

Windsor Bridge replacement project

Submissions report

Transport for NSW | February 2019



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Prepared by Transport for NSW

Publication Number: 20.023

ISBN: 978-1-922338-32-7

Executive summary

The proposal

Transport for NSW (Transport) (the former Roads and Maritime Services) is replacing the existing bridge over the Hawkesbury River at Windsor (known as the Windsor Bridge Replacement Project, WBRP). The project was assessed as State Significant Infrastructure (SSI) under the former Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The WBRP was approved on 20 December 2013 by the Minister for Planning and Infrastructure subject to the Minister's conditions of approval (MCoA).

Transport is proposing to modify the approved project to include the following key components:

- Line marking changes to the two through lanes at the northbound approach of the Bridge Street and George Street intersection which includes the following:
 - left lane: shared left turn and through lane
 - right lane: dedicated through lane
- A new merge lane exiting the Bridge Street and George Street intersection which includes the following:
 - 100 metres long (including a 30 metre parallel lane and 70 metre 'zip' merge lane)
 - the lane merges into one northbound lane on the new bridge.

A Modification report was prepared to seek approval for the new northbound merge lane as a modification to the approved WBRP under Section 5.25 of the EP&A Act.

Display of the Modification report

The Modification report was submitted to Department of Planning, Industry and Environment (DPIE) in September 2019 and placed on public exhibition for 14 days from 23 October 2019 to 7 November 2019 at Hawkesbury City Council, Hawkesbury Central Library and Roads and Maritime Services (Roads and Maritime). A hard copy was available at the DPIE office at 320 Pitt Street Sydney. The Modification report was also made available at the Windsor and South Windsor Post Offices and published on the DPIE and Transport project websites and made available to download.

Transport invited the public to provide feedback on the proposal. The display locations and website link were advertised in the local newspapers and a community update was letterbox dropped across Windsor and surrounding areas. Transport also met with Hawkesbury City Council during the exhibition period.

Summary of issues and responses

The DPIE received a total of 32 submissions in response to the exhibition of the modification comprising 26 submissions from the community, three from community organisations and three from public authorities (Environment, Energy and Science Group of DPIE (the former Office of Environment and Heritage), Heritage Council of NSW and Hawkesbury City Council).

The main issues raised by the community and stakeholders, and a response, are provided below.

Consultation

In summary, issues raised by the respondents included a perceived disingenuous consultation process, lack of consultation, a short consultation period and that the 2019 traffic report was not made available during the exhibition period.

Response

The public exhibition of the Modification report was coordinated by the DPIE in accordance with its procedures and guidelines and provided the community and other stakeholders an opportunity to provide comments on the proposal.

The key issues raised by the community and stakeholders have been considered by Transport in this Response to Submissions (RTS) report. The DPIE requires Transport to consider all submissions received and provide a response to those relevant to the modification.

Transport acknowledges that the 2019 Traffic report was not initially made publicly available during the exhibition period. The 2018 Traffic report was based on traffic counts undertaken in 2017 and recommended the proposed traffic changes in the Modification report. The decision to proceed with the proposed modification was not made until 2019, after new traffic counts were used to re-affirm the 2017 traffic data. The new 2019 Traffic report confirmed that the traffic counts were comparable and as such the findings and recommendations in 2018 Traffic report did not require amendment. The 2019 Traffic report was not initially provided as it did not add any substantive further information on the modification proposal.

Traffic and Transport

Traffic issues raised in the submissions included concerns about the traffic data and traffic assessment, retaining the current lane configuration and safety of the merge lane.

Response

Transport engaged external traffic specialists to model the approved design and the proposed modification design to determine the improvements in traffic performance. The traffic model was based on current traffic data and growth assumptions. The traffic modelling and assessment indicated that the proposed modification would increase the level of service and reduce delays compared to the approved project. In addition, the proposed lane configuration would provide a better opportunity for vehicles to merge prior to reaching the new bridge.

The proposed merge lane has been designed to meet accepted safety standards in accordance with the Austroads Guide to Road Design (Austroads, 2009) and Roads and Maritime supplements to the Austroads Guide. The proposed modification would improve safety for motorists, pedestrians and cyclists.

Heritage

In summary, the respondents raised issues relating to the reduction in the Thompson Square parkland and the further impacts to heritage in the area.

Response

Transport is very conscious of the significant state heritage values associated with the Thompson Square Conservation Area (TSCA) and acknowledges that the proposed modification would result in a reduction in parkland space (approximately 160 square meters) in the south east corner of Thompson Square compared to the approved project.

Transport engaged external heritage specialists to assess the heritage and archaeological impacts of the proposed modification. The heritage assessment determined that the cumulative impact of the design change is minor within the context of the project, while further reductions in the size of Thompson Square are not desirable, the modification is acceptable from a heritage standpoint provided the mitigation/management measures identified in the Modification report are implemented.

The proposed modification would not alter the need to adopt the recommendations for historical archaeological salvage and management outlined in the DPIE approved Detailed Salvage Strategy (DSS) for the project.

While there will be some additional impacts to Thompson Square, the proposed modification would result in improved traffic benefits which would provide an improved overall outcome for the local community in comparison to the approved project.

Justification

The main issues raised in the submissions related to the justification and need for the proposed modification.

Response

Transport has undertaken additional investigations to confirm traffic growth rates since the EIS was prepared. The new 2018 Traffic report indicated that traffic had grown slightly faster than originally predicted. Consideration of this new information has led to this proposed design modification which would improve traffic flows in the long term and provide greater capacity for future growth.

The 2018 Traffic report shows that the key benefits of the proposed modification, compared to the approved project, include:

- improved northbound traffic flow through the Bridge Street and George Street intersection
- reduced delays in the afternoon peak (at both the Bridge Street and George Street intersection and the Bridge Street and Macquarie Street intersection).

Proposed changes to the modification

After consideration of the issues raised in the public submissions, there are no proposed changes to the modification's concept design or to the MCoA detailed in the Modification report. However, one additional environmental management measure has been proposed as part of this RTS report.

Next Steps

The Minister for Planning and Public Spaces as the determining authority will consider the information in the Modification report and this RTS report and make a decision whether or not to approve the proposed modification.

DPIE will inform the community and stakeholders of the decision. Where the decision is made to proceed with the modification, Transport would continue to engage and communicate with the community and stakeholders during the construction phase.

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1. Introduction and background

1.1 The project

Transport for NSW (Transport)(the former Roads and Maritime Services) is replacing the existing bridge over the Hawkesbury River at Windsor (known as 'Windsor Bridge') (refer Figure 1-1). The project has been assessed as State Significant Infrastructure (SSI) under the former Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Planning approval for the Windsor Bridge Replacement Project (WBRP) was granted in December 2013 and construction commenced in September 2018.

The *Windsor Bridge Replacement Project Environmental Impact Statement* (EIS) (SKM, 2012a) and the *Windsor Bridge Replacement Project Submissions Report incorporating Preferred Infrastructure Report* (SPIR) (SKM, 2013) were prepared for the Project. In December 2013, the Project was approved by the former Minister for Planning and Infrastructure (SSI-4951).

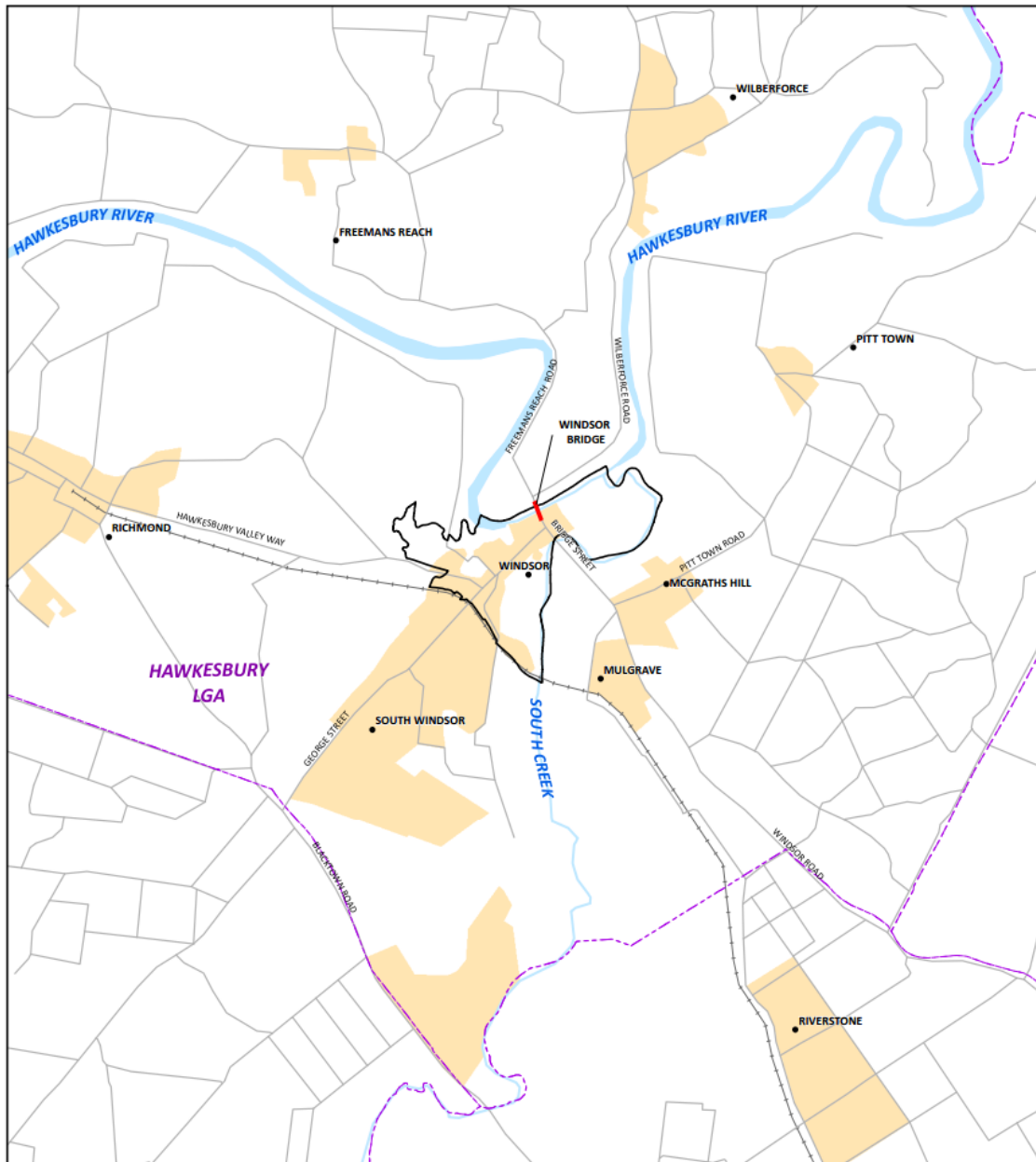
The WBRP involves the following (Figure 1-2 provides an overview of the approved project):

- Construction of a new bridge over the Hawkesbury River at Windsor, around 35 metres downstream of the existing Windsor bridge
- Construction of new approach roads and intersections to connect the new bridge to existing road network
- Modifications to local roads and access arrangements, including Macquarie Park and The Terrace;
- Construction of pedestrian and cycling facilities, including a shared pedestrian/cycle pathway for access to and across the new bridge
- Removal and backfilling of the existing bridge approach roads
- Removal of the of the existing road bridge, known as Windsor Bridge
- Urban design and landscaping works, including within the parkland area of Thompson Square and next to the northern intersection of Wilberforce Road, Freemans Reach Road and the Macquarie Park access road
- Ancillary works such as public utility adjustments, water management measures and scour protection works, as required.

Transport is proposing to modify the approved project to include the following key components (Figure 1-3):

- Line marking changes to the two through lanes at the northbound approach of the Bridge Street and George Street intersection which includes the following:
 - left lane: shared left turn and through lane
 - right lane: dedicated through lane
- A new merge lane exiting the Bridge Street and George Street intersection which includes the following:
 - 100 metres long (including a 30 metre parallel lane and 70 metre 'zip' merge lane), and
 - the lane merges into one northbound lane on the approach to the new bridge.

A more detailed description of the modification is found in the *Windsor Bridge Replacement Project. Environmental Assessment Modification* prepared by the former Roads and Maritime Services (Roads and Maritime) in September 2019.



LEGEND

- Windsor State Suburb Boundary
- Urban area
- LGA boundary
- River
- Major road
- Railway

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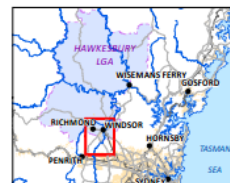
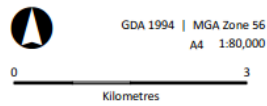
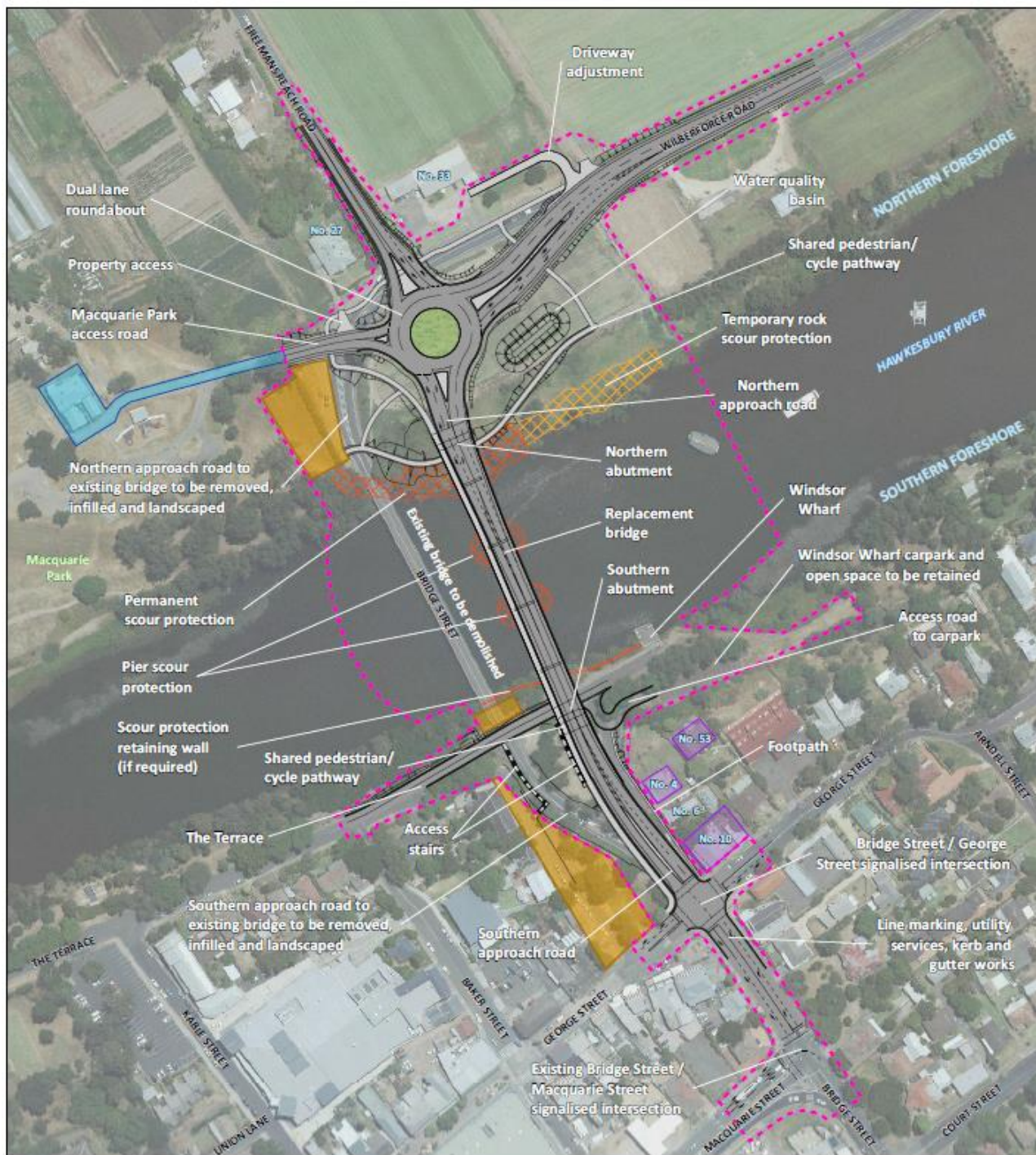


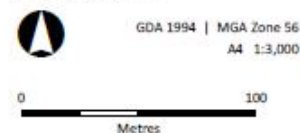
Figure 1-1 Location of the WBRP (Source: SKM, 2012a)



LEGEND

- Concept design
- Construction work zone
- Permanent rock scour protection (if required)
- Temporary rock scour protection (if required)
- Properties requiring flood mitigation works. Works subject to further consultation with and agreement from affected property owners.
- Properties requiring noise mitigation works. Works that are feasible and reasonable would be subject to further consultation with and agreement from affected property owners.
- Works subject to further council and stakeholder consultation

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Indicative only – subject to detailed design



Figure 1-2: Key elements of the WBRP (Source: SKM, 2012a)



Figure 1-3: Proposed modification to the project

1.2 Statutory context

The WBRP was declared State significant infrastructure (SSI) and was therefore assessed and approved under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The WBRP was approved on 20 December 2013 by the Minister for Planning and Infrastructure subject to the Minister's conditions of approval (MCoA). Any refinements to the project which are not consistent with the approved project must be approved by the Minister under Section 5.25 of the EP&A Act.

The Modification report (Roads and Maritime, 2019) was prepared for the purposes of seeking approval for a new northbound merge lane as a modification to the approved WBRP under Section 5.25 of the EP&A Act.

1.3 Modification exhibition

The Modification report was exhibited by the Department of Planning, Industry and Environment (DPIE) for 14 days from 23 October 2019 to 7 November 2019. The exhibition was advertised in the Hawkesbury Gazette. The modification was exhibited at the locations listed in Table 1.1.

Table 1.1: Display locations

Location	Address
DPIE website	planningportal.nsw.gov.au/major-projects
The WBRP website	rms.nsw.gov.au/windsorbridge .
Hawkesbury City Council	366 George Street, Windsor, NSW 2756
Hawkesbury Central Library	300 George Street, Windsor, NSW 2756
Roads and Maritime Services	20–44 Ennis Road, Milsons Point, NSW 2061

The Modification report was also made available at the Australia Post South Windsor (1/507 George Street South Windsor NSW 2756) and Australia Post Windsor (1/125 George Street Windsor NSW 2756). Further a hard copy was available for viewing on request at the DPIE office at 320 Pitt Street, Sydney, NSW, 2000.

The Community Update (October 2019) was letterbox dropped widely across Windsor and surrounding areas. The update provided a brief summary of the proposed modification, outlined the key impacts of the proposal and provided details on how to make a submission. The community update is provided as Appendix A.

Hawkesbury City Council was briefed by Transport on the proposed modification during the exhibition period.

1.4 Purpose of the document

During the exhibition of the modification, 32 submissions were made.

This report identifies the issues raised during exhibition of the modification and provides responses to those issues (Chapter 2). It includes information regarding the revised environmental management measures (Chapter 3) and proposed amendments to the MCoA (Chapter 4).

2. Response to issues

2.1 Respondents

The DPIE received 32 submissions accepted until 15 November 2019. Of these 26 were submissions from the community, three from community organisations and three public authority submissions (Environment, Energy and Science (EES) Group of DPIE (the former Office of Environment and Heritage, OEH), Heritage Council of NSW and Hawkesbury City Council). Table 2-1 lists the respondents and each respondent's allocated submission number and where the issues from each submission have been addressed in Chapter 2 of this report.

Table 2-1: List of respondents

Respondent	Submission No.	Section number where issues are addressed
Community		
Individual submission	1	Section 2.5, Section 2.12
Individual submission	2	Section 2.5, Section 2.12
Individual submission	3	Section 2.5, Section 2.11.2, Section 2.12
Individual submission	4	Section 2.3, Section 2.5, Section 2.10, Section 2.11.2
Individual submission	5	Section 2.4
Individual submission	6	Section 2.4, Section 2.11.3, Section 2.11.4
Individual submission	7	Section 2.10, Section 2.12
Individual submission	8	Section 2.3, Section 2.4, Section 2.11.3
Individual submission	9	Section 2.3, Section 2.4, Section 2.11.3, Section 2.12
Individual submission	10	Section 2.3, Section 2.4, Section 2.11.2, Section 2.12
Individual submission	11	Section 2.4, Section 2.5, Section 2.8, Section 2.10, Section 2.11.2, Section 2.11.3, Section 2.11.4, Section 2.12
Individual submission	12	Section 2.11.4
Individual submission	13	Section 2.3
Individual submission	14	Section 2.11.2
Individual submission	15	No attachment provided on DPIE website
Individual submission	16	Section 2.4, Section 2.5, Section 2.12
Individual submission	17	Section 2.3, Section 2.4, Section 2.11.4, Section 2.12
Individual submission	18	Section 2.3, Section 2.4, Section 2.7, Section 2.9, Section 2.10, Section 2.11.2, Section 2.11.3
Individual submission	19	Section 2.3, Section 2.7, Section 2.10, Section 2.11.3, Section 2.12

Respondent	Submission No.	Section number where issues are addressed
Individual submission	20	Section 2.5
Individual submission	21	Section 2.11.1, Section 2.11.2
Individual submission	22	Section 2.3, Section 2.4, Section 2.5, Section 2.11.2, Section 2.11.3, Section 2.11.4
Individual submission	23	Section 2.4, Section 2.5, Section 2.11.4
Individual submission	24	Section 2.3, Section 2.10
Individual submission	25	Section 2.3, Section 2.4, Section 2.5, Section 2.12
Individual submission	26	Section 2.4, Section 2.7, Section 2.9, Section 2.10, Section 2.11.3, Section 2.12
Community Organisations		
Defenders of Thompson Square Incorporated	27	Section 2.4, Section 2.5, Section 2.11.2
North Richmond & Districts Community Action Association	28	Section 2.3, Section 2.11.3, Section 2.11.4, Section 2.12
Community Action for Windsor Bridge (CAWB)	29	Section 2.3, Section 2.4, Section 2.5, Section 2.7, Section 2.9, Section 2.10, Section 2.11.2, Section 2.11.3, Section 2.12
Public Authorities		
EES Group of DPIE (the former OEH)	30	Section 2.3
Heritage Council of NSW	31	Section 2.5, Section 2.6
Hawkesbury City Council	32a	Section 2.3, Section 2.4, Section 2.5, Section 2.11.2, Section 2.12
	32b	Section 2.3, Section 2.4, Section 2.5, Section 2.7, Section 2.10, Section 2.11.2, Section 2.11.3

2.2 Overview of the issues raised

Each submission has been individually considered to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in multiple submissions, only one response has been provided. The issues raised and Transport response to these issues forms the basis of this chapter.

Out of the 29 community submissions (including community organisations):

- One submission was in partial support for the proposal
- 28 submissions objected to parts or all of proposal.

In summary the issues raised by the community (including organisations) generally relate to:

- Consultation including a perceived disingenuous consultation process, lack of consultation, short consultation period and traffic report not being made available during the exhibition period
- Traffic issues including retaining the current lane configuration, concerns about the traffic data and traffic assessment and safety of the merge lane
- Heritage impacts including the reduction in Thompson Square parkland and the further destruction of heritage
- Amenity impacts such as increased noise and reduced air quality
- Justification for the proposed modification.

It is noted that the community raised a number of issues that are outside the scope of the proposed modification including justification for the approved WBRP, heritage impacts of the approved WBRP and retention of the existing bridge.

The EES Group of DPIE (the former OEH) recommended that Transport discuss the proposed modification with the registered Aboriginal parties (RAPs).

