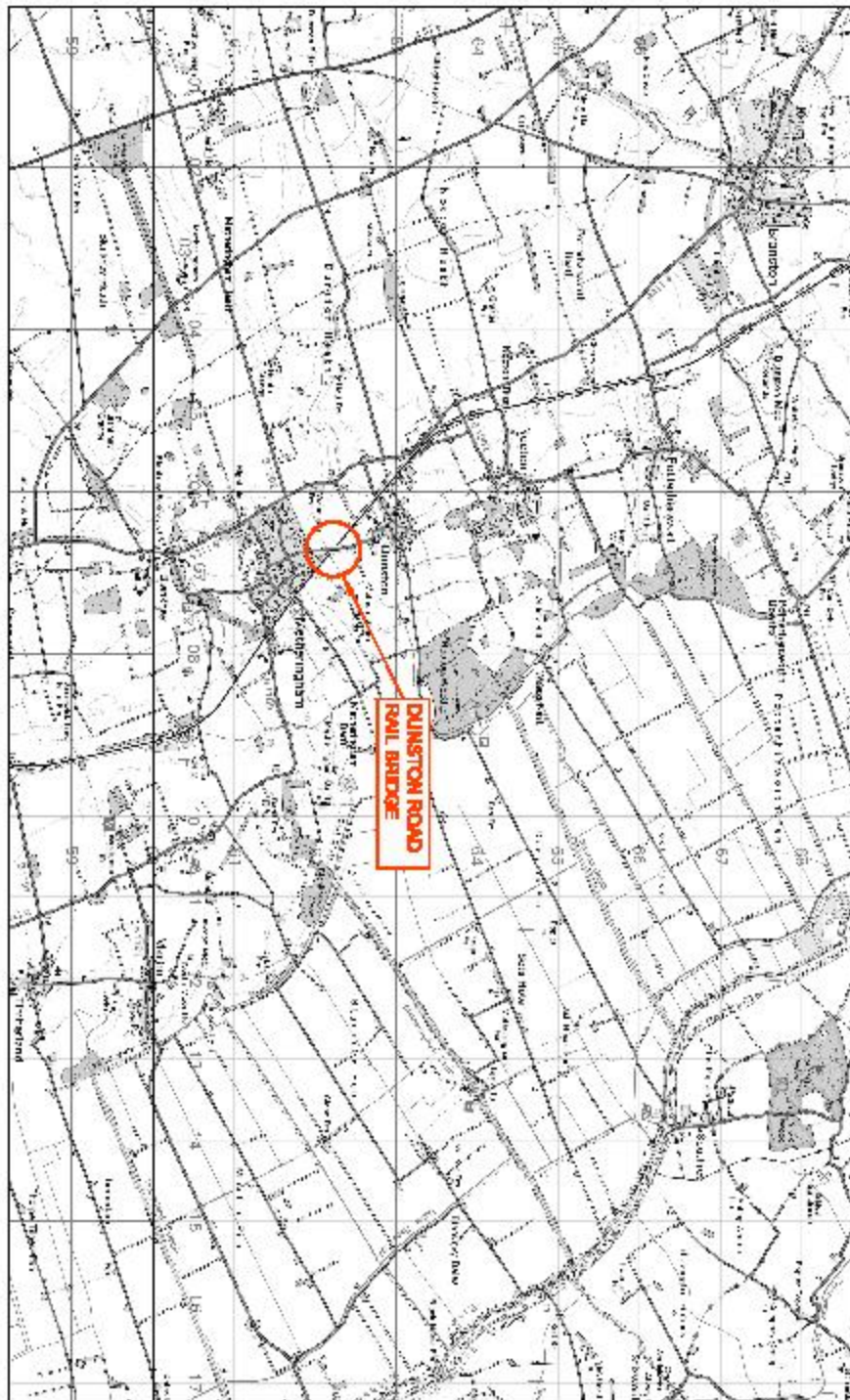
The most economically viable solution that manages the potential risk of future unplanned closure of the road for safety reasons.

APPENDICES - these are listed below and attached at the back of the report.	
APPENDIX A	Location Plan

BACKGROUND PAPERS

No Background Papers within Section 100D of the Local Government Act 1972 were used in the preparation of this report.

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TITLE DUNSTON ROAD RAIL BRIDGE
LOCATION OF SCHEME

Not to Scale

