Appendix 1

AGENDA ITEM NO 17

REPORT NO 584/09

ANGUS COUNCIL

INFRASTRUCTURE SERVICES COMMITTEE

25 AUGUST 2009

MA/36 BOG ROAD BRIDGE, BRECHIN - FUNDING IMPLICATIONS AND OPTIONS FOR LONG TERM FUTURE MAINTENANCE

REPORT BY THE DIRECTOR OF INFRASTRUCTURE SERVICES

ABSTRACT

This report updates the Committee following an investigation of the maintenance and repair options for Bog Road Bridge, Brechin, one of three road-over-rail bridges on the railway line between Brechin and Bridge of Dun. It summarises three options and recommends one of them for implementation.

1 **RECOMMENDATION**

- 1.1 It is recommended that the Committee:
 - (i) agrees to instruct the Head of Roads to continue to monitor the structure;
 - (ii) agrees to adopt in the long term Option 2, removal and closure, as the best course of action for Bog Road Bridge as and when the bridge deteriorates to the point that this is necessary together with the promotion of a permanent weight limit order in the interim period.

2 INTRODUCTION

- 2.1 The Committee was informed in August 2005 (Caledonian Railways Maintenance Liabilities Report No 989/05) of a problem regarding the maintenance and repair of three road-over-rail bridges on the private railway line between Brechin and Bridge of Dun leased to the Caledonian Railway Company.
- 2.2 At that time the Committee's instructions were:-
 - the terms of the lease were amended to relieve the Caledonian Railway Company of its obligations to maintain three bridges which carry public roads over the private railway;
 - the Director of Roads, in conjunction with the Economic Development Manager, were instructed to undertake studies to determine the best options for the future of these bridges;
 - (iii) the Director of Roads, the Economic Development Manager and the Acting Director of Finance were instructed to bring forward further reports on the funding implications and options for the long term future maintenance of these three bridges.
- 2.3 This report sets out the implications and options for the long term future maintenance of one of these bridges, Bog Road Bridge, which is located immediately east of the Brechin Station. (as shown on the attached plans in Appendix A of this report). It is noted that the bridge carries an unadopted two-lane single carriageway, Bog Road, over the Caledonian Railway and serves as an informal link between Scott Street and Park Road, with the formal link and permanent or temporary diversion being via Commerce Street, A935 Montrose Street, and Park Road (approximately 1 km).

3 DETAILS

3.1 The construction date of Bog Road Bridge is unknown. The structural form of the deck is unusual and does not lend itself to simple strengthening measures.

- 3.2 This bridge was assessed in 2008 and found to be incapable of carrying vehicles weighing more than 3 tonnes. A temporary order imposing a weight restriction of 3 tonnes Gross Vehicle Weight (GVW) has been put in place. A feasibility study into the potential engineering solutions for the bridge was completed in 2008. The assessment report noted severe deformation of the west edge girder, poor paintwork and signs of corrosion on the edge beams with only slight corrosion of the internal beams. There is a large crack in the north-east wingwall, which indicates possible movement of the north abutment.
- 3.3 There are a number of options for the long-term future of this bridge:

Option 1: Permanent weight restriction

This solution retains the present bridge superstructure and substructure. It would involve medium term maintenance to preserve its present substandard load capacity and without major intervention could be expected to last about 50 years, after which it would require demolition or replacement.

Advantages:

- Retains direct access between Scott Street and Park Road for pedestrians and light vehicles
- Lowest short-term cost option

Disadvantages:

- Maintenance liability of existing structure retained
- Requires demolition or replacement after 50 years
- Risk of vehicles above the weight limit crossing the structure
- Long-term costs higher than for Option 2
- Long-term traffic diversion for vehicles weighting more than 3 tonnes and pedestrians

Option 2: Ongoing monitoring eventual removal when necessary

This solution involves removing the bridge deck when it reaches the end of its serviceable life, closing the unadopted road and signing a permanent diversion of traffic using Bog Road between Scott Street and Park Road via Commerce Street, A935 Montrose Street, and Park Road (approximately 1 km).

Such proposals would require consultation and if members are minded to agree to this option then appropriate consultation will be undertaken at the appropriate time. In addition there would be legal processes required to close the road and to extinguish any rights of access across it.

