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**REPORT TO: ECONOMIC DEVELOPMENT AND INFRASTRUCTURE  
SERVICES COMMITTEE ON 21 JUNE 2022**

**SUBJECT: CLODDACH BRIDGE STRUCTURAL ASSESSMENT**

**BY: DEPUTE CHIEF EXECUTIVE (ECONOMY, ENVIRONMENT AND  
FINANCE)**

**1. REASON FOR REPORT**

- 1.1 To inform the Committee of the structural condition of Cloddach Bridge which is currently closed in the interest of public safety and advise on the options available for the future operation of this bridge.
- 1.2 This report is submitted to Committee in terms of Section III (F) (15) of the Council's Scheme of Administration relating to management and implementation of the requirements of the Roads (Scotland) Act 1984.

**2. RECOMMENDATION**

**2.1 It is recommended that Committee agree:**

- (i) Cloddach Bridge remains closed to vehicular traffic but open to pedestrians and cyclists with regular inspections to monitor the condition of the bridge; and**
- (ii) when bridge condition deteriorates further and it is not considered safe for any user, this route is closed permanently and the bridge is removed.**

**3. BACKGROUND**

- 3.1 Cloddach Bridge was built in 1905 with an estimated design-life of between 100 and 120 years, after which it would require significant refurbishment or replacement. This bridge is located on the C2E road and a traffic survey undertaken in 2020 showed the average number of vehicles crossing the bridge each day was less than 800.
- 3.2 Principal Inspections were undertaken on the bridge in 1995, 1997 and 2019. In 2001 a weight restriction of 7.5 Tonnes was applied to the bridge and following the Principal Inspection and Structural Assessment undertaken in 2019, the allowable weight was reduced to 3 Tonnes.

- 3.3 To deter non-compliant vehicles from crossing the bridge a 2m height restriction was installed in summer 2021. However, the height restriction was hit repeatedly by non-compliant vehicles over a period of several months.
- 3.4 A Special Inspection and Load Capacity Review was undertaken by officers in February 2022, to establish how much the bridge had deteriorated and the impact the deterioration had on the load bearing capacity. The findings of this assessment indicate significant deterioration and a load bearing capacity of less than 3 Tonnes. Based on this assessment Cloddach Bridge was temporarily closed to motor vehicles in the interest of public safety. The maximum length of diversion required because of this closure is 6 miles.
- 3.5 To verify the condition of Cloddach Bridge an independent Structural Engineer was commissioned to undertake a Principal Inspection and Structural Assessment. The independent Structural Assessment used more complex analysis techniques that provide more detail on the structural condition of the bridge. The Inspection took place in mid-February 2022, with the Structural Analysis completed by the end of March. The report of the Principal Inspection and Structural Assessment has been uploaded as an additional document to the Committee Management Information System (CMIS) along with the agenda. A summary of the findings is provided below.
- 3.6 Findings of the independent Principal Inspection and Structural Assessment:
- The Principal Inspection (PI) –confirmed that substantial corrosion has occurred to the steel beams. The concrete arches between the beams and the steel soffit are showing significant signs of deterioration. These defects are commensurate with the age of the bridge, which is at the end of its service life.
  - Structural Assessment – The Structural Assessment confirms that the bridge does not have sufficient capacity for vehicle loading. Details of the analysis are provided in the report of the Principal Inspection and Structural Assessment.
  - Recommendations – The Assessment report recommends that Cloddach Bridge should remain closed to all vehicular traffic. With continued monitoring, the bridge could remain open to pedestrians and cyclists for a period of approximately two years.
- 3.7 Potential options for the future operation of Cloddach Bridge have been identified and these are provided below. A cost estimate has been provided for each option by the independent Structural Engineer and this estimate includes a nominal allowance of approximately 15% for risk. Given that construction inflation is currently 30% and there are a number of uncertainties associated with the repair and replacement works, 15% is considered optimistic. At this stage in a construction project it is standard practice to add optimism bias of 60%. As a small risk allowance has already been included, optimism bias of 45% has been added to the options requiring construction works.
- 3.8 **Do Nothing** – This would allow the bridge to remain open to pedestrians and cyclists only without further intervention from the Council. Vehicles would be

prevented from crossing the bridge by the barriers currently in place on either side of the bridge. This option is considered a risk to public safety as no inspections would be undertaken to monitor the condition of the bridge and suitability for pedestrian and cycle use. There would also be no turning facilities for motor vehicles. There are no costs or economic benefit associated with the Do Nothing option.

- 3.9 **Do Minimum** – The bridge would remain open to pedestrians and cyclists only but the structure would be inspected and its condition monitored. Further deterioration of the bridge is likely to result in a full closure. A long term road closure would be required, with ancillary works such as signage and turning facilities for motor vehicles. Erection of bollards or other substantial structure would be required to prevent vehicle access while allowing access for pedestrians and cyclists. The cost estimate for this option is £135,000. It should be noted that there will be additional costs required to implement a full road closure when this becomes necessary. There is no economic benefit associated with this option.

Costs

Bollards Signage & Inspections	Stopping Up Order	Turning Head	Construction Works	Optimism Bias	Total
£50,000	N/A	£85,000	N/A	N/A	£135,000

- 3.10 **Close and Demolish Bridge** – the bridge would be closed to all users and a Stopping Up Order would be progressed. Stopping Up requires the river channel to be reinstated to its condition before the bridge was constructed and the land returned to the landowner(s). The bridge, including abutments and piers would need to be removed and the channel made good. The cost of demolition is estimated to be £333,500. This cost estimate does not include any work that may be required to remove the weir which forms part of the bridge structure. Any work to the weir would need to be done under licence from SEPA. There is no economic benefit associated with this option.

