

Statement of Heritage Impact
Hawkesbury River Bridge (RTA No.415),
Windsor, NSW



Report Prepared for
NSW Roads & Traffic Authority
Environmental Services Sydney
October 2008
Final Report

HERITAGE
concepts

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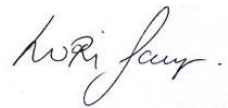
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Date: 27th October 2008

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Executive Summary

Introduction

Heritage Concepts Pty Ltd has been commissioned by the NSW Roads and Traffic Authority (RTA) to prepare a non Indigenous Statement of Heritage Impact (SOHI) for the Hawkesbury River Bridge (RTA No.415) and adjacent areas to be impacted by the construction of the proposed bridge in Windsor, NSW. This includes the historic Windsor Wharf and the State Heritage Registered Thompson Square Conservation Area. This report has been prepared in accordance with the NSW Heritage Office & Department of Urban Affairs and Planning (DUAP) (1996a) *NSW Heritage Manual*, NSW Heritage Office (2002) *Statement of Heritage Impact*, and the NSW RTA (2004) *Heritage Guidelines*.

Study Area

The study area comprises the bridge over the Hawkesbury River at Windsor and its approaches. The approach on the southern, Windsor side includes Windsor Wharf and the State Heritage Registered (SHR) Thompson Square. The study area is located on the northern boundary of Windsor with the Bridge forming the only access to Windsor over the Hawkesbury River. The Bridge is described as RTA Bridge Number 415.

Project details

The Study Area has been subject to previous assessments. In 2005 the RTA commissioned Burns and Roe Worley to undertake a *Study of Heritage Significance of Pre-1948 RTA Controlled Concrete Beam Road Bridges* in the Sydney, South West and Southern Regions, into which Windsor falls. The report identified the Bridge as the eighth most significant bridge in the sample of 78. Thompson Square has been assessed as part of the SHR listing process and in relation to archaeological investigations undertaken by Higginbotham (1986).

Proposed Works

The RTA proposes to replace the Hawkesbury River Bridge with a new structure adjacent to the existing bridge on the eastern or downstream side. The current Bridge is deteriorating due to age and heavy usage and poses safety and maintenance issues. The current Bridge is also subject to 1 in every 2 year flood events and the proposed new bridge will reduce flooding events to 1 in every 5 years and allow for future traffic increases. As a result of the proposal, the current Bridge will become redundant and the RTA wishes to explore future management options for the Bridge, including demolition. Retention of the Bridge as an operable component of the road system presents significant challenges for the RTA as the Bridge is subject to flooding. Other options include the retention of the Bridge as a pedestrian and/or bicycle crossing or the retention and transfer of ownership to local government. Partial retention of the Bridge for interpretive purposes is also an option that is being considered.

Heritage Values

Hawkesbury River Bridge

The Hawkesbury River Bridge is an item of State significance. It is an historic crossing of the Hawkesbury River, the structure dating to 1874 and the site of the river crossing of 1814.

Level of Significance: State and Local

Remains of the Historic Windsor Wharf

The Wharf is of State significance as a rare extant site of early river transport. The remains possibly date to 1814-15. The Wharf is of State significance for its archaeological potential to yield information regarding the construction of wharf structures in the early Colony and provide comparative data regarding these important early communication infrastructures.

Level of Significance: State

Thompson Square & associated brick drain

Thompson Square is one of the oldest public squares in Australia and notable for the large number of Colonial Georgian buildings which surround it. It is the only public space remaining from the original

town and has played an important part in the history of the town. It is the only remaining civic space as laid out by Governor Macquarie and is a vital precinct in the preservation of the early Colonial character of Windsor. The Square reflects Macquarie's visionary schemes for town planning excellence in the infant colony (SHR Listing).

The brick drain is potentially of State significance. The remains of the brick drain in Thompson Square have the potential to provide information regarding 19th century construction and fabrication technologies. Any extant remains would be of historic significance as a physical reminder of the early 19th century rural colonial town of Windsor.

Level of Significance: State

Recommendations

The following recommendations are based on the results of the background research, site inspection, and the heritage significance of the existing Bridge, the potential historic Wharf remains, Thompson Square and the associated Drain. This report has been prepared in accordance with the NSW Heritage Office & DUAP (1996a) *NSW Heritage Manual*, NSW Heritage Office (2002) *Statement of Heritage Impact*, and the NSW RTA (2004) *Heritage Guidelines*.

Recommendation 1

It is recommended that the RTA consider the full or partial retention of Hawkesbury River Bridge. Adaptive re-use should include use as a pedestrian and cycleway; an alternative vehicle crossing of the Hawkesbury River; or the conversion of the partial remains to an interpretive viewing platform.

The full or partial retention of the Bridge will require that sufficient funds are made available for its on-going maintenance and conservation. The transfer of ownership from the RTA to a second party would need to be carried out in such a way as to ensure that its long term conservation is safeguarded and achievable.

Where retention of the Hawkesbury River Bridge is not feasible, the following management recommendations apply:

Recommendation 2

The Hawkesbury River Bridge in Windsor is listed on the RTA Section 170 register as an item of State significance. Any proposals involving the demolition of heritage assets should be referred to the Heritage Council of NSW for comment. The Heritage Council will provide a response to the proposal within 40 days of receipt of notification.

Recommendation 3

It is recommended that the proposal to infill the cut to the existing bridge approach and consolidate Thompson Square be adopted as per the Concept Designs prepared by the Government Architects Office.

As Thompson Square Conservation Area is registered on the State Heritage Register, any development works adjacent to or within it requires a Section 60 approval from the Heritage Council of NSW.

Recommendation 4

It is recommended that should removal of the Hawkesbury River Bridge in Windsor proceeds, a full photographic archival recording programme be undertaken of the Bridge and its setting prior to its demolition in accordance with the Heritage Branch guidelines *Photographic Recording Of Heritage Items Using Film or Digital Capture* (2006).

Recommendation 5

It is recommended that all plans, files and documentation including the Archival Photographic Record of the Bridge be collated, archived and retained in a publically accessible venue, such as the Hawkesbury City Council Library and the State Library.

Recommendation 6

It is recommended that an oral history project should be undertaken to record local residents views on the social and cultural aspects of the Bridge.

Recommendation 7

The archaeological excavation and recording of the potential remains of the historic Windsor Wharf and Drain associated with Thompson Square will be necessary. These archaeological investigations should include an underwater survey of the Wharf area. Excavation will require an excavation permit be sought from the Heritage Branch, Department of Planning. As the drain is within a SHR curtilage a Section 60 permit will be required. An archaeological research design would need to be prepared in support of any excavation permits.

Recommendation 8

It is recommended that once the extent, condition and integrity of the Wharf and Drain have been assessed through archaeological excavation, the RTA should examine possibilities for the *in situ* retention, or partial retention of features as part of the new bridge designs.

Recommendation 9

It is recommended that a holistic 'whole of landscape' approach to the interpretation of the heritage values of the existing Bridge, the historic Wharf and Drain and Thompson Square is undertaken by the RTA.

The interpretation plan should focus on the role of the River as a communication and trade route through the interpretation of the existing Bridge, the historic Windsor Wharf and Drain, and the importance of the River to the birth and development of the Town and Thompson Square as a surviving Georgian landscape.

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1.0 Introduction

1.1 Project Background

Heritage Concepts Pty Ltd has been commissioned by the NSW Roads and Traffic Authority (RTA) to prepare a non Indigenous Statement of Heritage Impact (SOHI) for the Hawkesbury River Bridge (RTA No.415) and adjacent areas to be impacted by the construction of the proposed new bridge in Windsor, NSW. This includes the historic Windsor Wharf and the State Heritage Register listed Thompson Square Conservation Area. This report has been prepared in accordance with the NSW Heritage Office & Department of Urban Affairs and Planning (DUAP) (1996a) *NSW Heritage Manual*, NSW Heritage Office (2002) *Statement of Heritage Impact*, and the NSW RTA (2004) *Heritage Guidelines*.

The Study Area has been subject to previous assessments. In 2005 the RTA commissioned Burns and Roe Worley to undertake a *Study of Heritage Significance of Pre-1948 RTA Controlled Concrete Beam Road Bridges* in the Sydney, South West and Southern Regions. The report identified the Bridge as the eighth most significant of the 78 assessed.

In May 2008 Heritage Concepts provided the RTA with a Rapid Heritage Constraints Document in relation to the proposed replacement of the Bridge. That document recommended a baseline assessment of Aboriginal archaeological values be undertaken and a Statement of Heritage Impact be prepared.



Figure 1.1: Location of Study Area, centred on Hawkesbury River Bridge, Windsor (Source: UBD 2008:86).

1.2 The Study Area

The study area comprises the Bridge over the Hawkesbury River at Windsor and the approaches to the Bridge on both the Windsor and Wilberforce sides. The Windsor approach encompasses Thompson Square on 26 Lots listed in Table 1.1 and illustrated in Figure 1.2. The Thompson Square Conservation Area is listed on the State Heritage Register (No. 00126) and consists of George Street, Bridge Street, Thompson Square and The Terrace. These streets form a triangular shaped reserve, which is grassed

and planted with mature introduced species. A subsurface 1814-15 brick drain is thought to run through the centre of the Square with an outlet into the River. The reserve forms a theatre from which to view the heritage buildings surrounding the Square, which are also part of the listing. The buildings include The Doctor's House (originally the Post Office), Hawkesbury Museum, A.C. Stern Building, Macquarie Arms Hotel and an assortment of cottages and shops.

The construction of the proposed bridge will also impact the remnants of an 1810s Wharf on the south bank of the Hawkesbury River, to the east of the Bridge. This SoHI will also assess the impact on these items.

For the purpose of this study, the Hawkesbury River Bridge (RTA No.415) will be referred to as 'the Bridge'. The 1810s wharf will be referred to as 'the Wharf', to distinguish it from the current wharf, which is located outside of the study area to the east.

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
LOT	1	-	DP	1011887
LOT	7007	-	DP	1029964
PART LOT	1	-	DP	1045626
LOT	1	-	DP	136637
LOT	B	-	DP	161643
LOT	1	-	DP	196531
LOT	2	-	DP	223433
LOT	2	-	DP	233054
LOT	2	-	DP	232319
LOT	C	-	DP	379996
LOT	A	-	DP	381403
LOT	1	-	DP	555685
LOT	2	-	DP	555685
LOT	1	-	DP	60716
LOT	1	-	DP	60716
LOT	10	-	DP	630209
LOT	10	-	DP	630209
LOT	11	-	DP	630209
LOT	11	-	DP	630209
LOT	10	-	DP	666894
LOT	345	-	DP	752061
LOT	10	10	DP	759096
LOT	1	-	DP	864088
LOT	1	-	DP	87241
LOT	1	-	DP	995391
LOT	1	-	DP	996417

Table 1.1: Lot and Deposited Plan numbers of the State Heritage Register listed Thompson Square Conservation Area Precinct.

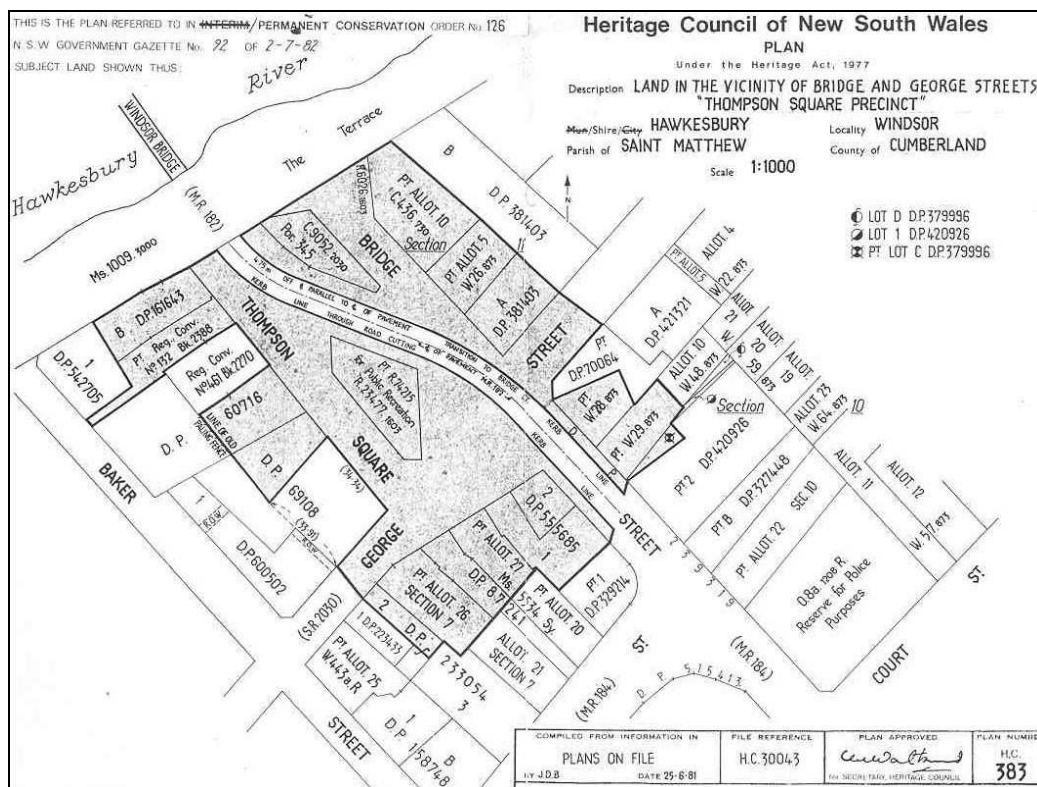


Figure 1.2: Heritage Curtilage for SHR Listed Thompson Square.

1.3 Project Tasks

The aim of the project is the preparation of a Statement of Heritage Impact for the Hawkesbury River Bridge, Windsor, the Windsor Wharf and Thompson Square. In order to meet these aims a number of tasks were identified as part of the project brief. These tasks include:

- Identification of statutory requirements relevant to the project;
- Review of relevant State and Federal heritage registers;
- Review of existing local government planning instruments as they relate to the non Indigenous heritage values of the Study Area;
- Consultation with the relevant heritage authorities and stakeholder groups such as the Heritage Branch, the National Trust of Australia (NSW) and the Engineering Heritage Committee of Engineers Australia;
- Site inspection;
- Assessment of the heritage impact;
- Preparation of management recommendations and mitigation measures; and the
- Identification of permits required and the necessary steps to obtain such permits (if applicable).

1.4 Limitations

Documentary research into the study area was undertaken at the Mitchell Library, the RTA Archives, State Records, the Hawkesbury Regional Museum and the Hawkesbury Local Library. This research was limited by the extent of records preserved regarding the Bridge and the Wharf. RTA Archives did not contain information regarding the construction of the Bridge, although plans have survived.

This document presents the results of an evaluation of the heritage impact on historic (non Aboriginal) archaeological and heritage values of the study area in light of the proposed works.

1.5 Proposed Works

The RTA proposes to replace the Hawkesbury River Bridge with a new structure adjacent to the existing bridge on the eastern or downstream side. The current Bridge is deteriorating due to age and heavy usage and poses safety and maintenance issues. The current Bridge is also subject to 1 in every 2 year flood events and the proposed new bridge will reduce flooding events to 1 in every 5 years and allow for future traffic increases. As a result of the proposal, the current Bridge will become redundant and the RTA wishes to explore future management options for the Bridge, including demolition. Retention of the Bridge as an operable component of the road system presents significant challenges for the RTA as the Bridge is subject to flooding. Other options include the retention of the Bridge as a pedestrian and/or bicycle crossing or the retention and transfer of ownership to local government. Partial retention of the Bridge for interpretive purposes is also an option that is being considered.

The proposed location for a new bridge was determined by the RTA through an options report study (RTA July 2008a). The study assessed various strategic concept options to facilitate the selection of a preferred option. Ten route options were examined and investigations into the retention of the existing Bridge identified significant structural deterioration. As such, the cost and provision for traffic to accommodate remedial measures of the existing Bridge justified the consideration of a bridge replacement. Option 1, the preferred route option was selected as it offered a high level crossing 20 metres downstream of the existing Bridge. The proposed replacement bridge would be approximately 430m in length consisting of 70m of new southern approach, 200m of new bridge and 160m of new northern approach. The proposed new bridge will comprise of ten spans and nine piers with abutments at either end. Refer to Figure 1.3 & 1.4.

Removal of the existing Bridge is required as its retention alongside the replacement bridge could compromise the integrity of the new structure. The level of proposed earthworks on the Windsor side of the River is restricted to a maximum depth of 0.997m and the proposed alignment will include the consolidation of Thompson Square. Refer to Figures 6.1-6.4. The existing Bridge alignment involved the division of the Square with the introduction of the new Bridge Street. These proposed changes will move the alignment of the road and approach to the new bridge west of its current alignment. These works will also move the road away from heritage listed properties along Bridge Street. The works on the Wilberforce side of the River will involve earthworks to a maximum depth of 1.10m.

