

RP-9 HAMPDEN BRIDGE

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Recommendation

That Council:

- a note the information contained within this report regarding the testing and inspections undertaken to assess the condition of the Hampden Bridge**
- b resolve to demolish Hampden Bridge and give consideration to the allocation of funds in the 2012/13 budget for the demolition of the bridge**
- c proceed with the lodgement of a Development Application for the demolition of the bridge with Council's Planning Department to allow consideration of that Development Application against the matters listed under section 79C of the Environmental Planning and Assessment Act 1979**

Report

The 2011/12 Wagga Wagga City Council Operational Plan, adopted at Council's meeting 27 June 2011, contains a project to "open Hampden Bridge for pedestrian traffic".

Council will be aware of the scope of works carried out on the bridge to date which has seen the bridge closed for nearly two years.



Open the Hampden Bridge to Pedestrian Traffic

At its meeting in June 2009, Council resolved to:

'open Hampden Bridge as a pedestrian walkway subject to prior assessment of the potential hazards and risks presented to the public from accessing the bridge'

Council Officers have carried out two independent risk assessments of the Hampden Bridge and the subsequent report(s) have identified several matters relating to public safety that need to be addressed prior to opening the bridge.

The items to be addressed and which constitute the scope of works to open the bridge are:

- Non Destructive Testing on Pylons
- repair/replace the failed timber load bearing member
- release and remove the yellow steel truss
- upgrade to handrails
- removal of derelict walkway
- minor patching of pavement
- install adequate lighting
- review warning signs as detailed in 'Signs as Remote Supervision'
- initiate inspection program for ongoing Monitor & Review.

A precursor to any work on the bridge has been Non Destructive Testing of the bridge pylons to provide Council with a recommendation on the remaining life of the concrete filled pylons in the Murrumbidgee River.

Non Destructive Inspection

Results of the report on non destructive inspection of the bridge pylons indicate that the bridge pylons are structurally sound and adequate to continue to support the Hampden Bridge.

An extract from this initial report states:

"The increased flow in the river meant that we were not able to assess for scouring at the base of the piles. Corrosion of the piles could not be assessed other than visually. The ultrasound thickness gauge that we were using was not able to get a echo from the back of the steel. This indicates that the concrete is in good contact with the steel. It is unlikely that there will be any corrosion on the inside of the piles because of the passivation effect of the concrete. The external appearance of the pile did not show significant corrosion which suggests that it may be cast iron. The web between the piles did show significant pit corrosion which increased towards the water level. The measured thickness of the web was approximately 10.6mm with minimum readings of 4.4mm being recorded. Photographs taken, at lower water levels show that the web has corroded through where it attaches to the pier at the bottom."

In addition to inspection of the bridge pylons, Council Officers also arranged for testing of the structural integrity of the load bearing timbers within the bridge to assess the 'health' of the timbers. This differs from typical structural inspections as it does not assess the load bearing strength of the bridge in total in relation to the traffic load the bridge may bear, but the strength remaining in specific timbers in the bridge and their remaining structural integrity.

The timber testing highlighted significant areas of weakness in the bridge, particularly in the Southern Truss. The principle inspecting Engineer has recommended access to the underside of the bridge be immediately cordoned off and if possible the southernmost truss be removed as quickly as possible prior to it failing. This has been done.

The timber testing has outlined failures in a number of structural bearers in the bridge that would require replacement, should Council decide to retain the bridge.

An extract from the executive summary states:

"Span 1 is in the process of falling down in pieces and the temporary steel truss that has been placed in Span 1 has prevented a wholesale collapse of Span 1."

"In addition portions of Span 1 will fall under their own dead weight which is now happening. Span 1 has become a serious health hazard and it recommended that public access to the underside of the bridge be limited. The lateral braces in all three spans are also heavily degraded and as such the truss stability is in serious question even in all spans. This poses a potential problem should flooding, high winds or impact increase lateral loading on the bridge."

To source the timber and undertake a program of element replacement, would be a very expensive exercise, but would result in a return of structural integrity to the bridge allowing it to be fit for a variety of purposes.

Maintenance Cost

To assist in planning works for the remediation of Hampden Bridge Council Officers attended and presented at a small bridges conference in Melbourne, held in May 2011. At the conference Council Officers received a great deal of feedback and advice relating to the bridge and its parts.

