

## **Before a Board of Inquiry Basin Bridge Proposal**

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Under the Resource Management Act 1991 (the Act)

In the matter of a Board of Inquiry appointed under section 149J of the Act to consider the New Zealand Transport Agency's notice of requirement and five resource consent applications for the Basin Bridge Proposal.

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### **Witness Concise Summary of Richard Leonard Cheyne Reid for the Mt Victoria Residents Association and Richard Reid & Associates Ltd**

5 March 2014

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- 1 I have participated in Expert Witness Conferencing on Transport Planning during December 2013 and February 2014. Following these processes I co-signed Joint Witness Statements with other transport planning expert witnesses.
- 2 Below I provide a concise summary of my evidence-in-chief, rebuttal evidence and supplementary evidence on transport planning. I will illustrate this summary with a selection of images from my evidence as well as from NZTA's Basin Bridge Proposal.

### **Summary of evidence**

- 3 My work on the Basin Reserve Roundabout Enhancement Option has been consistent in its intention since I developed a conceptual approach to the Project in March 2012. That is, I have seen that an upgrade of the existing Roundabout at grade level can meet the Objectives for the Project.
- 4 During the course of my practice's extensive investigations, I have not found evidence for the need to create an entirely new context to accommodate an increase in traffic capacity at the significant expense of the receiving environment.
- 5 I have also not found evidence that transport improvements to the existing Roundabout have been adequately considered.
- 6 At each stage of the option investigative process, including when important changes have been made to the brief, NZTA has not appeared to return to the existing roundabout as a base case to examine whether it can be retained and improved.
- 7 In my estimation, only 4 of the 72 options investigated by NZTA since 2001 explored retaining use of the southern alignment and 3 of these were limited in scope and insight. In particular, a major omission was the failure to consider integrating the southern alignment of the roundabout into options which investigated the potential transport benefits from the Buckle St Underpass, including the cumulative benefits from improvements to the Taranaki St intersection and further west.

- 8 From my site observations and analysis, which are independently supported by John Foster and David Young's evidence, the major causal issues lie outside the roundabout and are not within the configuration itself. Most of these will be resolved with the completion of other transport projects, not the Basin Bridge Proposal.
- 9 Yet the current roundabout layout suffers from being inefficient and underutilised. The weight of evidence suggests that NZTA has invested almost all of its time in the analysis of other options, structures and locations and has therefore neglected the real problems associated with the roundabout.
- 10 Notwithstanding this, modifications to the street pattern and arrangement of lanes at the Roundabout over time have served to clarify and strengthen the organisational role of the Roundabout within the city rather than dilute or dismantle it.
- 11 In this respect, the volume of traffic now using the Roundabout can be interpreted as a positive expression of the Roundabout's importance which can and should be better managed, not treated as an adverse effect to be avoided or removed.
- 12 NZTA's position, shared by Greater Wellington Regional Council transport experts, is that removal of the volume of traffic from the roundabout will create ample space for bus priority, reliability and capacity improvements.
- 13 Despite this opportunity, NZTA has produced a layout which is not considered safe, legible or functional at the two key intersections (Ellice/Dufferin/Paterson St and Rugby St/Adelaide Rd) by the peer reviewers and some submitters, including myself; nor has NZTA yet produced a roundabout plan with continuous dedicated bus lanes and bus priority up to all intersections; nor has NZTA and GWRC, despite their mutual interests, yet produced a layout for the preferred transit system, Bus Rapid Transit. Further complicating the situation is Wellington City Council's need to designate land and acquire property along the whole eastern side of Adelaide Rd in order to accommodate BRT.
- 14 Hence, a key NZTA Project Objective, namely the provision of opportunities for public transport developments, is not able to be confirmed or tested until after the Board of Inquiry process is likely completed. This leaves uncertain the overall outcome and promised benefits from the different transport projects. On this basis alone, NZTA's application is premature and piecemeal and should be declined.

