Submission No 332

INQUIRY INTO WINDSOR BRIDGE REPLACEMENT PROJECT

Organisation: Department of Premier and Cabinet

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NSW Government Submission to the Parliamentary Inquiry into the Windsor Bridge Replacement Project

DEPARTMENT OF PREMIER AND CABINET

NSW GOVERNMENT

1. Introduction

The NSW Government welcomes the opportunity to provide a submission to the Parliamentary Inquiry into the Windsor Bridge Replacement Project.

In consultation with key agencies, a brief response has been provided against each of the individual Terms of Reference. All referenced information is currently publicly available.

Key project benefits

Upgrading of an essential local and regional road link across the Hawkesbury River

The piers of the existing bridge are over 143 years old and the deck is 97 years old and these components are deteriorating as a result of age and heavy use. The level of rehabilitation and maintenance required to keep the bridge serviceable is no longer cost effective. It is considered that the bridge has reached the end of its structural and economic life and requires replacement to ensure a safe, efficient and cost effective crossing of the Hawkesbury River at Windsor is available for all road users.

Improved traffic flow and safety from a bridge that allows two-way heavy vehicle traffic and shoulders for vehicle breakdowns

Heavy vehicles travelling in opposing directions currently stop on the bridge approaches and give way due to narrow lane widths on the existing bridge. The new bridge will provide wider lanes removing these delays.

There were 52 crashes including injuries to 20 people between July 2011 and December 2016 in the project area. The project will provide wider traffic lanes and improved intersection arrangements which will substantially reduce the crash risk.

Improved intersection arrangements to substantially reduce crash risk

Traffic performance and capacity of the existing bridge and surrounding intersections is inadequate and the predicted growth in traffic using this river crossing indicates further deterioration in the level of service. The new bridge will provide two southbound lanes and one northbound lane improving traffic flow. The project will upgrade intersections with a signalised intersection at George Street / Bridge Street and a dual lane roundabout at Freemans Reach Road / Wilberforce Road / Bridge Street.

Provision for increased pedestrian and cycle movements

Provision for pedestrians and cyclists on the existing bridge is well below current requirements. The project will provide a three metre wide shared pedestrian and cycle path that provides safe, efficient connections to Thompson Square and surrounds and conforms to current standards.

Unification of Thompson Square

The project will provide a reduced road footprint and unified open space within the Thompson Square heritage precinct. The useable community space of Thompson Square will be increased by more than 500 square metres with direct access to the river.

Improved flood resilience

The existing bridge has lower flood immunity than the surrounding roads. The new bridge will have higher flood resilience matching that of surrounding approach roads on the northern riverbank.

Progress to date and next steps

The tables in the Responses to the Inquiry Terms of Reference below provide references to some of the comprehensive set of public documents that were part of the project planning and approval processes. The planning process for the project was thorough with many opportunities given for community input as shown in responses and in the project timeline in item c) any other related matters below.

Approval for the project was gained from the Minister for Planning and Infrastructure in December 2013.

Roads and Maritime has been working with the community to complete additional studies and to finalise the Urban Design and Landscape Plan. Detail design and preparation of contract documentation is now well advanced in preparation for award of the construction tender in mid-2018.

The project will be completed in mid-2021.

2. Responses to Terms of Reference

1) That Portfolio Committee No. 5 - Industry and Transport inquire into and report on the expenditure, performance and effectiveness of the Roads & Maritime Services' Windsor Bridge replacement project, and in particular:

a) the current Windsor Bridge including its maintenance regime, renovation methods and justification for demolition

Windsor Bridge was built in 1874. The piers consist of cast iron caisson style piers filled with mixed rubble (such as bricks) for strength and the bridge originally had a timber beam deck. In 1897 the bridge was raised by 2.4 metres and lengthened by about 65 metres on the northern end and 18 metres on the southern end by construction of additional spans. In 1922 the timber deck was replaced with a concrete beam deck. This was an early use of this type of concrete technology.

Over the 143 year life of the piers and 97 year life of the deck, the structural members in the bridge have deteriorated.

Roads and Maritime regularly inspects its bridges across the State and uses Bridge Management Systems to plan and deliver the necessary maintenance. A large number (5,623) of bridges across NSW are maintained by Roads and Maritime, and, bridges scheduled for replacement are inspected more often.

Further information on the existing bridge structure and outcomes of the condition assessment are provided in the Windsor Bridge Options Report including a refurbishment cost estimate of more than $18 million[i]. This estimate of $18 million did not include the economic cost to the community of speed limits and delays at the bridge and vehicle operating costs associated with extensive detours that would be required during some stages of repair and refurbishment of the bridge.

Section 2.2.9 of the Options Report describes two approaches to rehabilitation with either three month (option 9A) or twelve month (option 9B) closures required. These two options would alter the structure of the existing bridge by either adding steel girders (option 9A) to strengthen the deck or by completely replacing the deck and filling the cast iron piers with concrete (option 9B). These options do not improve the flood immunity of the bridge and option 9A does not enable traffic flow improvements on the bridge. Both option 9A and 9B would require additional significant structural rehabilitation in around 25 years from completion of the rehabilitation work.