1.6 Authorship

The report was prepared by Lori Sciusco, Dr Susan Lampard and Peter Howard and reviewed by Charles Parkinson (Heritage Concepts Pty Ltd). The site inspection was carried out by Dr Susan Lampard, Lori Sciusco and Charles Parkinson on 12th June 2008. Historical research was carried out by Dr Susan Lampard and Peter Howard. An additional inspection was carried out by Dr Susan Lampard and Peter Howard on 18th June 2008 in response to new historical data. Dr Susan Lampard and Lori Sciusco prepared the impact assessment and management recommendations. Charles Parkinson reviewed the document.

1.7 Acknowledgements

The input and participation of the following people are gratefully acknowledged:

Alan Aldrich	Hawkesbury Regional Museum;
Jaimz Belegris	RTA Document Management Centre, Auburn.
Don Fraser	Engineering Heritage Committee, Institution of Engineers Australia, Sydney Division;
Patrick Giltrap	Senior Environmental Officer, Environment Services, NSW RTA;
Robyn Gurney	NSW State Records;
Sam Laybutt	Ozroads;

Ken Maxwell	Bridge Engineer, Member of Institution of Engineers Australia, Sydney Division;
Glenn Rigden	Engineering Heritage Committee, Institution of Engineers Australia, Sydney Division;
Rebecca Turnbull	Hawkesbury Regional Museum.

1.8 Abbreviations Used

The following abbreviations have been used throughout this document:

AHC	Australian Heritage Council
CHL	Commonwealth Heritage List
DA	Development Application
DECC	Department of Environment and Climate Change
DEWR	Department of Environment and Water Resources
HB	Heritage Branch, Department of Planning
LEP	Local Environmental Plan
LGA	Local Government Area
MWS&DB	Metropolitan Water, Sewerage and Drainage Board
NES	National Environmental Significance
NHL	National Heritage List
NSW	New South Wales
NT	National Trust of Australia (NSW)
PMG	Post Master General
RNE	Register of the National Estate
RTA	NSW Roads and Traffic Authority
SHI	State Heritage Inventory
SHR	State Heritage Register
SoHI	Statement of Heritage Impact
u.d.	Undated document

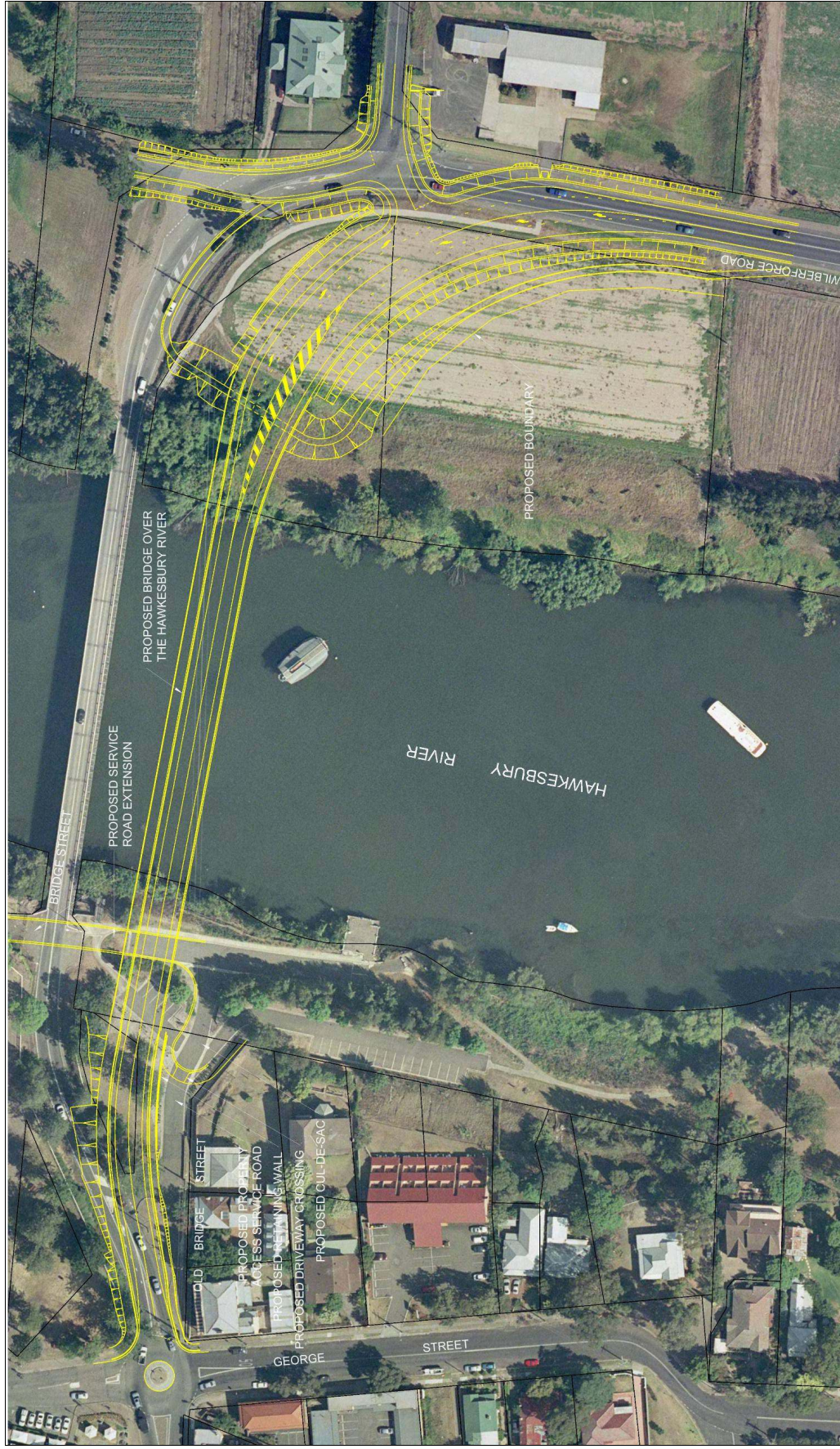
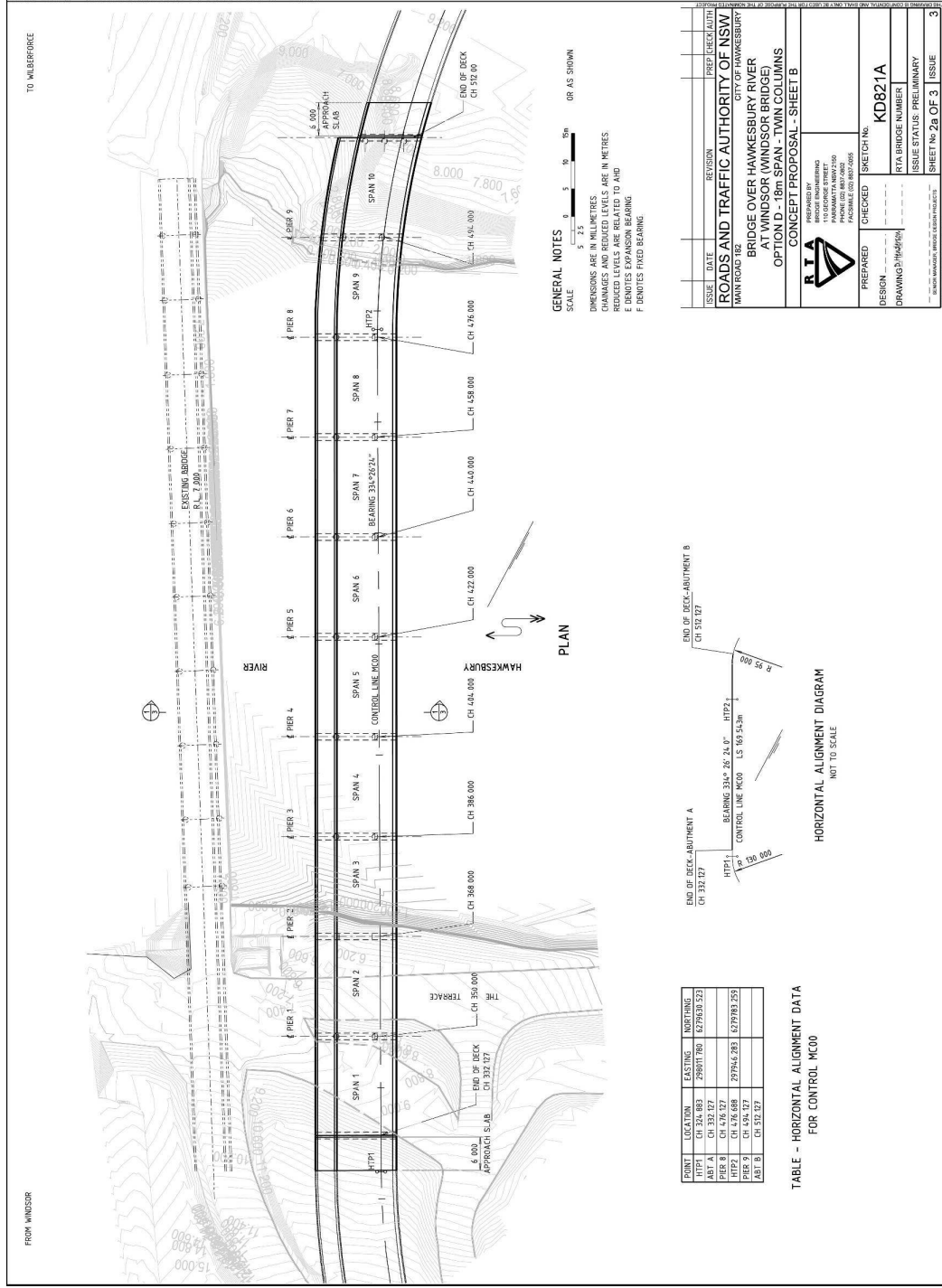


Figure 1.3: Proposed bridge replacement location and layout (RTA 2008).



2.0 Legislative Framework

2.1 Introduction

Historic cultural heritage in Australia is protected and managed under a variety of legislation. The following section provides a brief summary of the Acts which are relevant to the management of cultural heritage in New South Wales. It is important to note that these are not presented as legal interpretations of the legislation by the consultant.

2.2 Commonwealth Legislation

2.2.1 *Environmental Protection & Biodiversity Conservation Act 1999*

The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) provides a national framework for the protection of matters of national environmental significance and the conservation of Australia's biodiversity. Under the *EPBC Act*, "environment" includes

- a) ecosystems and their constituent parts, including people and communities
- b) natural and physical resources
- c) the qualities and characteristics of locations, places and areas
- d) heritage values of places
- e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c).

Under Part 9 of the *EPBC Act*, any action that has, or is likely to have, a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with the approval of the Commonwealth Minister for the Environment, Heritage and the Arts. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration to any of these. Where an exception applies, an action will also require approval if it:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact.
- Is undertaken outside Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land.
- Is undertaken by the Commonwealth and will have or is likely to have a significant impact.

Under Section 28 subsection (1) "The Commonwealth or Commonwealth Agency must not take inside or outside Australian jurisdiction an action that has, will have, or is likely to have a significant impact on the environment inside or outside Australian jurisdiction".

Australia changed the legislation that protects its national heritage places, as a result three laws came into effect on January 2004, which provide changes that offer greater legal protection under the existing *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) and repeal the *Australian Heritage Commission Act 1975*. These three Acts are;

The Environment and Heritage Legislation Amendment Act (no.1) 2003.

This Act amended the *EPBC Act* to include 'national heritage' and protect listed places to the fullest extent under the Australian Constitution. Under the new system, National Heritage joins six other important 'matters of national environmental significance' (NES matters) already protected by the *EPBC Act*. The *Environment and Heritage Legislation Amendment Act (no.1) 2003* also establishes the National Heritage List which records places with outstanding natural and cultural heritage values that contribute to Australia's National identity; and the Commonwealth Heritage List which comprises the natural, Aboriginal and historic places owned or managed by the Commonwealth.

The Australia Heritage Council Act 2003.

This Act establishes a new independent heritage advisory body to the Minister for the Environment and Heritage, the Australian Heritage Council (replacing the Australian Heritage Commission established under the *Australian Heritage Commission Act 1975*) and retains the Register of the National Estate (RNE). The RNE was also established under the *Australian Heritage Commission Act 1975* which defined it as a register of those places being components of the natural environment of Australia, or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations, as well as for the present community. Listings on the RNE are not legally binding but provide widely acknowledged recognition of the cultural value of the listed place or item. Listing of an item or place on the RNE has certain implications for how Commonwealth agencies may deal with an item.

The Australian Heritage Council (Consequential and Transitional Provisions) Act 2003.

This Act repeals the *Australian Heritage Commission Act*, amends various Acts as a consequence of this repeal and allows for the transition period whilst the National and Commonwealth Heritage Lists are finalised. During this transition period the Register of the National Estate will act in conjunction with the formative National and Commonwealth lists to provide full coverage for items already identified as having cultural heritage significance.

Approval under the *EPBC Act* is required if an action is proposed that will have, or is likely to have, a significant impact on the National Heritage values of a National Heritage place and/or any other NES matter. This action must be referred to the Australian Government Minister for the Environment and Heritage. The Minister will decide whether an action will, or is likely to, have a significant impact on a matter of national environmental significance.

The heritage provisions of the *EPBC Act* allow for a transition period whilst the National and Commonwealth Heritage Lists are finalised. During this transition period the Register of the National Estate acts in conjunction with the formative National and Commonwealth lists to provide full coverage for items already identified as having cultural heritage significance.

Under the new system, the Register of the national Estate is retained as a record of Australia's natural and cultural places. Places on the Register (not yet subject to re-evaluation for the Commonwealth or National Heritage Lists) will be protected under the same provisions that protect Commonwealth Heritage Places.

A search of the database for the Register of National Estate, Commonwealth Heritage List and the National Heritage List revealed the following:

Application to the current study

There are no items within the study area listed on the Register of National Estate; National Heritage List or Commonwealth Heritage List.

2.3 State Legislation

2.3.1 The NSW Heritage Act 1977 (amended 1999)

The *Heritage Act 1977* is the primary piece of State legislation affording protection to all items of environmental heritage (natural and cultural) in New South Wales. "Items of environmental heritage" include places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values.

The *Heritage Act 1977* established the Heritage Council of NSW which provides advice and recommendations to the Minister for Planning relating to the conservation and management of items of environmental heritage. The Heritage Council is also required to maintain a database of items of State heritage significance; the State Heritage Register, and a database of items of both State and local heritage significance; the State Heritage Inventory. If the Heritage Council believes that a heritage item or place needs to be conserved, it can make a recommendation to the Minister, who decides whether to place protection on that item. There are two types of protection available: interim heritage orders; and listing on the State Heritage Register. These forms of protection are 'binding directions', which means

that the heritage item which is protected in one of these ways cannot be demolished, redeveloped or altered without permission from the Heritage Council.

The *Heritage Act* 1977 does not apply to Aboriginal “relics” (any deposit, object or material evidence), which are protected under the *National Parks and Wildlife Act* 1974, however, some aspects of Aboriginal cultural heritage management and protection are covered by the provisions of the *Heritage Act* 1977. The Director-General of the Department of Environment and Climate Change can recommend that the Minister of Planning make Interim Protection Orders (IPOs) to preserve areas of land that have natural, scientific or cultural significance which can include land with Aboriginal places or relics on it. Particular Aboriginal places and items that the community has formally recognised as being of high cultural value can also be listed on the State Heritage Register. This provides an extra level of protection in addition to that provided by the *National Parks and Wildlife Act* 1974.

Application to the current study

The Hawkesbury River Bridge is not listed on the State Heritage Register or the State Heritage Inventory. Thompson Square Conservation Area is listed on the State Heritage Register as No. 00126

2.3.2 NSW RTA S170 Heritage and Conservation Register

As a government agency the NSW RTA must maintain a “Heritage and Conservation Register” under Section 170 of the *Heritage Act* 1977.

This Register lists RTA assets that have been identified as having State or Local heritage significance. Many of the items on the S170 Register have been listed in other heritage registers as well, such as the State Heritage Register or on Local Environmental Plans.

A search of the database for the RTA Heritage and Conservation Register revealed the following:

Application to the current study

The Hawkesbury River Bridge is listed on the RTA S170 Register as Item No. 4309589

2.3.3 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act* 1979 requires that environmental impacts are considered prior to land development. This includes impacts on Aboriginal and non-Aboriginal cultural heritage items and places. The Act also requires that Regional Areas and Local Governments prepare Local Environmental Plans (LEP) and Development Control Plans (DCP) in accordance with the Act to provide guidance on the level of environmental assessment required.