The bridge is currently capable of carrying a reduced load of 3t, and this capacity will only reduce after some considerable time, and at such time the bridge would be able to sustain pedestrian loading until it again deteriorates to a point at which it becomes potentially unstable under its own weight. Only at this point would it become necessary to implement this option and physically remove the bridge deck.

Although the bridge currently has a temporary weight restriction, it would be appropriate to promote a permanent order (weight restriction) to endure until such time as the bridge deck is removed.

Advantages:

- Maintenance liability of existing deck eliminated
- Removes risk of vehicles above the weight limit crossing the bridge, albeit that this remains a risk until the bridge is removed
- Lowest long-term cost option

Disadvantages:

- Removes direct access between Scott Street and Park Road
- Permanent traffic diversion for all vehicles and pedestrians when this becomes necessary

Option 3: Deck replacement and repair of existing substructure

This solution provides a bridge with a capacity of 40 tonnes by replacing the concrete deck and edge beams with a new concrete superstructure on refurbished abutments. The substructure would require further investigation to assess the scope of the refurbishment works.

Advantages:

- Full 120 year bridge design life
- Improved access between Scott Street and Park Road capable of carrying 40 tonne vehicles
- Temporary traffic diversion only

Disadvantages:

- Initial costs significantly higher than Options 1 or 2
- Risk of higher initial costs resulting from investigation of abutments
- Road surface higher than present

4 FINANCIAL IMPLICATIONS

4.1 A comparative whole life cost study has been performed using a 120 year design life costing, and the results are summarised in the table below, in order to give comparable costs of the 3 options:

Cost item	OPTION 1	OPTION 2	OPTION 3
Inspection	£778,000	£4,000	£778,000
Maintenance	£3,578,000	£20,000	£856,000
Full refurbishment (Year 50)	£1,092,000	-	-
Demolition	-	£38,000	£15,000
Traffic Diversion	£8,000	£2,000	£1,000
Construct new deck	-		£220,000
TOTAL	£5,456,000	£64,000	£1,870,000

- 4.2 Based on demolition following a 20 year residual life period, Option 2 has the lowest estimated initial cost and whole life cost of the three options considered, at a capital cost of £64,000 with no subsequent revenue costs.
- 4.3 However given the other priorities on the Roads capital budgets, this work is not seen as necessary in the near future. In due course provision would be made for the project in the Roads capital budget for bridge repairs/strengthening.
- 4.4 In the interim period the bridge will continue to be inspected, and a permanent weight limit will be imposed replacing the existing temporary limit. The nominal costs of these actions can be funded from the Roads revenue budget.

5 HUMAN RIGHTS IMPLICATIONS

5.1 There are no human rights implications arising from the proposals in this report.

6 EQUALITIES IMPLICATIONS

6.1 The issues dealt with in this Report have been the subject of consideration from an equalities perspective (as required by legislation). An <u>equalities impact assessment is not required.</u>

7 SINGLE OUTCOME AGREEMENT

- 7.1 This report contributes to the following local outcome(s) contained within the Single Outcome Agreement for Angus.
 - Communities in Angus are safe, secure and vibrant.

8 CONSULTATION

- 8.1 The Chief Executive, Director of Corporate Services, Head of Finance, and Head of Law and Administration have been consulted in the preparation of this report.
- 8.2 The Caledonian Railway Company has been involved in discussions which precipitated this report.

9 CONCLUSION

9.1 This report details the options for Bog Road Bridge, Brechin. Option 2 appears to be the best course of action, offering the lowest initial and whole life costs and an optimum balance of cost. It is recommended that the Head of Roads seeks to progress this option, subject to consultation and legal processes, in due course only when the condition of the bridge deteriorates to the extent that this becomes necessary.

ERIC S LOWSON DIRECTOR OF INFRASTRUCTURE SERVICES

NOTE:

The following background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (other than any containing confidential or exempt information), were relied on to any material extent in preparing this Report:-

Report No 989/05 – Caledonian Railways – Maintenance Liabilities

Roads/JG/SP

Appendix A

Bog Road Bridge

(i) Location Plan



Not to scale

5



Not to scale