The Heritage Council of NSW raised the issue of the cumulative impacts on the state significant Thompson Square Conservation Area and the further likely erosion of effective public heritage interpretation on the ground. The Heritage Council of NSW also notes that appropriate mitigation measures to protect heritage, including significant trees within Thompson Square, should be adopted.

In summary, Hawkesbury City Council raised the following concerns:

- Traffic efficiency - concern that the proposed modification would not be a solution to the traffic problem
- Traffic studies and data discrepancies
- Community engagement/ consultation - time provided and the fact that part of the traffic data was not made available to the public until the last day of the consultation period
- Hawkesbury City Council's *Thompson Square Conservation Management Plan* (December 2018) was not adequately considered
- Loss of public amenity
- Noise and vibration impacts.

2.3 Consultation

Submission numbers

4, 8, 9, 17, 18, 19, 29, 32b

Issue description

In summary, the respondents raised the following issues:

1. Concerns regarding the consultation process and the information provided.
2. Comment that the submission process was not user friendly.
3. Concerns there was a lack of consultation or disingenuous consultation, including:
 - a. Very little or no consultation with the community regarding the proposed modification.
 - b. No discussion with Hawkesbury City Council prior to public exhibition of the Modification report.
 - c. Whether Transport will take the community feedback into consideration.

Response

The public exhibition of the Modification report, including the online submission process, was coordinated independently by the DPIE in accordance with its procedures and guidelines to provide the community and other stakeholders with the opportunity to provide comment on the proposal. Concerns around the submission process itself are matters for the DPIE to consider.

The community was advised of the proposed modification via a number of avenues including advertisement in the Hawkesbury Gazette and via a community update (refer Appendix A). The update was issued to residents and stakeholders explaining the proposal and outlining how submissions on the proposal could be made. The community update was letterbox dropped to 14,000 residents and businesses in areas including Windsor, South Windsor, Mulgrave, McGraths Hill, Pitt Town, Wilberforce, Freemans Reach and Richmond. The distribution area of the update was in accordance with the DPIE approved *Community Communication Strategy* developed for the project. The level and timing of the consultation with the community and stakeholders is considered appropriate given the scale, nature and likely impacts of the modification.

Hawkesbury City Council was briefed on the proposed modification during the exhibition period and it has provided written comments on the proposal. It is noted that Hawkesbury City Council also wrote to Transport on 31 October 2019 requesting additional information in relation to the proposed modification. Transport provided Council with additional information as outlined in Transport's letter emailed on 5 November 2019 (refer Appendix B).

The key issues raised by the community and stakeholders, including Hawkesbury City Council, during the exhibition period have been considered by Transport in this Response to Submissions (RTS) report. Preparation of a RTS report is a requirement of DPIE in accordance with its procedures and guidelines. The DPIE requires Transport to consider all submissions received and provide a response to those relevant to the modification.

After considering all feedback provided from the community and stakeholders, Transport does not expect to make any amendments to the modification.

Transport will continue to engage and communicate with the community, Hawkesbury City Council and relevant stakeholders as construction progresses on the project.

Submission numbers

9, 10, 18, 25, 28, 32a, 32b

Issue description

In summary, the respondents raised the following issues:

4. Comments about the length of the exhibition period, including:
 - a. Insufficient time to fully read all the documentation.
 - b. 12 working days to allow for submissions is an unacceptable time frame for community feedback.
 - c. Consultation period was too brief to make an informed decision on the proposal.
5. Concerns that Transport refused an extension of time for submissions requested by Hawkesbury City Council on behalf of the community.
6. Request that the exhibition period be re-opened and extended for a period of 14 days after all the relevant information has been provided by Transport.

Response

Under the EP&A Act, the DPIE has the discretion to exhibit and seek submissions on a Modification Report. In this instance, DPIE considered it appropriate that the proposed modification be exhibited for a 14 day exhibition period given the scale, nature and likely impacts of the modification.

While the publicly stated closing date for submissions was 7 November 2019, submissions including one from Hawkesbury City Council were accepted by the DPIE until 15 November 2019.

Transport has prepared this RTS report to respond to the issues relevant to the proposed modification that have been raised by the community and other stakeholders. The report will be lodged to the DPIE to allow it to complete its assessment of the merits of the proposal.

Submission numbers

13, 18, 22, 32b

Issue description

In summary, the respondents raised the following issues:

7. Concerns that the 2019 Traffic report and data was not available for comment during the exhibition period.
8. Comments that the 2019 Traffic study was finalised six days after the consultation period commenced.
9. Comment there was insufficient time to make a submission once the additional traffic information had been provided.

Response

Transport acknowledges that the *Traffic Counts Data Comparison Between 2017 and 2019* report (referred to as the 2019 Traffic report) was not initially made publicly available during the modification exhibition period. It was placed on the Transport website towards the latter end of the exhibition period following requests from a community member and the DPIE.

The Modification report that was placed on display included a copy of the 2018 *“Windsor Bridge Replacement Project, Traffic and Options Modelling Report”* which was based on traffic data collected in 2017. This 2018 Traffic report recommended the proposed traffic changes proposed in the Modification report.

The decision to proceed with the proposed modification was not made until 2019, after new traffic counts were used to re-affirm the 2017 traffic data. The new traffic counts were undertaken in August 2019 and included in the 2019 Traffic report.

The 2019 Traffic report concluded *“Overall, the traffic volumes on the Windsor Bridge and four nearby intersections have remained at similar levels between 2017 and 2019”*.

As the March 2017 and 2019 traffic counts were comparable, the findings and recommendations in 2018 Traffic report did not require amendment. As such, public exhibition of the 2019 Traffic report was not initially provided as it provided no substantive further additional information on the modification.

Whilst the 2019 Traffic report was finalised on 29 October 2019, six days after the consultation period commenced, there were no substantive differences from the draft version of September 2019. The statement in the Modification report about consistent traffic data was made based on the September 2019 draft version of the 2019 Traffic report.

Further information on the traffic reports and data is provided in Section 2.4.

Submission number

30

Issue description

In summary, the respondent raised the following issue:

10. Recommendation to discuss the modification with the registered Aboriginal parties (RAPs).

Response

The area impacted by the proposed modification is within the approved project boundary for which consultation with the RAPs has been underway since 2016. The modification area was also covered by the archaeological testing program undertaken in 2016 and was assessed under the Detailed Salvage Strategy (DSS)(AAJV, 2017). As detailed in expert assessment by the AAJV (Appendix C of the Modification report) the AAJV stated; “we do not foresee additional Aboriginal archaeological impacts, and no changes to the recommendations of the Detailed Salvage Strategy would be required”.

Following exhibition of the Modification report the following RAPs were advised of the proposed modification, provided with a copy of the report and invited to seek further information or comment:

- Deerubbin Local Aboriginal Land Council
- Darug Land Observations
- Yarrawalk/Tocomwall
- Darug Aboriginal Cultural Heritage Assessments
- Darug Tribal Aboriginal Corporation
- Darug Custodian Aboriginal Corporation
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Darug Aboriginal Land Care
- Cultural Knowledge Holder – Mr Barry Corr.

The RAPs were consulted by email and letter dated 12 December 2019 and a further email and letter was forwarded on either 17, 20 or 24 January 2020 requesting if the RAP wished to make comment, that this be provided within one week. Sample letters are provided in Appendix C.

No specific issues or concerns were raised by the RAPs during and following the exhibition period. Transport will continue to engage and communicate with the RAPs as construction progresses on the project.

Submission number

24

Issue description

In summary, the respondent raised the following issue:

11. Lack of meaningful information in the Community Update (October 2019).

Response

The purpose of the Community Update (October 2019) was to provide a brief summary of the proposed modification, outline the key impacts and provide details on where to access further detailed information and how to make a submission. Further information and details of the proposal and environmental assessment were provided in the Modification report.

2.4 Traffic and Transport

Submission numbers

5, 6, 8, 10, 11, 16, 17, 18, 22, 23, 25, 26, 27, 29

Issue description

In summary, the respondents raised the following issues:

1. Clarity required around the traffic reports and data for the WBRP project and modification, including the 'May 2019 report'.
2. Concern that previous traffic management plans for the project are not accurate.
3. Concern that no traffic counts were undertaken for the proposed modification.
4. Concerns that the Modification report is not based on recent traffic data.
5. Comments about the traffic data used to justify the modification, given traffic counts between 2017 and 2019 are consistent.
6. Concerns that the traffic numbers have not increased.
7. Concerns around the comparison of 2017 and 2019 traffic data.
8. Concerns that the introduction of a merge lane would increase traffic congestion.
9. Comments that the current lane configuration (dedicated left turn lane) should be retained.
10. Concerns that the Bridge Street / Macquarie Street intersection would not have an adequate level of service in the short or long term.
11. Comments that the Modification report does not include modelling of local roads such as Freemans Reach Road and Macquarie Street.
12. Concerns in the delay between the 2018 Traffic report and proceeding with the modification.
13. Concerns around the timing of traffic data, assessment and the decision to proceed with the modification.
14. Comment that intersections are already beyond maximum capacity.

Response

The traffic models and reports prepared in relation to the approved project and the proposed modification have been prepared by external traffic experts and based on traffic data, assumptions and knowledge at the time of reporting and are considered accurate. The traffic reports undertaken for the approved project and modification to date include:

- SKM (2012) *Traffic and Transport Working Paper - Working Paper 4*, November 2012. This report is based on traffic data collected in 2011 and 2012
- Arcadis (2018). *Traffic and Options Modelling Report*, 27 March 2018. Referred to as the '2018 Traffic report' or '2017 traffic counts'. This report is based on traffic data collected in March 2017
- Arcadis (2019). *Counts Data Comparison Between 2017 and 2019*, 29 October 2019. Referred to as the '2019 Traffic report' or '2019 traffic counts'. This report is based on traffic data collected in August 2019. This report compared the 2017 traffic counts with the 2019 traffic counts.

It is noted that the 2018 Traffic report was incorrectly labelled 'on the Transport website as the 'May 2019 Traffic and Options Modelling Report'. Transport apologises for this error which has now been rectified.

The delay between being granted planning approval (December 2013) and commencing construction (September 2018) has provided the project team with an opportunity to confirm traffic growth rates since the EIS was prepared (November 2012). The 2018 Traffic report indicated that traffic had grown slightly faster than originally predicted based on a review of current land use data, proposed future developments and traffic origins and destinations. The increase in daily traffic vehicles between the 2012 and 2018 Traffic reports is 1,000 vehicles. Consideration of this new information has led to this proposed design modification.

The traffic modelling for the proposed modification is supported by the 2018 Traffic Report which is based on traffic data collected in March 2017. Following receipt of the traffic counts in 2017 and the 2018 Traffic report, a decision was made to undertake further traffic counts to verify the results and validate the recommendations in the 2018 Traffic report. These additional traffic counts were undertaken in 2019. As the traffic data collected in 2019 was found to be consistent with the data presented in the 2018 Traffic report a decision was made to proceed with the modification. As the 2017 and 2019 traffic counts are similar, the findings and recommendations in 2018 Traffic report did not require amendment.

The 2018 Traffic report includes the analysis of four intersections within the study area to determine the operating performance and level of service. The 2018 Traffic report includes modelling of Bridge Street and the intersection of other local roads as follows:

- Wilberforce Road / Freemans Reach Road intersection
- Bridge Street / George Street intersection
- Bridge Street / Macquarie Street intersection
- Bridge Street / Court Street intersection.

Compared to the current approved lane configuration the proposed modification (merge lane after the Bridge Street / George Street intersection) would provide a better opportunity for vehicles to merge prior to approaching the new bridge. The proposed modification would still allow northbound vehicles to turn left into George Street. A description of the project is provided in Section 4.3 of the Modification report.

As outlined in Table 6-6 of the Modification report, the introduction of the proposed merge lane would have significant traffic benefits at the Bridge Street / George Street intersection and the Bridge Street / Macquarie Street intersection in the afternoon peak. It is noted that whilst traffic delays would be reduced, the overall level of service at the Bridge Street / Macquarie Street intersection in 2036 would be unchanged compared to the current approved design.

The 2018 Traffic report confirms that the existing roundabout at the intersection of Bridge Street and George Street has insufficient capacity. Table 3-5 of the 2018 Traffic report shows the existing Level of Service (LoS) in 2017 to be F in the afternoon peak. Table 4-8 of the 2018 Traffic report shows the signalised intersection for the approved project will attain a forecast LoS E in 2026. The modification would significantly improve the LoS for this intersection to B in the 2026 afternoon peak.

Submission number

29

Issue description

In summary, the respondent raised the following issue:

15. Concern about the increase in proportion of heavy vehicles between the 2017 and 2019 traffic counts, and the implications of this increase.

Response

Over the two years period between 2017 and 2019, the proportion of heavy vehicles to total traffic have increased from 11 per cent to 13 per cent being only 2 per cent increase. In one year, heavy vehicles proportion has increased by just one per cent.

The increase in heavy vehicles over the two years period (2017 to 2019) on Bridge Street is shown in Table 2-2 below. The heavy vehicle increase on Bridge Street is shown for general traffic peak hour at 8-9 am and 4-5 pm.

Table 2-2: Increase in heavy vehicles by class on Bridge Street between 2017 and 2019

Period	Medium trucks / bus	Articulated trucks	B-doubles	Total heavy vehicles
Morning peak hour (8am-9am)	25	2	1	28
Afternoon peak hour (4pm-5pm)	38	0	2	40

The data indicates that, in the afternoon peak, heavy vehicles have increased by about 28 vehicles over the two-year period. Of that:

- About 25 are medium trucks (two to four axle)
- About 2 are articulated trucks (three to six axle articulated)
- About 1 B-double.

In one year, data shows about 14 heavy vehicles increase in morning peak being primarily two to four axles truck. The small increase of heavy vehicles during morning peak hour is likely to have minor impact on the Bridge Street traffic flow.

Similarly, in the afternoon peak, heavy vehicles have increased by about 40 vehicles over the two-year period. Of these 40 vehicles:

- About 38 are medium trucks (Two to four axle)
- No articulated trucks
- About 2 are B-doubles.

In one year, data shows about 20 heavy vehicles increase in afternoon peak being primarily two to four axles trucks. The small increase of heavy vehicles during afternoon peak hour is likely to have minor impact on the Bridge Street traffic flow.

Submission numbers

8, 10, 26

Issue description

In summary, the respondents raised the following issue:

16. Concerns over the safety of a merge lane and potential closure of the bridge if an accident was to occur.

Response

The proposed merge lane has been designed in accordance with the Austroads Guide to Road Design (Austroads, 2009) and Roads and Maritime supplements to the Austroads Guide.

Motor vehicle crashes can occur at any time or anywhere on the road network that, unfortunately, can potentially cause disruption to traffic flow. In the event of a motor vehicle crash, Transport's Transport Management Centre and NSW Police Force have established protocols and procedures that allow them to implement measures to safely manage traffic until traffic flow returns to normal.

Submission numbers

9, 26

Issue description

In summary, the respondents raised the following issues:

17. Concerns about access to Governor Phillip Park and the boat ramp.
18. Concern about access to the Peninsula Residential Precinct.

Response

There is no change proposed to the approved turn provisions as a result of the proposed modification. As such access to Governor Phillip Park and the Peninsula Residential Precinct is the same for both the approved project and the proposed modification.

Submission numbers

29, 32a, 32b

Issue description

The following additional traffic information has been requested:

19. Additional traffic data (movement, number and time of day) for four intersections in the study area.
20. Details of the 2019 Traffic study, including any differences compared to the 2017 study.

Response

The Traffic and Options Modelling report included in Appendix B of the Modification report includes full details of the morning and afternoon peak traffic movement counts and time of day for each leg of the four referenced intersections. In particular:

- Bridge Street / Court Street intersection
- Bridge Street traffic volumes from Fitzroy Bridge
- Bridge Street / George Street intersection
- Wilberforce Road / Freemans Reach Road intersection
- Bridge Street / Macquarie Street intersection.

Refer to traffic volume diagrams on pages 49 to 52 and pages 57 to 60 of Appendix B of the Modification report.

The turning volumes for the proposed modification are the same as the approved project and not included in the report. The modification does not change any of the available traffic movements, hence reported traffic volumes for approved project (pages 57 to 60 of Appendix B of the Modification report) are the same for the proposed modification.

A copy of the 2019 traffic study was also placed on the Transport project website. As noted on page 23 of the Modification report the 2019 traffic assessment was confirmed to be consistent with the traffic data that was surveyed in 2017.

The 2019 study provides assessment of any differences between traffic counts at all intersections and locations in the study area between the 2017 and the 2019 studies. The 2019 study concludes that the traffic counts and assessment to be consistent with the 2017 assessment.

2.5 Heritage

Submission numbers

1, 2, 3, 4, 11, 16, 20, 22, 23, 25, 27, 29, 31, 32b

Issue description

In summary, the respondents raised the following issues:

1. Comments that the Modification report fails to recognise the significant heritage value of Thompson Square Conservation Area.
2. Concerns over the further reduction in the area of Thompson Square parkland.
3. Comments that the proposed modification would destroy the heritage of the area.
4. Questions over how the heritage of Thompson Square would be protected and preserved.
5. Comment that further conditions, if necessary, should be imposed to ensure that the area of the proposed modification would be managed in accordance with the approved Detailed Salvage Strategy (DSS)(AAJV, 2017) and the approved WBRP *Construction Heritage Management Sub Plan* (Appendix B5 of the CEMP).
6. Concern about the cumulative impacts on Thompsons Square, and the further likely erosion of effective public heritage interpretation on the ground.
7. Comment that the excavation required to construct the new merge lane could disrupt historic tunnels under Thompson Square.
8. Comment that the negative impacts on the heritage of Thompson Square and the heritage tourism potential of Windsor should be minimised.

9. Concerns that the reduction in the area of Thompson Square parkland would negatively impact on the potential community benefits and economic benefits provided through heritage tourism to the area.
10. Comment about the reduction in the Archaeological buffer zone proposed as part of the modification.
11. Question about the heritage and character impacts of an additional northbound lane on the bridge.
12. Comment that the proposed modification is inconsistent with the original Conditions of Approval, which did not provide for further incursions into the Heritage Precinct of Thompson Square.

Response

Transport is very conscious of the significant state heritage values associated with the Thompson Square Conservation Area (TSCA) (refer Section 6.4.2 of the Modification report) and acknowledges that the proposed modification would result in a reduction in parkland space (approximately 160 square meters) in the south east corner of Thompson Square compared to the approved project.

Transport engaged external heritage specialists to assess the Aboriginal archaeological, historical archaeological and landscape and boundary impacts of the proposed modification to ensure the potential impacts would be minimised (refer Appendix C of the Modification report). The heritage assessment determined that the cumulative impact of this design change is minor within the context of the project, while further reductions in the size of Thompson Square are not desirable, the modification is acceptable from a heritage standpoint provided the mitigation/management measures identified in the Modification report are implemented.

During preparation of this RTS report, Transport requested additional heritage advice on the potential impacts of the proposed modification on the TSCA as a whole (refer Appendix D). After consideration of the visualisations (presented in the Appendix E of the Modification report) and design drawings the advice concluded *'there will be minimal additional loss of heritage value of the Thompson Square Conservation Area above and beyond that which is already contemplated in the existing approval'*.

It is not expected that the proposed modification would change the recommendations for historical archaeological salvage and management outlined in the DPIE approved DSS (AAJV, 2017). Therefore, the proposed modification would be managed in accordance with the DPIE approved DSS and the DPIE approved *Construction Heritage Management Sub Plan* (Appendix B5 of the CEMP). In addition, the Interpretation Plan which is currently being prepared is not anticipated to require amendment in light of the proposed modification. The Interpretation Plan will be completed in early 2020.

Whilst resulting in additional impacts to Thompson Square, the proposed modification would result in improved traffic benefits which would provide an improved overall outcome for the local community in comparison to the approved project.

The proposed modification is within an area suspected to contain historical archaeological deposits and relics which may be disturbed by construction of the proposed modification. However, it is noted that the works would not impact the brick barrel drain uncovered during construction of the approved project. Archaeological investigations identified that the upper regions of the brick barrel drain were damaged and removed by the roadway cutting that was built through Thompson Square in the 1930s. It is not known whether the brick barrel drain continues above the roadway cutting in Thompson Square. If this is the case the alignment of the barrel drain would be to the west of existing *Araucaria cunninghamii* (Hoop Pine) tree and if present it would be a minimum distance of approximately 10 metres from the proposed limits of the modification works.

The TSCA is acknowledged as an important area for both the local community and tourism. Whilst the proposed modification would reduce the area of parkland of Thompson Square along the Bridge Street frontage, the majority of the area of parkland is retained and the physical access and view corridor through to the river is also largely unaffected. There would still be an increase to the overall unified open space in the Thompson Square parkland compared to the existing situation (i.e. without approved project or modification). Refer Section 2.10 for further information. As such, the proposed modification is unlikely to

change the tourism or economic impacts to local businesses during construction and operation compared to the current approved design (and impacts identified in the EIS).

As part of the RTS process, Transport looked into an opportunity to improve the open space and amenity within the broader project area (refer Appendix F). Transport has identified a partnering opportunity with Hawkesbury City Council to upgrade the landscaping at the Windsor Wharf Reserve which adjoins the WBRP project area. These landscaping improvements were identified previously in Hawkesbury City Council's *Windsor Foreshores Parks Plan of Management Plan (PoM)* (Hawkesbury City Council, 2013) in addition to the proposed works for the WBRP. Figure 2-1 shows an aerial view of Windsor Wharf Reserve, identifying and the range of landscaping improvement works that are now proposed to be undertaken as part of the WBRP (including modification).

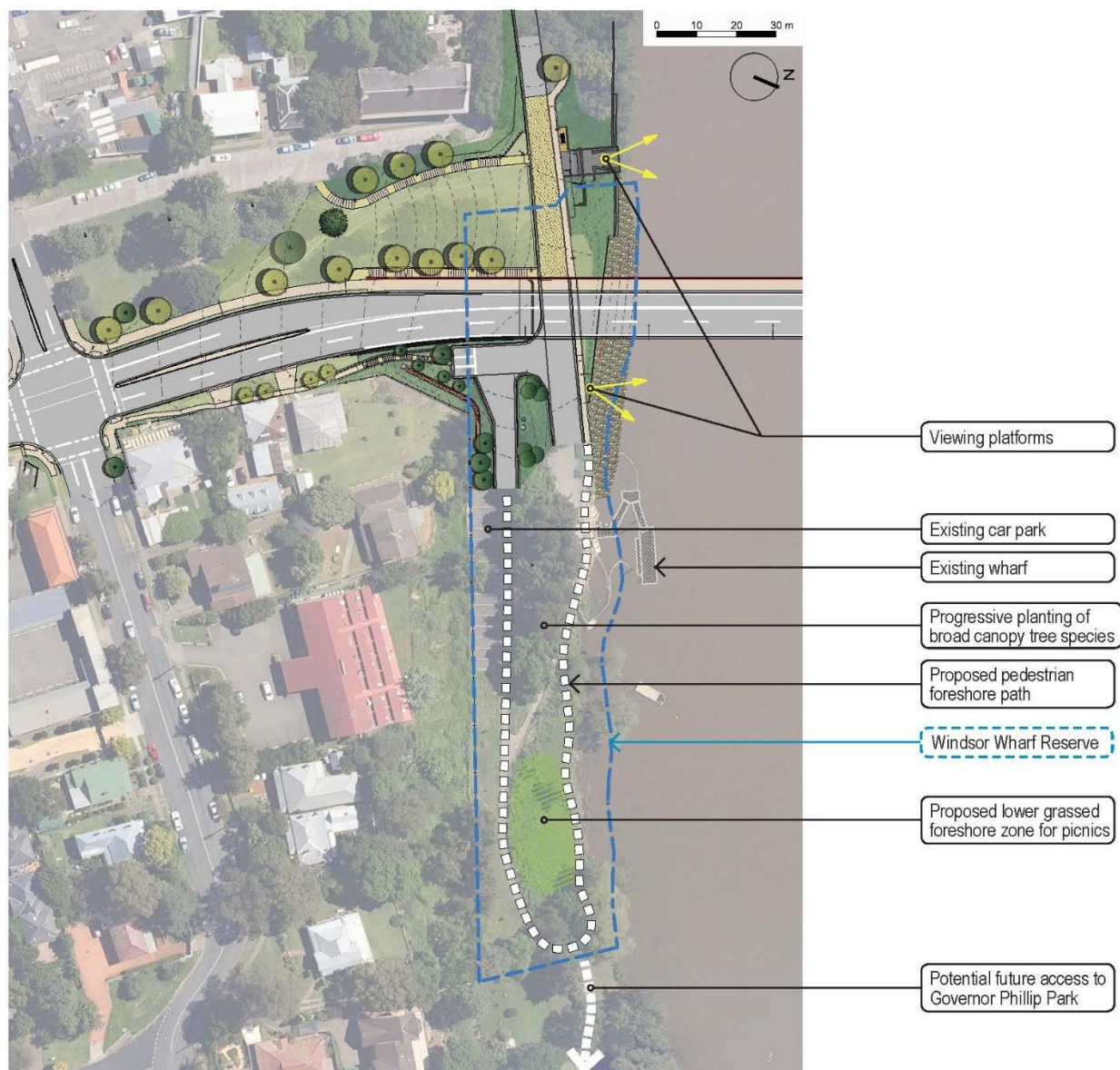


Figure 2-1: Proposed landscape improvements to Windsor Wharf Reserve

These landscape improvement works would provide a significant contribution to the foreshore open space in Windsor. The foreshore works in the Reserve also provide the opportunity to facilitate access and usage of this foreshore area, providing additional attractive riverfront parkland with foreshore picnic areas, a revamped Hawkesbury Artist Trail, vantage points to view the river and easy access to the wharf for patrons of the Hawkesbury Paddlewheeler and other boat users.

