

WEST DUNBARTONSHIRE COUNCIL

Report by Acting Director of Housing, Regeneration & Environmental Services (Land and Environmental Services)

Council: 27 June 2007

Subject: Dillichip Footbridge (Black Bridge), Bonhill

1. Purpose

- 1.1** The purpose of this report is to provide Members with information on the structural condition of Dillichip Bridge (Black Bridge), Bonhill as instructed at the Council meeting on 30 May 2007 and provide options for consideration.

2. Background

- 2.1** Dillichip Footbridge, known locally as the Black Bridge, is a three span simply supported steel structure with timber decking spanning the River Leven and linking Old Bonhill to Millburn.
- 2.2** A principal structural inspection in 2004 identified concerns over the condition of the overall structure, especially the rapidly deteriorating condition of the timber decking.
- 2.3** Regular inspections were undertaken to monitor the condition of the structure with minor repairs being undertaken to maintain a safe footway over the structure.
- 2.4** Following severe weather conditions on 11 January 2005, an inspection identified a major failure of the timber decking. Other areas of failure on the decking were also evident.
- 2.5** The failure of the timber decking, in conjunction with the general poor structural condition of the steel sub structure, forced the immediate closure of this footbridge. It was unsafe for the footbridge to be used by pedestrians and remedial works were undertaken to reduce loading on the steel sub structure to allow the footbridge to support the water and gas mains that it currently carries across the River Leven.
- 2.6** In January 2005 the bridge was secured to ensure that the public could not gain access
- 2.7** On 23 April 2007, following a notification of subsidence on the east river bank of the Leven down stream of Black Bridge, a detailed site investigation was immediately undertaken.

- 2.8** Extensive undermining of approximately 25 metres of the river bank wall has caused the wall to collapse and this has resulted in the bank slipping into the river.
- 2.9** Immediate localised damage as a result of this slip has occurred to the adjacent gatehouse within the Distillery, the boundary wall and there is a possibility that continued slippage could have an adverse effect on the eastern abutment to Black Bridge. Any movement on the abutment would cause the bridge deck to move. This movement, if of sufficient magnitude, could cause damage to the remaining bridge structure.
- 2.10** No immediate action has been required with regard to public safety, as the Black Bridge has been closed to pedestrian use since 2005.

3. Main Issues

- 3.1** Prior to the bridge closure, pedestrian use was quantified by a pedestrian survey. Some 200 pupils attending the Vale of Leven Academy plus a few local pedestrians and cyclists used the bridge each day.
- 3.2** A suitable alternative route using Bonhill Bridge exists. This alternative route has been generally accepted by previous bridge users.
- 3.3** It is worth noting that although school pupils previously used the bridge, there was no direct means of access to the Academy building. The route also involved using a section of towpath which is very susceptible to flooding and was in the view of many parents and teachers unsafe as a walking route to school.
- 3.4** Diageo, the owners of the adjacent distillery where the subsidence to the river wall has occurred were immediately notified of the collapse and they have appointed structural Engineers to assess the damage. Temporary fencing has been erected to protect the public from the affected area.
- 3.5** Diageo will contact the Council on completion of the assessment to determine what action is required to make good the failed river wall. Most of the ownership will be in Diageo land however that small section which is undermined adjacent to the structure of Black Bridge has occurred in land owned by the Council.
- 3.6** Previous contact had been made with Scottish Water and Scottish Gas Networks with respect to diverting their services from Black Bridge due to the condition of the structure. The failure of the adjacent river bank has prioritised the need to deal with these services and new contact has been made.
- 3.7** Scottish Water have confirmed that the existing water main is redundant and can be removed should it be necessary to demolish the bridge as a result of the abutment failing.

3.8 Scottish Gas have undertaken an independent structural assessment of the bridge and abutments and have advised that it is their intention to replace the existing gas main by thrust boring a new pipe below the river bed. Discussions are currently ongoing between Scottish Gas and Diageo with respect to the necessary wayleave agreements required to facilitate this proposal. Scottish Gas have advised that they will undertake this necessary work at their cost.