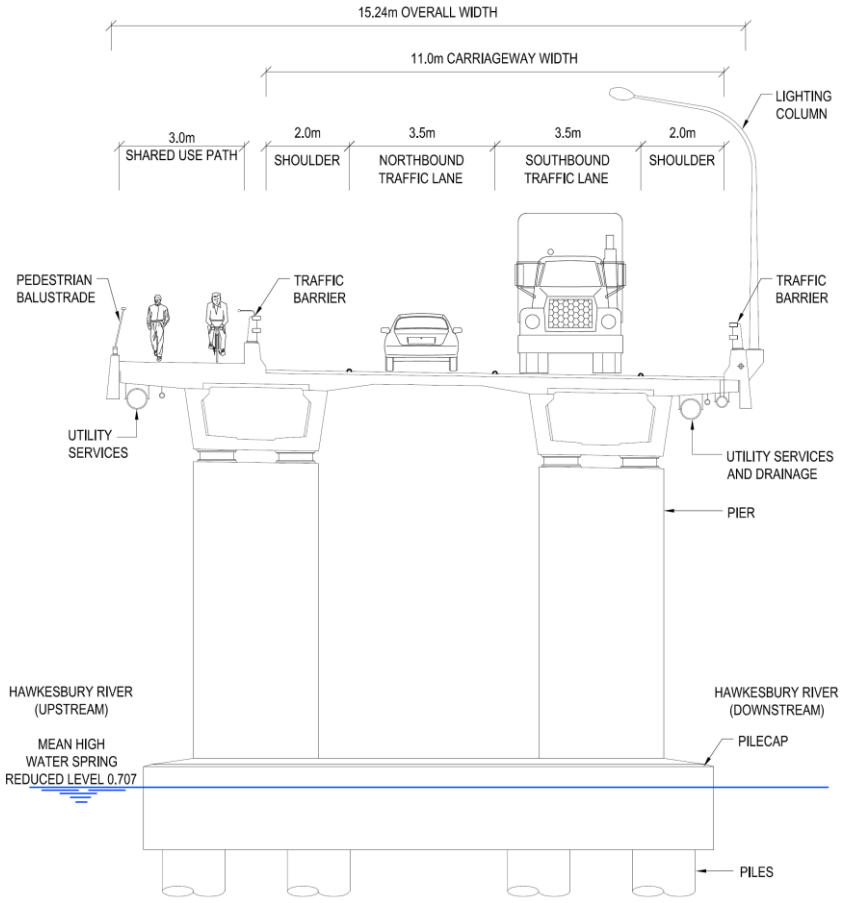
The flood frequency of the existing bridge is 2 years Average Recurrence Interval (ARI) which means it is closed before the surrounding approach roads. The replacement bridge would have a 3 year ARI which matches the closure of the lowest approach roads. Further flood immunity information is provided in item iv) flood immunity benefits of this submission.

The poor condition of the existing bridge and its design limitations are identified as some of the project needs in the Environmental Impact Statement (EIS). Technical reports on the condition of the existing bridge were included as an attachment to the EIS[ii]. These reports include outcomes from under water inspection, tests for graphitisation of the cast iron pier casings and test loading of the bridge.

The current deck design has carried traffic travelling over the bridge for the last 97 years. However, the deck width at 6.1 metres and footway width at 1 metre are below present standards. The crash rail provided is also under strength by present standards. In comparison, the proposed replacement bridge (see image below) would have wider lanes, plus shoulders and a 3 metre wide shared use path.

Numerous submissions in response to the EIS related to retention of the existing bridge. Several of these submissions proposed retention of the existing bridge with a 16 tonne load limit designed to cater for light traffic only[iii] in conjunction with a bypass of Windsor. Responses to these suggestions and a review of the $18 million refurbishment estimate included in the EIS are discussed in the Submissions Report.

An alternative approach to refurbishment of the existing bridge ('the Rickabys Line option') was suggested and a technical review of that methodology was carried out. Due to the number of submissions regarding the condition of the existing bridge a document[iv] was prepared summarising available information on inspections and refurbishment requirements and estimated costs.



Document	Issued	Description
Windsor Bridge Options Report	Aug-11	Section 1.3 Need for bridge works
Environmental Impact Statement	Nov-12	Section 3.2 Need for the project Section 3.5 Statement of strategic need and justification Chapter 11 Project justification and conclusion Appendix C – Technical reports on the condition of existing Windsor Bridge
Submissions Report	Apr-13	Section 2.4.5 Refurbishment of the existing Windsor Bridge Section 2.15.1 Lane widths and design standards of the existing bridge Section 2.15.2 Load limits of the existing bridge Section 2.15.3 Structural condition of the existing bridge Section 2.15.4 Maintenance history of the existing bridge Section 2.15.5 Need for demolition of the existing Windsor Bridge Appendix C – Technical review of alternative bridge refurbishment methodology

1) That Portfolio Committee No. 5 - Industry and Transport inquire into and report on the expenditure, performance and effectiveness of the Roads & Maritime Services' Windsor Bridge replacement project, and in particular:

b) the current replacement bridge project, including:

i) options presented to the community

Nine options to replace or rehabilitate Windsor Bridge were developed and placed on public display at two locations for comment in July / August 2009. The alternatives studied included options to retain the existing bridge, replace the existing bridge close to its current location or to replace the bridge with a bypass of Windsor. A community update requesting feedback was posted to 13,500 residents and an information session was held during this period (140 people attended). There were 136 submissions received and these are summarised in the Community Consultation Report (November 2009). A petition of 600 signatures was received supporting options 1, 2 and 8 (in order of preference) and strongly opposing 6 and 7.

A community workshop was held at Windsor Central Library on Saturday 1 August 2009. About 90 people attended this session.