The benefits resulting from the combined works to Thompson Square and Windsor Wharf Reserve could have a significant contribution to the recreational enjoyment of both local residents and visitors, enhancing the local economy through increased tourism activity.

A 4m archaeological buffer zone was originally proposed as part of the approved project to accommodate construction related works, such as haulage roads, shoring of excavations and scaffolding. The works proposed as part of the modification (that is the shared path) that are within the original buffer zone would be limited to shallow excavation as outlined in Section 6.5 of the Modification report.

The option of adding an additional north-bound lane on the bridge would require changes to the bridge approach and foundations resulting in a further reduction of the Thompson Square parkland. The impact to the parkland would be greater for an additional northbound lane on the bridge compared to the proposed modification.

Minister's conditions of approval (MCoA) for the approved project were based on the information and assessment included in the EIS and SPIR reports. As the proposed modification is not considered consistent with the approved project the proposed changes, including any impacts on the TSCA, it must be approved by the Minister under Section 5.25 of the EP&A Act. The Modification report and this RTS report have been prepared for the purposes of seeking approval for the new north bound merge lane as a modification to the WBRP. In addition, Transport seeks to modify Condition A1 of the MCoA to include reference to the Modification report and this RTS report.

Submission numbers

22, 32a, 32b

Issue description

In summary, the respondents raised the following issue:

13. Concerns that the proposal has not considered and does not comply with Hawkesbury City Council's *Final Thompson Square Conservation Management Plan*.

Response

Hawkesbury City Council commissioned the *Thompson Square Conservation Management Plan* (CMP)(December 2018) for the entire square. The purpose of the conservation policies is to provide guidance for the ongoing care, use and management of the TSCA including addressing any proposed future changes or development.

Consideration of Hawkesbury City Council's CMP is provided in Appendix E. The proposed modification is considered to be generally consistent with principles and policies outlined in the CMP.

As part of the conditions of approval for the WBRP, the former Roads and Maritime was required to prepare a *Strategic Conservation Management Plan* (SCMP) (AAJV, 2018) for the project. The SCMP was approved by DPIE on the 23 February 2018 and includes the following volumes:

- Volume 1: Site ID, Historical and Heritage Status
- Volume 2: Physical analysis and Policy
- Volume 3: Specific Information
- Volume 4: Consultation Report.

The SCMP outlines the heritage principles for the project to retain the heritage significance of Thompson Square and mitigation measures for Thompson Square and individual listed items to mitigate impact.

Consideration of the former Roads and Maritime's SCMP is provided in Appendix E. The proposed modification is considered to be generally consistent with principles and policies outlined in the SCMP.

Overall the heritage impact of the proposed modification has been assessed in Section 6.4 and Appendix C of the Modification report to not be significant.

2.6 Planted Trees

Submission number

31

Issue description

In summary, the respondent raised the following issue:

1. Comment that appropriate measures should be adopted to protect the significant trees within Thompson Square parkland, in particular the *Aracuaria cunninghamii*.

Response

Transport acknowledges the need to protect significant trees within the Thompson Square Parkland and has proposed mitigation measures to be implemented to protect the *Aracuaria cunninghamii* tree. Details are included in Section 6.6.4 of the Modification report. No additional mitigation measures are considered necessary.

2.7 Noise and Vibration

Submission numbers

18, 19, 26, 29, 32b

Issue description

In summary, the respondents raised the following issues:

1. Concerns that unacceptable noise levels would be experienced by recreational users of Thompson Square and residential receivers.
2. Comment that construction noise impacts would be different to those identified in the EIS.
3. Comment that adequate details on the expected noise and vibration effects on nearby residents, users of the parkland and the surrounding area were not provided.
4. Concern that the increase in heavy vehicle movements between 2017 and 2019 were not considered in the noise modelling.
5. Comments that the noise model should be based on the 2019 traffic data.
6. Concern that additional noise monitoring was not undertaken.
7. Concern that the increase in proportion of heavy vehicles will have impacts on users of the parkland.
8. Concern that Calculation of Road Traffic Noise (CoRTN) is not appropriate for modelling heavy vehicles.
9. Question if the noise levels are responsible for the "high amenity parkland" being reduced to a strip of land a mere 18 metres wide.

Response

Section 6.8 and Appendix F of the Modification report details the investigation and assessment of noise and vibration impacts of the proposal. The proposed modification was assessed to not increase noise levels in adjoining properties and to not provide a significant change in noise levels in Thompson Square compared to the approved project.

The calibrated noise model used for the environmental assessment was amended to include the proposed modification. Additional monitoring was not required because the previously calibrated model was re-run using recently acquired traffic data in March 2017 to assess the noise impacts to adjacent residences.

As the traffic survey recently undertaken in August 2019 was consistent with the traffic data (including heavy vehicles) surveyed in March 2017, as well as the traffic growth used for the noise assessment, the noise assessment presented in the Modification report did not require amendment. Refer to Section 2.4 for further information on the change in heavy vehicles between the 2018 and 2019 Traffic reports.

The noise modelling is consistent with the requirements of EPA's document *Road Noise Policy* which states that CoRTN is an appropriate noise modelling algorithm for assessing road traffic noise. Monitored noise levels were compared with the predicted noise levels as part of the environmental assessment when calibration of the noise model was undertaken. The results of the comparison showed that there was good agreement between the measured noise levels and the predicted noise levels and within the accepted tolerances for a road noise assessment.

The landscape character assessment for the proposed modification (Section 6.7 and Appendix E of the Modification report) refers to the high amenity parkland area as the central area of the parkland which offers not only some increased separation from the road but also an elevated setting providing views over the parkland and road to the river and floodplain beyond. The area of high amenity parkland is based on a notional landscape buffer and distance from the road, not on expected noise levels. Changes in noise levels within the recreational areas of Thompson Square would be minor compared to the approved project.

2.8 Hydrology

Submission number

11

Issue description

In summary, the respondent raised the following issue:

1. Comment that the project and the modification would not provide significant flood immunity.

Response

As outlined in Section 6.11 of the Modification report, the construction and operation of the project modification would not alter the peak water levels in the river or property impacts compared to the approved design and impacts identified in the EIS. Further, the modification would not significantly alter the flow distribution near Windsor.

2.9 Air Quality

Submission numbers

18, 26, 29

Issue description

In summary, the respondents raised the following issues:

1. Concern there would be a reduction in air quality as vehicles would travel closer to recreational users of Thompson Square.
2. Concern that the increase in proportion of heavy vehicles will have impacts on users of the parkland.

Response

The proposed modification would bring operational traffic slightly closer to the recreational users of Thompson Square, however there is not expected to be a significant change in air quality impacts project compared to the current design and impacts identified in the EIS. As suggested in Section 6.12 of the Modification report, the improved traffic performance (reduced delays) at the intersection of Bridge Street and George Street has the potential to provide minor improvements in air quality.

Refer to Section 2.4 for further information on the increase in heavy vehicles between the 2018 and 2019 Traffic reports.

2.10 Project Description and other issues

Submission numbers

7, 11, 18, 19, 26, 29, 32b

Issue description

In summary, the respondents raised the following issues:

1. Comment that the proposed modification is poorly defined in the Modification report.
2. Comment that there was a lack of investigations relating to the proposed modification.
3. Comment that the Modification report does not adequately describe the portion of Thompson Square to be removed.
4. Request for technical drawings of the proposed modification.
5. Question about the exact area of Thompson Square parkland to be removed by the proposed modification.
6. Comment that precise figures as to the amount of land resumed for the current slip/zip lane proposal should be provided.
7. Request for exact and accurate details of the area of Thompson Square parkland that would be removed compared to the additional area of parkland the approved project provides.
8. Concern about the reduction in useable space of Thompson Square.
9. Comment about the assessment of cumulative impacts.

Response

Section 4.3 of the Modification report provides a detailed description of the two amendments associated with the proposed modification and outlines construction and operational phases of the project. The project description provided allows for an adequate assessment of the environmental impacts of the proposal and identification of management measures. The Modification report provides an assessment of all environmental aspects of the project, including specialist assessments for the key areas of potential impact, which are traffic, heritage, landscape character, visual impact and noise.

Transport acknowledges that the proposed modification would result in a reduction in parkland space (approximately 160 square meters) in the south east corner of Thompson Square compared to the approved project. However, there would still be an increase to the overall unified open space in Thompson Square parkland compared to the original conditions (i.e. without approved project or modification). The original condition is shown in Figure 2-2, the approved design is shown in Figure 2-3 and the proposed modification is shown in Figure 2-4. These figures clearly show the unification of the two original parkland areas of Thompson Square, with the river foreshore parks of Howe Park and Windsor Wharf Reserve as a result of both the approved project and the proposed modification. A detailed summary of the design development is provided in Appendix F.

Section 6.7.3 of the Modification report assesses the reduction of the Thompson Square parkland from an amenity and usage perspective. The assessment concludes that whilst the proposed modification would potentially have some effect on the higher amenity central areas of the parkland, the majority of the parkland would be retained and the physical access and view corridor to the river would be unaffected. The retained trees and the proposed new tree planting along the Bridge Street frontage would assist in maintaining high amenity values in the Thompson Square parkland. Transport would consult with Hawkesbury City Council with regard to the location of the new plantings.

Section 4.3 of the Modification report describes the footprint of the modification on the parkland as a narrow and tapering strip of land in the south east corner of Thompson Square. The strip of land would measure between zero and 3 metres in width over a length of 100 metres. Figure 4.4 of the modification report also shows the widening for the merge lane is centred around and located to the east of the significant Hoop Pine in Thompson Square.

The location of the widening has been assessed in the Supplementary Landscaping Information (refer to Appendix F) to be in an area which separates the higher amenity value parkland central core from the adjacent Bridge Street. This area of land is sloping towards the roadway and the shared pedestrian/ cycle path and is seen as having lesser public space amenity. The cross sections of the parkland shown in Figure 2-5 shows the flatter land in the Upper Parkland to the west of the Hoop Pine to be the area of highest amenity value. This central core area of parkland is not directly affected by the proposed modification.

Also as shown in the cross sections in Figure 2-5, the original conditions at this location included a steep cutting face which impacted the open space amenity of this area. By backfilling and landscaping the former cutting both the approved project and the proposed modification provide a higher level of open space amenity than the original conditions.

The cumulative impact of the modification, in the context of the approved project, has been considered throughout the Modification report, for each environmental aspect. For example, the cumulative heritage impacts and the landscape character/visual impact of the approved project and the proposed modification has been undertaken as discussed in Appendix C and Appendix E of the Modification report.

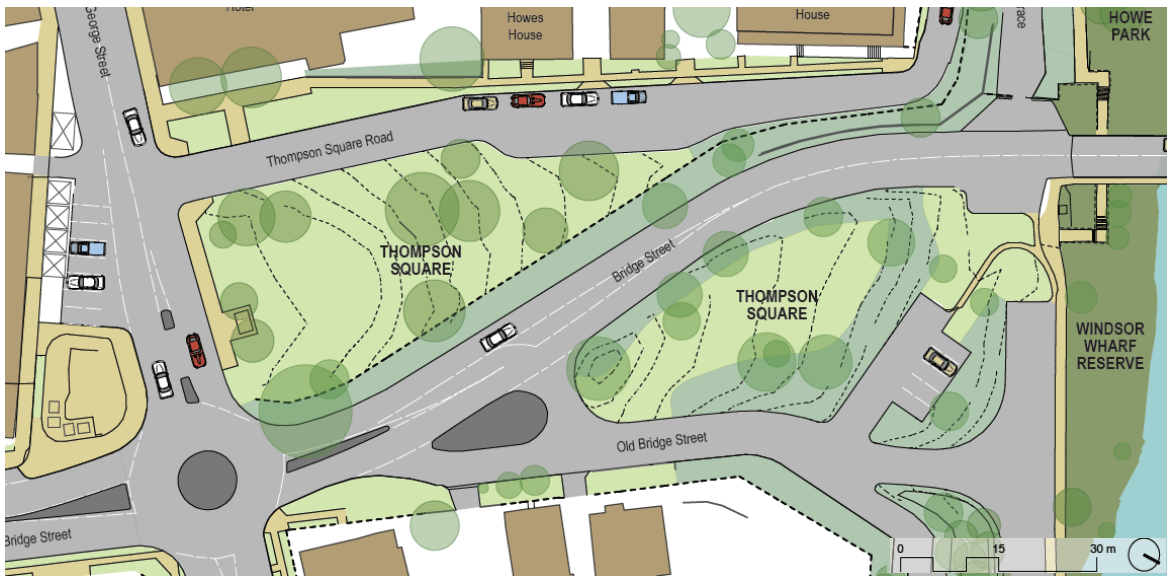


Figure 2-2: Original condition

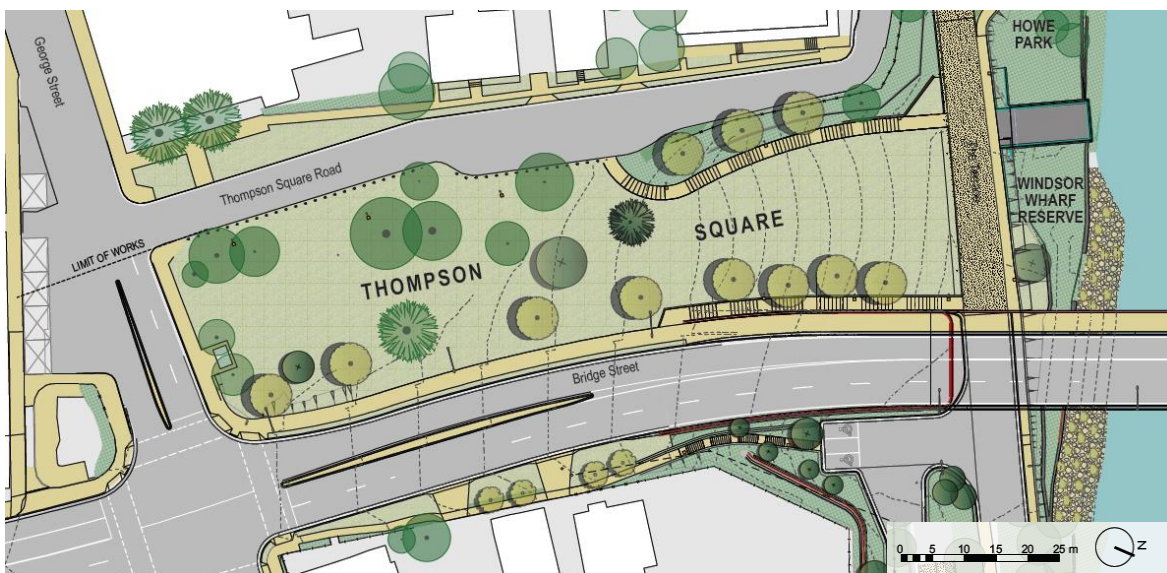


Figure 2-3: Approved design for construction (May 2018)

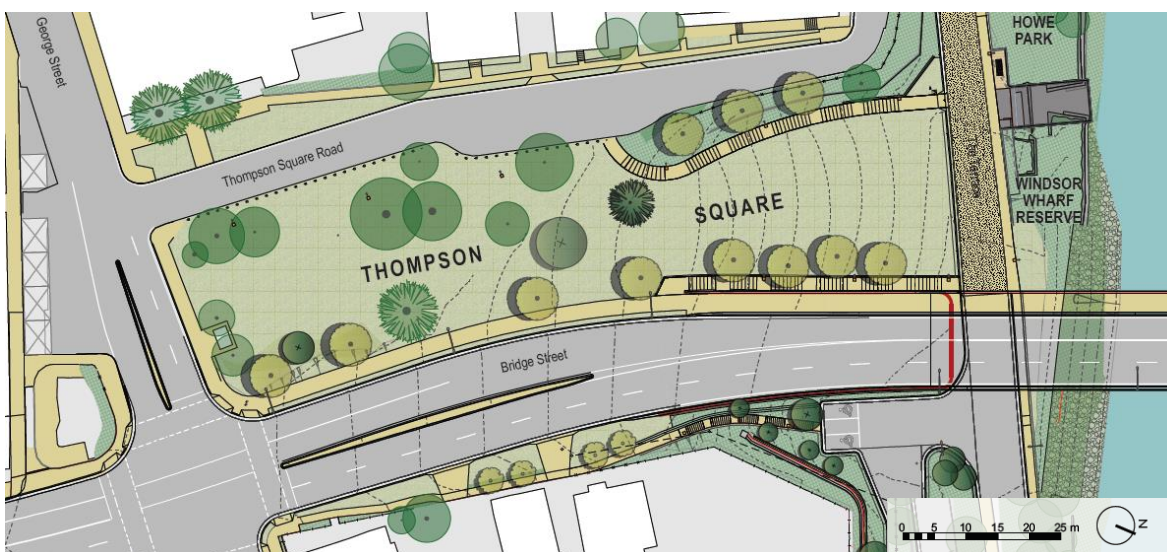


Figure 2-4: Proposed design including new merge lane (September 2019)

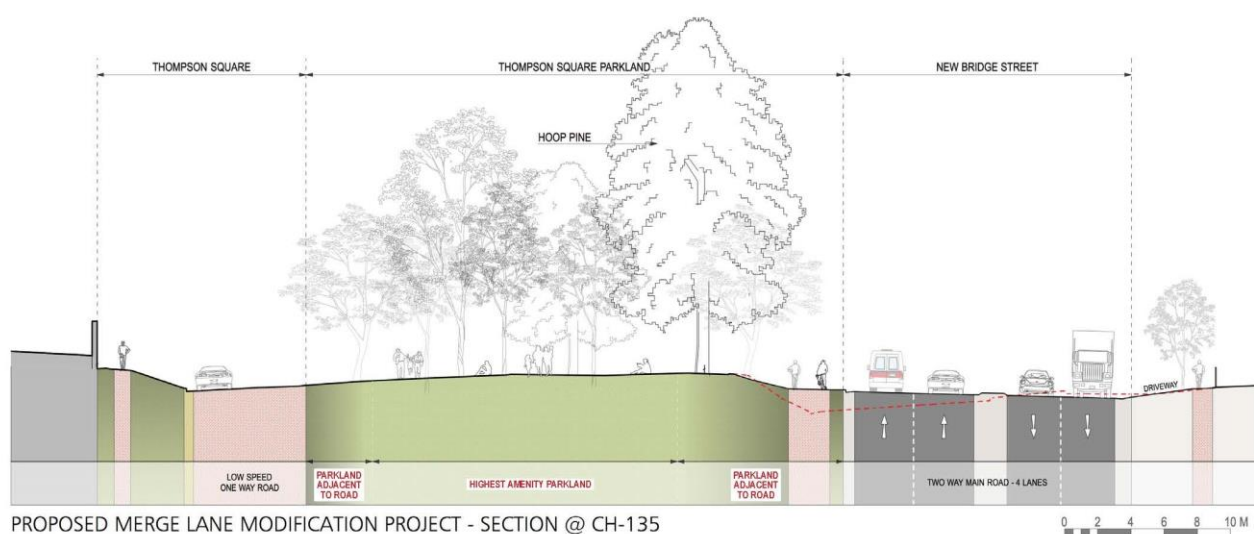
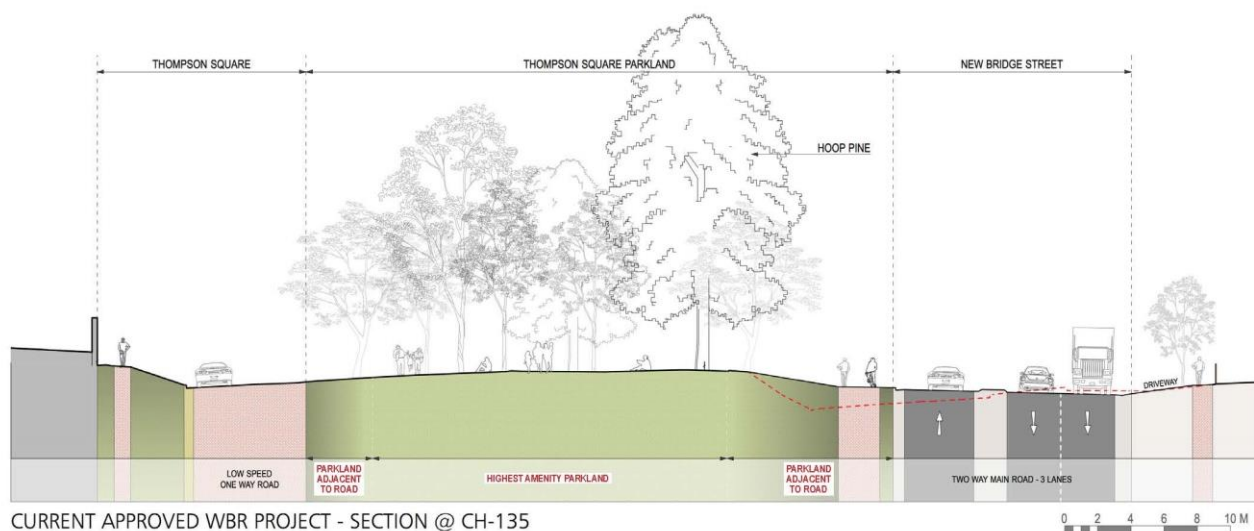


Figure 2-5: Comparison between approved and modified conditions – Cross sections

Submission number

29

Issue description

In summary, the respondents raised the following questions:

10. On the technical drawing of 'Alignment and set-out control plan Sheet 3' (Appendix A of the Modification report), what are the highlighted sections on the barrier between the roadway and the shared pedestrian/cycleway (i.e. red scalloped area).
11. Comment that the curve of the new bridge appears to allow for the creation of the proposed merge lane.

Response

The red "scalloped area" on the 'Alignment and set-out control plan Sheet 3' highlights that the chainages have altered as a result of the merge lane design. There is no physical change to the bridge.

The bridge has been constructed as per the current DPIE approved design and no physical changes to the design of the bridge are required for the proposed modification. The proposed merge lane design adjusted the road alignment on the southern abutment.

