Submission No 87

INQUIRY INTO WINDSOR BRIDGE REPLACEMENT PROJECT

Name: Mr Peter Stewart

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Inquiry into the Windsor Bridge replacement project

Submission by Peter Stewart to the Portfolio Committee 5 regarding

Inquiry into the Windsor Bridge replacement project

My details

Name: Peter Stewart

This is an Individual submission

Background

My connection with the Windsor Bridge replacement project started in early 2013 when the Department of Planning and Infrastructure (DP&I) approached me to report on the RMS EIS in respect of the structural condition of the existing bridge. My final report of August 2013 is attached for completeness.

Inquiry into the Windsor Bridge replacement project

Key Issues addressed in this submission

In relation to the inquiry terms of reference the following aspects are relevant:

Term of Reference	**Addressed in this submission**
The current Windsor Bridge, including its maintenance regime	Yes
The current Windsor Bridge, including renovation methods	Yes
The current Windsor Bridge, including its justification for demolition	Yes
Replacement bridge project not addressed in this submission except for:	
iii. economic, social and heritage impacts	Yes

Questions I would raise with the Inquiry are as follows:

1. **Maintenance Regime:** Why did maintenance activities on the existing bridge dramatically reduce once the RMS made the decision 'in house' to proceed with a 'bypass' PRIOR to the EIS approval and certainly more than 10 years before a 'bypass' would be operational? By taking this action, the RTA assumed the current bridge would be demolished as early as December 2003.

2. **State Heritage**: If a structure is declared as State Significant or even on a heritage register is it not incumbent on the owner of the structure to maintain it such that the heritage value is preserved? There was no change to the maintenance approach to the Windsor Bridge because of its heritage status. In fact, as per 1. above the bridge was neglected assuming it would be demolished in the near future.

3. **Heritage:** Does a structure which is deemed of heritage value have a budget for maintaining it's heritage and a nominated structure owner to administer that budget? There was no evidence to say the existing Windsor Bridge had such a budget.

Evidence in relation to the above questions and associated issues

[Relevant extracts from the final report to the Department of Planning & Infrastructure in August 2013 are quoted below in *italics*]

Maintenance Regime

The RMS EIS states: *"The existing bridge needs to be replaced as its structural integrity is deteriorating with age and it is no longer cost-effective to maintain".*

Maintenance declined once RMS made decision to demolish the bridge in December 2003. *"While the bridge is deteriorating from various ailments it is not about to collapse in the short term. Each ailment can be treated, and this has been plainly demonstrated by RMS and others. However, if left untreated the bridge condition would deteriorate and the bridge would eventually fail. It appears the RMS has left it untreated because of the recommendation in December 2003 to replace the bridge in 5 years. Ten plus years have*

elapsed since that decision and a new operational bridge could still be up to 5 years away. [This was written 5 years ago] *This raises concerns about the bridge integrity especially if the refurbishment of the fabric of the bridge is not carried out in the near future."*

Maintenance Cost

1. *RMS advises in answer to DP&I questions that maintenance activities on Windsor Bridge between 1994 and 2002 totalled $57,347. [Average $6371.89 per year or $6.10/m2/year].*
2. *RMS have provided maintenance history in document entitled "Routine Maintenance Windsor Bridge 1994 – 2001" in which the total maintenance cost is $83,994.42 [average $10,500/year or $10.06/m2/year.*
3. *The Grants Commission received information from the RMS in 2008 that the "annual maintenance cost on RMS bridge structures is $19.70/m2. Total program expenditure figures for 2008-09 indicate total bridge expenses averaging $45.26/m2". This would confirm that even before the decision to replace the bridge was made that the RMS was not spending anything like enough ($10.06/m2/year) on the routine maintenance of Windsor Bridge.*

Information provided by RMS is not consistent (refer 1 and 2 above) but even if the larger expenditure is considered correct it is still 50% of the state average.

Interventions

"Interventions are notable by their absence since the recommendation to replace the bridge in 5 years was made by RMS in December 2003. In answer to the DP&I question [D6]: What, if any, interventions to the bridge have taken place to reinstate the fabric of the bridge in the last 10 years? Note: not maintenance but refurbishment tasks. RMS has responded "No specific interventions have taken place to reinstate the fabric of the bridge, although activities such as removal of spalling continue as part of bridge maintenance."

These major causes of deterioration continue unabated as there have been no interventions to arrest their advance despite many recommendations about actions that should be taken."

RMS/State Heritage Register

"There is no evidence that the change of status (listing on the s.170 register of the Heritage Act 1977) changed the approach to maintenance of the bridge." This is particularly reinforced by the obvious neglect of maintenance since 2003.

Renovation Methods

The RMS EIS states:

"Elements of the bridge have deteriorated substantially and RMS has assessed that it is not practical to replace or repair these elements"

Options considered:

- The RMS proposed a refurbishment method that strengthens the bridge to provide a load factor of 2 for current legal maximum loads or the T44 standard.
- The ex-Chief bridge Designers proposed a refurbishment method would strengthen the bridge and provide a load factor of 1.87 on current loadings (42.5tonne semi-trailers and 62.5tonne B-double vehicles.