Much of the feedback received at the conference related to the cost associated with the continued maintenance of a large timber bridge and the accelerated deterioration of such a bridge that is not being used for its intended purpose. That is to say that the Hampden Bridge may deteriorate more rapidly without traffic than it would, being used as it was designed.

For example the Roads and Maritime Services (RMS) (formerly Roads and Traffic Authority) maintains around 48 timber bridges across New South Wales at an annual cost of approximately \$25million. This equates to an annual maintenance cost per bridge in the vicinity of \$520,000.

History also shows that the RMS expended on average around \$215,000 per annum on the maintenance of Hampden Bridge over the last 8 -10 years before the bridge was divested by the RMS to Council. At the time of handover it was also

acknowledged that the costs to maintain the Hampden Bridge was likely to escalate as the timbers deteriorated over time and the timber and skilled labour required to maintain the bridge become scarcer.

At the time of removing the bridge from the Classified Road network, by the RMS, the bridge became the responsibility of Council. In recognition of the deferred maintenance work on the Hampden Bridge following the construction of the Travers Street Bridge, Council accepted an offer from the RMS for an amount of \$200,000 per year for six years commencing in 1993/94.

In July 2011, RMS undertook a review of its timber truss bridges in order to determine the evolving operational needs and long term conservation of its 48 historic timber truss road bridges. The report recognises the difficulty and expense required for RMS to maintain its timber truss bridges in terms of planning, approvals, materials, maintenance frequency and skilled resources.

The RMS review also recognises that even if timber bridges are not subject to traffic load, they still require a major rebuild every 20 years due to deterioration of the timber from environmental factors, in contrast to a new bridge built from modern materials with a 100-year design life and therefore a much less frequent maintenance cycle.

The RMS review advises that even if structurally upgraded a redundant timber bridge that is utilised for adaptive reuse such as pedestrians and cyclists will need a major rehabilitation every 20 years at an average cost of \$4.7million.

By way of example, the RMS refers to the Morpeth Bridge in its review. The Morpeth Bridge is a three-span overhead Allan Truss bridge very similar to the Hampden Bridge. The Morpeth Bridge is listed on the State Heritage Register and has been identified by the RMS for the retention and conservation. The financial analysis for the conservation of the Morpeth Bridge is shown in the table below.

Item	Truss Type	Capital to upgrade \$ 000	Routine maintenance \$ 000	Rehabilitation cost after capital upgrade \$ 000	Expected rehabilitation type (years)
Morpeth	Allan	23,700	190	7500	5

Note: the costs referred to in the above table for the Morpeth Bridge are based on the bridge being operational to vehicular traffic with the capacity to take T44 design loads.

It is also interesting to note that the availability of high quality hardwood timbers required for the upgrade and rehabilitation of timber truss bridges is a substantial concern for the RMS. The timber required to replace the major structural elements require tree species from old growth forests that are often rare outside of national parks. As reported by the RMS, searches conducted Australia wide have failed to yield sufficient timber of suitable quality and dimensions for the replacement of the major structural elements in the remaining timber truss bridges.

The RMS review of Timber Truss Bridges recognises that the Hampden Bridge is in a poor state of repair and in general it is not considered viable for a bridge to be

transferred to alternate ownership such as local government as local entities are less likely to have the resources or expertise necessary to manage the bridge effectively.

Comparably, assuming that the Hampden Bridge is retained and conserved as a pedestrian bridge, it is reasonable to extrapolate from this information that bridge will require an annual budget of between \$200,000-\$300,000 for maintenance and a significant multi million dollar capital injection every 20 years to rehabilitate the bridge.

Council maintains over \$1.2Billion worth of assets with an annual maintenance budget of approximately \$17Million per annum. Based on current modelling of Council's assets maintenance and the amount of maintenance performed (frequency, activity type etc) currently, against the amount of maintenance that is optimal there is an identified funding gap of more than \$6Million per annum across all Infrastructure assets.

Whilst Council is working to address this shortfall with incremental increases in maintenance budgets across all assets, it is difficult to justify the additional expenditure to retain, conserve and maintain Hampden Bridge as responsible fiscal management for an extended period.