Submission number

32b

Issue description

Comments that the Modification report does not adequately address the following:

12. Existing condition 46 of the MCoA.
13. Travelling north there is no right turn proposed from Bridge Street into George Street.
14. The lane marking arrangements between South Creek and Court Street including Court Street intersection.

Response

The proposed modification has no impact on condition 46 of the MCoA. Both the approved project and the proposed modification provide for a signalised right hand turn from Bridge Street southbound into George Street. Existing condition 46 only related to traffic provisions during construction, and in particular restrictions on times of the day for closing the right hand turn.

There is no change between the approved project and the modification concerning the no right turn from Bridge Street (travelling north) into George Street.

There is no change proposed to the existing turn provisions and lane marking at the Court Street intersection. This condition is the same for both the approved project and the proposed modification.

Submission number

4

Issue description

In summary, the respondent raised the following questions:

15. Question about how long Bridge Street would be closed for whilst the carriage way on southern side of the bridge is constructed.
16. Question if the Terrace would be used as a detour whilst the carriage way is installed.
17. Question about the meaning of the broken orange lines of Figure 4-4 of the Modification report.

Response

There is no change to the traffic management along Bridge Street during construction as a consequence of the proposed Modification. Bridge Street would remain open to traffic at all times. The exception is for a potential closure for safety when traffic is being switched onto the new bridge, which is planned for mid-2020. The above temporary closure of Bridge Street if required would provide for traffic being detoured via North Richmond. The road closure would be advertised in advance and be limited to one night during a weekend.

The Terrace would not be used as a detour during construction.

The orange boundary relates to landscaping works that have been designed in consultation with Hawkesbury City Council and are detailed in the Urban Design and Landscape Plan which is available on the project website. The proposed modification would not encroach on this area.

Submission number

18

Issue description

In summary, the respondent raised the following issue:

18. Comment that it would be challenging to provide a design with no more than 1:4 slope.

Response

The Modification would not alter the slope of the open space in Thompson Square. The slope of 1:4 will allow for maintenance of the grass.

Submission number

24

Issue description

In summary, the respondent raised the following issues:

19. Concern that the proposed modification would abandon one of the three lanes on the bridge approved as part of the WBRP.

20. Comment that the access stairs on the figures in the Modification report requires explanation.

Response

The approved project is for a three lane bridge to operate from opening. This would not change as part of the proposed modification.

The access stairs are part of the approved project design and would not change as a result of the proposed modification.

2.11 Justification and Need for the Modification

2.11.1 Support for the proposal

Submission number

21

Issue description

The submission was in partial support of the proposed modification based on the improvements in traffic performance.

Response

Transport notes the support for the proposal and looks forward to delivering the benefits that the proposal would provide.

2.11.2 Design options considered

Submission numbers

3, 4, 10, 11, 14, 18, 21, 22, 27, 29, 32a, 32b

Issue description

In summary, the respondents raised the following issues:

1. Comments that additional options should have been considered, such as:
 - a. The introduction of tidal flow arrangements on the new bridge
 - b. Making two lanes on the bridge northbound with one lane southbound
 - c. Use the proposed shared path on new bridge as an additional northbound lane on the new bridge and retain the old bridge as the shared path.
 - d. Extending the Macquarie Street / Bridge Street signalised intersection to include traffic lights at the intersection with Court Street
 - e. Removing traffic signals at the Bridge Street / George Street intersection or limiting traffic in and out of George Street to through traffic and left hand turn movements.
2. Comments that the existing Windsor Bridge should be retained for pedestrian, cyclist, and heritage events, in return for the Thompson Square space taken from the Windsor community through the WBRP.
3. Comments that the old bridge should be retained as part of the traffic solution.

Response

Section 4.2 of the Modification report details the design options/alternatives considered. The options considered were incorporating an additional northbound lane on the bridge, addition of a merge lane or the do nothing option.

The alternative option of a tidal flow arrangement cannot be accommodated under the current approved design as further widening of Bridge Street would be required. This is because a tidal flow would need to reduce southbound traffic at the Bridge Street and George Street intersection to one lane during the afternoon peak, removing the right-hand turning lane. The removal of this southbound right turn would have unacceptable local business impacts and is not proposed by this modification. If tidal flow was to be considered in the future, it would likely have further impacts on Thompson Square. For similar reasons the alternative option of making two lanes on the bridge north-bound with one lane southbound is not considered feasible. In addition, the traffic performance benefits as a result of the proposed modification would not be realised.

The alternative option of utilising the proposed shared pathway on the new bridge and keeping the existing bridge as the shared pathway is not considered feasible or necessary for the following reasons:

- The current approved design for a three lane bridge will provide an adequate level of service to the community
- Complexities in changing the existing bridge design to incorporate an additional lane
- Retaining the existing bridge would increase upstream flooding levels and impacts
- Significant cost of retaining the existing bridge. The cost is estimated in the order of \$12-18 million to undertake structural rehabilitation of the existing cast iron bridge piers, concrete deck and deck joints. The rehabilitation work would be required to meet standards for pedestrians and maintenance vehicles as well as to maintain the longer term durability of the bridge
- Shared path on the new bridge will link with paths in Macquarie Park and the broader network.

The flood impact of retaining the old bridge has been evaluated. The retention of the complete existing bridge combined with the proposed bridge would increase upstream flood levels. Due to the increased flood impacts, retention of the full length of the existing bridge is not supported.

The Urban Design and Landscape (UDL) Detailed Design Report adopts retention of the southern span of the existing bridge as a viewing platform. The retained span will preserve the nature of the design and construction of the bridge, show the 1897 increased bridge height of 2.4 metres at the pier and the 1922 concrete deck. Interpretation signage displaying historical information and site interpretation relating to both Windsor Bridge and Thompson Square would be incorporated into this platform, which would be a key interpretation node within the Heritage Interpretation Plan for the project. Flood impacts of retaining the single span have been evaluated. It was found that the inclusion or exclusion of the viewing platform structure would have negligible impacts on the overall flood height results found in the flood model for the project.

The retention of the southern span is considered a reasonable approach to preserving a publicly accessible record of the existing Windsor Bridge.

The suggested alternative option of extending the Macquarie Street / Bridge Street signalised intersection to include traffic lights at the intersection with Court Street is not considered a feasible option. Court Street is a minor local road and carries small traffic volumes. Introducing an extended traffic signal design with additional signal phases would increase delay and congestion along Bridge Street and reduce the overall level of service. The approved project and the modification retains the existing lane marking provisions at this intersection which provides adequate gaps for the forecasted right hand turn movements. As well, a secondary consequence if this intersection was signalised, is the potential to redistribute some local traffic movements, although small, away from George Street East to Court Street without any associated benefit.

The suggested alternative options of removing traffic signals at the Bridge Street / George Street intersection or limiting traffic in and out of George Street to through traffic and left hand turn movements are not considered feasible options. These options would have a significant adverse impact on traffic accessing or exiting businesses in George Street and would also impact on residential amenity in east Windsor. For example, right hand turn movements from south travelling vehicles on Bridge Street into George Street (refer to pages 49 to 50 of Appendix B of the Modification report) are 215 vehicles per hour (vph) in the morning peak and 87 vph in the afternoon peak. The traffic modelling forecasts these volumes to be unaltered by the approved project or the proposed modification. Removing any such right hand turn at the Bridge Street / George Street intersection would be expected to be strongly opposed by the shops and commercial premises along George Street due to potential impacts to business. As well any such removal of traffic movements at George Street would then re-direct additional traffic in east Windsor to the Court Street intersection. Although traffic volumes in East Windsor are low, there would appear little benefit gained in re-directing this traffic to Court Street.

Submission numbers

4, 29, 32b

Issue description

In summary, the respondents raised the following questions:

4. Question about the additional construction cost of the proposed modification.
5. Question about the cost estimates considered as part of the process of adopting the currently preferred option.
6. Comment about the cost benefits of the travel time savings.
7. Concern that a breakdown of the proposed cost of the Modification (\$100,000) is not provided.

Response

As outlined in Table 4-1 of the Modification report, the proposed modification would have a small impact on the overall construction cost if undertaken concurrently with building the approved project.

As the area of pavement widening is only minor (160 m²) the additional cost of the works is estimated to be approximately \$100,000 and can be accommodated within the current project budget of \$137 million. An economic analysis of the associated benefits in travel time savings over the life of the project are in the amount of \$42 million, should the Modification be adopted. Details of Economic Analysis are included in Appendix G.

The cost estimate of \$100,000 provided for the proposed modification is the overall construction cost only and does not include the costs to prepare the Modification and manage the lodgement and approval process. There are no additional archaeological investigation costs.

2.11.3 Justification for the modification – traffic solution

Submission numbers

6, 8, 9, 11, 18, 19, 22, 26, 28, 29, 32b

Issue description

In summary, the respondents raised the following issues:

1. Concern about the purpose of the WBRP and how the modification would address the issue of the Bridge Street / Macquarie Street intersection.
2. Concerns about the justification for the proposed modification.
3. Concerns that the proposed modification would not be a solution to the traffic problem.
4. Concern that vehicles would not use kerbside lane when travelling northbound across the bridge.
5. Questions the benefit of the proposed modification as the Bridge Street / George Street intersection has Los A prior to and post this modification.
6. Question about how would the slightly extended merge lane result in improved traffic flow.
7. Comments that traffic volumes have not increased and the traffic data has not been validated.
8. Comments that the increase in traffic numbers were expected.
9. Concerns that the increased traffic volume of 2,000 vehicles per day referenced in the Modification report are incorrect.

Response

The objectives of the WBRP are listed in Section 3.1.1 of the Modification Report. The proposed modification on balance is consistent with the project objectives, in particular the new north bound merge lane would improve safety for motorists, pedestrians and cyclists and would improve traffic and transport efficiency.

Section 9.1 of the Modification report details the justification and need for the proposal. Transport has undertaken additional investigations to confirm traffic growth rates since the EIS was prepared. The new study (Arcadis 2018) indicated that traffic had grown slightly faster than originally predicted. Consideration of this new information has led to this proposed design modification which would improve traffic flows in the long term and provide greater future proofing. A full description of the need for the modification is provided in Section 9.1 of the Modification report.

Transport engaged external traffic specialists to model the approved design and the proposed modification design to determine the improvements in traffic performance. The traffic model was prepared by traffic

experts, based on current traffic data and accounts for driver behaviors such as lane selection. The traffic performance improvements are summarised in Table 6-6 of the Modification report. Table 6-6 indicates that the proposed modification would reduce delays and improve level of service at the intersection of Bridge Street / George Street and the intersection of Bridge Street / Macquarie Street in the afternoon peak compared to the approved design. The afternoon peak is the critical traffic condition within the project area and congestion would continue without the proposed modification.

In the 2026 afternoon peak, the model predicted that the proposed modifications would improve the Level of Service (LoS) at Bridge Street / George Street from LoS E with a delay of 62 seconds (approved design) to LoS B with a delay of 20 seconds (proposed modification design). In the 2036 afternoon peak, the proposed modifications would improve the LoS at Bridge Street / George Street from LoS F with a delay of more than 169 seconds (approved design) to LoS C with a delay of 30 seconds. It is noted that there would be minimal improvements in travel times and LoS during the morning peak.

Addition of a new merge lane provides additional opportunity for vehicles to merge prior to reaching the new bridge. The traffic travelling northbound will have an increase in distance (length of road) and additional time to progress through the intersection of Bridge Street / George Street and merge before reaching the new bridge. The current approved design requires vehicles to change lanes prior to the Bridge Street / George Street intersection.

The increased traffic growth rates presented in the Modification report and supporting traffic assessment are comparing the originally predicated rates in the EIS and the recent traffic assessment undertaken in the 2018 Traffic report. The increase in daily traffic vehicles between the 2012 and 2018 traffic reports is 1,000 vehicles.

The referenced traffic volume of 2,000 vehicles per day in Section 1.3.2 and Section 9.1 of the Modification report is a typographical error and should read 1,000 vehicles per day. It is noted that the referenced traffic volume of 2,000 vehicles has not been used in the traffic analysis, and the forecast of traffic performance in the Modification report is based on the detailed traffic engineering assessment that assesses peak hourly volumes (refer to Appendix B of the Modification report). The justification and conclusions of the assessment are not altered by this error.

The traffic counts used in the forecast of traffic performance were undertaken by suitably qualified experts and in accordance with relevant Australian standards and guidelines.

2.11.4 Justification for the modification – heritage and public space

Submission numbers

6, 11, 12, 17, 22, 23, 28

Issue description

In summary, the respondents raised the following issues:

1. Comments that the reduction in the Thompson Square parkland is not justified based on the questionable traffic benefit.
2. Concerns that the reduction in open space/loss of amenity is not justified.

Response

Section 9.1 of the Modification report details the justification and need for the proposal. Transport has undertaken additional investigations to confirm traffic growth rates since the EIS was prepared. The new study (Arcadis 2018) indicated that traffic had grown slightly faster than originally predicted. Consideration

of this new information has led to this proposed design modification which would improve traffic flows in the long term and provide greater future proofing. A full description of the need for the modification is provided in Section 9.1 of the Modification report.

Transport engaged external traffic specialists to model the approved design and the proposed modification design to determine the improvements in traffic performance. The traffic performance improvements are summarised in Table 6-6 of the Modification report. Table 6-6 indicates that the proposed modifications to the approved design would reduce delays and improve level of service at the intersection of Bridge Street / George Street and the intersection of Bridge Street / Macquarie Street in the afternoon peak.

The proposed changes, whilst resulting in additional impacts to Thompson Square, would result in the traffic benefits which would provide an improved outcome for the local community in comparison to the approved project. The heritage assessment determined that the cumulative impact of this design change is minor within the context of the project, while further reductions in the size of Thompson Square are not desirable, the modification is acceptable from a heritage standpoint provided the migration/management measures identified are implemented.

Section 6.7.3 of the Modification report assesses the reduction of the Thompson Square parkland from an amenity and usage perspective. The assessment concludes that whilst the proposed modification would potentially have some effect on the higher amenity central areas of the parkland, the majority of the parkland would be retained and the physical access and view corridor to the river would be unaffected. The retained trees and the proposed new tree planting along the Bridge Street frontage would assist in maintaining high amenity values in the Thompson Square parkland.

2.12 Issues outside the scope of the modification

Submission numbers

1, 2, 3, 7, 10, 11, 16, 17, 19, 25, 26, 28, 29, 32a

Issue description

In summary, the respondents raised the following issues which are outside the scope of the proposed modification:

1. Objection to the approved WBRP in general.
2. Concerns that there is no justification for the WBRP in general.
3. Comment that other viable alternatives to the approved WBRP were available such as a bypass.
4. Comments that the approved WBRP will not alleviate traffic congestion.
5. Comment that the approved WBRP will not fix flood immunity.
6. Concerns that the replacement of roundabout at the Bridge Street / George Street intersection will cause traffic congestion.
7. Comments that the existing bridge should be retained as a shared path (pedestrian and bicycle) or bridge for local traffic.
8. Request for additional information on the international aspects of the historic significance of the existing bridge.
9. Comment about the cost of the overall WBRP.
10. Comments that the WBRP should have been a bypass.
11. Comments that the WBRP should be stopped until an independent inquiry is undertaken.
12. Comments that the WBRP has destroyed the heritage of the area and fails to preserve the existing bridge.
13. Comment about the heritage significance of the existing bridge.
14. Concerns that the WBRP has divided the community.
15. Comment that heritage tourism will be impacted or has been lost as a result of the approved WBRP.
16. Comment that much of the traffic is utilising local roads.
17. Comment that the approved WBRP will encourage motorists to use local roads.
18. Comment about the single lane on Fitzroy Bridge.
19. Concerns about the proximity of sets of traffic lights in the broader study area.
20. Comment that roundabouts are not a safe option.
21. Comment that tidal flow arrangement was not mentioned in the approved project.
22. Concern about the impacts and property acquisition associated with future modifications.
23. Comment about the role of the DPIE.

Response

The comments in relation to the WBRP listed above are noted, however, are outside the scope of this proposed modification.

3. Revised environmental management measures

Mitigation and management measures identified in the EIS, SPIR, DSS and CEMP (and associated sub-plans) are considered sufficient to address the majority of impacts of the proposed modification. The Modification report identified a number of additional mitigation measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the modification (refer to Chapter 8 of the Modification report) have been revised. Should the modification proceed, the environmental management measures in Table 3-1 will guide the subsequent phases of the proposal. Additional environmental mitigation and management measures to those presented in the Modification report have been underlined and deleted measures, or parts of measures, have been struck out.

Table 3-1: Additional mitigation measures

Aspect	Mitigation measure
Aboriginal heritage	To ensure the archaeological sensitivities are protected within the vicinity of SA 11, the following mitigation measures would be incorporated into the <i>WBRP Construction Heritage Management Sub Plan</i> (Appendix B5 of the CEMP) in order to increase this distance from construction areas of Aboriginal sensitivity: • The buffer zone would be reduced to 1m along its entire length (as marked in green on Figure 6-6b <u>of the Modification report</u>) and turned into a solid boundary through the use of temporary fencing to enforce a hard barrier which would not be crossed under any circumstances in order to increase the distance from construction areas to Aboriginal sensitivity; • With the exception of shallow excavation (<300mm) no direct impact would be permitted within the buffer zone; and • Indirect impacts must be appropriately managed (e.g. surface protection for heavy vehicles).
Planted Trees	• The batter located between the proposed road alignment and the <i>Araucaria cunninghamii</i> tree will be undertaken via one of the following methods, unless otherwise approved by Roads and Maritime Transport <u>Roads and Maritime Transport</u>: - Option 1: All proposed work is located at least three metres from the subject tree (measured from the edge of the trunk). This option would not require further root investigation or assessment by the project arborist; or - Option 2: The proposed work falls within three metres of the subject tree (measured from the edge of the trunk). This option would require further root investigation (by non-destructive methods) under supervision of the project arborist. Any proposed excavations that fall within 2.5 metres of the tree are not recommended and are likely to cause impacts that cannot be mitigated through the use of tree protection measures and/or tree sensitive construction techniques; and • Ensure the overhanging canopy of the <i>Araucaria cunninghamii</i> tree is protected and retained as its shape is important for its aesthetic appearance.

Aspect	Mitigation measure
Visual amenity, urban design and landscape	• Additional tree planting along the parkland edge of Bridge Street should be considered, in consultation with Hawkesbury City Council, if additional visual separation is required between the parkland and the road. • <u>Transport will discuss a partnering opportunity with Hawkesbury City Council to upgrade the landscaping at the Windsor Wharf Reserve which adjoins the WBRP project area.</u>

4. Proposed amendments to conditions of approval

During preparation of the Modification report, a review of the MCoA for the project was undertaken to identify the conditions that would require either amendment or deletion as part of the proposed modification.

As outlined in Section 7 of the Modification report, only one condition would need to be changed as a result of the modification. Condition A1 would need to be updated to include the Modification report and this RTS report. All other MCoA would continue to apply to the project

After consideration of the issues raised in the public submissions, no further changes to the MCoA stated in the Modification report are proposed.

5. References

- Arcadis, 2018. *Windsor Bridge Replacement Project. Traffic and Options Modelling Report*. Prepared by Arcadis on behalf of Roads and Maritime Services, 27 March 2018.
- Arcadis, 2019. *Windsor Bridge Replacement Project. Traffic Counts Data Comparison Between 2017 and 2019*. Prepared by Arcadis on behalf of Roads and Maritime Services, 29 October 2019
- AAJV, 2017. *Detailed Salvage Strategy for Aboriginal and Historical Archaeological Heritage*. Prepared by AAJV (an Austral & Extent Joint Venture) on behalf of NSW Roads and Maritime Services, 17 August 2017.
- AAJV, 2018. *Strategic Conservation Management Plan. Thompson Square and Windsor Bridge Replacement Program Project Area*. Volumes 1-4. Prepared by AAJV (Austral AHMS Joint Venture) on behalf of NSW Roads and Maritime Services.
- Hawkesbury City Council, 2013. *Windsor Foreshore Parks (Incorporating the Great River Walk). Plan of Management*. July 2013.
- Hawkesbury City Council, 2018. *Final Thompson Square Conservation Management Plan*. Prepared by Lucas Stapleton Johnson & Partners Pty. Ltd on behalf of Hawkesbury City Council, December 2018.
- Roads and Maritime, 2019. *Windsor Bridge Replacement Project. Environmental Assessment Modification*. Prepared by Roads and Maritime Services, September 2019.
- SKM, 2012a. *Windsor Bridge Replacement Project Environmental Impact Statement*, Prepared by Sinclair Knight Mertz (SKM) on behalf of Roads and Maritime Services, November 2012.
- SKM, 2012b. *Windsor Bridge replacement project. Traffic and Transport Working Paper - Working Paper 4*. Prepared by Sinclair Knight Mertz (SKM) on behalf of Roads and Maritime Services, November 2012.
- SKM, 2013. *Windsor Bridge Replacement Project Submissions report incorporating preferred infrastructure report*. Prepared by Sinclair Knight Mertz on behalf of Roads and Maritime Services, April 2013.

Terms and acronyms used in this report

Term / Acronym	Description
2019 Traffic report	<i>Traffic Counts Data Comparison Between 2017 and 2019</i> report (Arcadis, 2019)
AAJV	Austral & Extent Joint Venture
CEMP	Construction Environmental Management Plan
CoRTN	Calculation of Road Traffic Noise
DPI&E	Department of Planning, Industry and Environment
DSS	Detailed Salvage Strategy
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW). Provides the legislative framework for land use planning and development assessment in NSW
LoS	Level of Service – An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions
MCoA	Minister's Conditions of Approval
OEHS	former Office of Environment and Heritage, now the Environment, Energy and Science (EES) Group of DPIE
RAPs	registered Aboriginal parties
Roads and Maritime	Roads and Maritime Services. On 1 December 2019, all functions and responsibilities of Roads and Maritime Services were transferred to TfNSW.
RTS	Response to Submissions
SCMP	Strategic Conservation Management Plan
SPIR	Submissions Report incorporating Preferred Infrastructure Report
SSI	State Significant Infrastructure
the Project	The Windsor Bridge Replacement Project
Transport	Transport for NSW On 1 December 2019, all functions and responsibilities of Roads and Maritime were transferred to Transport for NSW.

Term / Acronym	Description
TSCA	Thompson Square Conservation Area. Also known as the Thompson Square Precinct, this is the area of Thompson Square listed on the State Heritage Register of NSW. One of the oldest public squares in Australia, constructed in 1811. Surrounding buildings were constructed between 1815 and 1880 in the colonial Georgian style. The Square consists of George Street, Bridge Street, Thompson Square and The Terrace.
Thompson Square open space area	Including all public lands (roads, footpaths, car parks, parkland areas, verges and medians) within Thompson Square.
Thompson Square lower parkland	Includes the parkland area below / north of Bridge Street bounded by Bridge Street, Old Bridge Street and The Terrace.
Thompson Square parkland	The parkland area bounded by George Street, Old Bridge Street, The Terrace and Thompson Square road. It includes both the Thompson Square upper and lower parkland areas.
Thompson Square upper parkland	Includes the parkland area above / south of Bridge Street bounded by Bridge Street, George Street and Thompson Square road.
UDLP	Urban Design and Landscape Plan
vph	Vehicles per hour
WBRP	Windsor Bridge Replacement Project
Zip merge lane	A zip merge lane is where the white line marking ends before the lanes merge. The car behind gives way to the car in front. This reduces congestion by allowing motorists to stay in their lanes right up until the merge point.

Appendix A

Community Update (October 2019)

Windsor Bridge replacement project

Project update – traffic design improvement

October 2019



Artist's impression of Thompson Square – indicative only

Construction work on Windsor Bridge started in September 2018.
The new bridge is on track to be opened to traffic mid-2020.