Comments on the refurbishment options proposed are:

1. The RMS refurbishment would provide a structure capable of complying with all the latest standards and load factors even though a new bridge is to be constructed mainly for the through traffic. In other words, it would include refurbishment & strengthening. This seems wasteful at best considering a new bridge will be built at some stage.
2. The Alternative (ex RTA State Chief Bridge Designers) refurbishment would provide a structure capable of a lighter loading more suited to local traffic and certainly assumes a new bridge will be constructed. This proposal would return the bridge to 'as new' condition with a load factor of 1.87 based on current loading (42.5t semi-trailers and 62.5t B-double vehicles)
3. For code compliance (load factor=2) the precast beams need to be enhanced for bending strength and this could be done using carbon fibre laminates bonded to the beam soffits, after repairing all spalling and re-alkalisation for treating carbonation. [Ref. Cook River Bridge has been successfully refurbished in this way]
4. The bridge may be retained for a lesser loading (local traffic, pedestrians etc.) and RMS have advised that the bridge could be refurbished to meet light traffic loading (<20tonnes). This would be acceptable if a comprehensive risk management strategy is put in place.
5. RMS advised that rehabilitation (without strengthening for T44 loading) would cost around $14m (2011 dollars) [D10].
6. If this amount is spent on the bridge now then there will only be routine ongoing maintenance.
7. The repair method should be such that the heritage is still preserved and visible and not concealed otherwise the heritage value is lost.

It is noted that the strengthening proposed by the RMS method would destroy most of the heritage value in the bridge.

Justification for Demolition

The RMS EIS states:

There are a number of reasons why a replacement river crossing at Windsor is required including:

1. Deterioration in the condition of the existing bridge – Elements of the existing bridge are over 130 years old and substantially deteriorated.
2. The existing bridge and approach roads do not meet current engineering and safety standards.
3. The existing bridge has a lower flood immunity than the surrounding roads.
4. The poor current and future traffic performance and capacity of the existing bridge and intersections.

"It is clear however that the RMS documentation does not show a strong resolve to preserve the existing bridge for an alternative use, with a continuing theme throughout the documentation that it will replaced by a new bridge. This was clear when a decision was main within the then RMS to replace the bridge sometime before 2003. After this decision no expenditure on maintenance or repair of damaged fabric is evident except where public safety might be endangered. Despite this neglect it is remarkable that no great deterioration has taken place in the last 10 years" [Note: From 2003 to 2013]

Further comments related to the justification above (using same number system):

1. Despite little maintenance since the RMS decision to demolish was made there not been significant deterioration of the structure contrary to the RMS's statement. The RMS statement does not justify demolition.
2. It would not be expected that the current bridge be refurbished to the current standards considering a bypass is being proposed. Again, this does not justify demolition as other uses have been identified.
3. The bridge has survived 64 floods which over-topped the bridge in 100 years, so it has demonstrated very high flood capacity. However, if the maintenance is not performed routinely, the bridge condition will deteriorate, and its flood immunity would be reduced. This does not justify demolition.
4. This statement supports the construction of a new bridge but doesn't justify the demolition of the existing bridge.

Economic, Social and Heritage issues

EIS proposes in 7.1.5: "*The 1874 bridge will be dismantled in a manner that allows its construction methods and evolution to be appropriately documented as an archival record prior to, and during its demolition."*

The specific key elements of the existing bridge with heritage significance are:

- *Precast Reinforced Concrete Beams (Earliest use of precast concrete girders in NSW and is unique)*
- *Cast iron caissons designed to resist the severe flooding (first use in a road over river crossing as previously only used in railway bridges)*
- *Elements used to raise the deck 2.4m*
- *Methodology involving maintaining the trafficability of the bridge during construction of the precast deck*

This is a heritage landmark that contributes to the social & economic life of Windsor. It would be a great loss to demolish this state significant structure.

There is no evidence that the RMS management approach to bridge maintenance and repair changed as a result of the current bridge either being listed on the RMS Section 170 Register or being classified as State Significant.

It would be catastrophic if we took the RMS approach to all our Heritage structures. There needs to be some determination to maintain our heritage for future generations.

Summary

It is always easy to be wise after the event but nevertheless the questions posed are still relevant.

1. The RMS made the error of assuming the EIS would be approved and hence, the 'bypass' built and the existing bridge demolished. Their actions to neglect maintenance and refurbishment activities were premature. As a minimum the bridge fabric should have been maintained. Incredibly it is now 15 years since they made the decision to demolish the bridge. Putting this in perspective approximately 105 million vehicles have crossed the bridge since then. The condition of the bridge will have deteriorated due to this neglect.
2. Refurbishment methods were thought to be too expensive. Other bridges in the network have been refurbished for similar/comparable costs so this argument not to refurbish does not stand up.
3. The questions regarding heritage structures and who is responsible, who provides the budget and who maintains them and to what standard, needs to be very clear. It certainly appears from the evidence that the heritage value of Windsor Bridge did not feature in any of the discussions other than the EIS reference to archiving the heritage information before demolition of the bridge.
4. The reasons for demolition of the existing bridge are based more on the decision to build a 'bypass' than the poor condition of the bridge.

Attachment:

"A Review and Consideration of the Structural Condition of the Existing Windsor Bridge" Dated 16 Aug 2013.