Hawkesbury City Council incorporates heritage provisions within the Hawkesbury Local Environment Plan 1989. Section 5 of the Hawkesbury LEP 1989 defines Items of Environmental Heritage as:

a building, work, relic, tree or place of heritage significance to the City of Hawkesbury described in Schedule 1 and shown by a red circled number on the map.

Section 27 defines the provisions enacted to control development on land with identified heritage items in order to conserve and promote heritage values.

- 1) A person shall not, in respect of a building, work, relic, tree or place that is a heritage item:
 - a. demolish or alter the building or work,
 - b. damage or move the relic, including excavation for the purpose of exposing the relic,
 - c. damage or despoil the place or tree,
 - d. erect a building on or subdivide land on which the building, work or relic is situated or the land which comprises that place, or
 - e. damage any tree on land which the building, work or relic is situated or on the land which comprises the place, except with the consent of the Council.
- 2) The Council shall not grant consent to a development application under subclause (1) unless it has taken into consideration the extent to which the carrying out of the proposed development would affect the heritage significance of the item and any stylistic or horticultural features of its setting.

Application to the current study

The Hawkesbury River Bridge and Thompson Square Conservation Area are listed on the Hawkesbury Local Environment Plan 1989 Heritage Schedule (no numbers ascribed).

2.4 Non-Statutory Listings

The National Trust of Australia (New South Wales) is a community-based organisation with independently constituted Trusts in each state and territory. The NSW National Trust compiles a heritage list primarily of historic places, but they also include some Aboriginal and natural places. Listing helps to provide recognition, and promote public appreciation and concern for local heritage.

The National Trust Register has no legal foundation or statutory power, but is recognised as an authoritative statement on the significance to the community of particular items, and is held in high esteem by the public.

A search of the National Trust Registers revealed the following:

National Trust of Australia

The study area contains no items listed with the National Trust of Australia (NSW).

2.5 Summary of Cultural Heritage Listings within the Study Area

The following is a summary of the results of the various heritage register/listings searches in relation to the study area.

Register of the National Estate	There are no items within the study area listed on the Register of National Estate
National Heritage List	There are no items within the study area listed on the National Heritage.
Commonwealth Heritage List	There are no items within the study area listed on the Commonwealth Heritage List.
State Heritage Register	Thompson Square Conservation Area is listed on the State Heritage Register as No. 00126.
State Heritage Inventory	There are no items within the study area listed on the State Heritage Inventory.
RTA S170 Conservation & Heritage Register	The Hawkesbury River Bridge (RTA No. 415) is listed on the RTA Section 170 Register as Item No. 4309589.
Hawkesbury Local Environment Plan 1989	The Hawkesbury River Bridge and Thompson Square Conservation Area are listed on the Hawkesbury Local Environment Plan 1989 Heritage Schedule (no numbers ascribed).

3.0 Historical Background

3.1 History of early bridge construction in NSW

The first bridge constructed in NSW was a functional timber bridge over the Tank Stream in the vicinity of what is today the corner of George and Bridge Streets, Sydney, in 1788. With no experienced bridge engineer in the colony this bridge was soon washed away by flooding, as were subsequent bridges across the expanding colony. The appointment of experienced bridge engineer David Lennox as Superintendent of Bridges in 1833 marked the beginning of sturdier bridge construction. Lennox's first work was the Horseshoe Bridge on Mitchell's Pass near Lapstone, which, as testament to his skill, still stands and is the earliest extant bridge in NSW (O'Connor 1985:14-15).

Timber bridges dominated early bridge building in NSW due to the local availability of high quality hardwoods, enabling construction at a fraction of the price of wrought iron or steel. During the convict period stone was also favoured as the use of convict labour kept construction costs down. With the cessation of convict transportation in the 1840s wood became the preferred material. This preference was enshrined by government decree in 1861 after the importation of wrought iron rail bridges at Menangle, Penrith and Goulburn had threatened the economy of the colony. Metal bridges were only approved where specific technical merits could be established. The decree was relaxed somewhat during the boom of the 1880s, but the depression of the 1890s saw a decrease in the number of metal bridges built. Metal bridges did not become more prevalent until the 1930s, when Australian iron production began to meet local demand. Wooden bridges continued to outnumber iron, although iron was favoured for major bridges (Cardno MBK 2001:16).

The use of concrete in bridges began not as a major construction component, but as suitable material to fill cast iron pier caissons. The alkaline nature of cement had the additional benefit of protecting the iron from corrosion.

Mass concrete was next used in the formation of abutments. Authorities in NSW were slow to accept concrete as a bridge building material. In order to speed the process several businessmen, under the name Carter Gummow & Co, obtained licences from a German company to construct bridges using their patented technique. Carter Gummow & Co built several small culverts from 1894. In 1896 they obtained the contract to construct sewage aqueducts over Johnstons and Whites Creeks in Annandale. These are the earliest reinforced concrete bridge-like structures in Australia (Burns and Roe Worley 2005:21). From this success the company went on to construct a total of 15 bridges between 1899 and 1903, when one of their bridges in Bendigo (Vic) collapsed, it led to the failure of the company.

The oldest extant concrete road bridge was built in 1896 over Black Bobs Creek on the Hume Highway near Berrima. The bridge was built by JW Park of Gladesville for the Public Works Department (PWD). It was of unreinforced concrete with one 9.14 metre span 8.84 metres wide. The bridge remained in use until 1971, when the Hume Highway alignment was altered (Burns and Roe Worley 2005:22).

Reinforced concrete was first used in NSW to bridge Reads Gully on Main North Road, near Tamworth in 1900. The durability of the material was proven – the bridge remaining in service until the road was realigned in 1937 (Burns and Row Worley 2005:24). Assistant Engineer for Bridges, Mr De Burgh was, by this time, satisfied with the performance of concrete and noted that its use was only inhibited by a lack of suitable sites. The flood conditions of the Hawkesbury River provided such a site – wood being unable to stand the heavy loads of flood waters and debris. In 1905 a Monier style bridge was constructed over the Hawkesbury at Richmond and at a length of 214.6 metres it was the longest reinforced concrete bridge in NSW. There were continuing improvements in the design of reinforced concrete bridges and by the end of World War I concrete was becoming the preferred construction material.

3.2 Overview of road and rail development

Governor Macquarie was the first to realise the economic development of NSW hinged on the construction of road networks to enable the transportation of produce. This was particularly important during the early years, when the Colony was struggling with provisions. Macquarie introduced a system of tolls to fund construction. Major roads were forged to the west, south and east, opening the country for settlers.

The nineteenth century was the period of greatest expansion with the advent of railway. Bridge building was a necessity to enable reliable mail and passenger coaches. In the twentieth century the increase in the motor vehicle saw the resurgence of road construction (Broomham 2001:8-9)

3.3 Brief History of the Study Area

3.3.1 Early Exploration of the Cumberland Plain

Areas along the Hawkesbury River and Broken Bay were first explored in 1789 by Governor Phillip, Captains Hunter, Collins and George Johnston and Surgeon White. During the same year the Nepean River was explored by Watkin Tench, Arndell and four others on an overland journey west of Parramatta. In 1791, the Hawkesbury River's southern course was further explored by Phillip, Captains Collin and Tench, Surgeon White and William Dawes. It was revealed that the Nepean and Hawkesbury Rivers was the same river, and that these areas presented a desirable situation for settlement, with fertile alluvial soils and a navigable river. These explorations resulted in the gradual settlement of the Hawkesbury-Nepean River area (Jeans 1972: 36, Proudfoot 1987: 9-11).

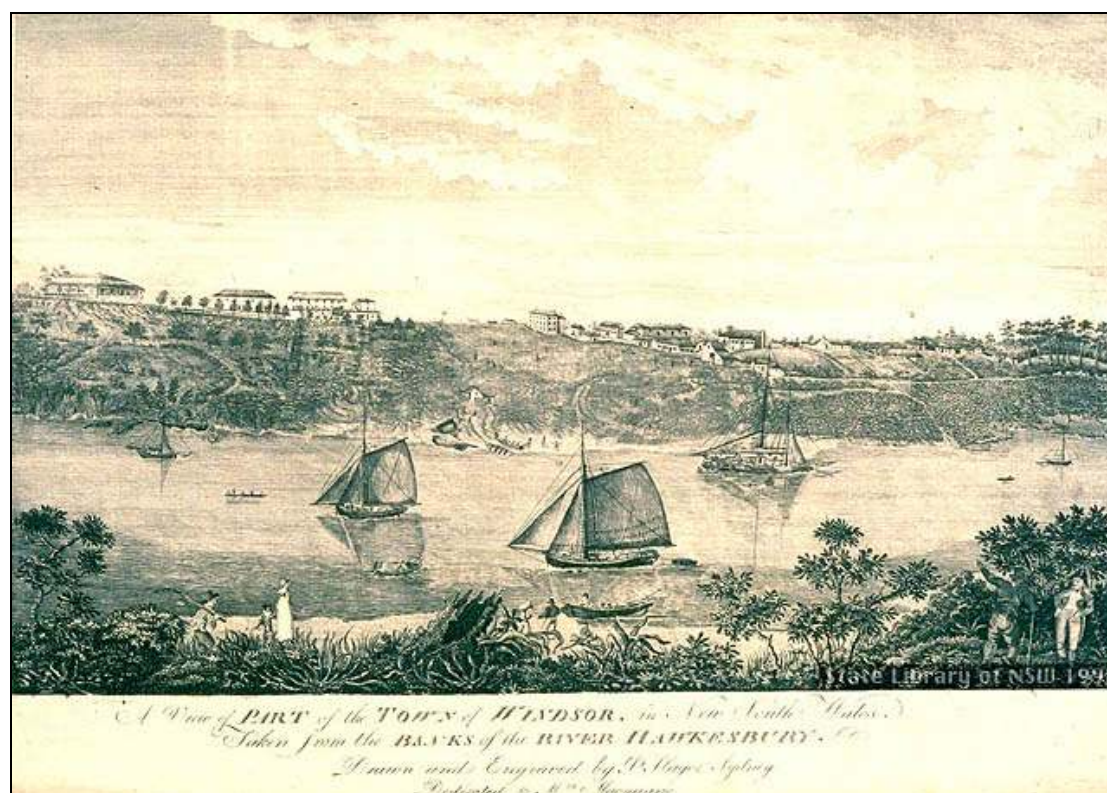


Figure 3.1 Image of Hawkesbury River at Windsor in 1813 (State Library of NSW).

3.3.2 The Development of Agriculture and Food Supply for the Early Colony of Sydney.

One of the first imperatives of the Sydney colony following its foundation in 1788 was the establishment of an ongoing food supply. Although Sydney Cove provided the first area for major domestic settlement, its landscape, dominated by sand dunes and sandstone outcrops, was not suitable for crop cultivation. Early agricultural shortages prompted Governor Phillip to organise a series of expeditions to explore the Cumberland Plain and it was along the arm of the harbour, now known as Parramatta River, where more arable lands were discovered. By 1789, areas along the Hawkesbury River and Broken Bay had been recorded and the Nepean River had been explored by Watkin Tench during an overland journey west of Parramatta. Two years later, the Nepean River's southern course was further explored by Watkin Tench and William Dawes. These early explorations revealed fertile alluvial soils along the Hawkesbury-Nepean River area and by the early 1790s time-expired and ticket-of-leave convicts had set up small farms on these soils (Heritage Office NSW 1996b: 20-24, Jeans 1972: 36-37).

The first official land grants in the area date to 1794, with a total of 22 issued by Lieutenant-Governor Major Grose adjacent to the Hawkesbury River. This collection of grants formed the first settlement in the area, known as Green Hills. The first settlers were given food rations for some time and also convict

assistants to help clear the land, plant the crops and try to establish livestock. The land at Green Hills had the most fertile soils discovered in the Colony at the time and soon became Sydney's principal source of food. Large amounts of wheat, barley, and maize were farmed here and transported to Sydney in small boats to feed the ever-increasing population.

Problems arose, however, due to the remoteness of the settlement. The overland route from Green Hills to Parramatta was a difficult journey of over several days (estimated 32 miles) thus the Hawkesbury River was initially used to ship produce to Sydney. Nevertheless, stormy weather, adverse winds, and the hazards of seizure by convicts were all significant restraints on the early maritime transport (Broomham 2001: 22-25, Powell 2000: 44).

In 1794, Lieutenant-Governor Major Grose arranged the construction of a track, the Hawkesbury Road, to link the Green Hills settlement with Parramatta. The overland transport of agricultural goods was thus much improved; Lieutenant-Governor Major Grose reported that "An officer who is by no means considered as being particularly active....with great ease to himself performed a journey [from Green Hills to Parramatta] in eight hours and two minutes." (H.R.A Series 1-Vol.1, p. 483).

Governor Macquarie's arrival brought sweeping changes to the colony and it was he who declared five towns in the Hawkesbury region on 6 December 1810. One of these was Green Hills, which he renamed Windsor, after its resemblance to the English town of the same name. Macquarie returned a month later to lay out the streets, a public square, church, school and burial ground. Windsor quickly became an important hub for the area with the construction of a convict gaol in 1812-13, military barracks in 1817, convict barracks in 1820 and the courthouse in 1829 (Hawkesbury Historical Society 2008).

Although the Hawkesbury Road, or Windsor Road as it was now known, soon became the primary transport route for market produce to Sydney, particularly following improvements to the road during the 1810s, farmers continued to use the Hawkesbury River for agricultural transport. A wharf had been constructed by February 1795, but Macquarie ordered a replacement in 1814. The contract was given to John Howe and James McGrath, who had considerable trouble completing the Wharf due to flooding, which washed away the structure in 1816. No part of the Wharf could be salvaged and the Wharf was not completed until 1817, with the cost of the flood damage being born by Howe (Bowd 1982:42) The current wharf was constructed in the 1980s (Hawkesbury Historical Society 2008).

The Hawkesbury River flats maintained the position of the principal source of agriculture, at least until the Blue Mountains were crossed in 1812. Windsor, as a gateway for outer settlements to the north, and as the location of the granary, was an important focal point for the Hawkesbury region. This importance in the supply network necessitated crossing the Hawkesbury River.

3.4 Crossing the Hawkesbury River

3.4.1 Punt

The Hawkesbury River was first crossed by a punt service at Windsor. John Howe, a prominent member of the Windsor community, established a punt over the Hawkesbury River at Windsor in 1814 (Bowd 1982:114; Steele 1916:175). Howe continued to own and operate the ferry until it was acquired by the Government in 1832. The Main Roads Board became responsible for ferries on its formation in 1925 (Kass 2006:51). Fitzpatrick (2004:6) remembers the ferry being operated by Mick Flood, who lived in the punt house "on top of the river bank close to 'the rails'".

It may have been political expediency, but when the Minister for Works visited Windsor in 1864 to view the railway works he was taken to see the punt, which was "swamped" (Walker 1890:59).

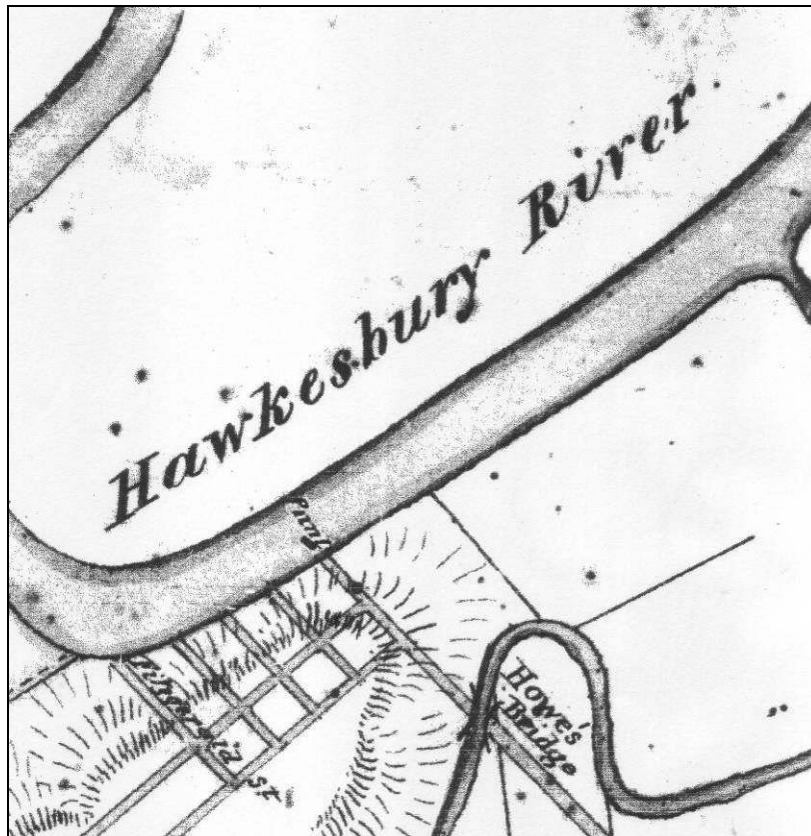


Figure 3.2: Section of Plan of new and old Glebe, adjoining the town of Windsor with part of the surrounding country, 1837. (Mitchell Library Map no. ZM2 811.1122).

