THE Warren CENTRE
FOR ADVANCED ENGINEERING

Spit Bridge Submission

"We need Strategic Transport Solutions for the Warringah Region, not isolated Road Works"

To consider the widening of the Spit Bridge solely as a localised road project in isolation to wider issues for access to the Warringah Peninsular would represent a failure to develop a strategic transport plan for this Region integrated with land use and focused on the Vision for Sydney and the Metro Strategy.

A properly planned proposal for the Spit Bridge integrated with future improvements for access along that route is an opportunity to improve access to the Warringah Region.

Submission Summary

- The Spit Bridge widening, in isolation, condemns the southern end of the Warringah Peninsular to inferior access for the foreseeable future by retaining a major arterial route with a continued break in traffic flow by an opening bridge.
- Without integration with other improvements it offers no future for enhancements in amenity in either the Warringah or Mosman Regions.
- The economic soundness of the investment must be questioned.
- A proper solution for the Spit Bridge access offers the opportunity to initiate an enhanced urban transport link to the southern end of the Warringah Peninsular.
- The Spit Bridge improvement should embrace public transport options for the area to reduce car dependency for this Region.
- The Spit Bridge proposal should include consideration of enhancement to amenity through the Mosman Region as part of the longer term plan.

Therefore, the Spit Bridge widening proposal must be reviewed and considered as an urban planning solution not a response to a localised traffic congestion problem. Improvement of access at Spit Bridge must provide the first element in a strategic transport plan for the Warringah Region.

A six lane non-opening bridge with kerbside transit lanes is proposed. It can be provided at similar cost to the widening proposal. Tolling of the bridge after completion is proposed to fund subsequent transport enhancements for the Warringah Region.

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Details of Submission

Does the Spit Bridge Widening contribute to the Warringah component of the Vision for Sydney?

The Spit Bridge widening proposal appears to be the result of an assessment of road options to remove a road capacity constraint at this four lane bridge in the Manly / Spit / Military Road route.

It clearly presents an advantage in removing the localised capacity restriction at the Spit Bridge and offers the opportunity to provide continuity in the transit lane operating along this route.

However the widening proposal assumes that the issue is a localised traffic problem and the solution is increased road capacity at this location whereas the real issue is access to the Warringah Region and the solution must derive from strategic transport planning.

Analysis of the current proposal for an additional 2 lane opening bridge

The Spit Bridge widening proposal provides for a parallel two lane bridge to be provided alongside the existing four lane bridge to the west with an opening span adjacent to the opening span in the existing bridge; the two opening spans to permit harbour traffic to flow through the bridge would operate together. Quoted costs have ranged between $30 and $35 million.

The bridge opens for boat traffic eight or nine times on week days, somewhat less than hourly, excluding peak traffic periods when it remains closed. At weekends it opens 13 times, almost every hour providing a significant choke to traffic flow. Special openings on call can increase the number of openings

- The current proposal will not solve the problem, merely move its location

There is significant delay to traffic in peak periods at the bridge due to the four lanes at this location compared to six lanes over the remainder of the Manly / Spit / Military Road route. There is a significant constraint to contra-flow in the peak traffic period as the bridge lanes are divided three in the peak flow direction and a single lane in the opposite direction. The proposed widening would remove this constraint.

It has been shown by Professor Stoffer through modelling that localised widening of the bridge to six lanes will simply shift the queue in peak periods further along the route. For example in the weekday morning peak period, the queue will shift to Spit Hill; widening of Spit Hill will then simply shift the queue to Military Road and similar widening of Military Road will move the queue to the Warringah Freeway. The net effect of each of these works is to attract more car traffic to the route with the overall result increasing traffic congestion along the route.

At weekends traffic is almost equally balanced on the two lanes in each direction across the bridge. With bridge openings at hourly intervals traffic flow is continually interrupted and congestion remains throughout the day. The widening proposal offers no improvement to this situation.

With the bridge remaining an opening facility the widening makes no significant contribution to improving access to the Warringah Region. Also by retaining an opening bridge on this route, it in effect condemns the Manly area to second class access to the City for the foreseeable future.