A government stakeholder workshop was held on 18 September 2009 to compare the options resulting in a short list of three options (1, 2 and 6) for further study. These options were refined including an improved option 3 (with reduced impacts on Thompson Square). The attendees included:

- Roads and Traffic Authority (now Roads and Maritime).
- Hawkesbury City Council.
- NSW Maritime.
- Heritage Branch of the Department of Planning (now part of the Office of Environment and Heritage).
- Government Architects Office.

The Windsor Bridge Options report[v] provides a description of the nine options considered (two bridge widths were considered for option 9), the studies completed, issues raised by the community and stakeholders and the process used to assess and compare the options including the stakeholder options review workshop. Options suggested by the community were also assessed. The positives and negatives of all options were then described and performance of the options against the project objectives was assessed.

The preferred option was identified as option 1 which is a new bridge 35 metres downstream of the existing bridge. The Preferred Option report was made publicly available on the project web site and a community update was sent to residents in August 2011 requesting feedback. Public information displays were established and a public information session was held. A total of 72 submissions were received which were summarised in a Community Issues Report[vi]. The report included sections stating how the issues raised would be addressed in further project development.

A further community update was distributed in May 2012 providing project background, a description of the preferred option and the type of bridge proposed. The community update also presented five options for renewing Thompson Square for community comment. The update

provided information about Aboriginal heritage investigations and advice on how community concerns had been addressed in the development of the preferred option.

The Environmental Impact Statement was released for public comment in November 2012. Chapter 4 describes the options development and assessment process and gives a detailed description of each option considered. It also describes how the preferred option (Option1 – replace the existing bridge 35 metres downstream) was selected. Within the preferred option there was consideration given to different approaches to the components of the project such as the approach roads and intersections, the bridge design, urban design details and access through Thompson Square.

In response to submissions received to the EIS, a Submissions Report was prepared and released in April 2013. The issues raised in the submissions were grouped into topic areas and responses were provided. A detailed assessment of the Rickabys Line option was provided.

Document	Issued	Description
Community Update	Jul-09	Requested feedback on nine options described
Government Options Review Workshop	Nov-11	Workshop attended by Government stakeholders to assess options (Workshop held September 2009)
Community Consultation Report	Nov-09	Summarised feedback received on nine options
Windsor Bridge Options Report	Aug-11	Comparison of options and selection of preferred option
Traffic modelling and evaluation of options	Aug-11	Traffic performance of options
Community Update	Aug-11	Requested feedback on preferred option
Community Issues Report	Oct-11	Summary of issues raised with preferred option
Community Update	May-12	Requested feedback on options for renewing Thompson Square
Community Update	Nov-12	Requested comment on the EIS
Environmental Impact Statement	Nov-12	Chapter 4
Submissions Report	Apr-13	Chapter 2 (particularly Section 2.4 Alternatives to the project, Section 2.13 Community consultation process and Section 2.16 Project justification) Chapter 4 Rickabys Line Option

ii) post construction strategic outcomes, including traffic benefits, transport and network service capacity

The post construction strategic outcomes expected from the project are presented in chapter 3 of the EIS detailing the strategic justification and project need. This chapter demonstrates how the project supports the various State and local strategic plans. It also provides details of the existing needs the project will address regarding the condition of the existing bridge, engineering and safety standards, flood immunity and traffic capacity. The chapter also lists the project objectives which were used in the selection of the preferred option for the project. It provides a concise summary of the strategic need and justification for the project.

Section 7.3 of the EIS provides details of the methodology used, the present traffic issues and the expected traffic benefits from the project. It also considers the short term traffic impacts during construction. Additional details are provided in Working Paper 4[vii] - Traffic and transport. The cumulative traffic impacts are also assessed in the Environmental Impact Statement finding that there would be improvements in traffic efficiency and road network capacity, improved pedestrian and cyclist safety and an opportunity for integration of the project with Hawkesbury City Council's foreshore masterplan and proposed Great River Walk.

Table 3-5 (section 3.3) of the EIS presents the value of traffic related benefits. These benefits include travel time savings, vehicle operating cost savings and safety benefits.

There were numerous submissions to the EIS that related to traffic and access. The responses to the issues raised in the submissions are provided Chapter 2 of the Submissions Report, much of the detail contained in section 2.8.

The EIS advised that the new bridge would be opened with one lane in each direction. However the design would allow for revised line marking providing two southbound lanes and one northbound lane when required due to increased traffic volumes (forecast as required in 2026). In December 2016 the community was advised that the new bridge would be opened with the two southbound lanes and one northbound lane. This will provide additional traffic benefits to the local community.

Roads and Maritime completed an additional traffic study to update the earlier study used for the EIS. This new study has reduced the predicted traffic growth to reflect the current rate of development in the area and to better reflect expected growth to 2036. The updated analysis indicates that the project will cater for the expected traffic needs.

Document	Issued	Description
Traffic modelling and evaluation of options	Aug-11	Traffic performance of options
Environmental Impact Statement	Nov-12	Chapter 3 Strategic justification and project need Section 3.3 Economic analysis Section 7.3 Traffic and transport Section 8.4.3 Assessment of cumulative impacts Working Paper 4 – Traffic and transport
Submissions Report	Apr-13	Section 2.8 Traffic and access

Document	Issued	Description
		Section 2.14.5 Accuracy and adequacy of information – Traffic Section 2.16.10 Benefits to pedestrian and cyclist safety
Community Update	Dec-16	New bridge to have three lanes from opening
Windsor Bridge Replacement Project Traffic Study	Dec-17	Revised traffic study including lower traffic growth rate and project design modifications

iii) economic, social and heritage impacts

Given the long Aboriginal occupation of the area, early European settlement of Windsor and its importance to Australian and NSW history, heritage impacts are one of the major considerations for the project. The impacts on present social and economic aspects of Windsor would affect amenity and lifestyle of residents and the future development of the Windsor area.