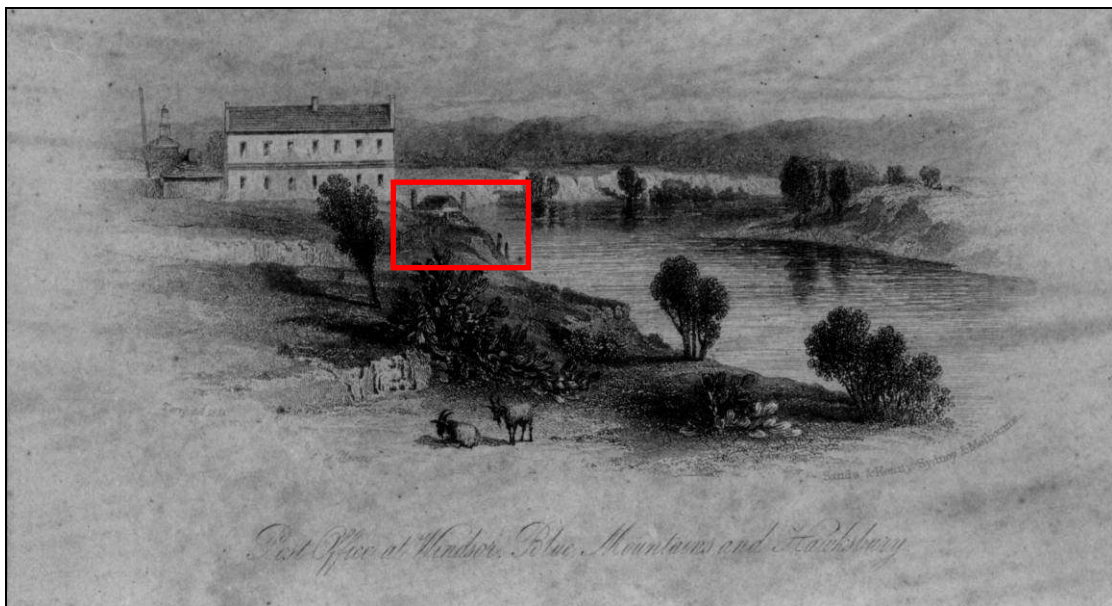


Figure 3.3 1853 post card by Sands and Kenny of Melbourne and Sydney depicting Windsor Post Office. Highlighted is a possible punt house and punt dock. (Courtesy Hawkesbury Regional Museum, Hawkesbury Historical Collection).

The location of the punt, according to Steele (1916:175), was on the site of the current Bridge. A Department of Lands map (ZM2 811.1122) also indicates the location of the punt as being on the site of the current Bridge (Figure 3.2). An 1853 post card of the Post Office (now known as the Doctor's House) depicts a small hut on the banks of the river, which may be the punt house. Two posts can also be seen at the waters edge and may indicate the location of the punt dock (Figure 3.3).

A ferry service across the Hawkesbury River also operated at North Richmond from about 1830. The ferry serviced drovers bringing stock from the north and west to market until the Gold Rush increased traffic to such an extent that a bridge was thought necessary.

3.4.2 Richmond Bridge

In 1857 the Richmond Bridge Trust was established, the fruits of which were seen in 1860 with the opening of a hardwood bridge 28 feet (8.53 metres) wide and 14 feet (4.27 metres) above the water level. This was the first bridge to cross the Hawkesbury River. The Trust had paid £900 for the rights to collect tolls on the Bridge, but the popularity of the Bridge meant a dividend of 10 percent was paid to shareholders most years. The bridge operated, with numerous repairs, until 1904 when a new bridge was constructed several metres upstream. Bowd (1982:62) reported the piles of the original Bridge were still visible.

3.4.3 Hawkesbury River Bridge, Windsor

According to the *Town and Country Journal* (22 August 1874:300) agitation for a bridge at Windsor began in 1864 when Mr J.A. Cunneen presented a petition to Parliament. In his reminiscences, William Walker (1890), Member for Windsor, recounts it was he who presented the petition in the Legislative Assembly and led the discussion. Whoever was responsible, it was not until June of 1871 that funds were given for the construction of a low level bridge. The construction of a low level bridge was considered unwise by locals, due to the flood-prone nature of the Hawkesbury River. Objections, however, were overruled and tenders were called for (Walker 1890:60; Steele 1916:183). The tender of Andrew Turnbull and William King Dixon was accepted in December 1871 and construction commenced on 15 January 1872 (Bowd 1986:95; *Town and Country Journal* 22 August 1874:300). Dixon was presented with a gold watch by the people of the Hawkesbury as a token of their appreciation of the many difficulties he overcame during the construction.

Bowd (1986:95) reports the death of ten year old Humphrey Douglass during the construction of the Bridge. Douglass was employed on the site and while walking along a footboard he fell into the water. Before assistance could reach him he had drowned.

The Bridge was originally designed to be 406 feet (123.75 metres) long, however, adjustments had to be made during construction and the completed length was 480 feet (146.30 metres). Plans of the Bridge, and subsequent modifications can be found in Appendix A. As a result of the greater length a tenth pier was required. Rather than wait for the casting of the columns the additional pier at the Wilberforce end was constructed from wood. The *Town and Country Journal* provided the following description of the Bridge and its construction on the opening of the Bridge:

The abutments were to be of timber; and the nine intermediate piers of cast iron cylinders and screw piles braced with strong wrought iron beams. The screw piles and cylinders to be sunk to the rock and lewised [refers to Lewis patent bolts] thereto by heavy wrought iron bolts, previous to being filled up with cement concrete.

In October, 1872, three of the iron piers had been sunk 4 feet into the rock to the depth of 25 feet below river bed; each column was lewised with four-inch bolt and filled up with strong cement and concrete, supporting a ring of 9-inch radiating bricks; enclosing a cone of concrete on the top of the pier.

From the nature of the strata found in sinking these piers, it became doubtful whether screw-piles could be used, as the bed of the river to the rock consisted of drift timber, silt, and boulders deposited by floods.

A test screw-pile, 2 feet 6 inches in diameter, was, however, put down in the middle of the stream; but the rock could not be reached, owing to the difficulty of removing the drift timber. Mr. Bennett, the Commissioner and Engineer for Roads, then decided to give up the screw-piles and to use cylinders for all the piers.

Many freshes and several heavy floods retarded operations; and the sinking of all the piers could not be completed until December, 1873. Although a few feet only of the iron columns appear above water, the cylinders reach an average depth of 40 feet below summer level. By the use of the sand-pump and air-lochs, boulders, drift-wood, and logs, several feet in thickness, were removed at considerable depths, and each pillar firmly bedded and lewised four feet into the solid rock. The bracing beams were also fixed below water by divers, before the erection of the superstructure.

The extraordinary floods at Windsor which reach to a height of 51 feet above low water, or 36 feet above the decks of the bridge, made it necessary to have the superstructure unusually strong; and much ingenuity is shown in the design for securely fastening it to the piers.

The deck is 21 feet 6 inches wide; and is composed of planks five inches thick, securely fixed to five ironbark girders 17 and 18 inches by 16 inches and 44 feet long, strongly bolted to corbels and

capsills firmly secured to the iron piers. The whole of the timber is ironbark, which has little buoyancy under water, and the girders are fine specimens of our colonial wood.

All the joints are covered with iron fish-plates, bolted with inch bolts, and it is evident from the massive fastenings throughout, and the great strength of the structure in every detail, that the engineer has taken every precaution to prevent the floods from making a breach in any part of the bridge.

The handrail is also ingeniously contrived to protect it from the large quantity of drift timber brought down by the floods. The foot of every rail post swings on a stout bolt secured to the girders, and the top is jointed to a two-inch wrought iron pipe, provided with sockets and collars at every 44 feet; the total length being held in place by two iron couplings in such a manner that one man can lower the whole alongside the girders in ten minutes.

The amount of Messrs. Turnbull and Dixon's contract was £8287; but an additional expenditure of about £2000 was rendered necessary by the substitution of cylinders for screw piles in the piers, and by the addition of two spans to the bridge to prevent future encroachment on the approaches. It was observed that moderate floods bring large deposits of sand and drift; but that heavy floods scour the river bed to a considerable extent.

The total length of the bridge as completed is 480 feet. The abutment on the Windsor side is built of iron backed with masonry in cement; and that on the opposite bank is protected by sheet piling reaching below summer level.

A new cutting has also been made on the Wilberforce side for the approach, which is covered with ironstone gravel.

The number of cast-iron cylinders used in the piers is 130. They are six feet long, and 3 feet 6 inches in diameter, and their weight exceeds 150 tons. They were cast at the Mort's Dock and Engineering Works at Balmain; and are another instance of the facility afforded for such works by colonial establishments.

The inhabitants of the district may well be pleased at the completion of this fine bridge; and it will be satisfactory for them to know that it has been ascertained by the officers of the Department of Roads and Bridges, in reference to the traffic and the disastrous floods of the Hawkesbury River, that while the deck of the Windsor bridge is free from flood, the Richmond bridge is covered with three feet eight inches of water, and that the Windsor bridge is crossable twenty-two hours after the stoppage of the traffic at the Richmond bridge.

Great credit is due to the contractors, Messrs. Turnbull and Dixon, for their energy and perseverance in carrying out, without any accident, such an important and difficult work, to the satisfaction of the Commissioner and Engineer for Roads.

The opening of the Bridge on Thursday 20 August 1874 was an occasion for celebration in the Hawkesbury region and £98.0.8 was collected to fund the festivities. George Street was decorated with banners and flags and a procession half a mile (804 metres) long marched from the Council Chambers to the bridge, serenaded by the Windsor and Richmond Volunteers bands. On arrival at the Bridge the Minister for Works officially opened the Bridge and named it the Windsor Bridge. The official ceremony was followed by a public dinner at the School of Arts for the invited dignitaries, a bullock roast on Thompson Square for the remainder of the public and games for the children. A ball was held in the evening at the barracks (Walker 1890:61-2).

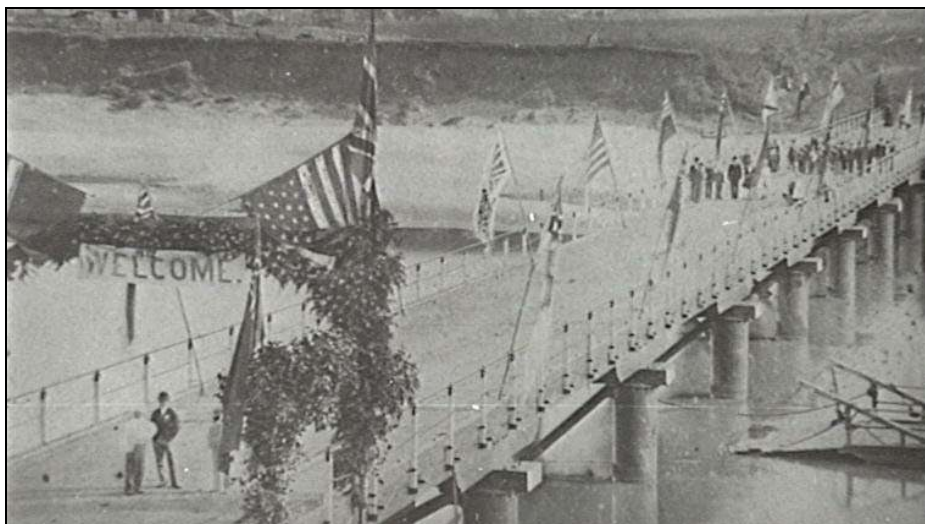


Figure 3.4 Image of the opening of the Hawkesbury River Bridge on 20 August 1874. Note the punt on the downstream (right) side of the bridge (Hawkesbury Regional Library Collection).

Despite the *Town and Country Journal's* optimism regarding the height of the new structure in relation to the Richmond Bridge it soon became apparent that the River flooded over the deck with alarming frequency. To place the Bridge above the flood waters it would have to be raised by 15 to 18 feet (4.57 to 5.49 metres), which was financially and operationally unviable. Instead, £4000 was given to raise the Bridge by eight feet (2.44 metres) with the work being completed in April 1897 (Steele 1916:184).



Figure 3.5 Hawkesbury River Bridge after being raised in 1896 but prior to concrete re-decking in 1922 (State Library of NSW).

A temporary bridge was constructed to allow the continual flow of traffic while work was in progress. The temporary bridge, begun on 9 September 1896, took six weeks to build and was 460 feet long (*Windsor and Richmond Gazette* 3 April 1897). RTA plans suggest that the temporary bridge was located immediately upstream of the existing bridge, was 12 feet wide and made up of 30 foot spans (RTA Plan 0182 492BC0104, sheet 8).

Raising the bridge was effected through the addition of eight foot cylinders on top of the extant columns. The deck was laid diagonally in tallow wood with kerbing of ironbark. The works also included new approaches to the Bridge, which greatly increased the ease with which traffic could access the Bridge – access from the Wilberforce side had been difficult for horse-drawn drays (*Windsor and Richmond Gazette* 3 April 1897). Further work was undertaken on the Windsor approach in 1934 to meet the requirements of increased motor vehicle traffic (Bowd 1982:64).

The timber decking was replaced with concrete in 1922. An Index of Public Works and Main Roads, Road Bridges, Public Ferries and Punts (SR 12638 item 3/886) inaccurately cites the date of Bridge construction as 1922, but this is thought to relate the re-decking work. This reference possibly gives rise to several other erroneous references to the Bridge's construction in 1922 (eg. O'Connor 1984: 14). The Index lists the cost of the Bridge at £13,370, although it is unclear if this figure refers to the original construction of the Bridge or the re-decking.



Figure 3.6 View Of Hawkesbury River Bridge during concrete re-decking operations in 1922 (Hawkesbury Regional Library Collection).

The *Windsor and Richmond Gazette* reported on 4 January 1935 that a boy had been critically injured while playing on the Bridge on New Years Day. Geoffrey Mortley had been swinging on the chain and top rail of the bridge at the southern approach when both gave way. The boy fell over 20 feet (6.1 metres) onto a ballast pile. He was taken to Windsor Hospital, but died shortly after (*Windsor and Richmond Gazette* 10 January 1935). In response it was proposed safety netting be attached to the railing to prevent children from swinging on the chain used to lower the railing during flood. An additional chain was also recommended for insertion that would cause the chain to tighten when the rail was in the upright position. These works were estimated at a cost of £110 but do not appear to have been carried out, as historical photographs show no change to the safety rails after the fatality (RTA File 91.1526.3)

In 1936 the timber kerb was replaced with concrete at a cost of £380. Further work was undertaken in 1941 when steel pier bracing was renewed with the aid of a Marine Services Board diver. The scrap steel was gifted to the Windsor Council Salvage Fund benefiting the War Effort. In November of 1953 an inspection revealed the cracking of a pier's cylinder. The steelwork was sandblasted and repainted in 1954 at a cost of £300 (RTA File 91.1526.1).

Further repair work was undertaken in July 1966 when the spalling and rust was removed at a cost of \$1400. In December of the following year a further \$350 was spent on maintenance and repair of the folding handrail and note was made to ensure the rail was operated by a "competent person" (RTA File 91.1526.2).

The Windsor Council began agitation for a footbridge in 1942. Ten years later the *Windsor and Richmond Gazette* reported on 10 December that the Council had made representations to the Department of Main Roads for an attached footbridge. It was not until May 1954 that a memo was prepared recommending that a preliminary investigation be conducted into methods of attaching the footbridge (RTA File 91.1526.2). Plans moved slowly and the footbridge was not constructed until 1968, with costs being shared by Colo and Windsor Councils, Department of Main Roads and the Metropolitan Water, Sewerage and Drainage Board (MWS&DB). The original handrail was relocated to the edge of the footway, with crash railing being installed on the Bridge proper. The total cost of works was \$32,630.95 (RTA File 492.1242.1).