Accordingly, it is the recommendation of Council Officers that the Hampden Bridge has reached a point in its life cycle whereby the cost to conserve, maintain and rehabilitate the bridge for any length of time is financially prohibitive and unsustainable.

Riverside Master Plan

The Riverside Masterplan adopted by Council in 2010, contains information relating to the Hampden Bridge. The Master plan states: *"The Hampden Bridge is considered a key element that adds character and identity to the city scape"*.

Whilst considering the alternate solutions for the Hampden Bridge and taking into consideration much of the feedback received by Council Officers at the small bridge conference it has been suggested that a possible solution may be to retain the centre truss, remove the left and right truss and abutments and fit single span walkways to the centre truss.

This configuration would maintain the linkage as provided by Hampden Bridge in the Riverside Master Plan, maintain a key element of the Bridge and the associated heritage and will also reduce the maintenance burden presented by the current bridge.

It is envisaged that the timber recovered from the removal of that the two sections of the bridge may partly contribute to the funding of this option.

Whilst Hampden Bridge is identified in the Riverside Master Plan as a key element to the riverside precinct it could be argued that the ability to cross the river is the key function and not necessarily the heritage elements of the existing timber bridge.

The Hampden Bridge is not currently a federal or state listed heritage site although it is listed in Councils own Development Control Plan as an item of local heritage significance.

Social Significance

In terms of aesthetic value the Hampden Bridge is located in a fairly prominent position close to the population centre of Wagga Wagga and as such is a high visibility asset making a significant contribution to the Murrumbidgee River vista.

Many local residents also value the bridge for its historical connections to the development of Wagga Wagga town and for its contribution to the setting of the Murrumbidgee River at Wagga Wagga.

The bridge is easily accessible to pedestrian and cyclist traffic linking the Fitzmaurice Street shopping precinct to the banks of the Murrumbidgee River and the open public space (Wilks Park) and North Wagga on the eastern side of the River, although its retention will present continuing conservation, operational and financial challenges.

The adaptive reuse of Hampden Bridge for non-vehicular traffic (pedestrians and cyclists) may be viable and a reasonable use in terms of aesthetic, heritage and social needs but is not necessarily viable from the economic perspective given the costs to conserve, maintain and rehabilitate the bridge are likely to be disproportionate in relation to the asset's value.

From a cost versus benefit perspective it is likely to be more economically viable to replace the Hampden Bridge with a new modern pedestrian bridge that would cost substantially less to maintain in the longer term and comply with the community service expectation in respect to the Riverside Master Plan.

Heritage Significance

McMillian Britton & Kell Pty Ltd were engaged in December 1998 by RMS to undertake a study of the heritage value of all timber bridges in NSW. The study considered the 37 remaining timber Allan Truss Bridges.

In order of National Significance the Hampden Bridge was ranked as number 4 by McMillian Britton & Kell.

The Hampden Bridge was preceded in order of ranking by the Dunmore, Morpeth and Monkerai Bridges.

All 3 of the higher ranking bridges are the responsibility of RMS and have been identified for conservation. The Dunmore and Morpeth Bridges are both three span Allan Truss bridges. The Morpeth Bridge is very similar to our Hampden Bridge whilst the Dunmore Bridge includes a liftspan. The Monkeria Bridge is an old PWD truss bridge.

The McMillian Britton & Kell (MBK) report refers to the Hampden Bridge as being listed on the Register of National Estate and the Local Environmental Plan.

The Register of the National Estate was closed in 2007 and is no longer a statutory list. All references to the Register of the National Estate were removed from the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 19 February 2012.

It should also be noted that the Hampden Bridge is not listed on the State Heritage Register of NSW. Nor is the bridge registered on the National Heritage List or the Commonwealth Heritage List.

The MBK report also refers to the adaptive reuse of bridges as an option for retaining bridges that have reached the end of their service life. Some possible adaptations referred to by MBK include:

- Converting the bridge to a footbridge or cycleway
- Using the bridge to carry service pipelines
- Dismantling the bridge and reconstructing it in another location as either a smaller footbridge, children's play equipment, or an ornamental feature in a park
- Decommissioning the bridge and leaving it in part in place as a non-functional item

In November 2007 Council Officers made an application to the NSW Government Department of Planning for funding under the NSW Heritage Grants Works Program 2008-2009 to undertake conservation works on the Hampton Bridge as a pedestrian bridge. Unfortunately the application was not successful.