Roads and Maritime has completed numerous studies of the project area. The studies were initially general in nature to identify major issues and to assist in evaluating the options identified. As the project development progressed these studies became more detailed and assisted in refining the design of the preferred option and minimising impacts as far as is reasonably practicable, while achieving project objectives. The studies also enabled Roads and Maritime to address the Director General's requirements for the EIS. The studies included specialist reports on economic, social and heritage impacts of the project.

The Windsor Bridge options report relied on information produced in numerous specialist reports. The reports relevant to this item of the inquiry are listed below. The information provided assisted in identifying the preferred option. Options were also developed for renewal of Thompson Square and access to and from the bridge.

The EIS considered the above issues in more detail for the preferred option (Option 1). More detailed studies were carried out to identify the potential project impacts and to develop measures to mitigate or manage these impacts.

Numerous submissions were received to the EIS and responses to the issues raised are provided in the Submissions Report. The Submissions Report also provides details of outcomes of additional studies completed and design changes proposed.

Roads and Maritime is currently completing a detailed design for the project. As part of this process, a detailed urban design and landscape plan is being developed. The draft of this plan was distributed for community comment through a community update. The draft Urban Design and Landscape Plan has been released.

There will be further investigation and salvage work carried out and the community will be kept informed of this activity.

The Office of Environment and Heritage (OEH) and the Heritage Council of NSW have an advisory role for this project. The Thompson Square Conservation Area is listed on the State Heritage Register under the NSW Heritage Act 1977. There are heritage conditions imposed in the approval to mitigate heritage impacts and to recognise the heritage of Thompson Square that will be impacted as part of this project. Those conditions are administered by the Department of Planning and Environment (DPE). OEH will continue to provide advice to the Heritage Council, DPE and Roads and Maritime Services about the Conditions of Approval for the project. OEH has provided

advice on specific specialist strategies and documents related to built heritage items, Aboriginal, historical and maritime archaeological investigations.

Document	Issued	Description
Windsor Bridge Options Report	Aug-11	Description of options considered and preferred option
Socio-economic investigations	Aug-11	Comparison of socio-economic impacts of options 1 and 6
Punt and wharf sites, maritime archaeological inspection	Aug-11	Site investigation
Preliminary urban design and heritage review of options 1 and 3	Aug-11	Investigation of urban design aspects of options 1 and 3 and begin the process of identifying urban design and heritage objectives and principles that will ensure the project is integrated with the surrounding environment
Preliminary Aboriginal archaeological and cultural heritage baseline investigations	Aug-11	Baseline study of Aboriginal heritage for all options
Landscape and visual investigation	Aug-11	Landscape and visual aspects of options 1 and 6
Built heritage and archaeological landscape investigations	Aug-11	Assessment of all options
Community Update	Aug-11	Description of preferred option
Thompson Square alternatives working paper	May-12	Description of process to shortlist possible treatments for Thompson Square and access connections to the bridge
Environmental Impact Statement	Nov-12	• Chapter 7 Assessment of key issues (particularly sections 7.1 State and local historic heritage and maritime heritage, 7.2 Aboriginal heritage, 7.4 Visual amenity, urban design and landscape, 7.5 Noise and vibration, 7.8 Land use, property and socio-economic and 7.10 Air quality) • Working paper 1 – Historic Heritage Assessment and Statement of Heritage Impact • Working paper 2 – Maritime Archaeological Statement of Heritage Impact • Working paper 3 – Aboriginal Cultural Heritage Assessment Report • Working paper 5 – Urban Design and Landscape Concept Report including

Document	Issued	Description
		• Landscape Character and Visual Impact Assessment • Working paper 6 – Noise and vibration • Working paper 9 – Land use, property and socio-economic • Working paper 11 – Air quality
Submissions Report	Apr-13	• Section 2.6 Heritage • Section 2.7 Urban design and landscape • Section 2.9 Noise and vibration • Section 2.10 Socio-economic impacts • Section 2.14 Accuracy and adequacy of information (particularly 2.14.2, 2.14.3, 2.14.6) • Section 2.16 Project Justification • Section 3.1 Additional historic heritage archaeological investigations • Section 3.2 Additional investigation options for Thompson Square • Chapter 5 Preferred infrastructure report • Appendix B Additional heritage investigations • Appendix D Landscape character and visual impact assessment addendum • Appendix E – Operational noise and architectural treatment addendums • Appendix F – Options for archaeological investigation of Thompson Square
Draft Urban Design and Landscape Plan	Mar-17	• Draft Plan for community input
Project Update	Mar-17	• Draft Urban Design and Landscape Plan release and invitation of input on the Plan
Submissions Report	Sep-17	• Submissions to the Draft Urban Design and Landscape Plan and responses
Draft Urban Design and Landscape Plan	Sep-17	• Final Plan after considering community submissions
Community Update	Sep-17	• Advice to community regarding salvage and heritage work at the bridge site

iv) flood immunity benefits

Flood performance was identified as one of the deficiencies of the existing Windsor Bridge as it is inundated by flood waters before approach roads from the north and south. This deficiency is identified in the EIS as one of the needs for the project. Improvement of the level of flood immunity is also one of the project objectives.