- 15 In the absence of providing this evidence, NZTA and other submitters have instead expressed their opinion that the roundabout will not be able to provide for BRT if all traffic is retained at-grade.
- 16 As a consequence of this apparent gap between opinion and evidence, I have prepared supplementary evidence which illustrates my practice's investigations into providing BRT along Kent Tce and Adelaide Rd through the roundabout.
- 17 I do this on the basis that whilst this work is provisional, indicative only and restricted to a few options amongst many possible configurations, it may nevertheless give the Board direction that:
- i) an enhancement of the roundabout can provide public transport improvements and benefits for BRT;
  - ii) that these benefits enable sufficient capacity and priority to be afforded to BRT both on and off the roundabout;
  - iii) these benefits are likely not far removed from what the roundabout would deliver with grade-separation provided by a flyover; and finally
  - iv) BRREO is able to adopt the Public Transport Spine Study's own indicative cross sections for BRT.
- 18 The Board may conclude from these investigations that planning for BRT has less to do with the amount of traffic removed from the roundabout and more about astute and efficient planning.
- 19 The existing network has sustained NZTA's many attempts to engineer a motorway 'solution' over the past fifty years. These 'solutions' have almost always diverted highway traffic northwards from its current route around the Basin Reserve Roundabout and involved a flyover or tunnel structure which invariably destroys the amenity of the Basin Reserve and the urban structure of the city.
- 20 I believe the existing network will continue to have sufficient flexibility, tolerance and resilience to serve the city well into the future. The Objectives for the Project can be met without the need for the Basin Bridge Proposal.

## **Summary of the Basin Reserve Roundabout Enhancement Option transport plan (“BRREO”)**

- 21 The Basin Reserve Roundabout Enhancement Option submitted to the Board of Inquiry differs in important respects from the conceptual drawings Richard Reid & Associates supplied to Wellington City Council in January 2013 (the “RR Option”).
- 22 The transport plan has benefited from six months of detailed design development and collaboration with John Foster and David Young, two highly experienced traffic experts with long standing knowledge of and insight into traffic problems in the vicinity of the Roundabout as well as across the regional network.
- 23 BRREO is designed to provide a simple and consistent re-arrangement of the roundabout for the benefit of all traffic and active modes. I believe the enhanced roundabout, on balance, is superior to the existing roundabout and NZTA’s Basin Bridge Proposal and can achieve the Project’s Objectives at low cost and without the environmental effects of the NZTA proposal.

### **New lane configuration**

- 24 The plans submitted comprise two stages – a plan which shows changes to the roundabout before the proposed duplication of the Mt Victoria Tunnel [Dwg.5/BRR\_502] and a second plan showing changes after the tunnel duplication [Dwg.6/BRR\_503]. For the purpose of summarising BRREO, I will describe the intended plan after a second tunnel is built, as Mr Foster’s modelling indicates this is the critical point at which necessary improvements to the roundabout must be in place. I note though that the changes shown before tunnel duplication can be implemented immediately or as part of the tunnel project.
- 25 BRREO widens Paterson St West and Dufferin St South from two lanes to three lanes. This enables three traffic lanes to circulate westwards around the roundabout from Paterson St through to the Buckle St Underpass and Karo Drive. This is a significant increase in traffic capacity, adding approximately 1km of extra lane space to the state highway corridor between Paterson St and Karo Drive.
- 26 As is the case now, the traffic signals at Paterson St and Rugby St will be linked to provide a "green-wave-progression" whereby the state highway traffic proceeding from Paterson St is provided a green light at the second intersection