3.9 Considering potential options available to the Council, there are 3 basis options available.

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| Option 1 | Replace the existing bridge deck and supporting structure |
| Option 2 | Replace the whole bridge |
| Option 3 | Close the bridge permanently and remove part or all of the structure |

3.10 Option 1 would return the bridge to its previous use as a pedestrian bridge using the existing sub-structure. The steel supporting system and a new deck would be replaced, retro-fitted onto the existing piers. Given current safety legislation new high level parapets would be required as cycling would be taking place.

Significant structural repair may be required as a result of the landslip. Further detailed investigation would be required.

The life span of the structure would be limited to that of the existing bridge substructure which would need further investigation but is likely to be less than 50 years.

For budget estimating purposes, the likely cost of this option would be £750,000 for the bridge work and £150,000 for access and riverside works. Detailed structural investigation would determine an estimated cost to deal with landslip.

3.11 Option 2 would provide the opportunity to construct a purpose-made footbridge with a life span of at least 100 years.

The estimated cost of this option is £2,000,000.

3.12 Option 3 would leave no means of access across the Leven at this point. An alternative route exists using Bonhill Bridge, this route does increase the interaction of vehicles and pedestrians at various locations but a review of this route has been undertaken resulting in a change to the school crossing patrol provision. No additional safety hazards have been identified.

Removing the pedestrian desire to access the rear of the Academy grounds, and the inherent difficulties there, to encourage use of the more controlled route over Bonhill Bridge, would improve child safety generally.

This option would include the partial or complete demolition of the bridge.

Given the nature of the recent landslip, it is anticipated that the council will need to contribute towards the cost of repair to the riverside.

The cost of Option 3 will be around £15,000 for the riverside wall repair, plus around £80,000 to demolish the whole structure. As a minimum the existing deck and supporting steelwork should also be removed at least over the north span.

4. Personnel Issues

- 4.1** There are no personnel issues.

5. Financial Implications

- 5.1** The costs of the 3 main options are shown above. There is no current budget allocation for any of these, although the cost to repair the riverside wall is essential irrespective of what decision is made regarding the bridge. This will be funded from the Roads Revenue Budget.
- 5.2** If options 1 or 2 are to be considered further, significant financial commitment will be required and funding sources identified.

6. Risk Analysis

- 6.1** Risks to both public and property have been assessed for many years in relation to this structure.
- 6.2** The rapid and continuing deterioration of the bridge has required periodic re-assessment of risk since 2004 and this has influenced the option appraisal process considered above.

7. Conclusion

- 7.1** Given the urgency of the situation it was recommended in the report to Community, Safety & Environmental Services Committee of February 2005 that the bridge be closed to pedestrians pending a more detailed analysis of the options. This has since taken place.
- 7.2** Early indication is that the east abutment remains stable and there appears to be no evidence of further movement. This will continue to be monitored by officers and should there be evidence of movement Scottish Gas will be immediately informed of the situation and appropriate decisions taken with regard to public safety.
- 7.3** Scottish Gas have advised that they will progress the diverting of the existing gas main however such an operation will take considerable investigation into the feasibility of thrust boring below the river bed and it is expected that it will be approximately 12 months before the works are undertaken.

- 7.4** No further action is required with respect to Scottish Water as the main is redundant and the continued closure of the footbridge ensures that public safety is not compromised. Again this situation may change if the east abutment changes.
- 7.5** The necessary repairs to the river bank wall will be undertaken following completion of the assessment by Diageo's consultant, it is anticipated that the works will be the continuation of the existing sheet piled walling which operates satisfactorily immediately upstream of the Black Bridge.
- 7.6** In the meantime, the regular structural inspections of the bridge will continue and dialogue with service authorities will continue. Should the structural stability of the bridge be considered, on inspection, to be further deteriorating then further action may be required in the short term.

8. Recommendation

8.1 It is recommended that Members:

- (a) Note the changing, and deteriorating condition of the bridge and its supports, including the river bank.**
- (b) Note that an option appraisal has been carried out and that the recommended option is Option 3 - close the bridge permanently and remove part of or all of the structure.**

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Appendix:	None
Background Papers:	Report to CSES Committee February 2005 Motion to Council 30 May 2007
Wards Affected:	1 and 2