As part of the development of the project, hydrologic studies were completed based on the concept design for the bridge to assess the impacts on flooding of the preferred option – Option 1 Replace Windsor Bridge 35 metres downstream.

The Hydrology Working Paper (Working Paper 8 – November 2012) was included as one of the documents made available for review with the EIS.

The new bridge would have a minimum deck level 2.8 metres higher than the existing bridge. This would result in the new bridge being a similar height to the lowest level of Freemans Reach Road and higher than around 60 per cent of Wilberforce Road between the bridge and Wilberforce.

The flood frequency for the new bridge would be around 3 years Average Recurrence Interval (ARI) compared to 2 years ARI for the existing bridge. The Working Paper found that the closure frequency of the new bridge compared to the existing bridge in looking at historic floods between 1987 and 2011:

- Closures would have been reduced from eight to three
- Hours of closure would have been reduced from 43 hours to 19.5 hours

The working paper was based on a one-dimensional flood model which results in conservative results. The paper predicted additional flood impacts on upstream properties in the 5 and 20 year ARI flood events but negligible change in the 100 year ARI event.

There would also be increased risk of scour of river banks at the new bridge site due to increased water velocity during floods. The Report recommended that further design work on the bridge and more detailed flood modelling should be undertaken to minimise flood impacts.

There were several flood related submissions received. These are addressed in the Submissions Report. Refined (two dimensional) hydrological modelling was carried out prior to the completion of the Submissions Report. The revised modelling also included the refined bridge design which reduced obstruction to flood flow compared to that assumed for earlier modelling.

The revised modelling indicated no increase in flood levels for events greater than the 20 year ARI event and increases for smaller events would result in a maximum flood level increase of 0.01 metres (for the 10 year ARI event) which is negligible and is at the limit of accuracy of the modelling.

As a result of the revised study the reduced frequency of bridge closures will be achieved with negligible upstream flood impacts.

Document	Issued	Description
Hydraulic analysis	Aug-11	Flood analysis for existing bridge and options 1 and 6
Environmental Impact Statement	Nov-12	Section 3.2 Need for the project Section 3.4 Project objectives Section 3.5 Statement of strategic need and justification Chapter 11 Project justification and conclusion Working Paper 8 - Hydrology Working Paper
Submissions Report	Apr-13	Section 2.11 Flooding, hydrology and climate change Section 2.12.1 Accuracy and adequacy of information - Flooding

Document	Issued	Description
		Section 3.3 Revised flood modelling

v) project assessment process

The project assessment process commenced with a report supporting a State significant infrastructure application in October 2011. The Director-General's environmental assessment requirements were received in November 2011 and formed the basis of the preparation of the EIS for the Project. Details of the assessment process are provided in chapter 2 and shown in Figure 2-1 of the EIS.

The EIS was placed on public exhibition at the locations listed below from 14 November 2012 with comments closing on 17 December 2012.

- Hawkesbury Council Chambers.
- RMS Motor Registry, Richmond.
- Deerubbin Centre (Windsor Central Library).
- Windsor Post Office.
- RMS Office, Blacktown.
- RMS Head Office, North Sydney.
- NSW Department of Planning and Infrastructure, Bridge Street, Sydney.
- Nature Conservation Council of NSW, Newtown.

The Department of Planning and Infrastructure received 101 submissions in response to the exhibited EIS including six submissions from government agencies and 95 from the community. The submissions were grouped into like topics and considered in the preparation of the Submissions Report. Several additional investigations were carried out prior to preparing responses to the issues raised in the submissions.

The full project documentation was then submitted to the Department of Planning and Infrastructure for consideration.

The instrument of Approval from the then Minister for Planning and infrastructure was issued in December 2013.

An appeal to the Land and Environment Court against the validity of the project Approval was lodged in March 2014 by Community Action for Windsor Bridge Inc. Following the hearing in October 2014 and consideration of the appeal, the Land and Environment Court found in October 2015 that "*All the grounds of review therefore failed. The Court orders that the summons be dismissed*".

Document	Issued	Description
State Significant infrastructure application report	Oct-11	Report to support a State significant infrastructure application under section 115X of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).
Director-General's environmental assessment requirements	Nov-11	Sets out the requirements of the Director-General for the preparation of the Environmental Impact Statement

Document	Issued	Description
Environmental Impact Statement	Nov-12	Environmental Impact Statement including Working papers
Community Update	Nov-12	Nominated Environmental Impact Statement display locations and date for closing of comments
Submissions Report	Apr-13	Provided details of the issues raised in submissions to the Environmental Impact Statement and Roads and Maritimes' responses to the issues
Instrument of approval	Dec-13	Infrastructure approval subject to conditions from Minister Hazzard under Section 115Z of the Environmental Planning and Assessment Act 1979
Community Action for Windsor Bridge Inc v NSW Roads and Maritime Services & anor [2015] NSWLEC 167	Oct-15	Appeal to Land and Environment Court https://www.caselaw.nsw.gov.au/decision/562dba00e4b0eaaf45aeed86

vi) planning and procurement strategies and associated project costs

The program and project management framework for the development and delivery of major projects within Roads and Maritime is well established. The framework consists of the policies, procedures, tools and systems defined as part of a quality assured ISO certified system. This system includes the development of a suite of plans, such as project management plans, risk management plans and project risk registers, Work Health and Safety (WHS) management plans, constructability reviews and procurement plans. The suite of documents is intended to support the development and ultimate delivery of projects and to ensure money is invested based on community need.