An underwater inspection of the Bridge in August of 1972 found the condition to be satisfactory. A similar inspection in October 1974 found minor rusting below the water line, which had not penetrated

the fabric and was removed. Above the water, cracks and spalls were identified in the reinforced concrete beams and it was recommended the steelwork be repaired. The work was not carried out as the inspection reports for 1975 and 1976 returned similar findings. The inspection of 1977 requested that repairs to the handrail be undertaken. The work was not undertaken and it was again requested in the 1978 report, along with re-painting the piers, repairs to a safety rail post and the need to re-direct local drainage. Limited repairs were carried out as the 1980 report lists the same concerns, although an underwater inspection reported the Bridge to be in satisfactory condition (RTA File 91.1526.3).

A fatal accident occurred on 11 May 1980 when a drunk driver crashed his panel van through the railing. His female passenger was found trapped in the car by police divers seven hours later. The man was committed for trial for culpable driving (*Windsor and Richmond Gazette* 3 September 1980). As a result of this incident the collapsible handrail on the upstream side was removed and replaced with a crashrail. The initial report of November 1980 estimated the cost to be \$8500, although the actual figure may have changed by the time the works were carried out in June 1982. Further repairs were needed when the Bridge was inspected in April 1984 (RTA File 91.1526.3).

A number of services have been piped across the Bridge, beginning, according to RTA files, in 1957, when the Colo Council installed a 0.5 inch (1.3 centimetres) water pipe at their own cost. The design of the footbridge allowed space for the provision of further service piping, allowing for 3.75 inch (9.55 centimetres) ducting for telephone cables by the PMG (Post Master General's Department) in March 1973. A MWS&DB application to install a water main on the Bridge was rejected in October 1975 based on aesthetics and safety. In June the following year, however, approval was granted for the laying of a 450mm water main as part of the Wilberforce amplification. The Prospect County Council was granted permission to lay a 100mm galvanised iron pipe and electrical cable under the footpath in February 1985 (RTA File 91.1526.3).

In November 1985 the footbridge was adjusted, movement over time had opened a substantial gap between the Bridge and the footbridge. The gap had become a pedestrian hazard; the RTA file refers to an accident although details were not provided. The works also included the erection of a new and more substantial collapsible pedestrian barrier (RTA File 91.1526.3).

Records of more recent maintenance are not well recorded, with the last reference to work on the Bridge being undertaken in August 2003 when the concrete headstocks and girders were tested at a cost of \$9770 (RTA File 91.1526.3).

3.5 Windsor Wharf

Higginbotham (1986:24) notes that the first wharf at Windsor was recorded by David Collins in 1795. Collins mentions the wharf in an entry from the 21st of May 1795:

On the 21st the colonial schooner returned from the Hawkesbury, bringing upwards of eleven hundred bushels of remarkably fine Indian corn from the store there. The master again reported his apprehensions that the navigation of the river would be obstructed by the settlers, who continued the practice of falling and rolling trees into the stream. He found five feet less water at the store-wharf than when he was there in February last, owing to the dry weather which had for some time past prevailed.



Figure 3.7 Photograph of a plan showing the Wharf at Windsor in relation to the Bridge and Thompson Square 1890 (S.R. 11/1653 x1081).

Governor Macquarie found this structure lacking and drew up contracts for the construction of a new Wharf and approach in 1814. The contract was awarded to John Howe and James McGrath of Windsor with the specifications of the Wharf, approach and a sewer to be constructed in the following manner:

The front of the Square to be piled with sound Piles from 16 to 18 Inches thick to be from three to four feet Apart in the [illegible] to be three feet above the Water Mark at Spring Tides (but in a line with it) Well Capped and Secured by Land-Ties to extend from side line to side line of the Square to be planked on the Inside of the Piles and then filled up to the top.

The Wharf to Commence from the Upper Side Line of the Square to Extend Eighteen feet from the above Row of Piles which will be in deep Water to Extend fifty feet in Length to be planked on the Inside and filled up unless it should be thought best to plank the top and in that Case the same is to be planked and not filled up, the whole to be Capped and well secured by Land Ties as also to the Row of Piles in Front of the Square.

...[the contractors are to pile] up the Front of Thompson's Square for filling up the Same and reducing it to a gradual slope from the Rise or Ridge on which His Majesty's Store stands...

...To Sink and Erect on Sewer in the middle of the Square with Channels leading thereto or to Sink and Erect two sewers one on each side of the Square as laid down in the Plan in the possession of His Excellency Governor Macquarie.

(Mitchell Library Manuscripts no. 106 article 37, 8 August 1814)

A second contract was signed 24 April 1815 that altered the contract:

To erect a Wharf or Platform in the front of Thompson's Square in the Town of Windsor in this Territory which shall extend the width of the square on a line with the present Jetty or Wharf but three feet higher, the said wharf to be constructed to have two Rows of Piles without the present platform, and one Row behind the whole to be well secured with Land Ties and Caps and planked with sound two inch Planks, and not more than six inches wide to be spiked with five inch Spikes, and the whole of the Square to slope from the Crown or Range on which His Majesty's Store stands gradually to the point of the said Platform, the Bank to the Westward of the New Wharf and adjoining to that point of the River where the Punt and Ferry Boats land is to be cut away sufficiently wide to admit of Carts turning at the Landing Places...

Disaster struck in June 1816. With works almost finished a flood almost completely destroyed the Wharf. Macquarie enlisted Francis Greenway to draw up plans to ensure the same did not happen again and agreed to pay Howe and McGrath an additional £220, provided works were finished within 18 months of November (Higginbotham 1986:27). Greenway's plan caused the contractors considerable expense, beyond the additional sum provided by Macquarie and Howe complained he, effectively, received nothing. The final agreement was signed in 1816, but the final payment was not made until 1820.

Historical Records of Australia (Watson 1925: 691) records the Wharf at Windsor in 1822 as a part of the evidence from the Bigge Reports: 'List and schedule of Public Buildings and Works erected at the expense of the Crown 1 Jan 1810 to 30 Nov 1821'

A large substantial wooden wharf or quay Constructed in the Center of the Town on the right Bank of the River Hawkesbury for the convenience of Vessels and Boats trading to Windsor and at which Quay Vessels of 100 Tons Burthen can load their Cargoes. A very Convenient Ferry has been established from the same Wharf to the North Bank of the River by a large Punt



Figure 3.8 View downstream from Hawkesbury River Bridge showing the Windsor Wharf in the immediate foreground. (State Library of NSW) 1947.

The Wharf was the principle means of loading ships for the transport of grain to Sydney with the return voyages providing the locals with supplies. When the railway line was extended to Richmond in 1864 grain was brought to Windsor to be sent by rail from Richmond. The silting of the River in the 1880s resulted in the increasing use of rail, followed by trucks in the 1930s (Bowd 1986:86).

The subsequent history of the Wharf is unclear and significant alterations may have been made to the structure during the construction of the Bridge. The final fate of the Wharf is unclear from the available historic data. A modern wharf and boat ramp has been constructed to the west of the Bridge and Wharf, probably in the early 1980s.

Windsor had a second wharf, known as Beasley's and "was a little higher up, near the Municipal water pump, at the foot of Fitzgerald Street" (Steele 1916:175). This is the only reference to this structure and as it falls outside the study area no further action is required.



Figure 3.9 Looking upstream towards Hawkesbury River Bridge from Windsor Wharf (Hawkesbury Historical Society Collection, courtesy of Hawkesbury Regional Museum) Circa 1896-1922.

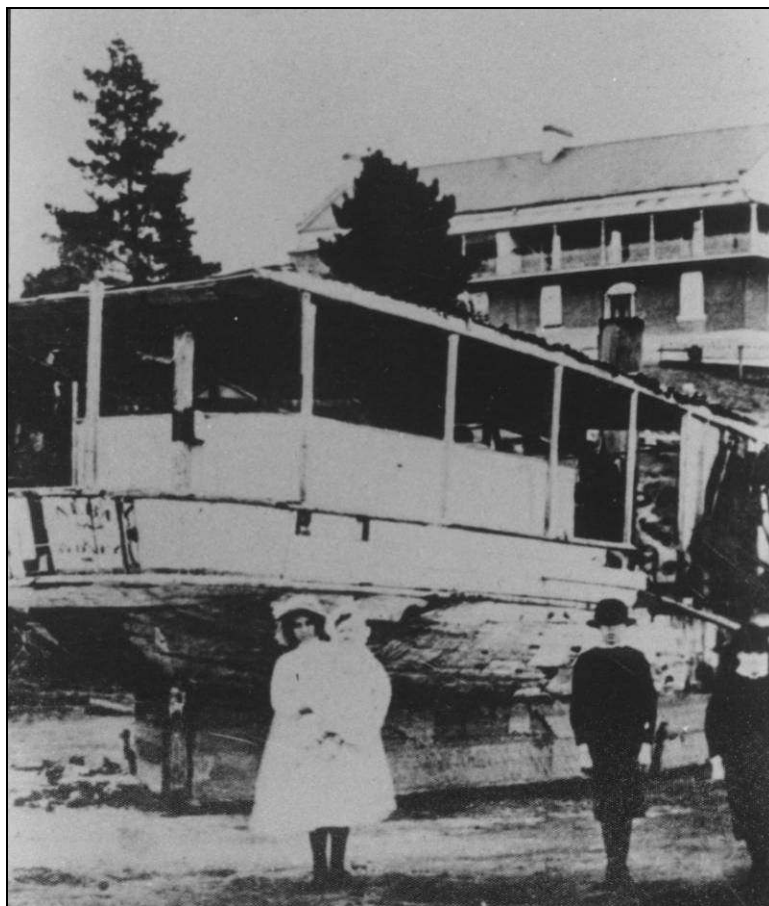


Figure 3.10 Paddle Steamer *St. Albans* on the Windsor Wharf, possibly the result of a flood, u.d. (Hawkesbury Historical Society Collection, courtesy of Hawkesbury Regional Museum).

3.6 Thompson Square

The impact of the proposed works is limited to the grassed portion and will not impinge on the structures surrounding the Square. This history will therefore be limited to the Square.

Governor Macquarie laid out Thompson Square in January 1811 as public space and named it after Andrew Thompson, a respected local of Windsor, an emancipist entrepreneur and magistrate. As the centre of the town a collection of buildings sprung up around the Square, including two hotels (of which the Macquarie Arms Hotel is extant), a doctor's house and a number of shops. The Square was the focus of community events as evidenced by the celebrations and bullock roast on the opening of the Bridge.

Howe and McGrath's contract to construct the Wharf and approach is the first record of changes to the Square. The construction of a gradual slope significantly altered the river bank, as did the installation of a turning area for carts at the Wharf. The contract also included the construction of a drain or drains through the centre of the Square:

...To Sink and Erect on Sewer in the middle of the Square with Channels leading thereto or to Sink and Erect two sewers one on each side of the Square as laid down in the Plan in the possession of His Excellency Governor Macquarie.

(Mitchell Library Manuscripts no. 106 article 37, 8 August 1814)

The drain is likely to be extant in sections and forms the greatest potential for archaeological remains. The drain has become a local legend as a rum smugglers tunnel, which is purported to run from the Macquarie Arms Hotel to the River.

The erection of the Bridge brought about the next major alteration to the Square with a road being cut behind the Wharf or the raising of an embankment to achieve the same. During the raising of the Bridge in 1897 the approach was raised above the Wharf and altered the line of Bridge Street through the north-west corner of the Square.

The current approach and road alignment was put in place in 1934. These works included cutting and infill of the land to level with the Bridge, which again significantly altered the Square (Higginbotham 1986:31, Burns and Roe Worley 2005).



Figure 3.11 View from Thompson Square towards The Hawkesbury River Bridge (State Library of NSW) 1934.

4.0 Results

4.1 Introduction

An inspection of the Bridge and surrounds was carried out by Dr Susan Lampard, Charles Parkinson and Lori Sciusco on 12th June 2008. An additional inspection was undertaken by Dr Susan Lampard and Peter Howard on 18th June 2008.

4.2 Hawkesbury River Bridge

The Bridge is formed of various components, namely abutments, Iron lined concrete piers, a mass concrete pier, spans, decking beams, footway and railings. Each of these components has varying heritage significance, implications and associated management issues. The Bridge is comprised of eleven spans of slightly differing lengths supporting a reinforced concrete road deck. These were constructed in two longitudinal sections each with four integral beams, in order to be able to keep a single lane of traffic moving during deck construction works (Figure 3.6). The deck provides a roadway with a width of 6.1metres, enough for two lanes of traffic.

4.2.1 Abutments

The two abutments on Bridge are listed as Abutment A being located at the Windsor end and Abutment B being located at the Wilberforce end. Abutment A is formed by three caissons fronting an endwall and wingwalls cast in concrete. Abutment B is formed of nine piles upon which a mass concrete platform was constructed at the time of the concrete decking, according to RTA Plans (0182 492BC0104, sheet 6). There are also wingwalls of driven sheet steel piling, which are most likely recent additions to prevent scouring around the abutment. An inspection of timber piles at the western end indicates they are unlikely to be the remains of the earlier wooden pier. The remains are not substantial enough to support a bridge of this size. Further investigation in the water is required to determine the purpose of the piles, but they may relate to an earlier abutment structure.

Abutments function as a support for the end spans as well as providing retaining walls for the fill material associated with the approach embankments and river banks. The main cause of abutment deterioration in flood prone areas is from scour associated with flood activities. Abutment B shows evidence of scour remediation with the presence of recently added steel wingwalls and stone rubble erosion baskets. Abutment A has also had significant works carried out to deter scouring through the installation of stone filled gabions. The gabions extend to the east over the Wharf.

4.2.2 Iron Lined Concrete Piers

The nine major piers are formed by two cast iron cylinders with cross bracing, which have been raised to their present level by the addition of 2.4m (8 feet) sections of caisson. The iron piers are then filled with mass concrete for strength. The piers originally had iron cross bracing, with a second level of bracing added when the bridge was raised in 1896. To support the concrete deck, constructed in 1922, a concrete cross girder has been cast between the caissons, with an upper level cross girder directly under the deck beams, which are simply supported.

The piers are constructed by sinking iron caissons into the river bed in order to reach bedrock. This was done by pumping out sand and air to allow the caissons to sink. In the process of sinking the caissons, many obstructions such as 'boulders, drift-wood, and logs, several feet in thickness, were removed at considerable depths' (*Town and Country Journal* 22 August 1874). Following the discovery of bedrock, the piers were attached four feet into the rock, and then the underwater attachment of cross-bracing by divers was performed. Finally the caisson was filled with concrete for strength and solidarity.



Figure 4.1: View of Abutment A, Windsor side, with endwall and wingwall elements visible. Also visible is the new handrailing installed in 1982.



Figure 4.2: Abutment B at the Wilberforce side, showing concrete construction and steel wingwalls.

Strength is critical as the piers are required to bear the weight of the bridge in addition to any and all traffic that uses it. In the case of this Bridge, the quality and skill of the construction of the piers is most evident in the fact that a bridge constructed in 1874 with timber decking for a relatively low traffic density is still capable of reliable operation with a heavy concrete decking and high traffic density with a much higher gross weight, as well as a steel and concrete footway erected in 1968.

These piers are in good condition with ongoing inspection and maintenance. The major areas of concern have been rusting and abrasion on the upstream side of the piers resulting from impacts by flood debris.



Figure 4.3: Iron piers and cross-bracing with concrete cross-girder added in 1922.

4.2.3 Mass Concrete Pier

The mass concrete pier at the Wilberforce end is a replacement for an earlier timber pier added during construction when it was realised that the river banks were subject to heavy scouring and that the Bridge would require an additional span. The timber pier was replaced by the present concrete one with re-decking of the Bridge in 1922, the timber pier being considered of unsatisfactory strength to bear the added weight of the concrete deck. The concrete piers are described as three foot Monier cylinders on a Public Works Department Plan, and are erected on a concrete bed cast on top of ten piles, driven approximately 30 feet (9.14 metres) into the ground (RTA Plans 0182 492BC0104, sheet 6).

The presence of the concrete pier shows how the Bridge design has been adapted over time in order to cater for changing needs. It demonstrates a history of adaptation of an older, reliable design rather than its replacement.



Figure 4.4: Mass Concrete Pier at Wilberforce end of bridge. Note the lack of cross-bracing and absence of iron casing on the piers.

4.2.4 Reinforced Concrete Beam Girder Spans.

The spans are of reinforced concrete beam girder construction dating to 1922. There are eleven simply-supported spans of slightly differing lengths as follows: one at 12.8m, two at 13.4m, three at 13.5m, one at 13.3m, three at 13.4m and one at 9.8m. The concrete beams and decking were constructed in two longitudinal sections each with four beams. These were built in such a manner as to allow a single lane of traffic to continue to use the bridge while re-decking works took place. This was achieved with the use of a temporary timber roadway 8 feet (2.44 metres) wide on the downstream side during re-decking works (RTA Plans 0182 492BC0104).