Proposed design change to improve traffic flow

The Windsor Bridge Replacement Project Environmental Impact Statement (EIS) was exhibited in November 2012 and received planning approval in December 2013.

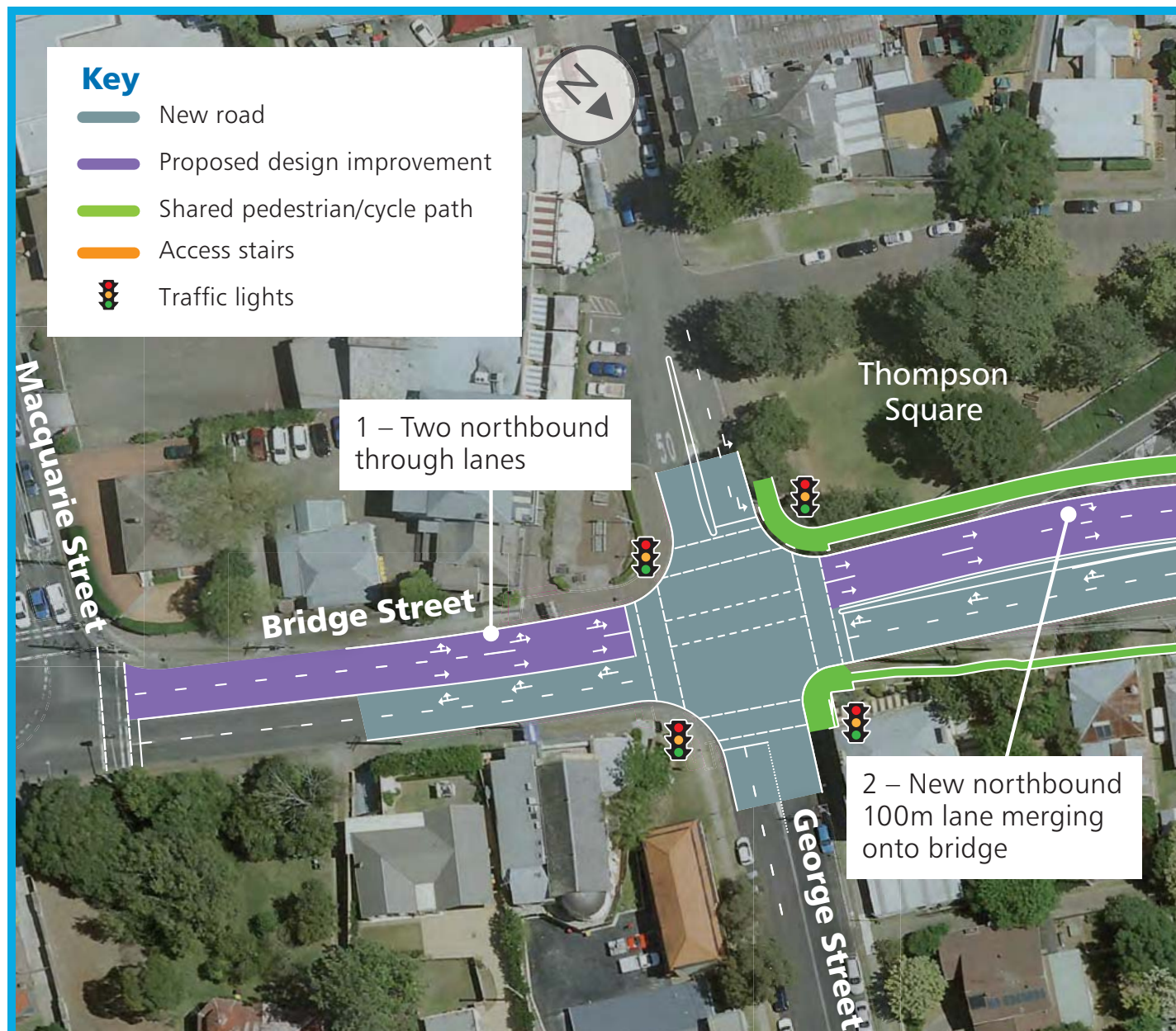
More than seven years have passed since the traffic assessment was completed as part of the EIS. While we have continued to develop and build the new bridge,

we have also taken the opportunity to carry out updated traffic studies in 2017 and 2019.

The new traffic modelling indicated a change to the existing design would allow traffic to flow better northbound during the afternoon.

This project update provides an overview of the proposed improvement and outlines the next steps.

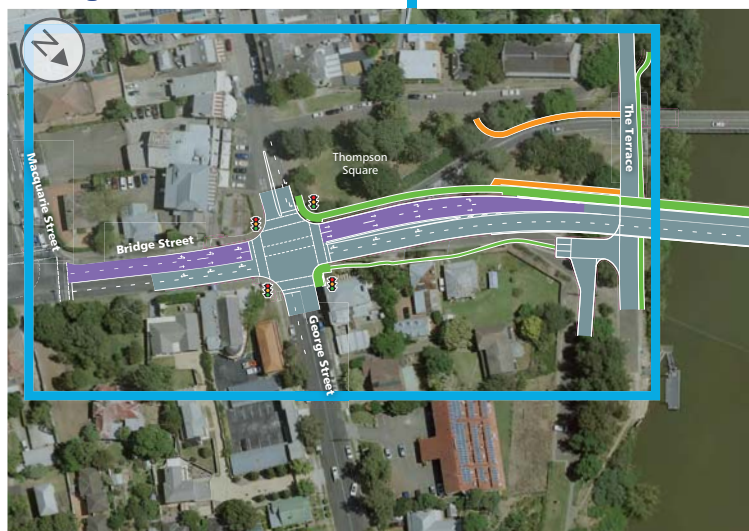
Map of the proposed modification

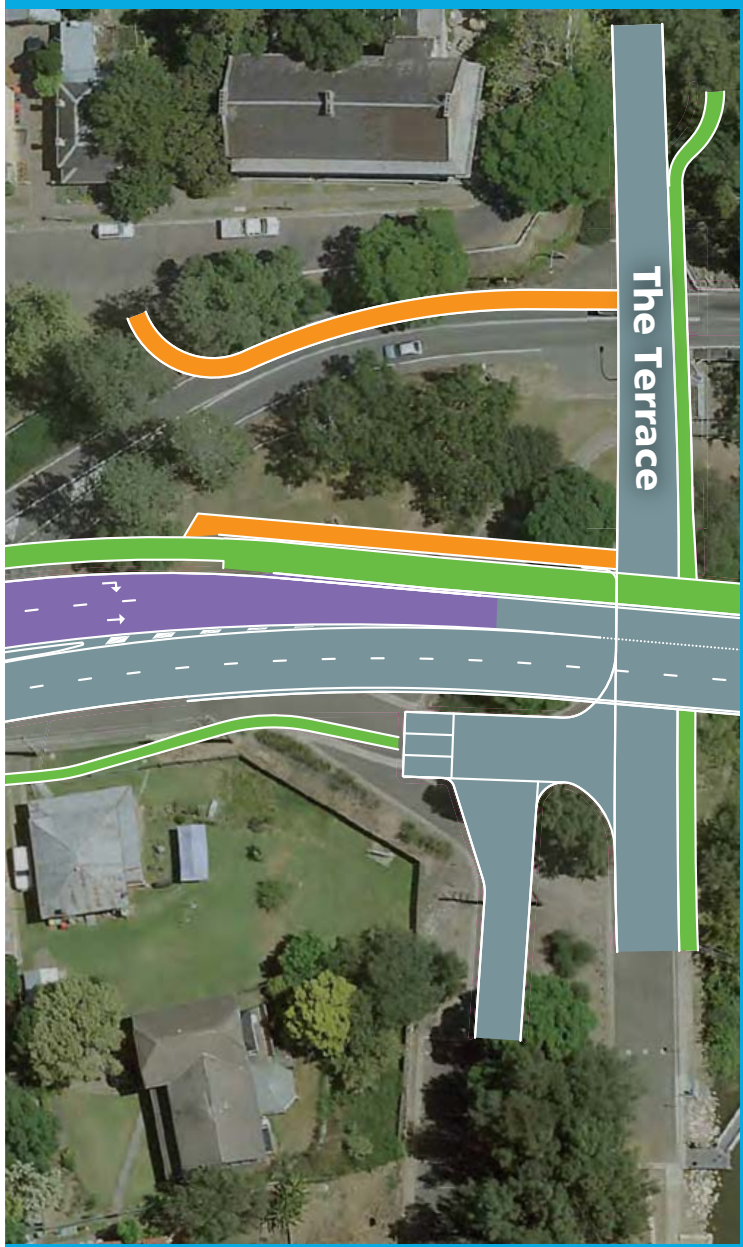


Design overview

The new bridge will:

- Improve safety for motorists, pedestrians and cyclists
- Improve traffic flow with wider lanes and shoulders
- Improve cyclist and pedestrian connectivity to the Hawkesbury
- Withstand higher flood levels
- Unify the open space in Thompson Square





Overview of the improvement

For northbound traffic, the project's current design has one lane turning left from Bridge Street into George Street and one lane going straight through and over the new bridge.

Roads and Maritime Services is proposing two minor design changes that our traffic modelling shows would improve northbound traffic flow and reduce congestion and travel times for all road users.

1. Two through lanes at the northbound approach of the Bridge and George streets intersection

Instead of only one northbound lane going straight through and over the new bridge, vehicles will be able to go over the bridge from both the left and right lanes. This would improve traffic flow and reduce travel times by allowing two lanes of northbound traffic to move through the intersection at a time, rather than one.

- Left lane: shared left turn and through lane
- Right lane: dedicated through lane.

2. A new merge lane exiting the Bridge and George streets intersection

With two lanes of traffic travelling through the intersection, there would be a merging area on the other side of the intersection to merge the traffic back into a single lane

- a 100 metre long merge lane
- the extra lane merges into one northbound lane on the new bridge.

This change would improve traffic flow by allowing two lanes to travel through the intersection, then merge before reaching the new bridge.

The updated traffic studies showed this minor adjustment could significantly reduce afternoon peak congestion for northbound vehicles. From the Bridge and George streets intersection, the predicted waiting times during the afternoon peak would reduce from 62 seconds to 20 seconds, based on predicted traffic volumes in 2026.



The proposed design change would have the following benefits for traffic:

- improved northbound traffic flow through the Bridge and George Street intersection
- reduced delays in afternoon peak including at the Bridge and George streets intersection
- improved travel times and reliability and reduced queue lengths in the afternoon peak
- the predicted waiting times during the afternoon peak would reduce from 62 seconds to 20 seconds, based on predicted traffic volumes in 2026

Artist's impressions of Bridge Street looking south west

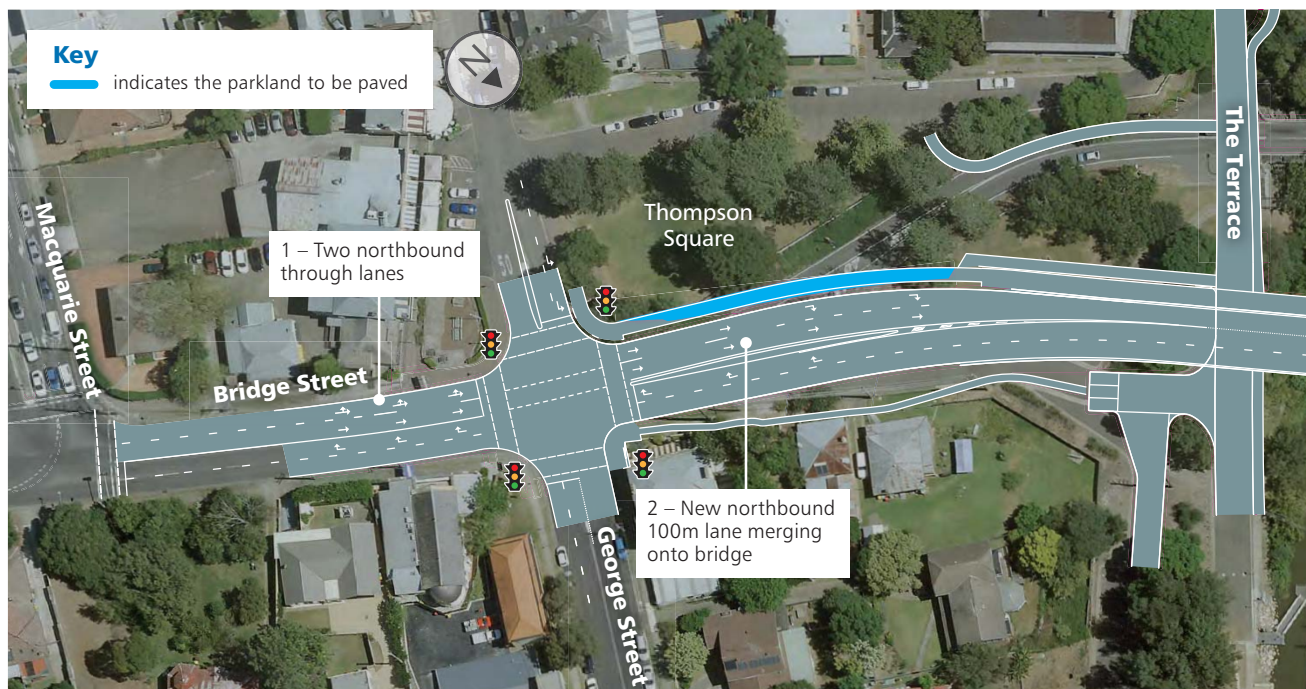


Artist's impression of Bridge Street with the project's approved single northbound lane configuration - indicative only



Artist's impression of Bridge Street with proposed additional northbound merge lane - indicative only

Why are we proposing this change?



More than 25,000 vehicles are expected to use the new bridge each day by 2026 and we're ensuring we take a long term view of traffic performance in the area and future proofing this intersection. The updated traffic modelling we carried out in 2017 and 2019 has created an opportunity for us to improve traffic outcomes in the area and help fulfill longer term road network needs in the area.

Adding this change at the same time we are already working in the area to build the new bridge, reduces the prospect of needing any future changes on Thompson Square.

The upgraded Thompson Square will still deliver positive outcomes for the community from the project including:

- reuniting the green space
- connecting George Street businesses to the river foreshore
- providing a new viewing platform for the community
- enabling a diverse range of heritage interpretation outcomes throughout the area.

What are the impacts?

Thompson Square parkland

The strip of extra space needed for the merge lane will reduce the Thompson Square parkland by 160 square metres. However, the access and amenity of Thompson Square as per the approved project will be maintained. Any further visual impact from the proposed design change has been assessed in the modification report as being minor.

The proposed design change still results in an increase to the overall unified open space in Thompson Square. The unified open space in the square at the end of the project will be 3780 square metres. Importantly though, the space will be unified and useable.

Tree removal

No existing trees or trees proposed to be planted in the future landscaping for the project will be affected by the proposed change to the project's design. This includes the large Hoop Pine "Christmas Tree" in Thompson Square, which will continue to remain unaffected.

Strict environmental controls continue to remain in place on the project, as outlined in the EIS, Construction Environmental Management Plans, and the Conditions of Approval from the Department of Planning and Environment.

Noise

Noise monitoring has indicated the design modification will not impose any additional impacts on noise levels on nearby properties.

Heritage and archaeology

No heritage buildings surrounding the Thompson Square will be impacted by the modification. Any excavation will be managed under the supervision of the project's archaeology team as required under the existing project approval.

Public exhibition of the Modification report

The Department of Planning, Infrastructure and Environment (DPIE) will publicly display the Windsor Bridge Replacement Project design modification report until **7 November 2019**.

Community members are welcome to make submissions to the DPIE. All submissions received on the Modification report will be considered and responded to in a submissions report.

The modification report is available for inspection online at:

- The DPIE website:
planningportal.nsw.gov.au/major-projects
- The Windsor Bridge Replacement Project website:
rms.nsw.gov.au/windsorbridge

The report is also available at the following display locations:

- Hawkesbury City Council –
366 George Street, Windsor, NSW 2756
- Hawkesbury Central Library –
300 George Street, Windsor, NSW 2756
- Department of Planning, Industry & Environment –
320 Pitt Street, Sydney, NSW, 2000
- Roads & Maritime Services –
20-44 Ennis Road, Milsons Point, NSW 2061

How to make a submission

Submissions must be in writing and can be lodged online through:

The DPIE website: majorprojects.planning.nsw.gov.au

You can also send a submission by post to:

**Attention: Director, Transport Assessments,
Department of Planning, Industry & Environment
GPO 39, Sydney, NSW 2001**

The submissions should state the application number 20191011001551

The Department of Planning, Infrastructure and Environment respects your right to privacy. Before lodging your submission online you will be asked to confirm that you have read the terms of the Privacy Statement available from planning.nsw.gov.au/privacy.

Submissions must be received by **7 November 2019**.



Aerial view of the Windsor Bridge replacement project

Further information



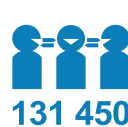
rms.nsw.gov.au/windsorbridge



windsorbridge@georgiou.com.au



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October 2019
RMS.19.1388

Privacy Roads and Maritime Services ("RMS") is subject to the Privacy and Personal Information Protection Act 1998 ("PPIP Act") which requires that we comply with the Information Privacy Principles set out in the PPIP Act. All information in correspondence is collected for the sole purpose of delivering this project. The information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise RMS will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by RMS at 27 Argyle Street, Parramatta 2124 NSW. You have the right to access and correct the information if you believe that it is incorrect.

Appendix B

Letter to Hawkesbury City Council



5 November 2019

Mr Peter Conroy
General Manager
Hawkesbury City Council
PO Box 146
Windsor NSW 2756

Dear Mr Conroy

Proposed Modification to Windsor Bridge Replacement Project

Thank you for your letter of 31 October 2019 about the proposed modification to the Windsor Bridge Replacement project.

The timing of the exhibition of the Modification is determined by the Department of Planning, Industry and Environment (DPIE) in accordance with its procedures and guidelines. Therefore Council's request for an extension of time to make a submission on the Modification would need to be directed to the DPIE.

It is also suggested that Council include any matters for which it would like further information in its submission. These matters can be addressed as part of the submissions report and would also be included in the DPIE's assessment of the Modification.

Regardless, information concerning traffic assessment and other matters of environmental assessment raised in your letter are provided in Attachment A.

I welcome the opportunity to further meet with Council to discuss the matters raised and I am liaising with Ms Robyn Felsch to convene the meeting.

For further information, please contact me on mobile 0421 044 177.

Yours sincerely

Graham Standen
Senior Project Manager

RESPONSE TO COUNCIL'S QUERY – TRAFFIC MATTERS AND OTHER AREAS OF ENVIRONMENTAL ASSESSMENT

TRAFFIC MATTERS

One of the key objectives for the Windsor Bridge replacement project is to improve traffic efficiency and reduce traffic delay and congestion. Significant time has elapsed since the initial traffic assessment for the project was undertaken for the Environmental Impact Statement (EIS) in 2012. As a result an updated traffic assessment was undertaken in 2017 and reported in the Arcadis traffic report dated March 2018. This is standard practice when project timeframes extend. This assessment included the collection of new traffic count data as well as queue lengths and travel time surveys.

The Arcadis traffic report of March 2018 reaffirmed and supported the EIS assessment that the approved project would

- provide effective traffic improvements to all the key intersections of Wilberforce Rd/ Freeman Reach Rd, Bridge Street/George Street and Bridge Street/ Macquarie St in the AM peak,
- as well as effective traffic improvement to the Wilberforce Rd/ Freeman Reach Rd intersection in the PM peak.

However, the 2018 traffic report identified that the approved project would not provide adequate traffic improvements for projected traffic volumes for the Bridge Street/George Street intersection, as well as Bridge Street/ Macquarie St, in the PM peak. The data for project growth rates was taken from the Roads and Maritime Strategic Traffic Forecast Model (EMME model) that is used to assist in forecasting traffic growth across the Greater Sydney network. This model takes into account journey to work data from the latest available census data as well as known changes to land use.

To validate the 2017 traffic data and assessment further traffic counts were undertaken in August 2019. The 2019 traffic counts validated the outcomes of the 2017 traffic data and assessment.

Under existing conditions motorists experience significant delays and queuing travelling north bound crossing the existing Windsor Bridge. The 2018 traffic report shows that the originally approved signalised intersection of the Bridge St/George St intersection with only one northbound through lane will not provide sufficient capacity in the PM peak into the future.

The Arcadis traffic report of March 2018 also identified an option where widening for a small area of additional pavement (160 m²) of Bridge St, on the northern side of the George St intersection, would allow for 2 northbound through lanes for the signalised intersection with a merge north of the intersection to a single northbound lane over the new bridge. The assessment shows that this minor modification would provide substantive improvement in capacity and level of service for the projected future traffic conditions.

The following responds to the matters that have been raised by Council.

Court Street and related access roads to Governor Phillip Boat Ramp

Access to the Governor Phillip Boat Ramp and Court Street will be as follows:

- Northbound vehicles on Bridge St will still be permitted to turn right into Court Street. These vehicles will not be able to turn right into George Street east.
- Southbound vehicles less than 9 metres in length travelling south across the new bridge will be able to turn left into George Street.
- Southbound vehicles longer than 9 metres in length travelling south across the new bridge will need to continue past George Street and turn left into Court Street.

The March 2018 traffic study by Arcadis, which is appended to the Modification report, includes an assessment of the Bridge Street/Court Street intersection and the Bridge Street/George Street intersection.

Bridge Street to the Fitzroy Bridge, South Creek

The Arcadis traffic study of 2018 re-assessed the traffic performance and capacity of Bridge St/ Macquarie St and Bridge St / George St intersections. Details are available in the Modification report.

Bridge Street to the intersection of Wilberforce Road and Freeman Reach Road.

The Arcadis traffic study 2018 confirmed that the current approved design for a 2 lane roundabout at the intersection of Bridge Street, Wilberforce Road and Freeman's Reach Road will provide a high level of service (Level of Service B in both AM and PM peaks in 2036).

Macquarie Street to Kable St

The Arcadis traffic study 2018 shows that the proposed modification would provide some additional improvement in the performance of the Macquarie Street / Bridge Street intersection. In particular during the afternoon peak, being the key period of delay.

Details of 2017 and 2019 Traffic Surveys

The full Arcadis traffic study is included in the Modification report that is displayed on the DPIE and the Roads and Maritime project websites. Details of the 2019 traffic survey are attached.

A comparison of the 2017 and 2019 traffic data produced no material differences.

Future Traffic Improvements on Fitzroy Bridge over South Creek.

Network improvement to the Fitzroy Bridge is outside the scope of this project. Roads and Maritime currently has no network improvement planned for the provision of an additional traffic lane on the Fitzroy Bridge.

ENVIRONMENTAL ASSESSMENT OF THE NORTHBOUND MERGE OPTION

Options and Cost Estimate of the Proposed Modification

The options considered are detailed in Section 9.2 of the Modification report. The feasible options were:

Option 1: do nothing being no change to the approved design

Option 2: the proposal as detailed in the Modification report

A third option to provide an additional north bound lane from Bridge Street across the new bridge was considered but was deemed to be unacceptable and unnecessary.

Option 2 being the provision of an additional northbound through lane at the Bridge St / George Street intersection and the additional merge lane between the intersection and the new bridge is considered to be the appropriate option. It would provide traffic benefits into the future and would have minimal impact on Thompson Square.

The new pavement and kerb construction is not scheduled to commence until mid-2020 and therefore if approved there is adequate time to locally modify the design without causing delay to the works.

As the pavement widening area is only minor (160 m²) the additional cost of the works is estimated to be approx. \$100,000. The modification however is estimated to deliver substantive saving in travel time costs over the lifecycle of the project.

Environmental Assessment

Environmental assessment of the proposed modification has been undertaken with consideration to the provision of the Environmental Planning and Assessment Act and the Thompson Square Strategic Conservation Management Plan.