Costs

Bollards & Signage	Stopping Up Order	Turning Head	Construction Works	Optimism Bias	Total
£15,000	£10,000	£85,000	£120,000	£103,500	£333,500

- 3.11 **Repair the bridge for pedestrian and cycle use** – The bridge would remain closed to vehicles but strengthening the deck could extend the life of the bridge for pedestrian and cycle use by 10 years. There is a risk that the grit blasting required to repaint the steelwork would reveal further deterioration that could not be observed during the Principal Inspection. If this were to occur it could significantly increase the cost of this option. The estimated cost of this option is £435,000. There is no economic benefit associated with this option.

Costs

Bollards & Signage	Stopping Up Order	Turning Head	Construction Works	Optimism Bias	Total

£15,000	N/A	£85,000	£200,000	£135,000	£435,000
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- 3.12 **Repair the bridge for vehicular use** – This option would require complete refurbishment of the bridge deck and parapet. There would also need to be extensive river bank repairs and repairs to the concrete substructure. It is estimated that this option could increase the service life by 50 years. Given the uncertainty with the condition of elements of the bridge that could not be accessed for inspection, the risk associated with this option is considered significant. The estimated cost of this option is £2,537,500. The economic benefit of this option is £74,000 per year.

Costs

Bollards Signage & Inspections	Stopping Up Order	Turning Head	Construction Works	Optimism Bias	Total
N/A	N/A	N/A	£1,750,000	£787,500	£2,537,500

- 3.13 **Demolish and replace Cloddach Bridge** – This would require demolition of the existing bridge and construction of a new single span bridge, which would have a design life of 120 years. The estimated cost of this option is £2,900,000. The economic benefit of this option is £74,000 per year.

Costs

Bollards Signage & Inspections	Stopping Up Order	Turning Head	Construction Works	Optimism Bias	Total
N/A	N/A	N/A	£2,000,000	£900,000	£2,900,000

- 3.14 Cloddach Bridge is not currently in the Capital Plan for expenditure on repair or replacement. Replacement of this bridge is considered low priority as it is not a critical route and the maximum diversion route is 6 miles. To be classed as a critical route the bridge would need to carry more than 7,000 cars per day, provide sole access to more than 8 properties or provide access to critical infrastructure such as a fire station or hospital.

#### 4. **SUMMARY OF IMPLICATIONS**

- (a) **Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))**

“Building a better future for our children and young people in Moray”

- (b) **Policy and Legal**

Moray Council in its role as Local Road Authority has a statutory duty under the Roads (Scotland) Act 1984 to manage and maintain the road network.

- (c) **Financial implications**

The financial implications are set out in paragraphs 3.9, 3.10, 3.11, 3.12 and 3.13 of this report.

When the Council approved the budget for 2022/23 on 22 February 2022 (paragraph 3 of the Minute refers) it balanced only by using reserves and one-off financial flexibilities. The indicative 3 year budget showed a likely requirement to continue to make savings in the order of £20 million in the next two years. All financial decisions must be made in this context and only essential additional expenditure should be agreed in the course of the year. In making this determination the committee should consider whether the financial risk to the Council of incurring additional expenditure outweighs the risk to the Council of not incurring that expenditure, as set out in the risk section below and whether a decision on funding could reasonably be deferred until the budget for future years is approved.

**(d) Risk Implications**

Cloddach bridge does not have the capacity to withstand vehicle loading and there would be a risk to public safety if the bridge were to be re-opened to vehicular traffic without significant repair or replacement.

There are a number of unknowns associated with demolition, repair and replacement of the bridge and there is a risk that the cost of undertaking these works will increase. It should also be noted that post COVID construction inflation is currently around 30%. There is still uncertainty around how much this may increase in future and there is a risk that costs could increase significantly over the next few years.

In addition, prioritising a bridge in departure from policy creates the risk that other communities will seek to alter the prioritisation of bridges in their area which would exacerbate cost pressures as set out in paragraph (c) above. Foths Bridge was viewed as an exceptional departure from policy in 2021/22 because a spend to save case could be made given the need for changes to school transport arrangements which created additional costs. There are no such considerations for Cloddagh Bridge.

**(e) Staffing Implications**

There are no staffing implications associated with the recommendations in this report. If another option is to be progressed, staff costs would be added to the overall project costs.

**(f) Property**

Cloddach Bridge currently vests with Moray Council in its role as Road Authority. If the bridge is closed and the road is Stopped Up, the land on which it has been constructed will need to be reinstated and returned to the landowner.

**(g) Equalities/Socio Economic Impact**

If the bridge remains closed to vehicular traffic, a maximum diversion of 6 miles may affect some car users.

**(h) Climate Change and Biodiversity Impacts**

Where possible we would seek to recycle and / or reuse the waste material generated through demolition of the existing bridge.

**(i) Consultations**

Depute Chief Executive (Economy Environment and Finance), Acting Head of Environmental and Commercial Services, P Connor Principal Accountant, Legal Services Manager, Equal Opportunities Officer and L Rowan, Committee Services Officer have been consulted and their comments incorporated into the report

**5. CONCLUSIONS**

**5.1 Cloddach Bridge is currently closed to vehicular traffic, in the interest of public safety.**

**5.2 The bridge can be used by pedestrians and cyclists, if regular inspections are undertaken to monitor its condition.**

**5.3 The bridge cannot be reopened to vehicular traffic without significant repair work or replacement. This bridge is not considered strategically important for the reasons set out in paragraph 3.14 and has not been prioritised for capital expenditure on repair or replacement.**

Author of Report: Debbie Halliday, Consultancy Manager

Background Papers: Principal Inspection and Assessment Report - Fairhurst.

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