Roads and Maritime operates under a project structure for major projects with separate specialist teams responsible for project development and project delivery. The process has a development manager initially in charge of developing the project, with a handover to the delivery manager typically following environmental planning approval and completion of the concept design. A critical component of this structure is the ongoing involvement of both the project development and project delivery managers throughout the life of the project.

The Governance structure for the project is shown in the figure below. The project development and delivery governance processes used by Roads and Maritime includes regular project team meetings and reporting of project progress.

During the development phase of the project numerous professional services contractors were engaged to carry out the specialist studies required to support the evaluation of options, the preparation of the EIS and Submissions Report and also for the preparation of the project design and the urban design and landscape plan.

Details of the project development process undertaken are included in chapter 4 Project development and alternatives of the EIS. Consultation undertaken during the project development is discussed in chapter 6 of the EIS.

A description of the construction of the project is included in chapter 5 of the EIS. Options for procurement for the delivery phase of the project have been evaluated and the recommended option approved by the Roads and Maritime Infrastructure Portfolio Procurement Committee. Delivery of the project will be by a professional services contract for detail design and a separate single contract for construction of the new bridge and demolition of the existing Windsor Bridge. The project had previously been procured as a design and construction Alliance. However, as a result of legal challenge and delay in planning approvals, a decision was made to suspend the Alliance contract.

The currently recommended construction delivery method would be a lump sum/schedule of rates contract with selection criteria set that would evaluate the tenders for heritage, environmental, community and stakeholder engagement and bridge launching experience. Based on the contract sum and complexity of the project the prequalification selection criteria would be set as F75, B4 and R4[viii]. These limits indicate the minimum thresholds for companies wishing to tender for the works as relates to financial capacity (F), bridgeworks complexity (B) and roadworks complexity (R).

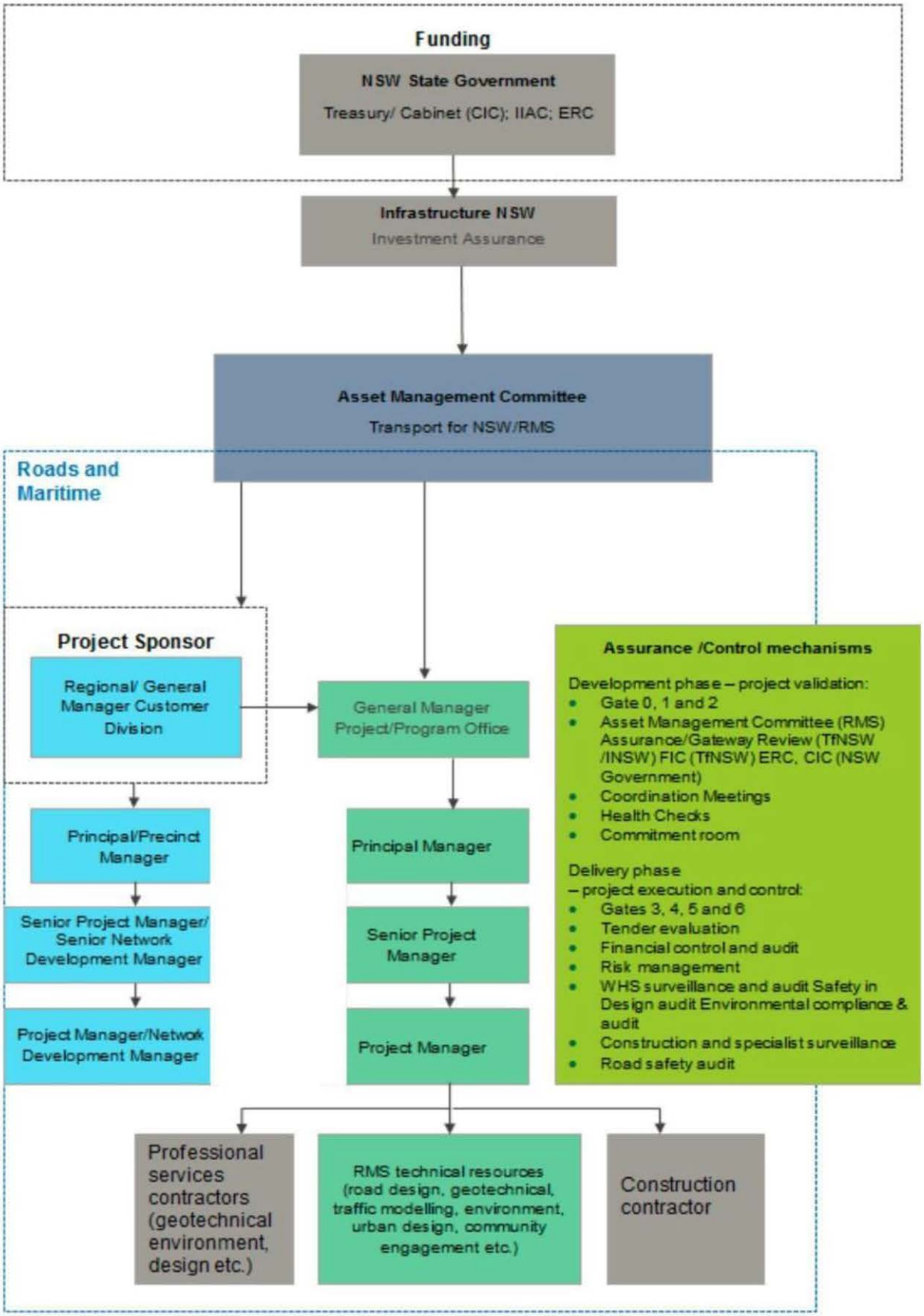
There were several submissions to the EIS that related to the community consultation process. The issues raised and Roads and Maritime responses are provided in the Submissions Report.