The girder spans provide the structural support for the road deck. Bridge girders are typically laid longitudinally and span the distance between bridge piers and transferring vertical loads from the bridge deck into the piers.

One of the maintenance issues associated with reinforced concrete spans include spalling, where reinforcing steel within the concrete becomes exposed to the elements and rusts, which leads to damage to the concrete as the rust expands to six times the volume of the steel. This can have significant implications for structural integrity if the spalling penetrates deep into the concrete structure. Spalling was first reported on the Bridge in 1966 and subsequently in 1974, but was considered to be present only on the surface and a cleaning and patching job was completed. The concrete girders and headstocks were tested and found to be structurally satisfactory in 2003 (RTA File No. 91.1526.3).

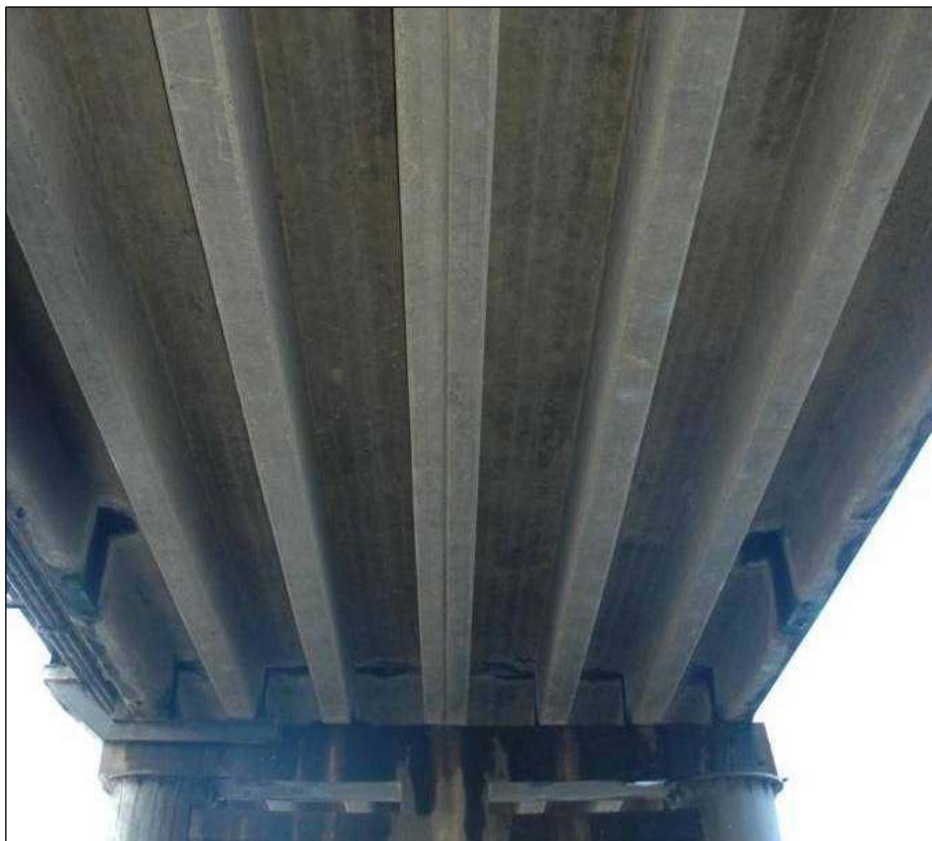


Figure 4.5: Underside view of concrete beam girders. Note the line between the central beams showing where the two sides were constructed separately.

4.2.5 Concrete Decking

The reinforced concrete deck was constructed with the new girders in 1922. The deck sits on top of the beam girder spans and provides the road surface for traffic. The deck of the Bridge is also of reinforced concrete and like the beam spans is divided up into two longitudinal sections in order to allow for traffic to use half of the bridge during the re-decking operation.

4.2.6 Footway

The footway is a more recent addition, being constructed in 1968 following many years of agitation. It is constructed from removable concrete slabs and steel bracing placed as a deck on top of a series of rolled steel joist girders cantilevered to the underside of the deck and supported by the bridge piers. The bracketed supports of the footway also make provision for services to use the bridge, and ducting for telephone cables installed by the PMG as well as a watermain and electrical conduit are all carried underneath the footway (RTA File No. 91.1526.2).

The footway was constructed in response to two decades of agitation by locals and appears to have finally come about as a way to share the cost of the construction with the MWS&DB as a pipeline easement. In 1985 remedial works on the footway decking were necessary in order to reduce the gap between the footway and the bridge so as to make it safe for pedestrian usage.

4.2.7 Railings

The Bridge was originally constructed with pipe and chain railings of a unique design which could be folded down to prevent damage from flood debris. The original railing provided no structural support, presented no barrier to vehicular traffic and little impediment to unwary pedestrians, as fatalities in 1935 and 1980 attest to. As such the original railing has been replaced on both sides of the road by tubular crash railing on top of concrete kerbs, initially on the downstream side in 1968 with the new footway and then on the upstream side in 1982.

In 1982 the collapsible hand railing on the downstream pedestrian footway was replaced with a more substantial railing due to safety concerns (see figure 4.1), chiefly that the safety chain provided no real barrier to an unwary pedestrian and the fact that this chain became disconnected easily. It is interesting

to note that in conjunction with the fatality in 1935 safety netting had been proposed as a precautionary measure, but this appears to have not been implemented (RTA files 91.1526.1, .2 and .3).



Figure 4.6: Underslung cantilevered footway brackets showing services attached to bridge.

4.3 Windsor Wharf

The remains of the Wharf are located on the river bank between the Bridge and the current wharf. Access to the site is difficult due to the steep nature of the river bank at this point and vegetation coverage. These two factors limited the examination of the Wharf remains, although their presence was identified on the 18th of June. Land-ties were identified jutting out into the water. Future examinations would require access from the water. The following description of the remains is taken from Higginbotham (1986:42) and given the date of the inspection, the site is likely to have deteriorated over the intervening 22 years.

It consists of a single row of piles parallel with the river bank, and secured by horizontal land-ties. Further beams lie across the ties and would have supported the decking. The innermost row of beams holds back a vertical wall of slabs with infill behind. The timbers are secured by hand-made bolts and spikes. The wharf dates to the nineteenth century and may be the one erected by Messrs. Howe and McGrath, according to Francis Greenway's plan between 1816 and 1820.

(Higginbotham 1986:42)

4.4 Archaeological Potential

The archaeological potential in the vicinity of the Bridge is limited due to the substantial works undertaken during the construction of the Bridge itself and the effects of river erosion underneath. It is therefore considered unlikely that evidence of the punt dock, on either side of the River, has survived. Archaeological evidence of the former abutments and approaches is more likely to be preserved. The areas of potential and impact are shown in Figure 4.7.

The area of impact on the Wilberforce side of the Bridge is considered of low potential. Historical maps and photos indicate this area to be bare or planted with crops (see for example Figure 3.6). There is low potential for archaeological features related to cropping, such as furrows, to be present – the subsequent land use is likely to have removed all evidence of this use. There is also low potential for evidence of the punt dock to be uncovered. This is considered unlikely due to the significant erosion and scouring of the River banks in the vicinity.

There is very high potential for significant portions of the Wharf to remain beyond that currently visible at the water line. Given the method of construction, the land behind the extant piles and land ties is likely to

be fill, the extent of which may indicate the size of the Wharf and provide further details of construction methods.

The proclamation of Thompson Square in 1810 as public space has kept the area free of buildings and the archaeological potential is limited to evidence of its use as a public space. The exception to this is a brick barrel drain or drains. A contract for construction of a brick drain was awarded to Messers Howe and McGrath in common with the construction of the Wharf leads to the strong likelihood of remains of the brick drain, which dates from 1815, to be present beneath the surface in areas of Thompson Square. Higginbotham (1986:41) has identified an entrance to a drain on the river bank behind the remains of the Wharf. The exact route of the drain is unclear, the contract provided for two alternate plans. The first involved a sewer down the centre of the square with channels running into it and the second was for two sewers, on down either side of the Square. It is not known which option was constructed. It is likely, however, to have been impacted by the construction of the new Bridge approach in 1934; the potential exists to encounter intact sections of the drain. Further testing is required to ascertain this point.

Any extant remains of the brick drain have the potential to reveal information about 19th century drainage practices, early 19th century rural brick making and the difficulties of providing adequate drainage in areas which are subject to severe flooding.

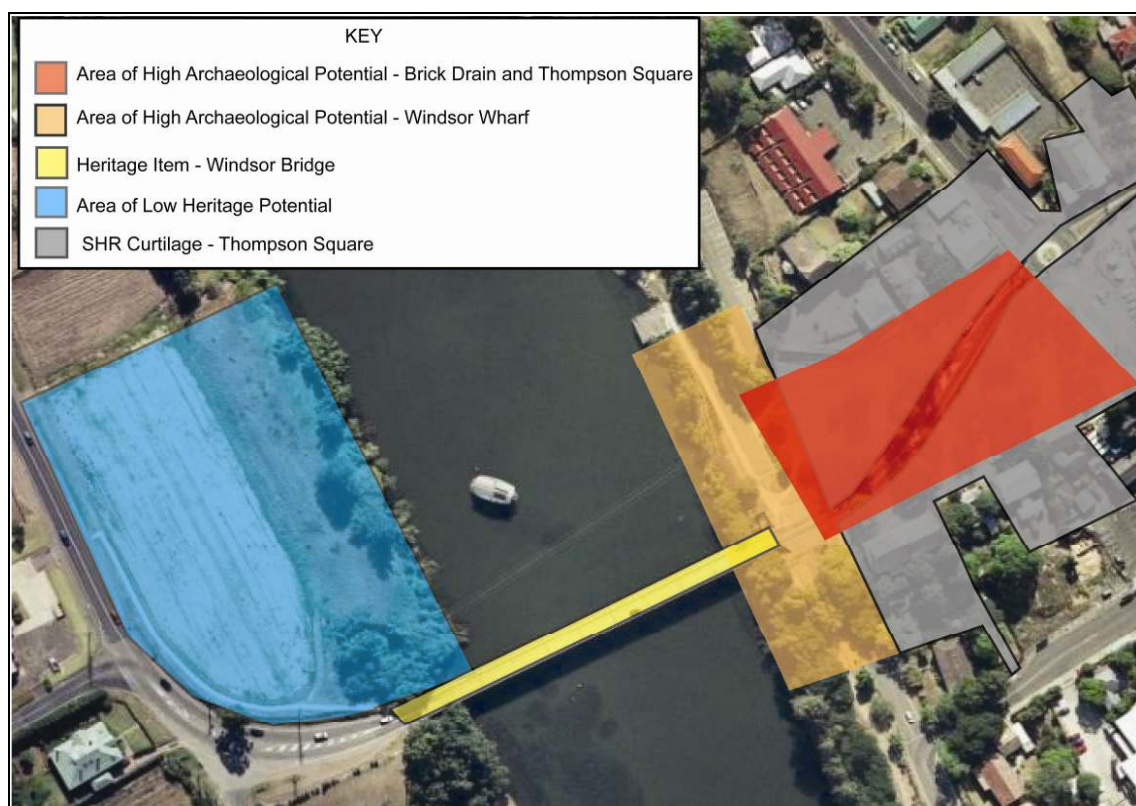


Figure 4.7: Map showing grading of heritage impact and potential. (NSW Department of Lands SIX Viewer 2008).

5.0 Assessment of Cultural Significance

5.1 Introduction to the assessment process

The presence of archaeological remains does not necessarily equate to research potential or archaeological significance. The nature of the archaeological evidence and the information that it may provide must also be considered when making decisions about the management of archaeological sites.

An assessment of significance seeks to understand and establish the importance or value that a place, site, or item may have to the community at large. The concept of cultural significance is intrinsically connected to the physical fabric of the item or place, its location, setting and relationship with other items in its surrounds.

The assessment of cultural significance is ideally a holistic approach that draws upon the response these factors evoke from the community. The criteria of evaluating cultural heritage value are generally applied to sites, places or items that have tangible historic structures or relics visible at the site, or where there is general understanding of the extent of the historic resources.

Archaeological sites require a different method of evaluation because of the nature of the heritage resource and because the degree to which it can contribute to our understanding of history cannot be fully comprehended at the outset. Therefore, what is subject to evaluation is the significance of the 'potential' of the site to reveal information about the past that needs to be assessed when determining the cultural significance of archaeological resource.

Archaeological deposits can also offer different types of information that is not always available through any other source and the contribution it can make to our understanding of a place of past human activities may also be of cultural heritage significance. Despite these differences the same general set of criteria are used to assess cultural heritage value of different types of heritage resources.

The Australia ICOMOS Charter for the conservation of places of cultural significance (the Burra Charter) was formulated in 1979 and most recently revised in 1999, and is the standard adopted by most heritage practitioners in Australia. The Burra Charter defines a number of categories for the assessment of significance of a place, item or site. These categories include:

- Historical;
- Aesthetic;
- Social;
- Scientific/Technical; and
- Other (rare or representative)

These categories provide the basis for many of the States and Territories criteria for assessment.

5.2 Criteria for the assessment of historic cultural heritage

The State Heritage Register, which was established by the amendments to the *Heritage Act 1977* in 1998, has a separate set of significance assessment criteria broadly based on those of the Burra Charter. A central feature of the amendments to the Act is the clarification and strengthening of responsibility for the management of heritage items at the Local and State level. The Heritage Council of NSW recognises the following four levels of significance for heritage in NSW:

- Local
- State
- National
- World.

The levels of significance reflect the corresponding statutory listing and responsible authority for the conservation and management of these items (Heritage Office 2008).

To be assessed for listing on the State Heritage Register an item will need to meet one or more of the following criteria:

Criterion	Description
A Historic	An item is important in the course, or pattern, of NSW's cultural or natural history
B Associative	An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;
C Technical / Aesthetic	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;
D Social	An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;
E Scientific/ Technical	An item has the potential to yield information that will contribute to an understanding of NSW's cultural and natural history;
F Rare	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;
G Representative	An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments.

Table 5.1 Criteria for the assessment of historic cultural heritage.

A central feature of the amendments to the Act is the clarification and strengthening of responsibility for the management of heritage items at the Local and State level. Subsequently, items can be assessed as having Local or State Level Significance.

It is important to note that an item cannot be excluded from the Register on the grounds that items with similar characteristics have already been listed. Also, these criteria can be applied to items that do not qualify for a State significance ranking, that is, items of Local level significance.

These categories are useful in considering a wide range of heritage items, and can be applied to sites with items of standing heritage as well as areas with the potential to contain archaeological deposits.

5.3 Assessment of Heritage Significance

The following section provides an assessment of significance for the Hawkesbury River Bridge at Windsor. The Bridge has previously been assessed by Burns and Roe Worsley (2005:6) as being of State significance. The RTA Section 170 heritage and conservation register listing does not ascribe a significance level. The assessment provided below therefore clarifies the significance of the Bridge. In addition, this assessment includes the heritage significance of the Wharf and Thompson Square. The assessment of significance is summarised below.

Previous assessments are presented *Italics* to differentiate it from any additional evaluations resulting from this study.

5.3.1 Hawkesbury River Bridge, Windsor

A Historic	An item is important in the course, or pattern, of NSW's cultural or natural history
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The Windsor Bridge represents the oldest extant crossing of the Hawkesbury River. Together with the successive crossings upstream at Richmond, this bridge has played a major role in shaping the history of the Hawkesbury area, which is defined by the life of the River. For well over a century the bridge has functioned as an all important link between the communities on either side of the River and as an essential component in a through route of importance in the development of the Sydney region. The series of major alterations to the structure since its construction articulate the continuing difficulties of negotiating a crossing of this major waterway with its frequent floods. (RTA Heritage Inventory)

The State significant Hawkesbury River Bridge represents a critical crossing of a major waterway, and the oldest existing crossing of the Hawkesbury River. The Bridge is located on a historic crossing, the river having been previously traversed at this point by a punt as early as 1814. The location of the Bridge has been an important factor in the development of the surrounding area, and provides an important link on an alternative cross-regional road from Sydney to the Hunter Valley.

The Bridge is also of local significance. Its importance to the economy and development of the local community is reflected in the level of community agitation for a river crossing over the years commencing with the push for the Bridge's construction, including extensive alterations and additions well into the 20th century to meet greater public needs.