- so that a three-lane volume of traffic passes through uninterrupted on a single phase.
- 27 BRREO also widens Dufferin Street North from two lanes to three lanes approaching the Paterson St intersection. This increases the lanes of traffic heading south to Adelaide Rd from one lane to two, one more than the current situation and NZTA's Basin Bridge Proposal. The third lane heading west is given much less space to reflect the dominant north-south traffic flow from Kent Tce to Adelaide Rd. The overall weighting at this intersection is very different from the current configuration and NZTA proposal. [Dwg.4/BRR\_487 and BRR\_532]
- 28 Rugby St has been increased from four to five lanes to significantly lengthen the second lane accessing Adelaide Rd off the roundabout.
- 29 Both Sussex Street and Buckle St West continue to have three lanes. By that I mean our team has assumed the third lane in the Buckle St Underpass is available for use upon its opening and is not held back to theoretically improve the benefits of the Basin Bridge Project.
- 30 The three lanes from Sussex St joining the Buckle St Underpass maximise the efficiency of the whole roundabout. The state highway corridor can now be accessed from every lane on the roundabout, unlike the current situation where only two lanes on Rugby St East, Rugby St West and Sussex St are able to. As a consequence, traffic does not need to change lanes to access the Underpass, thereby removing weaving problems. [Dwg.28/BRR\_466]
- 31 The right-hand lane in Sussex Street also serves as a shared lane to allow traffic to turn right into Buckle Street before turning left into Cambridge Tce. Provision of only one shared lane accessing Buckle St East, as opposed to the current two lanes, more efficiently serves the less dominant Cambridge Tce traffic flow and removes the middle lane accessing both directions which previously caused conflict. Again, the overall weighting in Sussex St is different from the current configuration and NZTA proposal.
- 32 BRREO includes an additional lane on Pirie St to allow left and right turns into Kent and Cambridge Terraces; and peak hour 'clear ways' on Vivian St between Tory St and Cambridge Tce, both as per the Basin Bridge Proposal.

- 33 Traffic signals and light phasing around the roundabout will be managed to ensure that the co-ordinated traffic control system keeps traffic flowing and there are no blockages that affect traffic and other modal movements.
- 34 The width of the existing lanes on and in the vicinity of the roundabout (including Vivian St) reflects the city street context and not a state highway. BRREO regularises the lane widths of every street on the roundabout to 3.2m wide which will create a more consistent, clear and efficient layout of lanes. In many cases, the existing lane widths will be increased (e.g. Rugby St East, Sussex St) and will make them wider than lanes on Vivian St, Kent Tce, Paterson St and Adelaide Rd.
- 35 BRREO incorporates a proposal to increase the number of lanes and re-align Paterson St as part of the Mt Victoria Tunnel Duplication Project. The duplication of the tunnel has major significance for the urban design of the city, not just accommodating traffic movement and a strategic state highway route.  
**[Dwg.no.10/BRR\_506 and Dwg.no.11/BRR\_507]**
- 36 The proposed re-alignment seeks to integrate Paterson St with the formal and historical planning structure of the city, something which it is presently out of character with. The changes will up-scale the presence of the street within the city plan and better reflect its importance as the major urban gateway to the city from the east. The new Paterson St can be planted in a simple and consistent way to join with the proposed planting around the Roundabout, creating cohesion and continuity between these two major spaces of the city. The two roads become part of a unified spatial structure of the city. I will elaborate on this when providing a concise summary of my urban design evidence.  
**[Dwg.no.12/BRR\_508]**

### **Car parking**

- 37 BRREO removes car parking from Kent Tce, Ellice St, Rugby St East and West and Sussex St. This is to improve the performance of the roundabout, remove unnecessary conflict and simplify the Roundabout's essential function as a one-way system.
- 38 Car parking on Sussex St can be retained, certainly in the short-term, although I believe BRREO's reorganisation and redesign of this street, including widening its footpaths and landscaping, will benefit from its removal.

### **Bus lanes and stops**

- 39 The BRREO design which has been submitted to the Board of Inquiry is not the same as that re-presented and assessed by Mr Dunlop in Annexure B of his rebuttal evidence. Mr Dunlop has modified the BRREO design in ways that have changed the functionality intended by me. His subsequent conclusions are based upon a false model and appear self-serving to me.
- 40 BRREO provides bus-priority lanes in Kent Tce and Cambridge Tce and each side of Adelaide Road. The addition of extra traffic lanes approaching the Dufferin St/Paterson St intersection and accessing Adelaide Rd, together with the greater efficiency of the BRREO layout, are adequate measures to improve the passage of buses through the roundabout. Additional bus priority measures are available if and when BRT is implemented (see paragraph 56-66).
- 41 BRREO re-locates the public bus stop at the head of Adelaide Rd in order to remove the conflict between buses, and buses with general traffic, turning off the roundabout. Its relocation one street block south (past Alfred St) uses an existing off-road parking bay. This provides greater parking capacity and vehicle safety and will improve the traffic flow on Adelaide Rd.
- 42 BRREO also relocates the existing bus stop and car parking arrangement outside St Marks Church School in order to provide a third lane on Dufferin St South. The idea of using a small section of St Marks Church School property to accommodate part of this rearrangement was offered to me by the Chairman of the School Board and the School Principal in a meeting on 14 January 2013.