Section 5.2 of the Windsor Bridge Options Report[ix] indicated a capital cost in 2011 dollars for each option to assist in selection of the preferred option.

Section 3.3 of the EIS provides the 2012 present value of the project cost as $43.36 million. This figure was based on the anticipated investigation and development activity, concept design for the project and an assumed timeframe for the project.

Since project approval in 2013, Roads and Maritime has carried out further studies and project design and prepared a draft urban design and landscape plan.

Document	Issued	Description
Windsor Bridge Options Report	Aug-11	Section 5.2 Preliminary cost of each option
Environmental Impact Statement	Nov-12	Section 3.3 Economic analysis Chapter 4 Project development and alternatives Chapter 6 Consultation Chapter 5 Project description (particularly sections 5.4 to 5.6)
Submissions Report	Apr-13	Section 2.13 Community consultation process


Funding
NSW State Government
Treasury/ Cabinet (CIC); IIAC; ERC
Infrastructure NSW
Investment Assurance
Asset Management Committee
Transport for NSW/RMS
Roads and Maritime
Project Sponsor
Regional/ General Manager Customer Division
General Manager Project/Program Office
Principal/Precinct Manager
Principal Manager
Senior Project Manager/ Senior Network Development Manager
Senior Project Manager
Project Manager/Network Development Manager
Project Manager
Assurance /Control mechanisms
Development phase – project validation:
Gate 0, 1 and 2
Asset Management Committee (RMS) Assurance/Gateway Review (TfNSW /INSW) FIC (TfNSW) ERC, CIC (NSW Government)
Coordination Meetings
Health Checks
Commitment room
Delivery phase – project execution and control:
Gates 3, 4, 5 and 6
Tender evaluation
Financial control and audit
Risk management
WHS surveillance and audit Safety in Design audit Environmental compliance & audit
Construction and specialist surveillance
Road safety audit
Professional services contractors (geotechnical environment, design etc.)
RMS technical resources (road design, geotechnical, traffic modelling, environment, urban design, community engagement etc.)
Construction contractor

vii) cost benefit analysis process

Cost benefit analysis has been carried out at various stages of the project and was completed in accordance with the guidelines relevant at that time.

The Windsor Bridge Options Report included a comparison of options using economic analysis as one of the inputs to selecting a preferred option. This analysis used cost estimates available at that time. The report identified that option 1 yielded a benefit cost ratio (BCR) of greater than 4. This indicates a project that is strongly economically justifiable, yielded a return on investment of more than $4 of benefit for every $1 invested.

The EIS in section 3.3 provides details of the results for the project current in 2012. The economic analysis returned a high BCR of 14.6 and concluded that the project would create benefits that would be realised by the general community and would outweigh the initial upfront construction and ongoing operational costs.

Several submissions to the EIS concerned the estimated costs and benefit cost ratio methodology. The responses to the issues raised are included in the Submissions Report.

Document	Issued	Description
Windsor Bridge Options Report	Aug-11	Section 5.2 Preliminary cost of each option particularly Table 5.2
Environmental Impact Statement	Nov-12	Section 3.3 Economic analysis particularly Table 3-5
Submissions Report	Apr-13	Section 2.8.9 Traffic speed and benefit cost ratio Section 2.16 Community consultation process
Windsor Bridge Replacement Project Traffic Study	Dec-17	Revised traffic study including lower traffic growth rate and project design modifications

1) That Portfolio Committee No. 5 - Industry and Transport inquire into and report on the expenditure, performance and effectiveness of the Roads & Maritime Services' Windsor Bridge replacement project, and in particular:

c) any other related matters

As stated in the documents referenced above, the piers of the existing bridge are over 143 years old and the deck is 97 years old and these components are deteriorating as a result of age and heavy use. The level of rehabilitation and maintenance required to keep the bridge serviceable is no longer cost effective. It is considered that the bridge has reached the end of its structural and economic life and requires replacement to ensure a safe, efficient and cost effective crossing of the Hawkesbury River at Windsor is available for all road users.

Bridge Component	Existing Condition
Piers	• Sections of the bridge below the water line are heavily corroded and substantial graphitisation of the cast iron has occurred on some piers. • Horizontal cracking is present in the pier columns. Such cracks would be expected to have a serious impact on the overall serviceability of the bridge. • Bracing between the older cast iron column sections on three piers are undergoing considerable corrosion at the water-line and may require replacement or repair.
Bridge Span	Between 2003 and 2007 there was 16% deterioration in the stiffness of at least one of the bridge spans. The stiffness of a span determines the load it is able to support. Therefore, to address this issue, load limits on the bridge may need to be implemented in the near future.
Bridge Deck	Concerns exist around spalling, cracking and corrosion relating to the deck slab, internal and external beams and deck joints.