- The current proposal will not improve amenity for either Mosman or Manly residents

The Manly / Spit / Military Road route is the main access to the City for Manly area residents for both car travellers and public transport users. Improvement of travel amenity along this route is dependent on route improvements but more significantly on better management of the route to provide a better balance between car and public transport use. Effective improvements will be costly and in terms of cost effectiveness for road based transport of significantly reduced value with an opening bridge at the Spit.

Likewise the Manly / Spit / Military Road route significantly impacts on amenity for residents in the Mosman area. Preservation of the present route condemns this area to the impacts of heavy traffic through the area for the foreseeable future. As indicated above, improvements to the overall route, such as diversion of through traffic to a tunnel route alternative to Military Road, are prejudiced by the reduced value through retention of an opening bridge at the Spit.

Also as indicated above, motorists will perceive the bridge widening as an improvement in road movement and thereby additional traffic will add to the route exacerbating the traffic congestion that currently occurs rather than easing it and further reducing amenity through the Mosman area

- Other options will deliver greater Economic Benefit

The economic soundness of the investment for widening the bridge is questioned. While the localised improvement may appear to be justified by reduced traffic delays at that location, as indicated above the wider and longer term view would indicate that traffic delays are likely to increase in the longer term.

The cost of operation and maintenance of the opening span, at about $½ million per annum, is high and would remain a significant cost to government. The cost in delay to bridge users is even more significant with delays due to bridge openings of the order of ¼ million person hours per annum. With the operation and maintenance this costs the Warringah community about $30 million discounted over 20 years (RTA Economics Analysis Manual[1]).

Transport planning in the Warringah Region needs a Broader Analysis

As indicated, the wider issue of improving access to the Warringah Region should be the overall focus to which isolated improvements should make a contribution to addressing. Improvements to transport for the Warringah Region should then be seen in context for improving transport to Greater Sydney in terms of financial viability, priority for allocation of government funds and economic soundness.

There are alternative transport options (see below) that would seem to have greater merit than the bridge widening proposal, probably with greater economic justification and certainly with greater contribution to an overall transport plan for Warringah.

- Three key Principles must be applied

Localised road improvements, to increase capacity of the Manly / Spit / Military Road route are only worth considering if part of a broader transport plan that ensures accessibility to the Region will be enhanced.

[1] Economic Analysis Manual. Roads & Traffic Authority, 1999, revised to 2004

With constraint on access to the Warringah Region by the three present access routes – Manly / Spit / Military Road, Warringah Road and Mona Vale Road - improvements must focus on:

- Road capacity improvements that benefit both car travel and public transport travel, desirably favouring the latter;
- demand management of the modal split in favour of public transport to minimise car use and hence traffic congestion; and
- land use initiatives that optimise opportunities to reduce car dependency for travel by increased walking, and greater use of public transport.

85% of all day trips within the Warringah Region are internal to the Region and 72% in the morning peak hour[2]. For Manly local government area internal trips are 82% all day and 56% in the morning peak hour. Principal destinations outside the Region are Sydney CBD and surrounds, North Sydney and lower North Shore (Chatswood, St Leonards, Crows Nest).

Public transport's share of the journey to work in the Warringah Region is 20% compared to the average of 23% for the Sydney Region. Manly is higher at 29% due to the higher residential densities which are more conducive to public transport use.

The Warren Centre Community Values Study[3] identified traffic congestion as the main transport concern for Warringah residents, 51% of those surveyed compared to 42% for the whole of Greater Sydney. The closer to Sydney, the greater is the congestion. The slowest car speeds are on Spit and Military Roads, averaging 21 kms / hr in the peak periods. At weekends particularly, the Spit Bridge is a major congestion point as it opens frequently for boat traffic.

29% of Warringah respondents in The Warren Centre's community survey for the Sustainable Transport in Sustainabile Cities Project indicated that poor public transport was a major concern compared to 23% for Sydney: 17% identified lack of adequate public transport (compared to 12% for Sydney) and 12% indicated reliability was their main concern (compared to 11% for Sydney).