### **Extra road space needed**

- 43 **Dwg no.9/BRR\_476** illustrates the extra road space required for BRREO.
- 44 The extra road space and property purchase required (if not already owned by NZTA) for the potential re-alignment of Paterson St according to BRREO has not been included in **Dwg.no.9/BRR\_476** as this would form part of a future Mt Victoria Tunnel Duplication Project application and still requires detailed design investigations. I have set out the reasons for the re-alignment and the extent of property take I expect needed on Paterson St in my evidence-in-chief (paragraph 7.3.9 (i- xvi)).

- 45 I have already discussed the land required from St Marks Church School for BRREO in paragraph 42. This area of the roundabout will require more detailed design to establish the exact area and arrangement needed.
- 46 Purchase of the property at the corner of Adelaide Road and Rugby Street (the Duckworth-Lewis Accommodation Hotel) is needed to enable the modification of the corner's tracking curve. Costs for this purchase ( $\approx \$3M$ ) can be shared between NZTA, GWRC and WCC as a better tracking curve will help achieve the objectives of the Public Transport Spine Study. The land can be resold and developed afterwards. Early purchase of this land is considered important as it will future-proof the widening of Adelaide Road in the future.
- 47 A small area of land from the south-west corner of the roundabout, part of the Basin Reserve Cricket Ground or the road reserve (I have to establish which) will be needed to re-align the roundabout according to the BRREO layout. This is due to BRREO removing the car-parking bay along the northern side of Rugby St to free space for an extra lane of traffic. The new traffic lane runs in a straight line through the south-west bend of the roundabout, slicing a segment off the corner. The new kerb line also enables the Rugby St footpath, grass verge, tree planting and boundary fence to continue around Sussex and Buckle St East. This will create a consistent, cohesive and softer road space and also improve the consistency and cohesion of the inside perimeter of the cricket ground. The amenity of the outside road space and inside cricket ground will be significantly improved as a result. I consider the subsequent small loss of land to be a minor effect. [Dwg.no.4/BRR\_487; Dwg.no.5/BRR\_502 and Dwg.no.7/BRR\_504]

### **Walking**

- 48 In BRREO walking is a planned activity and is integrated with the traffic light phasing of the Roundabout so that traffic flow accommodates walking in a consistent, regular, predictable and efficient way. [Dwg no.16/BRR\_463]
- 49 BRREO retains existing controlled pedestrian crossings where they are located because they are logical and practical and reinforce the underlying structure and organisation of the roundabout.
- 50 At the Paterson and Rugby St intersections, pedestrians and cyclists cross a roadway facing a red light at the same time as the conflicting traffic flows,

meaning the two potential conflicts are resolved together. It is unclear how the NZTA design for this area will work for pedestrians.

- 51 BRREO provides walking routes which are direct and reinforce long established and common sense desire lines. Walking is separated from traffic movement in order to provide a safer and more comfortable pedestrian experience. Typically, walking is directed through the centre or around the outside edges of the roundabout rather than close to traffic lanes. These edges will become more clearly defined and activated with ongoing urban development.
- 52 Of special note is BRREO's proposal for a north-south walking spine down the central median of Kent/Cambridge Tce, with the potential over time to connect the Basin Reserve with Courtney Place and the sea. **[Dwg no.18/BRR\_493]**
- 53 BRREO proposes an alternative approach from Cambridge Tce to Memorial Park with the view that in the event the application is declined, all aspects of the proposal will be reviewed, including this link. **[Dwg no.8/BRR\_505]** The BRREO approach provides a simple, safe, more direct and accessible route which can be used for ceremonial occasions, including connecting with the walking spine up/down Cambridge/Kent Tce. **[Dwg no.15/BRR\_477]**