Community information Session

At the meeting of Council held on the In December 2011 Council resolved to:

“undertake an information session regarding the testing and inspection results for the Hampden Bridge in February 2012”

The community information session was held on the evening of the 16 February 2012. Whilst the intent of the information session was to share the outcomes of the investigation carried out on the bridge, Council Officers took the opportunity to gauge the community sentiment towards the bridge on the evening.

At that information session interested members of the community were offered the opportunity to provide feedback to Council on their preference for the Hampden Bridge via a comment form. Of the 126 forms returned on the night the following feedback was received:

Demolish the bridge	61
Restore or retain all or some part of the bridge	63
No vote	2

Cost Estimates

At a meeting held on 12 December 2011 Council also resolved:

“receive a further report at the February 2012 ordinary meeting of Council following the information session providing recommendations and detailed costings on the future of the Hampden Bridge”

Due to the timing of the community information session the required report is being presented to Council March 2012 meeting.

In summary, costs provided to Council for the following options for the Bridge to date include:

- Repair - repair some of the failed timbers and truss joints only - \$200,000 (Integrity Testing 2006)
- Make safe for pedestrian access – removal of risk hazards - \$349,000 (Wagga Wagga City Council Delivery Program 2011/12)
- Conserve – retaining its historical heritage by replacing the deck, removing the guard rail, painting, lighting, repairing the walkway and making it accessible to pedestrian traffic in the longer term \$1,533,419 (Australian Cost Planners Pty Ltd 2007)
- Demolish - \$1,604,411 (Australian Cost Planners Pty Ltd 2007)

Repair – repair of some of the failed timbers only - \$200,000 (Integrity Testing Pty Ltd 2006)

Integrity Testing Pty Ltd provided a report on the Bridge dated September 2006. The report recommended replacing the failed bottom truss chord and restumping of 22 of the 56 chords with minor replacement of smaller elements for aesthetic reasons and protection of timber from termites and white rot attack. The estimated costs to undertake the work according to the report was \$200,000.

Make safe for pedestrian access – removal of risk hazards - \$349,000 (WWCC 2011/12)

The 2011/12 delivery program included an allocation of \$349,000 to undertake a further condition assessment of the bridge including the pylons (which has been completed) and the following works to open the bridge:

- repair the failed timber member
- release and remove the yellow steel truss
- upgrade to handrails
- removal of derelict walkway
- minor patching of pavement
- lighting
- warning signs
- ongoing monitoring and inspection program

Conserve – repair failed and damaged timbers, approaches, deck, lighting – \$1, 533,419 (Australian Cost Planners Pty Ltd 2007)

The budget estimate totalling \$1,533,419 (excluding GST) was based on the Conservation Management Plan prepared by Rappoport Heritage Consultants dated April 2007 with on-site inspections and engineering advice provided by structural engineers Kneebone and Baretta.

The budget estimate was prepared by quantity surveyors, Australian Cost Planners Pty Ltd.

The Budget Estimate for the conservation of the bridge included replacement of some of the timber elements, repair of approaches and footway, new decking, lighting, painting etc. (It was assumed that the failed truss section would be replaced separately).

The allocation of \$2,000,000 as referred to in the Report to Council in December 2011 was derived from the budget estimate prepared by ACP in 2007 to conserve the bridge.

This budget estimate for the conservation of the bridge is still relevant except that additional costs will be incurred to resolve issues of ongoing degradation that have occurred as referred to in Dr Tingley's report since this estimate was prepared.

Demolish - \$1,604,411 (Australian Cost Planners Pty Ltd 2007)

The budget estimate for the demolition of the bridge was costed in 2007 by quantity surveyors, Australian Cost Planners Pty Ltd for \$1,604,411 (excluding GST) following the preparation of the Conservation Management Plan, prepared by Rappoport Heritage Consultants dated April 2007. The budget estimate was prepared with on-site inspections and engineering advice provided by structural engineers Kneebone and Baretta and included the removal of the trusses, decking, pylons to one metre below the river bank level and management of contaminants.