Specialist studies have been undertaken and included in the Modification report to address key environmental impacts associated with the proposed modification. In summary these impacts are as follows.

Heritage Impact

As mentioned above, the additional pavement widening is limited to 160m². For the northern (or lower part) section of the pavement widening, the work will be within an area that currently comprises the existing Bridge St Roadway. The existing roadway built in the 1930s is expected to have already disturbed potential heritage finds in this location. As well, the new pavement is at a higher level than the existing roadway in this area requiring this area to be filled rather than excavated below the existing ground surface.

For the southern or upper section of the proposed northbound merge pavement widening, mitigation measures have been proposed to mitigate the potential impact on heritage.

Heritage and archaeological management procedures for inspection and monitoring for the works will be equivalent to those currently approved as part of the project's Construction Heritage Management Sub-plan.

Overall the heritage impact of the proposed modification works has been assessed as not being significant.

In accordance with the Conditions of Approval for the project, a Strategic Conservation Management Plan was prepared and approved by the Director General of the Department of Planning. This plan was developed in consultation with the Heritage Division of the then Office of Environment and Heritage.

The project Strategic Conservation Management Plan outlines the

- the heritage principles for the project to retain the heritage significance of Thompson Square
- specific mitigation measures for Thompson Square and individual listed items to mitigate impact

The proposed modification has been developed to meet the above principles.

Noise Impact

The proposed modification has been assessed and will be no discernible change in impacts from that of the approved project.

Existing Trees and Vegetation

The proposed modification does not require the removal of any additional trees and all additional planting as currently detailed in the landscape design will be provided.

Urban Design

The visual impact assessment determined that the proposed Modification would not present any significant additional visual impact.

Artist perspectives providing a visual comparison of views of the parkland for the approved project and the proposed modification have been included with the Modification report and the Community Update that was distributed across the local area in October 2019.

Strategic Conservation Management Plan

In accordance with the Conditions of Approval for the project, a Strategic Conservation Management Plan was prepared and approved by the Director General of the Department of Planning. This plan was developed in consultation with the Heritage Division of the then Office of Environment and Heritage.

The project Strategic Conservation Management Plan outlines the heritage principles and policies to retain the heritage significance of Thompson Square

The proposed modification has been developed to meet these principles and policies.

Appendix C

Sample consultation with Registered Aboriginal Parties (RAPs)

12th December 2019

Jamie Workman
Darug Land Observations
PO Box 571
Plumpton 2761

Dear Jamie

Windsor Bridge Replacement Project, Modification to the Project Approval

I wish to advise that Transport for NSW (formerly Roads and Maritime Services) has requested approval from the Department of Planning, Industry and Environment (DPIE) to modify the Infrastructure Approval for the Windsor Bridge Replacement Project. The proposal (Modification) is detailed in the attached "*Windsor Bridge replacement project, Environment assessment modification September 2019*".

Modification justification and design changes

The key components of this Modification are:

- Line marking changes to the two through lanes at the northbound approach of the Bridge Street and George Street intersection which includes the following:
 - left lane: shared left turn and through lane, and
 - right lane: dedicated through lane.
- A new merge lane exiting the Bridge Street and George Street intersection which includes the following:
 - 100 metres long (including a 30 metre parallel lane and 70 metre 'zip' merge lane), and
 - the lane merges into one northbound lane on the new bridge.

The merge lane will require a narrow and tapering strip of land in the south-east corner of Thompson Square. This narrow strip will range between zero and 3 metres wide with an area of 160sqm.

The scope of the Modification is detailed in figures 1 and 2 below:

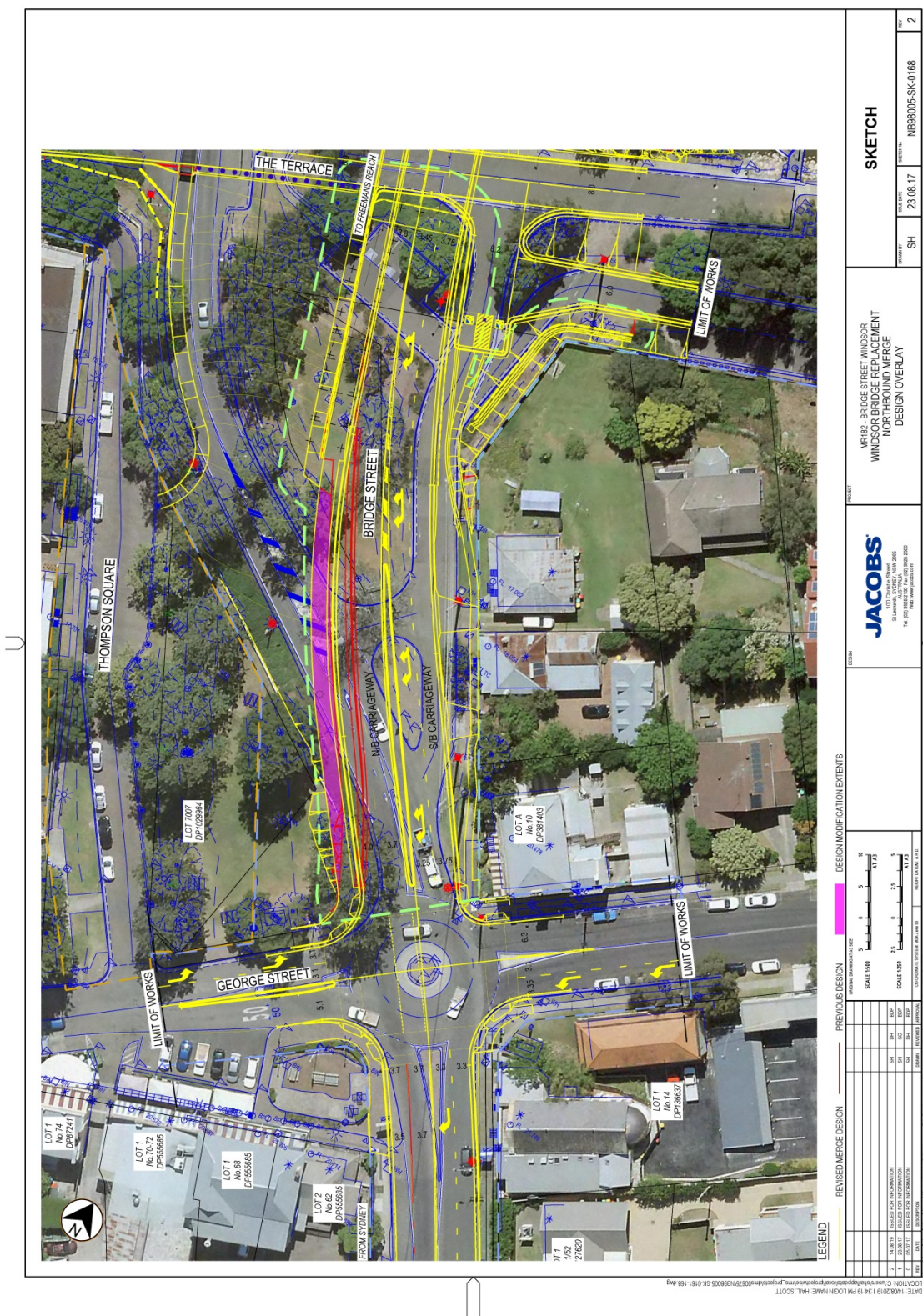
Figure 1: plan of the proposed final arrangement



Transport for NSW

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P XXXXXX | W roads-maritime.transport.nsw.gov.au | ABN 18 804 239 602

Transport for NSW
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P XXXXXX | **W** roads-maritime.transport.nsw.gov.au | ABN 18 804 239 602



The need for the Modification was identified during a regular process of review and as more than five years had passed since the traffic assessment was completed as part of the EIS, Transport for NSW undertook a new, independent traffic count and modelling report (Arcadis, 2018) for the project.

Transport for NSW has undertaken additional investigations to confirm traffic growth rates since the EIS was prepared. Essentially the new study indicated that traffic had grown slightly faster than originally predicted, and that about 1,000 additional vehicles per day could potentially be travelling the route in 2026 than predicted in the EIS (2012).

The proposed design modification would improve traffic flows in the long term and provide greater future proofing. Key benefits of the proposed modification, compared to the approved project, include:

- Improved northbound traffic flow through the Bridge Street and George Street intersection;
- Reduced delays in the afternoon peak including:
 - reduced delays at Bridge Street and George Street intersection,
 - reduced delays at Bridge Street and Macquarie Street intersection, and
- The design is expected to contribute to a lowering of the crash rate due to lesser congestion.

Assessment of Aboriginal cultural heritage impacts

The potential impacts of the Modification were assessed by relevant experts and their assessment reports are included in the appendices to the Modification document.

The assessment of the impacts on Aboriginal heritage was undertaken by the AAJV whose report is included in Appendix C. Much of the area beneath the merge lane is on fill and where there will be excavation it would be shallow and at a depth where it is unlikely to encounter artefacts. The AAJV's assessment nominates management measures to be employed and states, "we do not foresee additional Aboriginal archaeological impacts, and no changes to the recommendations of the Detailed Salvage Strategy would be required".

It is important to note that the Modification is within the approved project boundary for which consultation has been underway since 2016. The additional impact area was examined by archaeological testing area undertaken in 2016 and the Detailed Salvage Strategy, November 2017. Relevant technical reports are available on the project webpage, <https://www.rms.nsw.gov.au/projects/windsor-bridge-replacement/project-documents.html>

If you have any queries or comments please contact either:

Graham Standen on graham.standen@transport.nsw.gov.au or
Karina Rubenis on karina.rubenis@transport.nsw.gov.au

Yours faithfully



Graham Standen
Senior Project Manager
Transport for NSW

Transport for NSW

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Transport
for NSW

17th January 2020

Jamie Workman
Darug Land Observations
PO Box 571
Plumpton NSW 2761

Dear Jamie

Windsor Bridge Replacement Project, Modification to the Project Approval

I refer to the Transport for NSW (formerly Roads and Maritime Services) letter from Graham Standen dated 12th December 2019 concerning the proposal (modification) "*Windsor Bridge replacement project, Environment assessment modification September 2019*".

Transport for NSW expects to finalise its review of submissions for the proposed modification shortly.

If you would like to provide a submission on the modification, please forward this to me at karina.rubenis@transport.nsw.gov.au by Friday 24th January 2020.

Should you have any questions, or would like to discuss please call me on 0407 531 822.

Kind regards,

A handwritten signature in blue ink, appearing to read "Rubenis".

Karina Rubenis
Senior Environment Officer
Transport for NSW

Appendix D

Supplementary Heritage Information

21 January 2020

Mr Ian Allen

NSW Roads and Maritime Services

27-31 Argyle St

Parramatta NSW 2124

Dear Mr Allen,

RE: Windsor Bridge Replacement Project – Comment on Non-Archaeological Heritage Impacts of Proposed Southern Approach Lane Width Modification to the Thompson Square

I refer to your email of 17 January 2020 requesting additional heritage advice on behalf of the Department of Planning Industry and Environment (DPIE) regarding the potential additional heritage impacts of the proposed widening of the southern approach lane to the new Windsor Bridge, to the Thompson Square Conservation Area (TSCA) as a whole.

I refer also to the earlier advice on this matter provided by AAJV on 10 September 2019, and advice from SMM on 19 September 2019, as contained in the RMS Environmental Assessment Modifications Report dated 24 September 2019. As the AAJV's earlier advice has addressed the archaeological impacts of the proposed modification, they are not further discussed here.

Our advice of 10 September did touch on the matter of the proposed additional encroachment on Thompson Square, specifically the additional approximately 160m² of land which would be lost from the proposed widening. Our earlier advice identifies this as a negative heritage impact and undesirable (AAJV 10/9/19 pg 3). I note that approximately a third of the proposed widening will however be located in the existing approach cutting to the old Windsor Bridge, an area that is already highly disturbed and is not usable parkland at present.

I refer to the visualisations prepared by SMM in their report referred to above (SMM 19/9/19 Rev 8 pp 16-17) and the proposed widening plans prepared by Jacobs. These documents show the difference between the approved road and the widened road. I provide the following comments on the differences:

- The southern approach road will read as wider when standing at the intersection of George Street and will be noticeable due to the presence of lane markings. This is however not a pedestrian area and will only be seen by drivers once they have crested the top of the ridge. The widening will mainly be evident when standing on the south-eastern or south-western corners of the intersection. This is the area of maximum visibility of the proposed widening.
- Given the cresting of the ridge, there will be a minimal change in appearance of the bridge approach from the southern side of the TSCA, which will be only be obliquely visible from the front of No 14 Bridge St and Nos 62 and 68 George St. The widening is unlikely to be visible from further west along the south side of George Street, due to the sloping of the topography to the north and the retained mature trees.



- Due to the sloping of the topography from west to east, and the presence of retained mature trees within Thompson Square itself, the widening will have minimal or no visibility from the west side of Thompson Square. There may be some minimal visibility from the upper east verandah of the Macquarie Arms Hotel, but as one progresses further north along the Thompson Square road the view of the widening will be obscured from the fronts of the other properties.
- The proposed widening will be noticeable from the fronts of the properties on the east side of the TSCA, particularly from the front of numbers 6 and 10 Old Bridge Street (where the road will be widest) and to a lesser degree from the front of 4 Old Bridge Street. This will not be a substantially different view than will be otherwise afforded from the new bridge approach road as approved.
- Given the nature of the existing V-shaped intersection leading north to the old Windsor Bridge and the small grassed island, the proposed widening will present as a similar or in some locations a slightly reduced expanse of bitumen as viewed from the front of Nos 6 and 10 Old Bridge Street.
- From the north end of the approach road, and from pedestrians on the new bridge itself, the road will appear wider when walking north to south however, again, this will be a minimally different view from that already afforded by the approved new approach road.
- The proposed widening is unlikely, due to topography, to be visible from The Terrace, the wharf or from on the river itself.
- For those looking towards the TSCA from the north side of the river, there will be only a slightly different appearance in the width of the approach road, due to the distance separating the north embankment from the affected area. The widening is unlikely to be visible from those looking towards the TSCA from the parkland areas to the west of the northern abutment or the Windsor Beach due to the topography.

In conclusion, it is the AAJV's opinion that:

1. As stated in our advice of 10 September 2019, the loss of additional land from Thompson Square is a negative heritage impact and undesirable from a heritage perspective;
2. The further consideration of the visualisations prepared by SMM, the plans prepared by Jacobs and a consideration of the views and topography of the site from the various areas of the Thompson Square Conservation Area indicate there will be a minimal additional loss of heritage value for the Thompson Square Conservation Area above and beyond that which is already contemplated in the existing approval.

Should you have any questions, please contact me on 02 9555 4000.

Yours sincerely,

Dr MacLaren North
Managing Director
Extent Heritage P/L

On behalf of the AAJV

Appendix E

Consideration of the CMP and SCMP

Table E1: Consideration of the *Final Thompson Square Conservation Management Plan* (Hawkesbury City Council, 2018)

Conservation Area	Policy Number	Policy Details	Consideration
Conservation in Accordance with Significance			
Conservation in Accordance with Significance	8	HCC should continue to recognise and conserve the authenticity of the TSCA as an area where its history, broad characteristics (topography, built form, streetscapes, site and landscape features and setting) and finer detail elements (range of intact 19th and 20th century architecture, original materials, the subdivision pattern, and the historic associations and uses) are of equal importance.	The Modification report acknowledges the heritage significance of the Thompson Square Conservation Area (TSCA). External heritage specialists were engaged to review the heritage impacts of the proposed modification and identify mitigation measures to ensure the significance of the TSCA is conserved.
	10	HCC should conserve the significance of the TSCA and its setting in accordance with best conservation methodology and practice.	
	11	The modest, “colonial” character of the TSCA, as a compact, mixed locality of public reserve lands surrounded by historic buildings and containing historic roads, fronting the Hawkesbury River and located in a semi-rural setting, should be retained and conserved and restored when the opportunity arises.	
	13	The significance of the TSCA, should be protected by maintaining and managing the place, its ongoing use and any future change and development within the boundaries and on the boundaries of the conservation area in accordance with this Conservation Management Plan.	
Management of the TSCA			
Burra Charter Procedures	14	The TSCA should be treated as being of exceptional cultural significance. Consequently, activities at the place and decisions made about the future management and care of the place by HCC and other public authorities should continue to be guided by the philosophy of the Australia ICOMOS Burra Charter.	The Modification report acknowledges the heritage significance of the Thompson Square Conservation Area (TSCA). External heritage specialists were engaged to review the heritage impacts of the proposed modification and identify mitigation measures to ensure adverse impacts to the significance of the TSCA are minimised.

Conservation Area	Policy Number	Policy Details	Consideration
			The modification is also consistent with the DPIE approved Strategic Conservation Management Plan (SCMP) for Thompson Square that was developed for the WBRP and was prepared in accordance with the principles of the Burra Charter.
	15	HCC should be involved in the protection of the setting of the place and related places (including South Creek Bridge, Windsor Bridge, the Hawkesbury River, the surrounding agricultural lands etc.) from inappropriate uses and activities, in those instances where there is the potential for negative impacts on the significance of the TSCA.	The proposed modification, whilst resulting in minor additional impacts to Thompson Square, would result in traffic benefits which would provide an overall improved outcome for the local community in comparison to the approved project.
	17	Systematic photographic surveys of the place should be carried out by HCC before, during and after any works to the public domain within the conservation area and its setting, and the results catalogued and held in Council's archives.	A Detailed Archival Recording report was prepared and approved by the DPIE for the approved project and included photographic records of the TSCA and the area comprising the proposed modification.
Council Policies and Procedures	29	An Asset Management Plan or similar should be prepared for the public domain areas under HCC's management located within the TSCA, including: the public reserves (upper and lower reserves), site and landscape features, vegetation, street furniture, utilities and infrastructure, streets, footpaths, gutters, verges and local roads, to ensure that works undertaken are coordinated across Council and comply with this CMP.	Council's Asset Management plan will include Thompson Square, the proposed merge lane and the surrounding open space. Council has been consulted on the proposed modification and is aware of the maintenance requirements.
	30	A Works Program, a minimum of five years in advance should be developed by HCC for the ongoing care and maintenance of the public domain of the TSCA and the setting, and adjusted as necessary each year.	Transport will implement the required Landscape, Urban Design and Interpretation as a part of the WBRP including the area of the proposed modification.

Conservation Area	Policy Number	Policy Details	Consideration
	32	HCC should undertake regular inspections of the public infrastructure throughout the TSCA and the river bank lands to monitor change and imminent works.	
	38	All artefacts collected and retained from within the TSCA should be held in an Archaeological Repository at the Hawkesbury Regional Museum. The museum should have suitable space for cataloguing, analysis and storage of these archaeological remains.	This policy is addressed by the Unexpected Finds Procedure and subsequent archaeological assessment of finds.
Significant Spaces, Fabric and Components			
Fabric to be Conserved	41	The following fabric should be retained and conserved: • All in-situ deposits and features (Aboriginal and historic archaeology). • All excavated and uncovered archaeological material (artefacts). • The topography/landform of the place. • All fabric (including buildings and site and landscape features) identified as being of Little significance or higher in Tables 5.1 and 5.2, introduced to the place up to the date of this CMP. • The memorials and plaques related to significant events, historic phases and people associated with the place. • Associated objects and places (e.g. the grave of Andrew Thompson). • All fabric recorded in this report as previous reconstructions unless replaced by a more accurate reconstruction, based on documentary and/or physical evidence. • All fabric reconstructed (in the future) in accordance with these policies.	This policy would be considered for areas disturbed by the proposed modification should Aboriginal and non-Aboriginal archaeological evidence be identified during works.
Interpretation of the Place			
General, Elements of Outstanding	45-55	These policies relate to the interpretation of the Thompson Square Conservation Area.	The Interpretation Plan for the WBRP is currently being prepared and would not

Conservation Area	Policy Number	Policy Details	Consideration
Significance to be Emphasised			require amendment in light of the proposed modification.
Restoration / Reconstruction works	57	Opportunities should be sought to divert heavy traffic away from Thompson Square to reduce the noise levels and lessen the impacts on the amenity of the public reserves and the conservation area as a whole.	External noise specialists were engaged to undertake a noise assessment of the proposed modification. Whilst the proposal would increase the width of Bridge Street, the change in noise levels within the recreational areas of Thompson Square would be minor. The noise assessment is provided in Section 6.8 and Appendix F of the Modification report.
Use of Place			
Historical Uses and Land Use that should be continued	62	The following existing historical uses should be continued if at all possible: - Public Reserves: As open, undeveloped, shared public recreational and gathering places. - Buildings: Private residential, public uses and commercial uses as appropriate. - River bank lands: As open, undeveloped, landscaped areas for shared public use.	The existing historical uses would be continued following construction of the proposed modification.
The Continued Use of the Streets and Roads	66	The continued use of George Street, Old Bridge Street, The Terrace, Baker Street and the street known as Thompson Square for local (light vehicle) traffic is appropriate.	The proposed modification would not impact the use of these roads.
	67	The use of Bridge Street as a heavy vehicle (B-Double) route is not appropriate and future use of the road should be restricted to local traffic/light vehicle use only.	The proposed modification would not change the use of Bridge Street compared to the approved project.
Treatment of the Spaces, Components and Fabric			
Treatment of Archaeology	80	All subsurface areas below and adjacent to the TSCA should be considered to have archaeological potential (both Aboriginal and historic). This potential should be recognised on statutory heritage listings for the place.	The Modification report acknowledges the archaeological potential of the TSCA and a heritage assessment was undertaken to determine the impacts of the proposal as outlined in

Conservation Area	Policy Number	Policy Details	Consideration
			Section 6.4, Section 6.5 and Appendix C of the Modification report.
	81	All proposed works at the place (including works to private properties) should consider impacts to the archaeological resource (both Aboriginal and historic) and minimise these where possible.	External heritage specialists were engaged to review the heritage impacts of the proposed modification and identify mitigation measures to reduce the impacts. Refer Section 6.4, Section 6.5 and Appendix C of the Modification report.
	82	Future works within the TSCA that may disturb the ground beyond anything but superficially should be guided by the findings and recommendations of a due diligence level Aboriginal heritage impact statement for the proposed activity.	Impacts to Aboriginal heritage have been considered and mitigation measures developed as outlined in Section 6.5 and Appendix C of the Modification report.
	84	Contractor and sub-contractor contracts should specify obligations which need to be met relating to the <i>National Parks and Wildlife Act 1974</i> dealing with Aboriginal “objects” or artefacts.	This policy has been considered in the approved <i>WBRP Construction Heritage Management Sub Plan</i> (Appendix B5 of the CEMP). The proposed modification would be managed in accordance with this sub plan.
	85	As part of the schematic design phases for any substantial works to Thompson Square and including the riverbank lands, and to any areas identified as having Moderate and High potential for Aboriginal archaeology (as per Figure 5.4), and as part of the development of any future Interpretation Plan for the whole of the TSCA, Aboriginal consultation should be undertaken in accordance with relevant legislation and the recommended guidelines.	The area impacted by the proposed modification is within the approved project boundary for which consultation with the RAPs has been underway since 2016. Following exhibition of the Modification report the RAPs were advised of the proposed modification, provided with a copy of the report and invited to seek further information or comment. No specific issues or concerns were raised by the RAPs. Refer Section 2.3.