C	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;
Technical / Aesthetic	

The Windsor Bridge has landmark qualities as one of only two bridge crossings of the Hawkesbury River in the Hawkesbury area. As such it defines the surrounding network of roads. It is a large structure, and although simple in appearance, impressive. The bridge represents a major engineering project in the State for its time, the piers penetrating 15-20 metres below the water surface, and its construction proceeding through flood conditions. The bridge and its modifications have been designed to withstand flood, and have been successful in doing so. The addition of a reinforced concrete beam deck to replace the timber deck in the 1920s is a relatively early use of this technology. (RTA Heritage Inventory)

The Bridge reflects early technical achievement in spanning a flood-prone river. The sinking of the piers through drift wood, silt and boulders was an engineering feat of its period. The longevity of the Bridge is testament to the skill and care dedicated to the sinking of the piers. In conjunction with Bawden Bridge, near Grafton, this Bridge represents the early use of cast iron caissons filled with concrete. The replacement of the deck in 1922 with reinforced concrete is also an early use of this type of technology.

The modifications carried out to the design and fabric of the Bridge represent an historic record of engineering solutions to the difficulties of constructing and maintaining river crossings in heavily flood-prone areas. The Bridge, although modified during its life, represents a record of change in bridge technology and the continued use of an old bridge through newer technology and materials. The longevity of the Bridge demonstrates the success with which generations were able to modify the Bridge to their requirements.

D	An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;
Social	

The wider Hawkesbury community greeted the opening of the Bridge in 1874 with a jubilant series of celebrations. The River and this crossing of it has defined the life of several generations of local inhabitants on both sides of the River. The community's view of the bridge is perhaps at times ambivalent, as their lives have been interrupted by its overtopping in flood. As the suburban outskirts of Sydney widen and come closer to the still distinct and distinctive Macquarie towns, the rich history of the area and its physical remains become increasingly important to the community's sense of identity. The Windsor Bridge is an important part of Windsor's history. (RTA Heritage Inventory)

The Hawkesbury River Bridge at Windsor is of local significance to the community as the link that has tied residents on each side of the Hawkesbury River together. The Bridge has allowed for easier communication between the communities on both sides of the river and has enabled the expansion of social networks. The Bridge has become integral to the local community by removing the isolation initially caused by the River to settlers in the area. The fragility of this communication network is reinforced when the Bridge is cut during flooding and reminds locals of their reliance on the structure.

E Scientific/ Technical	An item has the potential to yield information that will contribute to an understanding of NSW's cultural and natural history;
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Along with other bridges in the study (Burns and Roe Worley 2005 Heritage Study of Pre-1948 Concrete Beam Bridges) constructed early in the history of beam bridge technology, the bridge provides a valuable benchmark for the understanding of this bridge form. (RTA Heritage Inventory).

The Bridge is of State significance as a record of the changing needs of the State in relation to the river crossings. It has the potential to contribute information relating to engineering solutions for flood prone area crossings and the modification and adaption of older bridges through the introduction of new bridge building technology and materials. The successive changes are evident in the modifications that occurred to the Bridge and these, far from detracting from the historical integrity of the structure, forms an integral part of the Bridge's significance.

Statement of Significance

The Hawkesbury River Bridge is an item of State significance. It is an historic crossing of the Hawkesbury River, the structure dating to 1874 and the site of the river crossing of 1814. The Bridge forms an important link in the historic road from Singleton to Sydney via Putty. The crossing is historically important as a transport route for produce and has been the subject of much community agitation from conception to fruition.

The Bridge is of State significance for its technical merits. It shows the successive alterations and adaptations that enabled the Bridge to survive as a major thoroughfare for over 130 years. The modifications form an integral part of the Bridge's significance as evidence of a structure intended for alteration. The Bridge is also significant for its early technical achievement and application of iron caisson and mass concrete technology, there being no earlier application of this technology in the state, and only one contemporary example.

The Bridge is also of local significance as it provides an important social link between communities on either side of the river.

Level of Significance: State and Local

5.3.2 Windsor Wharf

No detailed assessment of the heritage significance of the Windsor Wharf has been undertaken to date. In a brief statement Higginbotham declared that:

The remains of the wharf are significant because they demonstrate the importance of river transport and trade to Windsor in the nineteenth century, they illustrate early methods of wharf construction, and possibly have an historical association with John Howe, James McGrath, Francis Greenway and Governor Macquarie.

(Higginbotham 1986:42)

This study provides a complete assessment of the significance of the historic Windsor Wharf, and builds on the initial statement by Higginbotham (1986).

A Historic	An item is important in the course, or pattern, of NSW's cultural or natural history
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The Windsor Wharf is of State significance as a site of early river transport. The earliest phase of Windsor Wharf dates to 1795. The next phase of use, from which extant remains possibly date, was ordered by Governor Macquarie in 1814-15. This Wharf serves as a reminder of the days when shipping was the main means of communication with Sydney. While this period was a relatively short-lived period prior to the construction of reliable roads, the Wharf was essential in the chain of supply that supported the fledgling colony in the early years. Even after the road improvements river transportation, from Windsor Wharf, was favoured for agricultural produce. The produce shipped from this Wharf ensured the survival and growth of the Colony. It is a surviving tangible link to rural colonial development, and has parallel documents surviving in the historical record. The Wharf was also the site of Howe's ferry which connected Windsor with the northern bank of the Hawkesbury River. The

Wharf served the town of Windsor until the construction of the present wharf downstream in the 1980s.

E Scientific/ Technical	An item has the potential to yield information that will contribute to an understanding of NSW's cultural and natural history;
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The Windsor Wharf is of State significance for its potential to yield information regarding the construction of wharf structures in the early Colony and provide comparative data regarding these important early communication infrastructures. Archaeological investigations of the Wharf has the ability to determine the construction technique, extent and integrity of the remaining structure and may reveal how architect Francis Greenway dealt with wharf construction in a flood prone river. The remains of the historic Wharf may also reveal how Greenway's design dealt with the earlier remains of the Wharf.

F Rare	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;
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The Windsor Wharf is of State significance as a rare extant wharf structure from the 1810s. Wharves rarely survive as the renewal of successive structures removes earlier evidence. The contract for construction also survives and gives a rare research opportunity into wharf construction under Governor Macquarie.

Statement of Significance

The Windsor Wharf is of State significance as a rare extant site of early river transport. The remains possibly date to 1814-15. This Wharf serves as a reminder of the days when shipping was the main means of communication with Sydney. The Wharf was essential in the chain of supply that supported the fledgling colony in the early years. Even after the road improvements river transport, from Windsor Wharf, was favoured for agricultural produce. The produce shipped from this Wharf ensured the survival and growth of the colony. It is a surviving tangible link to rural colonial development, and has parallel documents surviving in the historical record. The Wharf was also the site of Howe's ferry which connected Windsor with the northern bank of the Hawkesbury River. The Wharf served the town of Windsor until the construction of the present wharf downstream in the 1980s.

Additionally, the Windsor Wharf is of State significance for its archaeological potential to yield information regarding the construction of wharf structures in the early Colony and provide comparative data regarding these important early communication infrastructures.

Level of Significance: State

5.3.3 Thompson Square

The heritage significance of Thompson Square as a whole has been established as part of the State Heritage Register listing process. This assessment has been included and additional assessment provided of the brick drain as a feature of high archaeological potential.

A Historic	An item is important in the course, or pattern, of NSW's cultural or natural history
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Thompson Square is one of the oldest public squares in Australia and notable for the large number of Colonial Georgian buildings which surround it. It is the only public space remaining from the original town and has played an important part in the history of the town. It is the only remaining civic space as laid out by Governor Macquarie and is vital precinct in the preservation of the early Colonial character of Windsor. The Square reflects Macquarie's visionary schemes for town planning excellence in the infant colony (SHR Listing).

C Technical / Aesthetic	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;
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Thompson Square is surrounded by a large number of Colonial Georgian buildings and sites that preserve the character of the square (SHR Listing).

E Scientific/ Technical	An item has the potential to yield information that will contribute to an understanding of NSW's cultural and natural history;
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The remains of the brick drain in Thompson Square are of State significance and have the potential to provide information regarding 19th century construction and fabrication technologies. Any extant remains would be of historic significance as a physical reminder of the early 19th century rural colonial town of Windsor.

F Rare	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;
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Thompson Square is one of the oldest public squares in Australia (SHR Listing).

The potential remains of the brick drain are of State significance as a rare surviving example of the importance placed on drainage by Governor Macquarie and as early evidence of such works in the Colony.

Statement of Significance

Thompson Square is one of the oldest public squares in Australia and notable for the large number of Colonial Georgian buildings which surround it. It is the only public space remaining from the original town and has played an important part in the history of the town. It is the only remaining civic space as laid out by Governor Macquarie and is a vital precinct in the preservation of the early Colonial character of Windsor. The Square reflects Macquarie's visionary schemes for town planning excellence in the infant colony (SHR Listing).

The brick drain is potentially of State significance. The remains of the brick drain in Thompson Square have the potential to provide information regarding 19th century construction and fabrication technologies. Any extant remains would be of historic significance as a physical reminder of the early 19th century rural colonial town of Windsor.

Level of Significance: State

6.0 Statement of Heritage Impact

6.1 Requirements of a Statement of Heritage Impact

The objective of a Statement of Heritage Impact (SOHI) is to evaluate and explain how the proposed development, rehabilitation or land use change will affect the value of the heritage item and/or place. A Statement of Heritage Impact should also address how the heritage value of the item/place can be conserved or maintained, or preferably enhanced by the proposed works. This report has been prepared in accordance with the NSW Heritage Office & DUAP (1996a) *NSW Heritage Manual*, NSW Heritage Office (2002) *Statement of Heritage Impact*, and the NSW RTA (2004) *Heritage Guidelines*.

6.2 Proposed Works

The proposed works as outlined in Section 1.5 of this document include the replacement of the existing Hawkesbury River Bridge with a new structure adjacent to the existing bridge on the eastern or downstream side. The current Bridge is deteriorating due to age and heavy usage and poses safety and maintenance issues. The new bridge will reduce flood risk and allow for future traffic increases. The current Bridge will become redundant and the RTA wishes to explore the management of the Bridge, including possible demolition. The retention of the Bridge presents significant challenges for the RTA as the Bridge is subject to flooding (1 in every 2 years). Other options include the retention of the Bridge as a pedestrian and/or bicycle crossing or the retention and transfer of ownership to local government; and partial retention of spans to the waterline for interpretive purposes.

6.3 Assessment of Impact

The following questions are applied to the proposed works in order to assess the level and nature of the impact to the heritage items within and adjacent to the study area. Only those questions applicable to the proposed development are applied, and where appropriate have been modified to reflect the requirements of the proposed works.

The following options have been assessed as part of this study:

1. demolition of the existing Bridge & replacement with a new bridge;
2. retention of the Bridge as a pedestrian and/or cycleway and/or retention of the traffic Bridge and transfer of ownership to local government; and
3. partial retention of sections of the Bridge for interpretive purposes.

6.3.1 Hawkesbury River Bridge, Windsor

1. Demolition of the existing Bridge

Have all options for retention and adaptive re-use been explored for the Bridge?

The retention of the existing Bridge has been considered as part of the planning process. The RTA undertook an options study that assessed various strategic concept options to facilitate the selection of a preferred option. The options study examined ten routes and investigations into the retention of the existing Bridge identified significant structural deterioration has taken place making it impractical to retain. Refer to Figure 6.1 for route options considered.

The study determined that the cost and provision for traffic to accommodate remedial measures for the existing Bridge justified the consideration of a bridge replacement. Option 1, the preferred route option was selected as it offered a high level crossing 20 metres downstream of the existing Bridge. Strategic estimate comparisons undertaken by the RTA indicate that Option 1 presents the least expensive bridge replacement option when compared to the maintenance of the existing Bridge for retention and continued use. The cost of retaining the Bridge has been estimated to cost \$16 million compared to \$2.6 million for Option 1.

Retention of the existing Bridge has been considered by the RTA beyond the cost for retention. The location, width and height of the existing Bridge do not allow it to adequately service the existing and predicted traffic flows. The Bridge is subject to a one in every two year flood, which severely disrupts access for the local community. A Hydraulic Study undertaken by the RTA's

Waterways Engineers (Bridge Section) in May 2008 determined that retention of the existing Bridge upstream of the proposed new bridge would result in an above normal rise in water levels to 160mm and 50mm for flood levels of RL10 and RL13 respectively (RTA 2008b). The study identified that the retention of the existing Bridge would increase the risk of flooding for the town of Windsor. The afflux levels of the proposed new bridge were within acceptable levels, and as such, the study recommended the removal of the existing Bridge.

In summary, the existing Bridge does not meet the current and predicted traffic flow and is subject to flooding on a regular basis. Widening and raising the level of the Bridge has been assessed by the RTA to be uneconomical. Modifications required to meet traffic and flood requirements would involve significant alterations to the current design and fabric of the Bridge.

Can all of the significant elements of the Bridge be kept and any new development be located elsewhere on the site?

The proposed location of the new bridge upstream of the existing Bridge would allow for the retention of the historic Bridge. However, retention of the Bridge upstream of a new bridge could pose a risk to the new structure through increased turbidity and scouring. There is the risk that during flood events that the historic structure may be damaged and/or subject to failure, which would have an impact on the proposed new structure downstream (RTA 2008b).

Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible?

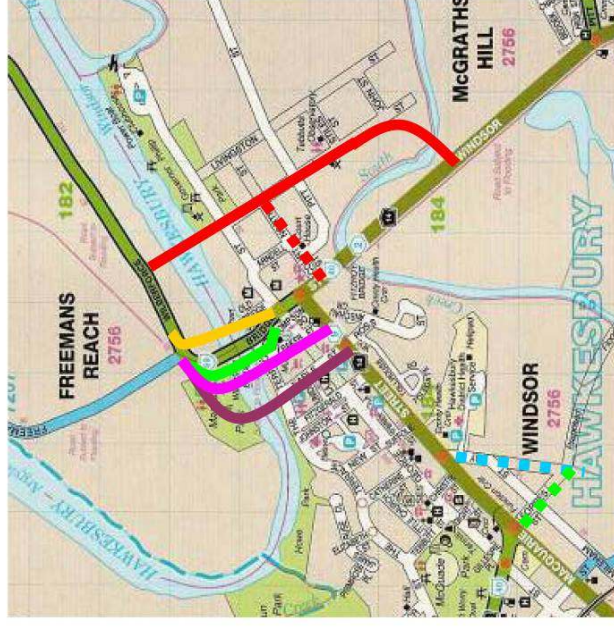
Demolition is not essential at this time; however a less flood prone crossing over the river that can cope with the increase in traffic has become an essential requirement for the town.

Full and partial retention of the Bridge is an option that is being explored and considered by the RTA as part of the broader feasibility assessment.

Has the advice of a heritage consultant been sought? Have the consultant's recommendations been implemented? If not, why not?

The RTA has commissioned Heritage Concepts Pty Ltd to undertake this Statement of Heritage Impact. Advice has also been provided to the RTA by its in house heritage specialists.

Windsor Bridge Options



- High and Low level – downstream of existing structure
- High level – upstream of existing structure
- Cable Street – from Windsor Road, via Macquarie Street
- Baker Street – from Windsor Road, via Macquarie Street
- Palmer Street – from Windsor Road across South Creek
- Palmer Street – from Windsor Road, via Court Street
- Extension of the Windsor Flood Evacuation Route, via Day St
- Extension of Windsor Flood Evacuation Route, via Forbes St
- Pitt Town Road option

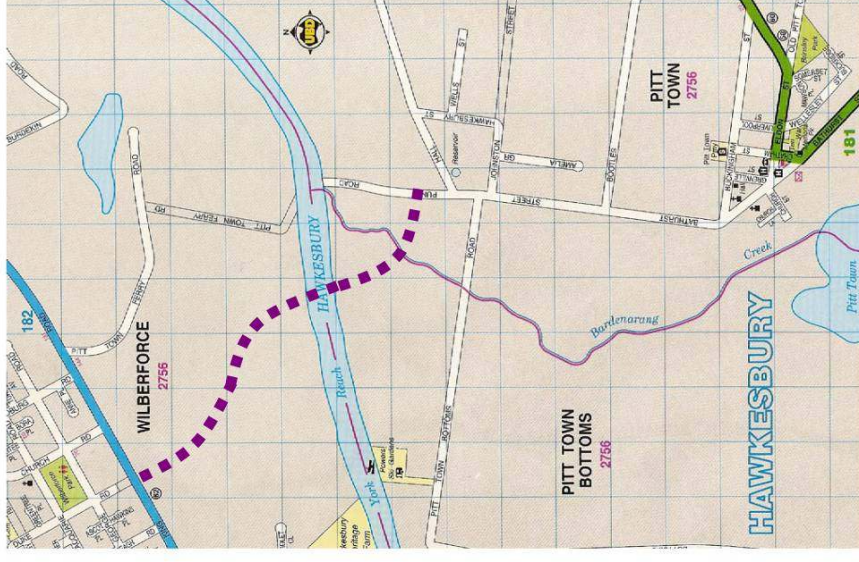


Figure 6.1: Plan illustrating options routes considered by the RTA as part of the Options Study (RTA 2008).