### Cycling

- 54 BRREO provides cycling routes which are direct and reinforce established and common sense desire lines at-grade level. **[Dwg.no.17/BRR\_509]**
- 55 In almost all journeys cycling is separated from traffic movement at the roundabout in order to provide a safer and more comfortable experience. Typically, cycling is directed to surrounding streets outside the periphery of the roundabout (Brougham, Ellice, Tory/Tasman) or along a dedicated north-south spine on Kent/Cambridge Tce which carries through the Basin Reserve Cricket Ground and is free from traffic. **[Dwg no.18/BRR\_493]**

### BRT

- 56 The Public Transport Spine Study (PTSS) cross section for Kent Tce envisages it will consist of four traffic lanes, three of which are general traffic lanes with the fourth a separated dedicated bus lane against the central median (Canal

- Reserve). A cycle lane is provided against the eastern kerbline and is separated from general traffic by a painted median spacer. [Dwg/BRR\_529]
- 57 BRREO retains the same number of lanes and transport modes but reorganises the cross section so that the cycle lane is against the central median and no additional land is required from the Canal Reserve. [Dwg 18/BRR\_533]
- 58 This is because the main north-south route for cyclists uses the Basin Reserve Cricket Ground as a traffic-free connection to Adelaide Rd instead of sharing traffic lanes on the existing roundabout. The roundabout lanes are not wide enough or safe for both users, including for NZTA's proposed layout. BRREO places the cyclists on the side which best aligns with this traffic-free route. Cycling is brought alongside the central median, the safest and most generous location within Kent Tce for active modes.
- 59 In the BRREO plan, the bus priority lane for BRT continues beyond the pedestrian crossing on Kent Tce and well into the roundabout configuration, approximately half-way around Ellice St and half-way to the Dufferin St/Paterson St intersection. [Dwg/BRR\_522]
- 60 This enables BRT to bypass all other traffic and any congestion on Kent Tce and arrive close to the Dufferin/Paterson St intersection which is widened to three lanes (either before or after tunnel duplication).
- 61 Hence, BRREO provides both priority and capacity for typically the slowest section of the roundabout for traffic to pass through (once the Buckle St Underpass is in place). This is a significant improvement upon the existing situation and provides a balance to the extra capacity given to Paterson St for state highway traffic.
- 62 The bus priority lane on the right hand side of Kent Tce/Ellice St and the 3 lanes approaching the Dufferin/Paterson St intersection enables BRT the choice of two lanes at the intersection and thence both sides of Adelaide Rd. The Basin Bridge Proposal will struggle to match this flexibility unless it provides 3 lanes at the Dufferin/Paterson St intersection.
- 63 I have supplied three options in my supplementary evidence from our numerous investigations into BRT on Adelaide Rd. [Dwg/BRR\_535, Dwg/BRR\_527 and Dwg/BRR\_537]

- 64 These three options are:
- i) Option 1 – BRREO adopts the PTSS cross section for Adelaide Rd
  - ii) Option 2 – BRREO combines central median and kerbside stations
  - iii) Option 3 – BRREO provides only kerbside stations
- 65 I do not draw a conclusion as to which option is better in relation to the others. These options only serve to show at this stage there are real world options for BRT on Adelaide Rd with degrees of functionality and value which are not dependent upon a flyover; and that the PTSS objectives can be adapted to an enhanced roundabout, as identified in paragraph 17 of this summary.
- 66 All options raise issues which need to be addressed at a more detailed level of design.

### **Integrated solution**

- 67 My focus on shaping the different transport requirements and enhancements into an integrated outcome in tune with the receiving environment means BRREO can achieve the Objectives for the Project without the significant adverse effects of the NZTA Basin Bridge Proposal. Over the long term, these enhancements will reinforce the Basin Reserve Roundabout as a major urban space of the city.

**Richard Reid**

On behalf of Mt Victoria Residents Association and Richard Reid & Associates Ltd

5 March 2014