The estimated cost to demolish Hampden Bridge provided with the Conservation Management Plan of \$1.600,000 in 2008 dollars is still a valid estimate with an annualised adjustment to allow for increased costs, hence the \$2,000,000 figure contained in this report.

RMS Cost Information

As referred to earlier in this report the review undertaken by RMS on its Timber Truss bridges also provides valid indicative costs that can be translated to the Hampden Bridge if it is decided to retain the bridge.

The RMS review suggests that once the Bridge is upgraded and fit for purpose, the ongoing maintenance costs will be in the order of \$200,000 per annum and even if the bridge is not subject to traffic loads, it is likely to still require a major rebuild every 20 years due to deterioration of the timber from environmental factors.

The RMS review advises that even if structurally upgraded a redundant timber bridge that is utilised for adaptive reuse such as pedestrians and cyclists will need a major rehabilitation every 20 years at an average cost of \$4,700,000.

In addition to the costings provided in the above for the demolition and conservation of the Hampden Bridge, if Council was to decide to retain the bridge, the provision of more detailed costings for specific options for the retention of the bridge will require more detailed inspections and testing of the bridge specific to the options being considered. This would require the engagement of a quantity surveyor and structural bridge engineer to development budget estimates and assess the viability and implications of each option.

This type of detailed assessment would need to include careful consideration of heritage and social issues relative to the option being considered. It would also need to include items such as the structural integrity of the bridge as outlined in Dr Tingley's assessment, safety for the community should the bridge be subject to load, works to return the bridge to a state that the community finds satisfactory with respect to its visual and useable amenity.

The assessment would also take considerable time and cost to complete and is not justified without first formally committing to the retention of the bridge.

Recommendation

Based on the potential ongoing maintenance costs identified for the bridge, the current condition of the bridge and the continuing cumulative cost to retain the bridge it is recommended Council agree that the bridge be demolished.

It is reasonable to expect that should Council wish to remediate Hamden Bridge there is a range of ways in which Council can source funding to do so. Council Officer's recommendation to demolish is based on the ongoing cost to maintain the bridge in the context of the current known maintenance shortfall versus the return from keeping the bridge as a pedestrian access.

It is recommended that Council give consideration to the allocation of \$2million in the 2012/13 delivery program for the demolition of Hampden Bridge.

To facilitate the demolition of the bridge it is also recommended that a Development Application (DA) be lodged for the demolition of Hampden Bridge. The DA will be lodged to consider matters listed under section 79C of the *Environmental Planning and Assessment Act 1979*.

Budget

A budget of \$349,000 has been allocated in the 2011/12 delivery program to open the Hampden Bridge for pedestrian access.

It is recommended that consideration be given to allocating \$2,000,000 in the 2012/13 for the demolition of the Hampden Bridge.

The cost to demolish the bridge may be significantly reduced if the timbers can be recovered and recycled for reuse.

The timbers in the bridge are of considerable value if they can be recovered and Council Officers will endeavour to sell the bridge 'as is where is' and have the site remediated to a satisfactory condition within the sale price thereby reducing Councils cost for the removal.

Policy

Infrastructure Asset Management Policy – POL-001.

Infrastructure Asset Management Strategy - POL-048.

Impact on Public Utilities

N/A

Link to Strategic Plan

4. A rich and vibrant culture

4.2 Develop the river as Wagga Wagga's cultural heart

QBL Analysis

	Positive	Negative
Social	Demolition of the bridge is supported by an element of the community	Elements of the community will not support the demolition of the bridge. Demolition does not align with the Riverside Master plan
Environmental	N/A	N/A
Economic	Responsible fiscal management and the recognition that the community cannot afford to fund the bridge	N/A
Governance	Appropriate decision making on behalf of the community	N/A

Risk Management Issues for Council

Prolonging a decision on the future of Hampden Bridge extends the period that the bridge receives no maintenance thereby increasing the risk of the bridge continuing to deteriorate at an accelerated rate.

Internal / External Consultation

Council has consulted with a range of external bridge specialists on the integrity of the current structure, maintenance costs for the bridge, estimates to repair the bridge and so on.

A community information session was held 16 February 2012 with more than 120 community members in attendance.