The Manly / Spit / Military Road and Warringah Road routes each pass through dense residential inner areas which causes conflicts between through and local traffic: this induces 'rat-running' through residential streets in peak periods with adverse consequences for the local transport environment and residential amenity. Traffic safety is an issue on the Manly / Spit / Military Road route, particularly where traffic is heaviest and the six lanes are of less than optimal width.

The population of the Region continues to grow (0.8% per annum 1996-2001) progressively exacerbating transport problems for the Region.

[2] Improving Transport on the Warringah Peninsular: Issues and Options. Working Paper 53, Bureau of Transport & Regional Economics, (btre) 2003

[3] Community Values – Research Report. The Warren Centre for advanced Engineering, The University of Sydney, 2001

64% of Warringah residents responding to the Warren Centre survey called for travel demand management rather than increasing road capacity to manage road congestion while 71% preferred a focus on improving public transport to the Region rather than building more toll roads. Warringah residents (58%) believe that not enough money and resources are being spent of Sydney's roads but 88% consider that if more money is spent that it should not be at the expense of public transport.

To fund improvements in transport, just over half of the residents favoured transferring a portion of the road budget to public transport, 20% favoured raising fares and tolls and 16% supported a special transport levy on Sydney residents and businesses. The Warren Centre survey findings indicate that Warringah residents favour policy approaches to traffic congestion that include both improved roads and improved public transport.

Alternative Options to the Bridge Widening

- The Tunnel Options do not appear to be justified at this time

The Bureau of Transport & Regional Economics (btre) proposed two tunnel options as Bypasses of Spit / Military Road – a long tunnel option and a shorter tunnel option.

The longer tunnel option comprises two two-lane tunnels from the Warringah Freeway at Cammeray to Burnt Bridge Creek deviation beyond Sydney Road at Manly a length of 7.6 kms. The shorter tunnel project comprises two two-lane tunnels from Warringah Freeway to the Spit (5.1 kms) where it joins a new high level Spit Bridge and elevated four lane road to Sydney Road with grade separation at Sydney Road(total length 6.1 kms). Both proposed a toll of $3.50 per vehicle trip.

Respective cost estimates for the two options were $956 million for the long tunnel option and $651 for the short tunnel option. The respective annual operating costs were $15.7 million for the long tunnel option and $13 million for the short tunnel option. The long tunnel option required a government contribution of $282 million while the short tunnel option could be financed entirely from tolls.

Economic evaluation showed benefit-cost ratios of 3.3 to 5.0 (discount rates of 7% and 4% respectively) for the long tunnel option and 4.3 to 6.4 for the short tunnel option.

Both proposals simply aim to increase road capacity along the Manly / Spit / Military Roads route. They are extremely expensive in terms of road investment compared to road needs in the rest of Sydney. Both require substantive investment before any benefit can be derived as tunnels do not lend themselves to stage development.

Both tunnel options would improve flow conditions for buses commensurate with that for cars but did not improve bus share of the market even with the toll; bus patronage was lower under both tunnel options than without the tunnels (Institute of Transport Studies 2005[4]). Hence the tunnel options give no added advantage to public transport over cars which is vital for an effective transport system to serve the Warringah Region.

[4] TRESIS (Transport and Environmental Strategy Impact Simulator). Application to a Case Study in NE Sydney. David A Henscher, Peter R. Stoffer, Philip Bullock, and Tu Ton, Institute of Transport Studies, The University of Sydney, NSW, Australia, 2005 (To be published by Transportation Research Board, USA)

- A Non-opening, tolled Spit Bridge will maximise regional development outcomes

This option proposes a non-opening six lane bridge with a 20 metre clearance above HWOST alongside the existing bridge, in effect at the location of the original Spit Bridge. It is illustrated as an artist's impression in the figure below.

The proposal provides for continuity of the existing 6 lanes in the Spit / Military Roads route with the kerbside lane transitways in peak periods and possibly extended over full daylight hours including weekends.