Conservation Area	Policy Number	Policy Details	Consideration
	86	All actions and activities within the SHR listed curtilage of the TSCA and to individual items listed on the State Heritage Register involving subsurface impacts require an approval under S57(2) or S60 of the NSW Heritage Act 1977. No subsurface works can be undertaken without consideration of the Archaeological Assessment (AA) and a Heritage Impact Statement (HIS) specific to the area to be impacted by the works.	The Modification application allows the work to be carried out under Section 5.25 of the EP&A Act which removes the S57 and S60 requirements. External heritage specialists were engaged to review the heritage impacts of the proposed modification and identify mitigation measures to reduce the impacts. Refer Section 6.4 and Appendix C of the Modification report.
	88	All State significant historic archaeological remains within the TSCA should be conserved in situ, where possible, and interpreted as part of future development proposals.	This policy would be considered for areas disturbed by the proposed modification should archaeological remains be identified during works.
	89	Archaeological work should be carried out by a suitable archaeologist who shall devise appropriate management of the archaeological resource. All proposed archaeological methodology has to be approved by the NSW Heritage Council prior to any disturbance of the site and areas of identified archaeological potential taking place. The archaeological director must meet the current NSW Heritage Council requirements for an Excavation Director of an SHR site and so be able to obtain the appropriate approval or exemptions required under S57(1) or S57(2) of the Heritage Act 1977.	External heritage specialists were engaged to review the heritage impacts of the proposed modification and identify mitigation measures to reduce the impacts. The proposal would be undertaken in accordance with the Detailed Salvage Strategy (DSS). The Excavation Director for the DSS was approved as suitably qualified and experienced by OEH and DPE in March 2016.
	90	Any artefacts collected and retained during the works should be catalogued and stored securely at the Hawkesbury Regional Museum following the completion of the archaeological program.	This policy would be considered for areas disturbed by the proposed modification should archaeological remains be identified during works.
	93	The terracing running east-west across Thompson Square and the stepping down of the landform from George	The general landform would remain unchanged from the

Conservation Area	Policy Number	Policy Details	Consideration
Treatment of Landform / Topography		Street to the river should be retained and conserved.	approved project as a result of the proposal.
	95	Excavations are not appropriate, other than in accordance with the remainder of these policies.	External heritage specialists were engaged to review the impacts of any excavation associated with proposed modification. Refer to Section 6.4, Section 6.5 and Appendix C of the Modification report. Excavation work would be managed in accordance with the DPIE approved Construction Environmental Management Plan, including the Heritage Management sub-plan.
Treatment of Views and Settings	96	Internal Views V1 to V10, within the boundaries of the TSCA, should be retained, as shown in Figure 3.16 and enhanced.	External visual specialists were engaged to undertake a visual impact assessment for the proposed modification.
	97	Views V12 to V19, of the TSCA from throughout the setting of the place, should be retained, as shown in Figure 3.16.	The assessment concluded that the proposal would marginally increase the magnitude ratings at some locations, however, this would not be sufficient to increase the overall visual impact ratings identified for the approved project.
	98	Key views V20 to V23 from the TSCA to the surrounding areas, should be retained, as shown in Figure 3.16 and enhanced.	
	99	The historic view V1 of the Macquarie Arms Hotel and George Street as seen from Bridge Street should be retained.	Refer Section 6.7 and Appendix E of the Modification report.
	100	Opportunities should be sought to re-establish (at least in part) the historic view V11 (first depicted by G. W. Evans in 1809).	
Treatment of Vegetation	107	In order to reinforce the historic landscape character of the TSCA, maintain two distinct vegetation zones for the public reserves and the river bank lands: the upper and lower reserves should feature ornamental species used typically in the late 19th century with no locally indigenous species; and	Transport will implement the UDLP for the WBRP. No changes to the planting and revegetation outlined in the UDLP is required as a result of the proposed modification.

Conservation Area	Policy Number	Policy Details	Consideration
		the river bank lands should only feature locally indigenous vegetation.	
	108	The horticultural viability of the sole hoop pine located within the upper reserve should be conserved for as long as possible. Should the tree become senescent or a public safety threat, the tree should be replaced with another hoop pine in a similar position.	There would be no significant impacts on the Hoop pine as a result of the proposal provided mitigation measures identified in the Modification report are implemented. Refer Section 6.6 and Appendix D of the Modification report.
Treatment of Public Reserves	116	The informal layout and character of the upper public reserve with open grassed areas, scattered tree planting, white timber fencing and minimal park furniture and facilities, should be retained and conserved.	The informal layout and character would not change as a result of the proposal, compared to the approved WBRP.
	118	The introduction of car parks and hard surfaces for pathways or other reasons to the upper and lower public reserves is not appropriate.	The proposed modification would increase the width of Bridge Street by a maximum of 3 metres. However, this change would lead to traffic benefits which would provide an overall improved outcome for the local community in comparison to the approved project.
Treatment of Streets and Roads	129	New roads or streets within the place are not appropriate.	The proposed modification is the widening of Bridge Street.
	130	The historic alignments of George Street, Old Bridge Street, The Terrace and Bridge Street (south of George Street) should be retained.	The general alignment of Bridge Street remains unchanged from the approved project.
	131	The existing alignment of Bridge Street (north of George Street) leading to Windsor Bridge should be retained.	
	132	The existing widths of the carriageways of George Street, Bridge Street, Old Bridge Street, Baker Street, the street known as Thompson Square and The Terrace should generally remain as existing.	The proposed modification would increase the width of Bridge Street by a maximum of 3 metres. However, this change would lead to traffic benefits which would provide an overall improved outcome for the local community in comparison to the approved project.

Conservation Area	Policy Number	Policy Details	Consideration
	133	The existing surface treatments of the road being bitumen to George Street, Bridge Street, Old Bridge Street, Baker Street and The Terrace and brick paving to the street known as Thompson Square should be retained.	Bridge Street and George Street would remain black asphalt.
	136	The practice of using of sandstone for kerbs and guttering throughout the TSCA should be continued and should be introduced to the pathways and roads within the river bank lands.	Kerbs and gutters along the western side of Bridge Street associated with the proposed modification would be the same as the approved project.
	141	Extruded concrete guttering should only be used in exceptional circumstances.	These kerbs and gutters would be concrete and would have a vital function in managing stormwater flow.
Treatment of Public Domain Features	162	Any works involving relocating services and utilities underground or the introduction of new services and utilities is to be preceded by appropriate archaeological investigation as per Policies 85 to 90. The high potential for and rarity of the Aboriginal and historic archaeology in the TSCA is to be conserved and protected.	The location and alignment for underground utility relocations remain unchanged by the proposed modification compared to the approved project. Any utility relocations would be managed in accordance with the DPIE approved Detailed Salvage Strategy and the Construction Environmental Management Plan, including the Heritage Management sub-plan.

Table C2: Consideration of the Strategic Conservation Management Plan (AAJV 2018)

Conservation Area	Policy Number	Policy Details	Consideration
Articulating a long-term vision for Thompson Square and the study area	1	This SCMP should be acknowledged as a document recommending planning principles and the guiding framework for the future management of the heritage values of the area.	The SCMP was considered during preparation of the Modification report and this RTS report.
Future Infrastructure	9	New or upgraded infrastructure should be sited to minimise or avoid heritage impacts. This should be done with reference to the policies outlined in this document.	Impacts to heritage were minimised during the options and design processes. For example, the buffer zone proposed for the modification has been reduced to avoid identified areas of high archaeological sensitivity. Mitigation measures were identified to address any identified impacts as outlined in Section 6.4, Section 6.5 and Appendix C of the Modification report.
	10	Wherever possible, new utility infrastructure should be located underground, in areas that are not identified as archaeologically sensitive, ideally in existing service trenches.	The location and alignment for underground utility relocations remain unchanged by the proposed modification compared to the approved project. Any utility relocations would be managed in accordance with the DPIE approved Detailed Salvage Strategy and the Construction Environmental Management Plan, including the Heritage Management sub-plan.
Maintenance	13	Existing maintenance plans for Thompson Square and the adjacent areas of the public domain should be reviewed and updated in line with the policies outlined in the SCMP.	Maintenance of Thompson Square and the surrounding open space is the responsibility of Hawkesbury City Council (HCC). HCC has been consulted on the proposed modification and is aware of the maintenance requirements. Transport will implement the required Landscape, Urban
	14	Regular inspections are to be carried out by qualified contractors as required.	
	16	Maintenance works should be assessed for their suitability as exempt works, not requiring consent under the <i>Heritage Act 1977</i> .	

Conservation Area	Policy Number	Policy Details	Consideration
	17	Relevant authority to implement the maintenance programme across Thompson Square and surrounds.	Design and Interpretation as a part of the WBRP.
Aboriginal Cultural Heritage	18	The Aboriginal community is recognised as the primary guardians and caretakers of Aboriginal cultural heritage values embodied in the Windsor area and the Hawkesbury River; they will be fully consulted in relation to all activities within Thompson Square and the adjacent public domain.	The area impacted by the proposed modification is within the approved project boundary for which consultation with the RAPs has been underway since 2016. Following exhibition of the Modification report the RAPs were advised of the proposed modification, provided with a copy of the report and invited to seek further information or comment. No specific issues or concerns were raised by the RAPs. Refer Section 2.3.
	19	Any interpretation works should include Aboriginal heritage, subject to consultation with the Aboriginal community.	The Interpretation Plan for the WBRP is currently being prepared and would not require amendment in light of the proposed modification. The Interpretation Plan will be completed in early 2020 in consultation with the RAPs.
Landscape and Environs - General	20	The informal, asymmetrical character of the site should be maintained as a reflection of its historic evolution. Symmetry and overly formal layout should be avoided with any redesign or introduction of new elements. The topography should remain undulating and formal terracing should be avoided.	The general character of the site remains unchanged from the approved project.
	21	No new landscape elements should be introduced that would visually overwhelm or detract from the open character of the precinct, or shield the place from view.	The proposed modification keeps the open character of Thompson Square. A landscape character assessment is provided in Section 6.7 and Appendix E of the Modification report.
	22	The incursion of vegetation that could impact on the open and informal character of the precinct and the views to and from it should be avoided.	All of the trees (existing and proposed) identified to be retained and planted in the

Conservation Area	Policy Number	Policy Details	Consideration
			current approved project would remain unchanged.
	24	Vegetation within the Thompson Square precinct should be managed in recognition of Thompson Square's early colonial history as informal parkland with an open character and with a limited planting palette which avoids ornamental, mass-planted garden beds.	The UDLP does not allow for formal garden areas and predominantly keeps the open space character of Thompson Square. The UDLP would remain unchanged as a result of the proposed modification.
	25	Selected inappropriate and self-sown trees should be removed (<i>Melia azedarach</i> , <i>Jacaranda</i> , <i>Ulmus parvifolia</i> , <i>Olea europaea</i> and <i>Schinus areira</i>) and replacement trees should be confined to species used in the earliest colonial plantings (<i>Brachychiton populneus</i> , <i>Araucaria cunninghamii</i> and <i>Grevillea robusta</i>) or other (especially native dry rainforest) species that were popular at the time of the earliest colonial tree plantings. Species from remnant native vegetation communities would also be acceptable.	This is allowed for in the UDLP. The UDLP would remain unchanged as a result of the proposed modification.
	28	All fences should be maintained in a style and condition consistent with the arrised timber post and rail fences, painted white, as shown in early photographs of Thompson Square – unless changes are required to meet identified public safety needs or in areas where no fences existed previously, and where the fence does not impinge upon the visual curtilage of the square.	No fencing changes are proposed within Thompson Square as part of the proposed modification.
	29	Existing road surfaces and paths should be reviewed with the aim of eliminating all harsh modern surface finishes within and adjacent to Thompson Square. Any replacement road surfaces and paths should relate more closely to the traditional gravel and honey-coloured crushed, coarse, aggregate-rich bitumen surfaces (such as using aggregate derived from Nepean River gravel or similar).	As Bridge Street and George Street are main roads, they are required to be standard black asphalt, and this recommendation is not technically achievable at the location of the proposed modification.
	30	Concrete kerbs and gutters should be considered for replacement with sandstone kerb and gutter except where they have a vital function in preventing erosion and managing storm water.	Kerbs and gutters along the western side of Bridge Street associated with the proposed modification would be the same as the approved project.

Conservation Area	Policy Number	Policy Details	Consideration
			These kerbs and gutters would be concrete and would have a vital function in managing stormwater flow.
	31	Construction of retaining walls should be avoided where possible. However, should they be necessary, single taller walls are preferred to avoid evoking a suburban character of multiple walls or terracing.	No additional retaining walls are required as part of the proposed modification.
Aboriginal Archaeology	41	An archaeological assessment or statement should be prepared where required for future works.	External heritage specialists were engaged to review the heritage impacts of the proposed modification as outlined in Section 6.5 and Appendix C of the Modification report.
	43	Any activities that require ground disturbance to >20 centimetres (such as watering systems and utilities) would require archaeological assessment and investigation by an Aboriginal heritage specialist. Where significant cultural deposits are identified, the activity should be redesigned to avoid impacts.	Impacts to Aboriginal heritage have been considered and mitigation measures have been developed as outlined in Section 6.5 and Appendix C of the Modification report.
	47	For all activities proposed for areas of Aboriginal archaeological significance, indirect impacts should be managed, including compaction from heavy vehicles, vehicle slewing, equipment storage, site sheds and fencing. Where indirect impacts are considered likely, surface protection should be established before the activity is initiated.	This policy has been considered in the approved <i>WBRP Construction Heritage Management Sub Plan</i> (Appendix B5 of the CEMP). The modification would be managed in accordance with this sub plan.
	48	Given that the depth of the archaeological deposits within Thompson Square and The Terrace can exceed 1.5 metres below the existing ground surface, any future archaeological or heritage investigations should ensure that appropriate excavation methods are employed to assess the significance of deposits that would be impacted by development and to appropriately manage any such impacts.	The proposed modification would be managed in accordance with the approved Detailed Salvage Strategy (DSS)(AAJV, 2017).
	49	Significant archaeological deposits found within Thompson Square and The Terrace should be registered on the OEH Aboriginal Heritage Information Management Systems to ensure future identification and	This policy would be considered for areas disturbed by the proposed modification should significant

Conservation Area	Policy Number	Policy Details	Consideration
		management. Artefacts produced from any archaeological investigations should be managed and stored as determined through consultation with the local Aboriginal community.	archaeological deposits be identified during works.
	51	Future interpretive opportunities should include Aboriginal heritage values associated with Thompson Square and The Terrace, such as early evidence of colonisation, survival through the Last Glacial Maximum, and nineteenth- century interactions between Aborigines and early European settlers	The Interpretation Plan for the WBRP is currently being prepared and would not require amendment in light of the proposed modification.
Historical Archaeology	52	Any potential archaeological resources should be conserved in accordance with the requirements of the <i>Heritage Act 1977</i> and their potential for interpretation considered.	The proposed modification would be managed in accordance with the DSS prepared for the approved project.
	53	All archaeological work should only be carried out under the supervision of a suitably qualified and accredited archaeologist.	The DSS would be carried out by the Excavation Director who was approved as suitably qualified and experienced by OEH and DPE in March 2016.
	54	Excavation works in areas identified as archaeologically sensitive should be managed in accordance with the relevant sensitivity zoning in this SCMP (see Figure 45, Volume 2) and the requirements of the <i>Heritage Act 1977</i> . The following guidelines should also be followed: - Avoidance – wherever possible, works should avoid known archaeologically sensitive areas. If avoidance is not possible, the mitigation measures listed below should be considered. - Stop work protocol – works in these areas only require a ‘stop work’ protocol in the event of an unexpected discovery. - Monitor and record – works in these areas should be monitored for potential historical remains. Prior to commencement, the works will require a section 139 or section 57 approval under the <i>Heritage Act 1977</i>, depending on their location. - Conserve in-situ or salvage excavation – works in these areas are known or highly likely to contain intact and significant historical archaeological	The sensitivity zoning is contained within the DSS and the proposed modification would be managed in accordance with the DSS.

Conservation Area	Policy Number	Policy Details	Consideration
		materials, including structural remains and deposits. Wherever possible, these areas should not be excavated. If there is no alternative, the area should be subject to full archaeological excavation. Prior to commencement, the works will require a section 139 or Section 57 approval under the <i>Heritage Act 1977</i>, depending on their location. Artefacts generated through any historical archaeological work should be stored and managed by Hawkesbury City Council or the Windsor Museum.	
	55	Wherever possible, new works or infrastructure such as landscaping and the installation of new services should avoid identified areas of high archaeological sensitivity.	Impacts to heritage were minimised during the options and design processes. Mitigation measures were identified to address any identified impacts as outlined in Section 6.4, Section 6.5 and Appendix C of the Modification report.
	57	For all activities proposed for these areas, indirect impacts should be managed, including compaction from heavy vehicles, vehicle slewing, equipment storage, site sheds and fencing. Where indirect impacts are considered likely, surface protection should be established before the activity is initiated.	This policy has been considered in the approved <i>WBRP Construction Heritage Management Sub Plan</i> (Appendix B5 of the CEMP). The modification would be managed in accordance with this sub plan.
	58	In the event that archaeological material is unexpectedly discovered during any works within Thompson Square and the adjacent public domain, work should immediately cease in the affected area and the Heritage Division of OEH be contacted for advice.	This policy has been considered in the approved <i>WBRP Construction Heritage Management Sub Plan</i> (Appendix B5 of the CEMP). The modification would be managed in accordance with this sub plan.
Vistas, Views and Setting	72	The vegetation in Thompson Square and the southern riverbank should be managed to open up views of Thompson Square and adjacent areas from the northern interpretive viewing area, at the eastern edge of Macquarie Park.	The majority of the area of parkland is retained as part of the proposed modification and the physical access and view corridor through to the river is also unaffected. All of the trees (existing and proposed) identified to be

Conservation Area	Policy Number	Policy Details	Consideration
			retained and planted in the current approved project would remain unchanged from the approved project. Refer Section 6.7.3 and Appendix E of the Modification report.
Consultation	80	Ongoing discussion with all stakeholders in relation to future action or development of Thompson Square should continue so as to ensure the retention of the cultural significance of the site	Consultation with stakeholders has been undertaken during the preparation and exhibition of the Modification report. This RTS report has been prepared to address the issues raised.

Appendix F

Supplementary Landscaping Information

Windsor Bridge Replacement Project

Bridge Street Merge Modification

Thompson Square Submissions Report Clarifications Memo



Prepared by

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Prepared for



Transport
for NSW

30 January 2020
[Revision 02] FINAL

Windsor Bridge Replacement Project

Bridge Street Merge Modification

Thompson Square Submissions Report Clarifications Memo

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Job reference number 10076

Rev	Date	Description	Author	Approved by
00	29-01-2020	Preliminary Draft	EH	MW
01	30-01-2020	Draft	EH	MW
02	30-01-2020	Final	EH	MW

Purpose of this Memo

Transport for NSW (TfNSW) are constructing a new bridge across the Hawkesbury River at Windsor to replace the existing bridge that has reached the end of its economic life (the original Project). Infrastructure approval for the original Project was granted on 20 December 2013 based on the Windsor Bridge Replacement Project Environmental Impact Statement Volumes 1, 2, 3 and 4 (November, 2012) (original Project EIS) prepared by Sinclair Knight Merz (SKM, now Jacobs) and the subsequent Windsor Bridge Replacement Project Submissions Report incorporating Preferred Infrastructure Report (April, 2013) (Submissions Report) prepared by SKM.

The original Project EIS was supported by an Urban Design and Landscape Concept Report (including Landscape Character and Visual Impact Assessment) (October 2012) (original UD&L report) prepared by Spackman Mossop Michaels and Hill Thalys (SMM and HT), that provided an assessment of impact of the

original Project. The assessment included Identifying urban design and landscape strategies in order to mitigate adverse impacts.

Following the determination to proceed with the original Project, Jacobs (previously SKM) have carried out detailed design. The detailed design process, based on the EIS Concept Design, developed what became the approved conditions for construction. Further consultation has identified a number of design amendments including the widening of Bridge Street to allow for the construction of a proposed merge lane (modified conditions) north of George Street.

This memo has been prepared to clarify the impact of the Bridge Street merge modification (modified conditions) on the amenity of Thompson Square parkland due to the reduction in open space area as defined in the approved conditions.

The following plan (Fig. 1) indicates the boundaries of the three interconnecting parks: Thompson Square, Howe Park and Windsor Wharf Reserve.

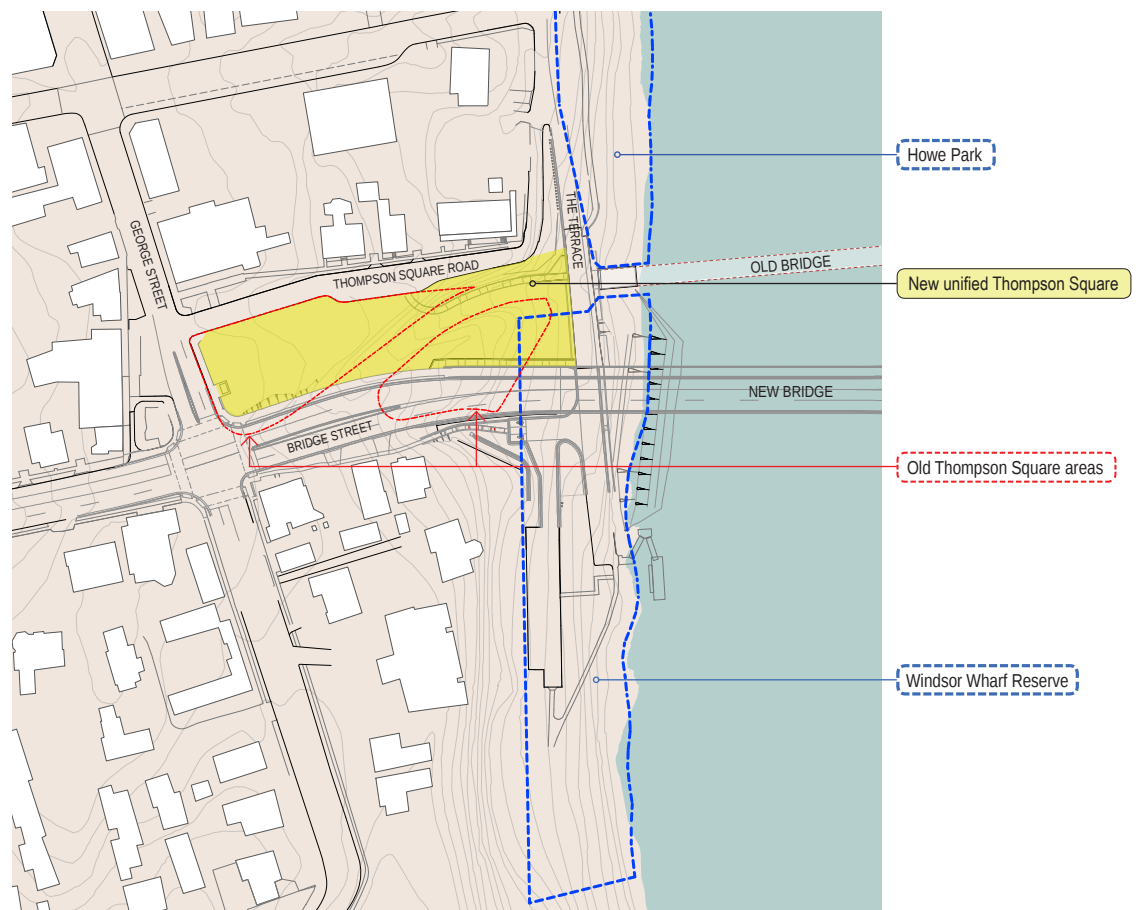


Figure 1. Plan showing boundaries of the 3 open space precincts affected by the Windsor Bridge Replacement

Previous Studies

Urban Design and Landscape Concept Report (SMM October 2012)

This report highlighted a range of public domain opportunities and benefits that will occur as a result of the original 2012 design for the project:

- Infilling the existing road cutting in order to partially restore the earlier landform of Thompson Square
- The proposal will provide a continuous green space connection to the river from Thompson Square
- The historic connection and relationship of the town to the river would be retained and enhanced
- The unified open space in Thompson Square would provide enhanced physical and visual linkages between George Street and the river foreshore
- The Terrace along the river foreshore would be reconnected providing a continuous link from Windsor Wharf to the upstream parkland areas

The landscape concept design sought to unify the two original parkland areas of Thompson Square, with the river foreshore parks of Howe Park and Windsor Wharf Reserve (Fig. 1 and 2) into a single public domain that enhances access to the river from the town, improves the amenity of the parkland and provides opportunities for heritage interpretation (Fig. 3).