The bridge currently has 40 kilometres per hour speed limits in place and it is likely that in the future load limits may also need to be applied due to poor condition of the bridge. Roads and Maritime continues to complete Level 3 bridge inspections yearly and to complete vertical and horizontal load analysis on the bridge.

It should be noted that due to the poor condition of the bridge a replacement of the bridge is needed urgently. Any solution other than the proposed replacement would lead to more significant delays which may lead to safety issues.

Traffic performance and capacity of the existing bridge and surrounding intersections is inadequate and the predicted growth in traffic using this river crossing indicates further deterioration in the level of service. The new bridge will provide two southbound lanes and one northbound lane improving traffic flows. The project will upgrade intersections with a signalised intersection at George Street / Bridge Street and a dual lane roundabout at Freemans Reach Road / Wilberforce Road / Bridge Street.

The existing bridge has lower flood immunity than the surrounding roads. The project will have higher flood resilience matching that of the surrounding roads.

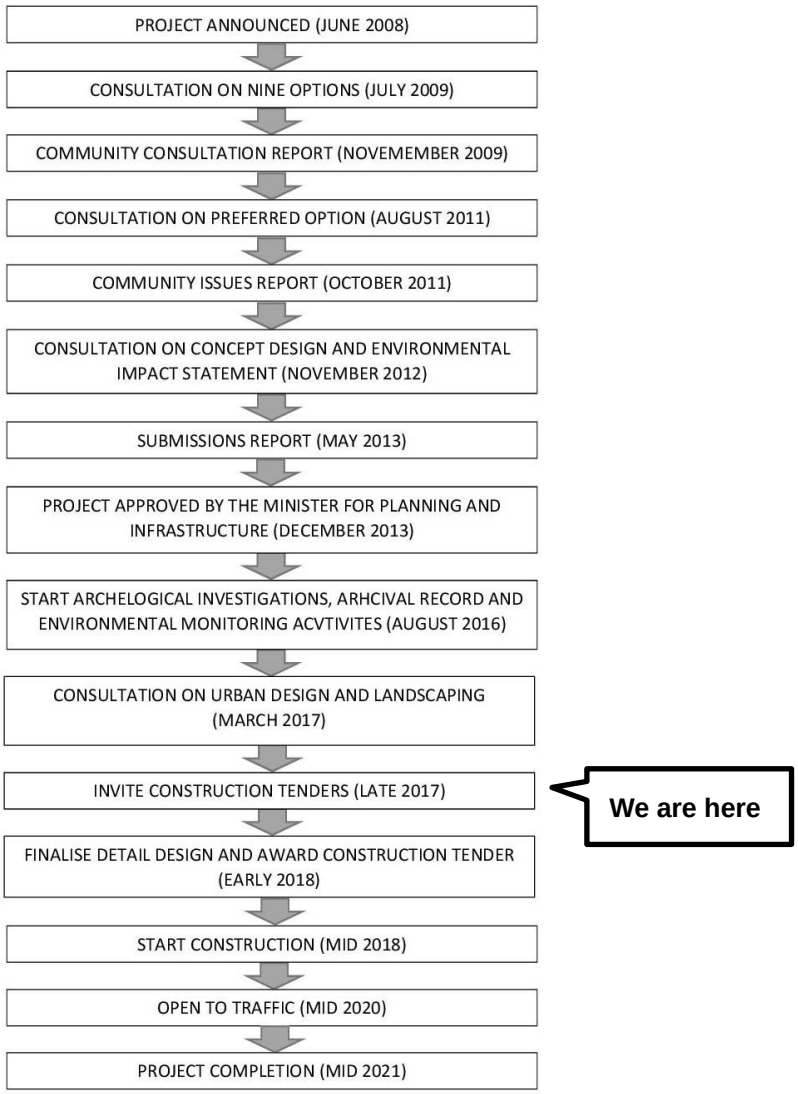
Heavy vehicles travelling in opposing directions currently stop on the bridge approaches and give way due to narrow lane widths on the existing bridge. The new bridge will provide wider lanes removing these delays.

There were 52 crashes including injuries to 20 people between July 2011 and December 2016 in the project area. The project will provide wider traffic lanes and improved intersection arrangements which will substantially reduce the crash risk.

Provision for pedestrians and cyclists on the existing bridge is well below current requirements. The project will provide a facility on the new bridge that conforms to current standards and associated links to existing facilities.

The project will unify Thomson Square and provide an additional 500 square metres of useable community space.

The current project timeline is shown below:



[i] Windsor Bridge Replacement Options Report – August 2011, Page 3.

[ii] Appendix C – Technical reports on the condition of existing Windsor Bridge

[iii] Windsor Bridge Replacement - Submissions Report including a Preferred Infrastructure Report (April 2013)

[iv] Appendix G - Technical investigations of the structural condition of Windsor Bridge

[v] Windsor Bridge Replacement Options Report, August 2011

[vi] Windsor Bridge Replacement Project - Community Issues Report, October 2011.

[vii] Windsor Bridge Replacement Project – Traffic and transport working paper – Working Paper 4, November 2012.

[viii] Guidelines - National Prequalification System for Civil (Road and Bridge) Construction Contracts. http://www.rms.nsw.gov.au/documents/business-industry/partners-and-suppliers/tenders-contracts/national-prequalification-guidelines-1013.pdf, October 2013.

[ix] Windsor Bridge Replacement Options Report, August 2011