While it is proposed that the new structure be financed from government funds (as the widening proposal is planned to be), to discourage increases in car traffic it is proposed that a toll be levied on private vehicle use of the new bridge (excluding buses). The toll would be automated and linked to cards already operating on toll facilities in Sydney. Toll revenue would be quarantined for use in building the planned transport system for the Warringah Region with initial funds allocated to develop that plan.

The new bridge should be the first stage in the transport plan for the Warringah Region which would also embrace the Mosman and Willoughby areas through which transport associated with Warringah passes.

This transport plan would incorporate such elements as:

- Development of a public transport network for the Warringah Region integrated with land use planning to provide higher density activity centres that the transport system would link. Centres within the Region could include Manly, Brookvale (Warringah Mall), Dee Why, Narrabeen and Mona Vale. Those external to the Region would include Sydney CBD, North Sydney, St Leonards and Chatswood.

  The public transport system would essentially comprise a bus network with links to rail at Chatswood and North Sydney.

  The fully automated Bishop Austrans ultra light rail system should be considered for components of the network as an alternative or adjunct to the bus network. Sinclair Knight Merz in 1996[5] examined a route from Brookvale and Manly to the Sydney CBD that would form the core for an ultimate Austrans network for the Warringah Region.

  Capital cost was estimated at $345 million and annual operating cost at $19.9 million. With fares of $5 per trip for trips over 8 kms and $3 for trips less than 8 kms, the

[5] Austrans Rapid Transit System: Sydney-Warringah Corridor Feasibility Study. Trans Research Pty Ltd, Sinclair Knight Merz, November 1996

project could be commercially viable without undue recourse to government financial support.

The advantages of the Austrans system are that it is independent of the road network and not subject to traffic congestion delays; it can traverse tight bends and steep grades as would be experienced in the Warringah Region and its links to the west; it offers a 2 minute service to any destination with travel times better than car travel. It is an effective alternative to the car.

An integral part of any public transport system is that attractive large park and ride facilities are provided at activity centres integrated into the urban fabric of those centres so as to encourage car drivers to choose the alternative form of transport readily available.

- Completion of the development of the three road accesses into Warringah – Manly / Spit / Military Road, Warringah Road and Mona Vale Road, with demand management of route to give primary focus to public transport movement.
- Development of a direct tunnel route to link Spit Road at the Spit Hill escarpment to the Warringah Freeway to replace Military Road as the through route for traffic, with first priority to developing a public transport link. Military Roads through Mosman would then revert to a local arterial for car and public transport access to the Mosman area only.
- Development of grade separation of Manly Road / Burnt Bridge Creek Road with Sydney Road and a more direct link, possibly in tunnel, between Spit Road and Wakehurst Parkway.

Bridge contractors have indicated a bid cost of $35-40 million for the six lane non-opening bridge proposal shown here alongside the existing bridge (to be removed). Demolition of the existing bridge could cost up to an additional $7 million, cost depending on the extent removed: it may be that portion of the existing bridge would have heritage value as short piers from the Spit and Manly sides.

Warren Centre Recommendations

In response to the above discussion we recommend that:

- Spit Bridge enhancement be developed only as a contributing element to a wider, broader Transport Plan for the Warringah Region which is compatible with the Vision for Sydney in the context of the Premier's focus on Sydney as a *City of Cities*.
- In pursuit of the recommendation above, Spit Bridge be replaced by a non-opening six lane bridge.
- The new bridge be financed from Government funds (as for the proposed widening proposal) but tolled as a source of revenue to develop Warringah Region transport.

- Utilise funds from tolls to develop and implement a Warringah Region Transport Plan with a primary focus on developing public transport to serve the Region.
- Progressively develop transport for the Region, including diversion of through traffic from the Mosman area, in accordance with than Plan.

In Conclusion

Replacement of the opening Spit Bridge impediment to movement to and from the southern end of the Warringah Region with a non-opening bridge is an obvious component of an effective viable transport system to serve that Region. The bridge proposal presented offers an opportunity to replace that bridge in a cost effective manner.