2. Full or partial retention of the Bridge

What options exist for retention and adaptive re-use of the Bridge?

The Bridge has the potential to be adaptively re-used as a pedestrian and/or cycleway. This would require the RTA to carry out significant maintenance works to the Bridge at a cost of \$16 million (pers comm. Patrick Giltrap, RTA). The costs would include general maintenance works in order to bring the Bridge to a state where it would meet RTA safety requirements as a pedestrian/cycleway crossing. The Bridge would then require on-going annual funding for its conservation and maintenance by the RTA.

The ownership of the Bridge could be transferred to the Hawkesbury City Council for use as a pedestrian/cycleway. Retention of the Bridge would require ongoing funds on behalf of Council to maintain the Bridge once it has been decommissioned. This option would still require the RTA to spend up to \$16 million to carry out the necessary works to the Bridge before transfer of ownership to Council. Council have not indicated an interest in taking ownership of the historic Bridge.

Ownership of the Bridge by Council would require ongoing funds for its maintenance and conservation. A lack of funds would result in the failure to maintain the Bridge. This would present a liability and safety risk, and would also result in the neglect of a heritage item. Adaptive re-use is an option, but it would require a financial commitment from the relevant owner.

The Bridge could be retained as an alternate trafficable route by the RTA. Depending on the location of the new bridge retention could increase scouring and turbidity around the new structure and pose a hazard during flooding if the existing Bridge was to collapse.

Partial retention of sections of the Bridge is being considered by the RTA. A proposal to retain spans of the Bridge to the water line is being explored as part of the broader planning strategy. The proposal would include retention, stabilisation and conservation of a span and pier to the water edge in its current location. The remnant structure would be converted into a viewing platform accessible by pedestrians and could be incorporated into as an interpretive element along the foreshore.

Full or partial retention of the Bridge would require adequate safeguards to ensure it's on going maintenance and conservation as a heritage item or relic of State significance.

If the Bridge is converted to a pedestrian and cycle way will this impact on the significance of the Bridge?

If the Bridge is retained as a pedestrian and/or cycle way the historical significance of the Bridge will be maintained as a transportation route. It is a change in use, however not one that is far from its current use. It will continue to serve as a river crossing, in its current setting and context. The Bridge currently allows for pedestrian and cycleway traffic as a result of the addition of the walkway.

Partial retention of the Bridge would include partial demolition of the structure. However, if incorporated into a broader interpretive plan which includes the SHR listed Thompson Square and historic wharf precinct, the conversion to a viewing platform could provide a tangible opportunity for the community to interact this historic landscape.

What physical alterations need to be made to the Bridge to convert it into a pedestrian and cycle way?

Alterations to the Bridge would be minimal. The railing between the traffic carriageway and the footbridge would be removed and the join between the Bridge and footbridge adequately smoothed to ensure accidents could not occur. New lines to designate direction of travel would also be required.

What physical alterations need to be made to the Bridge to convert it into a viewing platform?

The partial retention of the Bridge would result in the demolition of the majority of the structure. Conversion to a viewing platform would require conservation of the remaining fabric and installation of new fabric such as safety barriers. However, these works could be undertaken in a sympathetic manner (i.e. new fabric to be clearly distinguishable from older phases).

6.3.2 Windsor Wharf

1. Construction of a new bridge

What impact will the construction of a new bridge have on the Wharf?

The construction of a new bridge will impact on potential archaeological remains associated with the historic Wharf. The proposed pier locations are still in concept stage, however, the present configuration of Pier 2 will directly impact on the area identified as having potential to contain the remains of the historic wharf. Refer to Figures 1.4 & 4.7.

Archaeological excavations would need to be undertaken to recover information relating to the exact location, extent and integrity of the remains of the historic wharf.

Can significant elements of the Wharf be kept?

The construction of abutments and piers would make complete retention difficult, although once the extent of the remains are known in relation to the construction footprint it may be feasible that the remains of the historic Wharf could be retained *in situ*. Archaeological excavation would be required to ascertain the exact location and extent of this item. Any information gathered as a result of archaeological testing, could be used to influence the design of a new bridge in this location. For example, the design and location of piers could be modified to reduce or avoid impact to the subsurface archaeological resource. Impacts could be restricted to only those areas where piles or columns for the piers need to be located.

How is the impact of the new development on the heritage significance of the item or area to be minimised?

An archaeological excavation to determine the condition, extent and integrity of the historic Wharf remains could be used to guide the design of the new bridge to minimise the impact on the archaeological remains of the Wharf.

Impact to the heritage significance of the Wharf can be minimised by re-designing plans to limit areas of impact, and/or to retaining portions *in situ*, if feasible. The recovery of potential archaeological data will also help minimise the adverse effects on the heritage significance of the Wharf.

6.3.3 Thompson Square and Potential Historic Drain

The proposed approach to the new bridge will impact directly onto the curtilage of Thompson Square and works will therefore require approval by the Heritage Council of NSW.

1. Construction of a new bridge

How is the impact of the new development on the heritage significance of the item or area to be minimised?

The proposed bridge approach on the Windsor side of the River will cut through the curtilage of the State Heritage Registered Thompson Square. The level of proposed earthworks on the Windsor side of the River is restricted to a maximum depth of 0.997m approximately in the middle of the Square and the introduction of earth to 0.4m near the southern end of the Square. Refer to Figure 6.2.

The proposed alignment will help to consolidate Thompson Square by removing the existing Bridge approach road that currently divides the Square. The proposed changes will move the alignment of the road and approach to the new bridge west of its current alignment. The void left by the cuts for the existing approaches of the Bridge will be filled in and adjusted to blend with the existing topography of the Square.

The new alignment will cut into the eastern section of Thompson Square and will run parallel with the old Bridge Street alignment in this portion of Thompson Square. The new bridge alignment cannot be placed within the old Bridge Street alignment as it would block access to existing properties, and as such this has constrained the location of the new bridge alignment in this section.

The aesthetic qualities of the Square are integral to the heritage significance of the area. All possible measures have been taken to limit the visual impact. Heights have been restricted and in some cases reduced to avoid obstructing vistas across the Square and towards the River. Refer to Figures 6.3 & 6.4.

The RTA has commissioned the Government Architects Office to develop Concept Designs for Thompson Square which take into consideration the heritage values and vistas associated with the Square and its heritage curtilage. The Concept Designs produced by the Government Architects Office have been incorporated into the proposed bridge design layout, alignment and heights.

Why is the new development required to be adjacent to a heritage item?

The location of the new structure is limited by the access roads on either side of the River and residential development in the vicinity. The replacement of the existing Bridge with a new bridge in this location will result in the upgrade of an existing piece of road and river infrastructure.

The existing Bridge and the Thompson Square area are part of the setting and landscape of the town, and have grown around each other. The current Bridge is located in a convenient point within the town. A new bridge would seek to continue this service in proximity to the town.

Options for other crossings away from heritage items and/or places have been considered by the RTA as part of the Options Study (RTA 2008a). As discussed in Section 6.3.1 of the current document, the proposed new bridge presents the most feasible option for the RTA.

How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance?

The heritage curtilage of the Thompson Square Precinct will be directly impacted by the proposed bridge replacement. As an offset to this impact, the RTA are proposing to consolidate Thompson Square by infilling the cut of the existing bridge approaches. This area will be landscaped and returned to open space and contribute to the curtilage immediately east of historic buildings fronting the existing Thompson Square.

How does the new development affect views to, and from, the heritage item? What has been done to minimize negative effects?

The proposed development will have an effect on the views of Thompson Square as a rare Georgian landscape through the introduction of a modern structure. However, the proposed new structure will be restricted in height to minimise any visual obstructions to and from the Square. To mitigate the level of impact to these views, the RTA are proposing to fill in and landscape the cut of the existing bridge approach which runs through Thompson Square and consolidate this as an open space area. This will go in some way to providing a visual and physical barrier between the heritage properties currently fronting Thompson Square on Bridge Street. Properties fronting Old Bridge Street will be set back from the new bridge alignment, which will run parallel to the alignment of Old Bridge Street. Plantings will be established according to the Government Architects Office Concept Designs. Road access is required to provide essential services to properties east of the proposed new bridge.

Is the development sited on any known, or potentially significant archaeological deposits? What can be done to minimise the impact on the heritage significance of the deposits?

The development is sited in Thompson Square, which is known to be the location of a brick drain built in the 1810s. The significance of these potential remains has been assessed as being of State significance in this document. An archaeological test excavation to determine the location, condition, extent and integrity of the Drain should be used to further guide the final designs of the new bridge to minimise any impacts to subsurface archaeological resources.



Figure 6.2 : Proposed earthwork levels of the replacement bridge (RTA 2008).

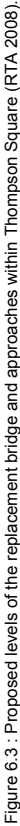




Figure 6.4: Plan indicating location of sections taken within Thompson Square (RTA 2008).

Why is the new development required to be adjacent to a heritage item?

The location of the new structure is limited by the access roads on either side of the River and residential development in the vicinity. The replacement of the existing Bridge with a new bridge in this location will result in the upgrade of an existing piece of road and river infrastructure.

The existing Bridge and the Thompson Square area part of the setting and landscape of the town, and have grown around each other. The current Bridge is located in a convenient point within the town. A new bridge would seek to continue this service in proximity to the town.

Options for other crossings away from heritage items and/or places will be considered by the RTA where feasible.

How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance?

The heritage curtilage of the Thompson Square Precinct will be directly impacted by the proposed bridge replacement.

How does the new development affect views to, and from, the heritage item? What has been done to minimize negative effects?

The proposed development will have a significant negative effect on the visual significance of Thompson Square as a rare Georgian landscape.

Further planning is required in the design of the proposed bridge replacement to avoid and/or minimise any visual and aesthetic impact to Thompson Square and its curtilage. Designs would need to allow for the visual setting and character of Thompson Square to be retained and conserved.

Is the development sited on any known, or potentially significant archaeological deposits? What can be done to minimise the impact on the heritage significance of the deposits?

The development is sited in Thompson Square, which is known to be the location of a brick drain built in the 1810s. The significance of these potential remains has been assessed as being of State significance in this document. The excavation and recovery of archaeological data will minimise the impact on the heritage significance. An excavation to uncover the Drain to ascertain its condition, extent and integrity could be used to guide the design of the new bridge to minimise the impact on the physical fabric of the Drain.

Is the new development sympathetic to the heritage item? In what way (e.g. form, siting, proportions, design)?

The design of the new bridge is not yet determined. The RTA is encouraged to consider the historic setting of the development during planning.

Will the public and users of the item, still be able to view and appreciate its significance?

The design of the new bridge is not yet determined. The RTA is encouraged to consider the historic setting of the development during planning.

2. Retention of the existing Bridge and re-use as a pedestrian and/or cycleway

What impact will the retention and re-use of the Bridge have on Thompson Square and Drain?

The retention and re-use of the Bridge will have no impact on Thompson Square or the Drain.

6.4 Summary

The social and historic value of the Bridge and Thompson Square are appreciated by the local community and it is therefore essential that management of this Bridge, Thompson Square and the broader cultural landscape is conducted in a sympathetic manner. The demolition of the Bridge will have a negative and irreversible effect on the heritage value of the structure and on the cultural landscape. The adaptive reuse of the Bridge is a more acceptable alternative to demolition; however its continued

maintenance must also be addressed, whether the item remains an RTA asset or whether ownership is transferred to local government.

Partial retention of sections of the Bridge and conversion to a viewing platform would assist with interpreting the remains of the structure to the community in a tangible way. The interpretation of the remnant structure would need to be carried out using a holistic 'whole of landscape' approach for the foreshore and the town itself.

In relation to the historic Windsor Wharf, the preferred option would be retention *in situ*. The location of the proposed bridge is constricted by access roads, making relocation away from the Wharf unfeasible. Demolition of the remains of the historic Wharf should be avoided due to its rarity and historic significance.

Thompson Square is a rare Georgian cultural landscape that is recognised as an item of State significance. The Square is of enormous pride to the local community and is admired by thousands of tourists each year. While the impact on this landscape is unavoidable for the reasons outlined above, the proposal to fill in the cut of the current bridge approach and to create a consolidated open space for Thompson Square is a feasible compromise. The success of this proposal will be dependant on the instigation of a holistic 'whole of landscape' approach to the interpretation not only of Thompson Square and the existing Bridge, but also the role of the River as a communication and trade route through the interpretation of the historic Windsor Wharf and the importance of the River to the birth and development of the Town and the region.

7.0 Management Recommendations

7.1 Introduction

The following recommendations are based on the results of the background research, site inspection, and the heritage significance of the existing Bridge, the potential Wharf remains, Thompson Square and the associated Drain. This report has been prepared in accordance with the NSW Heritage Office & DUAP (1996a) *NSW Heritage Manual*, NSW Heritage Office (2002) *Statement of Heritage Impact*, and the NSW RTA (2004) *Heritage Guidelines*.

7.2 Recommendations

Recommendation 1

It is recommended that the RTA consider the full or partial retention of Hawkesbury River Bridge. Adaptive re-use should include use as a pedestrian and cycleway; an alternative vehicle crossing of the Hawkesbury River; or the conversion of the partial remains to an interpretive viewing platform.

The full or partial retention of the Bridge will require that sufficient funds are made available for its on-going maintenance and conservation. The transfer of ownership from the RTA to a second party would need to be carried out in such a way as to ensure that its long term conservation is safeguarded and achievable.

Where retention of the Hawkesbury River Bridge is not feasible, the following management recommendations apply:

Recommendation 2

The Hawkesbury River Bridge in Windsor is listed on the RTA Section 170 register as an item of State significance. Any proposals involving the demolition of heritage assets should be referred to the Heritage Council of NSW for comment. The Heritage Council will provide a response to the proposal within 40 days of receipt of notification.

Recommendation 3

It is recommended that the proposal to infill the cut to the existing bridge approach and consolidate Thompson Square be adopted as per the Concept Designs prepared by the Government Architects Office.

As Thompson Square Conservation Area is registered on the State Heritage Register, any development works adjacent to or within it requires a Section 60 approval from the Heritage Council of NSW.

Recommendation 4

It is recommended that should removal of the Hawkesbury River Bridge in Windsor proceeds, a full photographic archival recording programme be undertaken of the Bridge and its setting prior to its demolition in accordance with the Heritage Branch guidelines *Photographic Recording Of Heritage Items Using Film or Digital Capture* (2006).

Recommendation 5

It is recommended that all plans, files and documentation including the Archival Photographic Record of the Bridge be collated, archived and retained in a publically accessible venue, such as the Hawkesbury City Council Library and the State Library.

Recommendation 6

It is recommended that an oral history project should be undertaken to record local residents views on the social and cultural aspects of the Bridge.

Recommendation 7

The archaeological excavation and recording of the potential remains of the historic Windsor Wharf and Drain associated with Thompson Square will be necessary. These archaeological investigations should include an underwater survey of the Wharf area. Excavation will require an excavation permit be sought from the Heritage Branch, Department of Planning. As the drain is within a SHR curtilage a Section 60

permit will be required. An archaeological research design would need to be prepared in support of any excavation permits.

Recommendation 8

It is recommended that once the extent, condition and integrity of the Wharf and Drain have been assessed through archaeological excavation, the RTA should examine possibilities for the *in situ* retention, or partial retention of features as part of the new bridge designs.

Recommendation 9

It is recommended that a holistic 'whole of landscape' approach to the interpretation of the heritage values of the existing Bridge, the historic Wharf and Drain and Thompson Square is undertaken by the RTA.

The interpretation plan should focus on the role of the River as a communication and trade route through the interpretation of the existing Bridge, the historic Windsor Wharf and Drain, and the importance of the River to the birth and development of the Town and Thompson Square as a surviving Georgian landscape.

7.3 Conclusion

This document presents the results of an evaluation of the heritage impact of the proposed bridge on historic archaeological values. The proposed bridge will require the removal of the existing bridge and will impact the remains of the Wharf and associated Drain. This impact can be mitigated through excavation, archival recording and interpretation.

Thompson Square is a State significant, rare Georgian cultural landscape. The Square is of enormous pride to the local community and is admired by thousands of tourists each year. While the impact on this landscape is unavoidable for the reasons outlined in this document, the proposal to fill in the cut of the current bridge approach and to create a consolidated open space for Thompson Square is a feasible compromise.

It is within the interest of the proponent that prior to the commencement of any works associated with the Bridge, that the appropriate permissions, as listed in the recommendations, are obtained from the Heritage Branch, Department of Planning.

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