Windsor Foreshore Parks - Plan of Management Appendix 1. Proposed changes to Thompson's Square, Windsor Wharf Reserve and Macquarie Park (HCC July 2013)

The Plan of Management prepared by the Hawkesbury City Council reinforced the objectives of the proposed landscape concept design prepared for the EIS and identified a range of opportunities in the design, including:

- Uniting the two parkland areas of Thompson Square to create one cohesive civic space that addresses the Hawkesbury River
- Shared access along The Terrace to increase the use and enjoyment of the foreshore
- Improved pedestrian and cycle access between Thompson Square and the river foreshore
- Landscape improves to Windsor Wharf Reserve

The HCC also "highly recommended that landscape plans for the portions of Thompson Square and Windsor Wharf Reserve, not included in the RMS Plans, be developed to supplement the plans so that the remainder of the parks can be landscaped/improved by Council at the same time"



Figure 2. Original conditions

**Windsor Bridge Replacement Project Bridge
Street Merge Modification - Landscape Character
and Visual Impact Assessment Memo**
(SMM September 2019)

In September 2019, SMM conducted a study to assess and document the potential landscape character and visual impacts of the modified conditions (Windsor Bridge Replacement Project Bridge Street Merge Modification - Landscape Character and Visual Impact Assessment Memo).

This study concluded that while the modified conditions would marginally increase the magnitude of the landscape character impact, the increase was not sufficient to increase the overall magnitude ratings. Therefore, the overall predicted rating for the impact to the landscape character remained unchanged to that identified in Section 7.4 of the EIS.

That study also acknowledged that the widening of Bridge Street north, adjacent to Thompson Square by up to 3 metres will reduce the parkland of Thompson Square along the Bridge Street frontage. However the majority of the area of parkland is retained and the physical access and view corridor through to the river is also largely unaffected.



Figure 3. Proposed site conditions in Urban Design and Landscape Concept Report - EIS - October 2012

EIS Concept Design

Whilst Thompson Square was originally designated as a public place for more utilitarian functions, it has gradually assumed an important role as a setting for civic and recreational functions over time. The EIS concept design (Fig. 3) seeks to improve the cultural and recreational value of the park.

The landscape concept design proposed to unify the two original Thompson Square precincts into one continuous open space that retained its civic use in the upper level and creates physical and visual connections down to the river through a gentle grassed slope to The Terrace. The unified open space will provide uninterrupted access from the upper area of Thompson Square down to, and across The Terrace, to Windsor Wharf Reserve, Howe Park and the river.

The EIS Concept Plan identified some improvements to the area of Windsor Wharf Reserve adjacent to Thompson Square and the new bridge however it was restricted to the extent of roadworks proposed as part of the bridge replacement.

Benefits of the proposed design for the area are:

- Unified parkland connecting Thompson Square, Howe Park and Windsor Wharf Reserve
- Shared zone along The Terrace for greater pedestrian enjoyment of the foreshore

- Integration of the unified parkland into the Great River Walk.

Approved Design

Following community and stakeholder consultation, including Hawkesbury City Council, the EIS concept design evolved to a detailed design that incorporated some improvements to part of the Windsor Wharf Reserve, primarily the area affected by the construction of the new bridge and the removal of the old bridge.

The improvements proposed were to retain part of the old bridge as a new river viewing platform, a new seating area and to provide embankment stabilisation with new native planting and scour protection along the river bank.

The retention of part of the old bridge as a viewing platform increased the visual and physical links between Thompson Square and The Terrace and the river foreshore. To reinforce the concept of a unified Thompson Square open space from George Street to the river foreshore, a section of The Terrace became a pedestrian priority shared zone to reinforce the importance of the open space values in this area.

The approved landscape design developed the EIS proposal to achieve a low maintenance open space through an uncluttered and simple layout and design, and the use of native species.



Figure 4. Approved design for construction - May 2018

Modified Design

TfNSW proposed minor design amendments to improve northbound traffic flow by incorporating a merge lane in Bridge Street north of George Street, along the edge of Thompson Square.

The modified conditions increased the width of Bridge Street (north) by up to 3 metres compared to the approved conditions over approximately 70m of the parkland frontage. The merge lane widening is to occur on the bridge abutment. Approximately 160m² (approximately 4%) of the Thompson Square parkland would be removed and replaced with additional road pavement and the relocated shared path.

The plan (Fig.5) and cross sections (Fig.6) indicate the area of the parkland that is affected by the proposed modification to Bridge Street at the eastern edge of Thompson Square. Along this parkland edge there is a landscape area which separates the higher amenity value parkland central core, from the adjacent Bridge Street (refer to red text cross sections). However the

highest amenity central core area of parkland is not directly affected and the physical access and visual connections to the river are also unaffected.

As shown in the Figure 5 there is one existing tree potentially affected by the proposed modification which is the Hoop Pine. However to avoid any impact on its roots, the proposed adjacent embankment has been modified by slightly increasing the embankment slope in the immediate area around the base of the tree. There are no other trees or planting beds affected by the proposed widening and as a consequence, the degree of change between the approved and the modified conditions would be relatively low.

The modified landscape design does not affect the proposed number of plants and chosen species in the approved design, therefore the original low maintenance landscape remains unaffected.

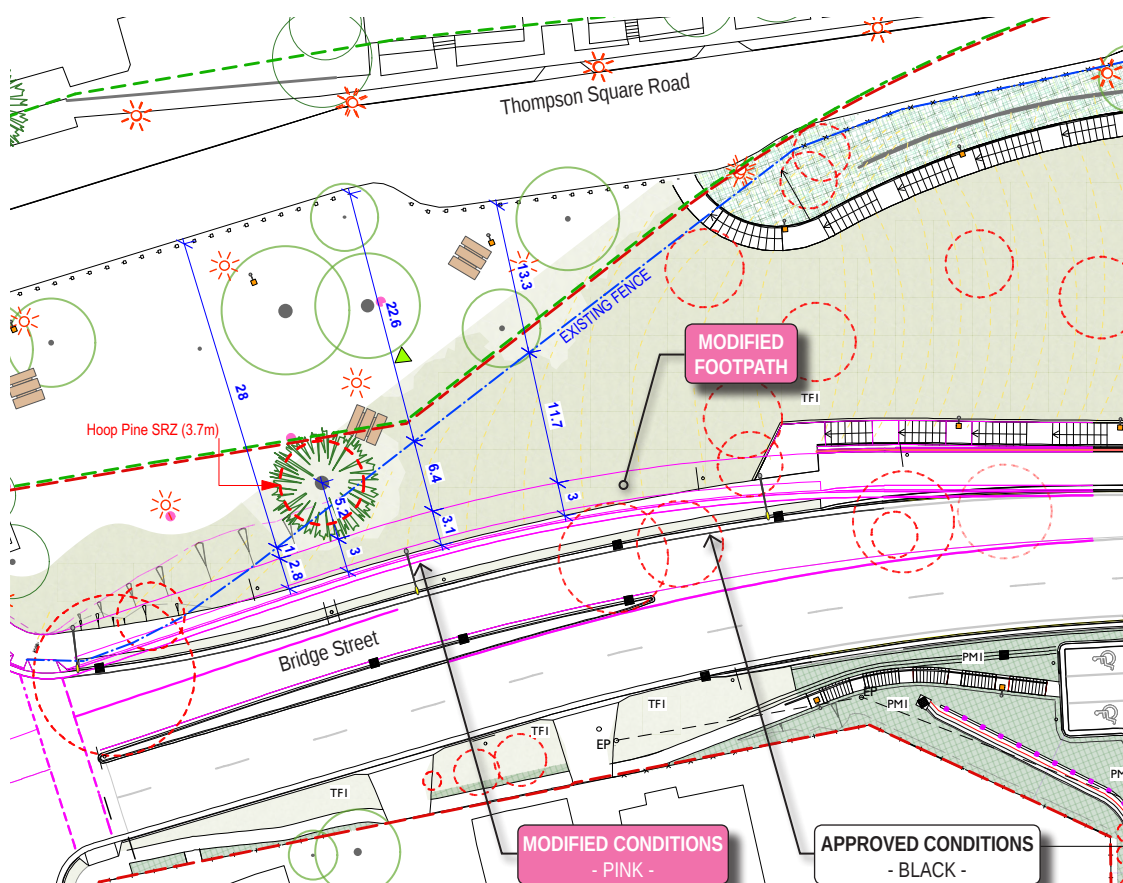


Figure 5. Plan illustrating a comparison between the approved and the modified design - September 2019

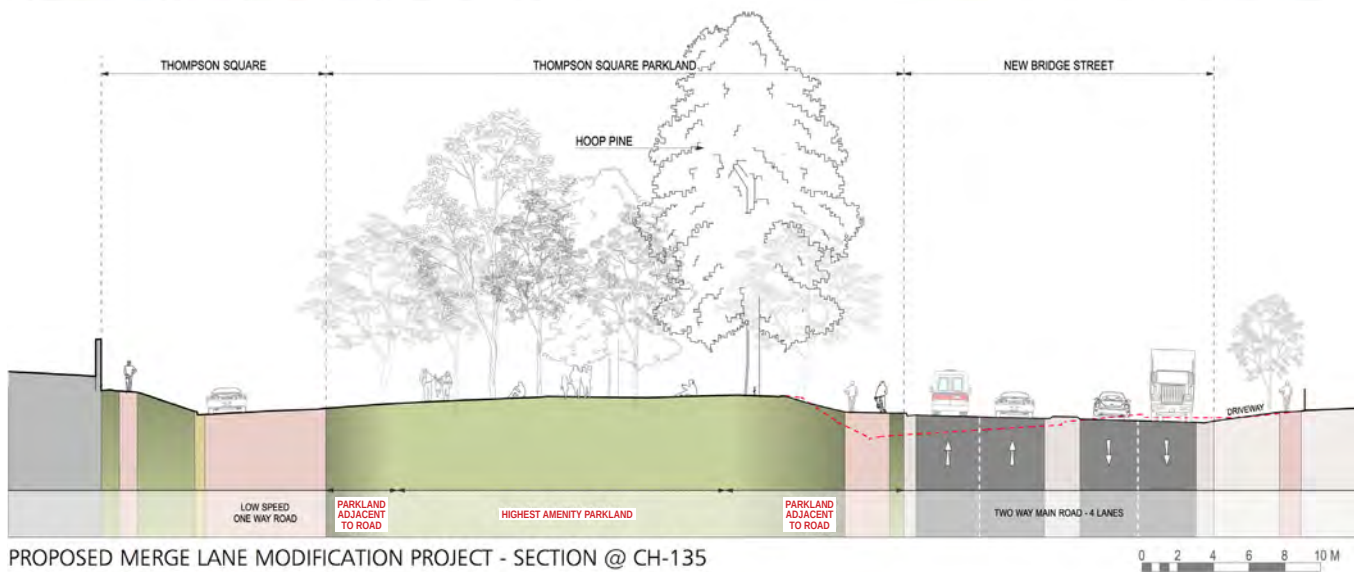
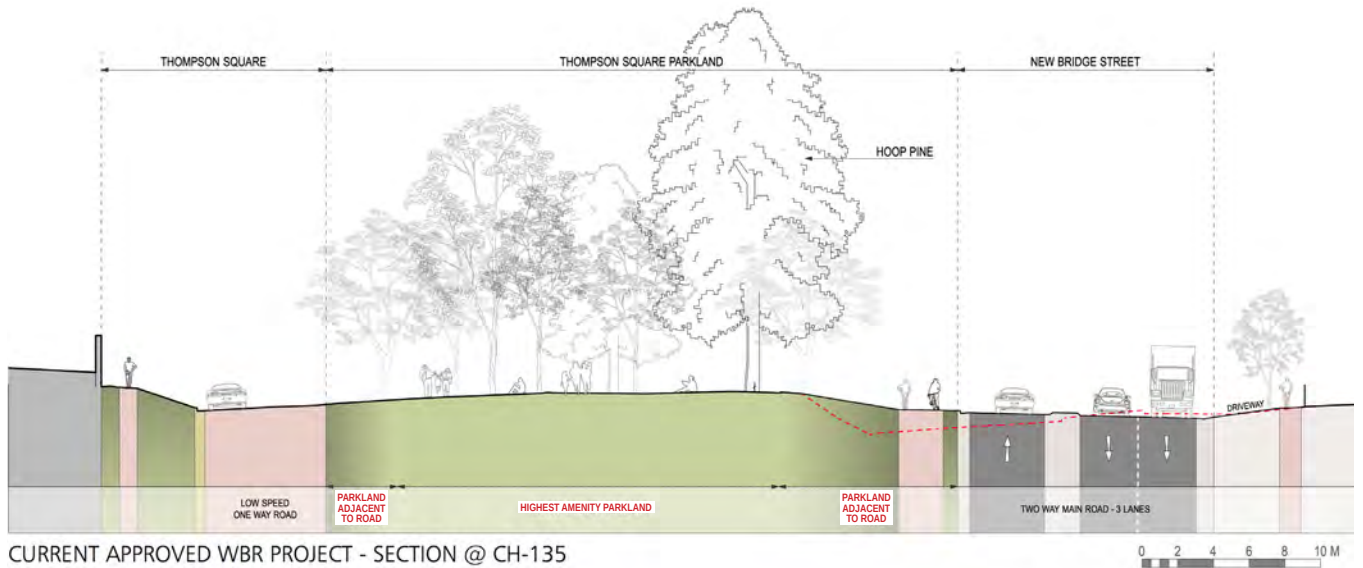


Figure 6. Comparison between approved and modified conditions - Cross sections



Future of the Adjacent Public Domain

The Hawkesbury City Council Plan of Management for Windsor Foreshore Parks (2013) has identified the opportunity to undertake a range of landscape improvements in Windsor Wharf Reserve in addition to the proposed works for the Windsor Bridge Replacement Project.

"It is highly recommended that landscape plans for the portions of Thompson Square and Windsor Wharf Reserve, not included in the RMS Plans, be developed to supplement the plans so that the remainder of the parks can be landscaped/improved by Council at the same time"

(Appendix 1, WINDSOR FORESHORE PARKS - PLAN OF MANAGEMENT, Hawkesbury City Council, July 2013)

Figure 8 shows an aerial view of Windsor Wharf Reserve, identifying the site boundary and key elements in the reserve, as well as the adjacent elements of the Windsor Bridge Replacement project.

Landscape improvement works undertaken within the Windsor Wharf Reserve would provide a significant contribution to the foreshore open space in Windsor. The foreshore works in the Reserve also provide the opportunity to facilitate access and usage of this foreshore area, providing additional attractive riverfront parkland with foreshore picnic areas, a revamped Hawkesbury Artist Trail, vantage points to view the river and easy access to the wharf for patrons of the Hawkesbury Paddlewheeler and other boat users.

The use of robust and low maintenance materials and plant species would meet a key objective of the HCC Windsor Foreshore Plan of Management.

A revitalised Windsor Wharf Reserve (Fig. 9) would provide the potential for the future extension of the Great River Walk from the reserve to Governor Phillip Park to be further pursued along the river foreshore.

The benefits resulting from the combined works to Thompson Square and Windsor Wharf Reserve, plus the improved connections to Howe Park, could have a significant contribution to the recreational enjoyment of both local residents and visitors, enhancing the local economy through increased tourism activity in Windsor.

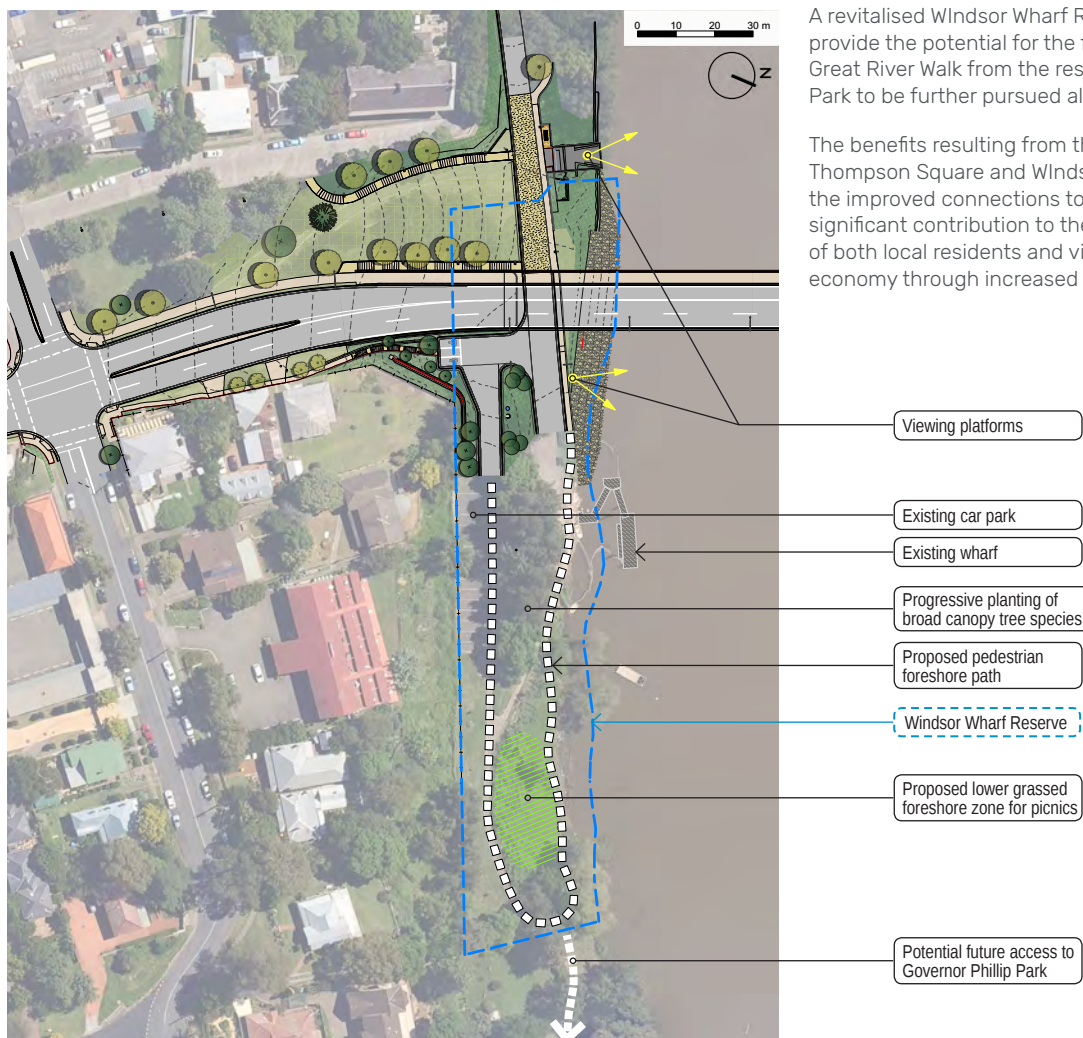


Figure 8. Aerial view of Windsor Wharf Reserve showing landscape key elements in the area



Figure 9. Photographs showing current conditions of the Windsor Wharf Reserve downstream of the Windsor Bridge Replacement project site (smm 12/01/2020)

Appendix G

Economic Analysis

Technical Advice – Economic analysis of travel time savings benefit from merge lane modification

Date	9/12/2019
To	Windsor Bridge Replacement project team, Transport for NSW (formerly Roads and Maritime Services)
From	Arcadis Australia Pacific Pty Ltd (Arcadis)
Project Name	Update traffic volume for Windsor Bridge Replacement Project
Subject	Technical Advice – Economic analysis of travel time savings benefit from merge lane modification

This technical advice has been prepared to report estimated travel time savings due to merge lane modification proposed for the Windsor Bridge Replacement Project. The net benefits in travel time savings of the modification is compared to the approved project. The economic parameters values for merge lane benefit estimation is consistent with the approved project.

An economic benefit of the merge lane in terms of travel time savings over the life of the project are substantial in an amount of \$42 M.

Detailed travel time benefit estimation due to the merge lane is shown in Table 1.

The analysis has assumed additional cost of work approximately \$100,000 for merge lane modification. Over the 30 years evaluation period, the travel time benefit is estimated to be approximately \$42 million for a discount rate of 7 per cent. The present value (PV) of benefits are shown for discount rates of 7 per cent, 3 per cent and 10 per cent (refer to Table 1).

Table 1 Travel time savings benefit over 30 years evaluation period

Analysis Period	Year	Additional Cost	Estimated Travel Time benefit		
			Approved Project	Merge Lane Modification	Additional Benefit
Base Year	2017	\$0	\$0	\$0	\$0
	2018	\$0	\$0	\$0	\$0
	2019	\$0	\$0	\$0	\$0
	2020 (opening year)	\$100,000	\$0	\$0	\$0
1	2021	\$0	\$7,139,864	\$7,726,425	\$586,561
2	2022	\$0	\$8,270,394	\$9,190,721	\$920,328
3	2023	\$0	\$9,400,923	\$10,655,018	\$1,254,095
4	2024	\$0	\$10,531,453	\$12,119,314	\$1,587,862
5	2025	\$0	\$11,661,982	\$13,583,611	\$1,921,628
6	2026	\$0	\$12,792,512	\$15,047,907	\$2,255,395
7	2027	\$0	\$14,505,892	\$17,303,242	\$2,797,350
8	2028	\$0	\$16,219,272	\$19,558,577	\$3,339,305
9	2029	\$0	\$17,932,653	\$21,813,912	\$3,881,259
10	2030	\$0	\$19,646,033	\$24,069,247	\$4,423,214
11	2031	\$0	\$21,359,413	\$26,324,582	\$4,965,169
12	2032	\$0	\$23,072,793	\$28,579,917	\$5,507,124
13	2033	\$0	\$24,786,174	\$30,835,252	\$6,049,079
14	2034	\$0	\$26,499,554	\$33,090,587	\$6,591,033
15	2035	\$0	\$28,212,934	\$35,345,922	\$7,132,988
16	2036	\$0	\$29,926,314	\$37,601,257	\$7,674,943
17	2037	\$0	\$29,926,314	\$37,601,257	\$7,674,943
18	2038	\$0	\$29,926,314	\$37,601,257	\$7,674,943
19	2039	\$0	\$29,926,314	\$37,601,257	\$7,674,943
20	2040	\$0	\$29,926,314	\$37,601,257	\$7,674,943
21	2041	\$0	\$29,926,314	\$37,601,257	\$7,674,943
22	2042	\$0	\$29,926,314	\$37,601,257	\$7,674,943
23	2043	\$0	\$29,926,314	\$37,601,257	\$7,674,943
24	2044	\$0	\$29,926,314	\$37,601,257	\$7,674,943
25	2045	\$0	\$29,926,314	\$37,601,257	\$7,674,943
26	2046	\$0	\$29,926,314	\$37,601,257	\$7,674,943
27	2047	\$0	\$29,926,314	\$37,601,257	\$7,674,943
28	2048	\$0	\$29,926,314	\$37,601,257	\$7,674,943
29	2049	\$0	\$29,926,314	\$37,601,257	\$7,674,943
30	2050	\$0	\$29,926,314	\$37,601,257	\$7,674,943
	Discount Rate	Additional Cost	Present Value (PV) of Estimated Travel Time Benefit		
			Approved Project	Merge Lane Modification	Additional Benefit
Present value (PV)	7%	\$81,630	\$191,527,359	\$234,217,309	\$42,689,950
	3%	\$91,514	\$384,223,920	\$473,937,309	\$89,713,389
	10%	\$75,131	\$122,069,677	\$148,212,999	\$26,143,322

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February 2020

Publication Number: 20.023

ISBN: 978-1-922338-32-7