WESTERN HARBOUR TUNNEL – COMMENTS AND OBJECTIONS

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By way of background, I am a civil/structural engineer who was a DMR scholarship holder at university and worked for the DMR for 6 years. I have been involved in general infrastructure projects as well as bridges. For the last 12 years I have lived in Waverton and worked in North Sydney, and have been active in the Waverton Precinct. My residence is the closest house to the proposed decline adit at the Berrys Bay construction site.

I have reviewed much of the provided documentation and have the following comments and objections.

MODAL SPLIT

I OBJECT to the manner in which this project was conceived and is being implemented. Almost all other progressive cities in the world are restricting or reducing the growth of road traffic in favour of public transport. Yet the NSW Government DIRECTED RMS to design a road-based system rather than first considering public transport alternatives (such as Light Rail lines). Prior to this EIS being approved, the proponent **SHOULD BE REQUIRED** to carry out a proper transport study of the city, including origin/destination surveys and the like, with environmental damage and consequences costed against all options to identify the best scheme.

LAYOUT AND TRAFFIC

I STRONGLY OBJECT to the WHT EIS BECAUSE of the **PERMANENT NEGATIVE IMPACT ON LOCAL TRAFFIC AND PEDESTRIAN SAFETY, particularly in the North Sydney CBD precinct**. Most progressive cities around the world are restricting or reducing the growth of road traffic.

I OBJECT to the manner in which the project was conceived, being the result of a political directive to design a road tunnel rather than a planning-based study which objectively looked at origin-destination demand and preferred modal split, and then addressed options including light rail etc. It is understood that previous studies of light rail to the northern beaches made better commercial sense than the current scheme. If in fact the driver for this tunnel is movement of containers north from Port Botany, then was a freightrail option considered which may have resulted in less road traffic rather than more? **NO APPROVAL SHOULD BE GRANTED UNTIL** such a study is completed and made public for community scrutiny.

I OBJECT to the proposed **REWORKING OF SURFACE ROADS** in the North Sydney area and their interactions with the WHT.

Any approval should **CONDITION** that before plans are adopted for links to freeways and tunnels, the traffic patterns associated with the North Sydney CBD should be studied in their own right and

reorganized to better serve pedestrians, buses and vehicles (and in that order of priority). As has occurred in the Sydney CBD in Pitt St and George St, vehicular access should be **REMOVED** from areas of maximum pedestrian density, and moved to a model which avoids through traffic.

The following statements **SHOULD BE ADOPTED** to underwrite this work:

- The centre of the North Sydney CBD should be delineated and agreed with North Sydney Council, acknowledging plans for future change.
- The planning should acknowledge, and where appropriate adopt, work done by NSC and local interest groups to forward plan the future of North Sydney. Such proposals as a dedicated people mover running from Blues Point to St Leonards Park are not addressed but would be doomed by the current plans to maximise traffic flows crossing Miller Street.
- No through traffic should be routed through the space delineated as CBD. Alternatives include tunnelling under or diverting around the CBD, and potentially double-decking surface roads over the Warringah Freeway airspace should be considered.
- Traffic whose destination is the North Sydeny CBD should enter and leave radially, perhaps via a partial or full ring road.
- The already heavy bus traffic volumes in North Sydney should be acknowledged, and plans to route the B-Line through the NS CBD reconsidered. Linking to the Crows Nest station may be a better option.

In regard to the plan as tabled, any approval should **CONDITION** that more thorough and rigorous review and redesign of traffic flow is required to reduce the impending high levels of congestion on local roads under the EIS plans. The EIS shows the intersection performance of many key intersections along the Pacific Highway, Miller Street and Military Road will fall dramatically to have an F rating, the lowest rating there is, at peak hours eg:

- Miller St and Falcon St intersection;
- Miller St and Berry St intersection;
- Bay Rd and Pacific Highway;
- Berry St and Pacific Highway;
- Miller St and Amherst Street;
- Military Rd and Ben Boyd Rd.

Major traffic problems are predicted at Miller Street and Ernest St and Miller St - and at all the intersections through to the top of Miller Street in Cammeray. Any approval should specify **CONDITIONS** that require these matters to be resolved before this project proceeds.

Layout Details

Cofferdam at Coal Loader

I OBJECT to the location of the cofferdam at the Coal Loader as I believe it will clash with the heritage structure of the Coal Loader in contravention of statements to the contrary. The following layouts appear to show that the interpretation of the sidescan sonar was deficient in that it did not

identify the berthing dolphins which occur along but which are offset from the face of the coal loader. These are part of the heritage fabric of the Coal Loader and must be avoided. **THE COFFERDAM MUST BE MOVED AT LEAST 2M** clear of the dolphins (SUCH CLEARANCE TO BE CONFIRMED BY EXPERT OPINION FOR THE AVOIDANCE OF DAMAGE TO THIS HERITAGE FABRIC).

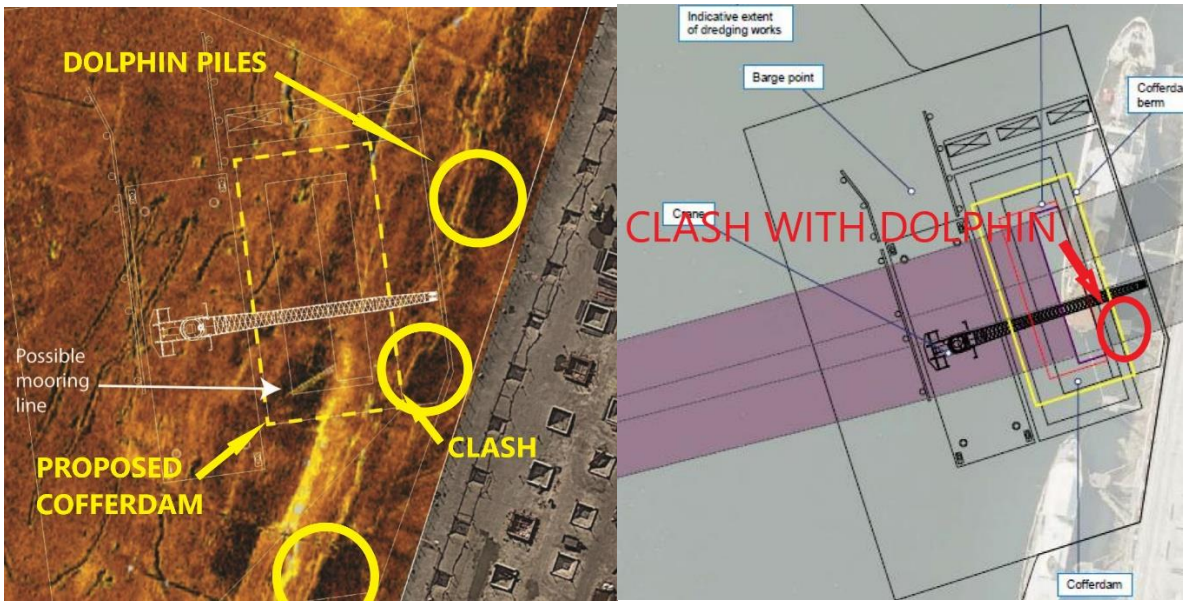

Figure 1 Sidescan plot left, and general plan right showing clash with Coal Loader Dolphin. Sources: Fig 126 and 119 of App K

Carradah Park Link

I OBJECT to the failure of the EIS to address the impact on Carradah Park in Waverton. It is nowhere stated that there will be a direct surface link to Carradah Park, yet one is shown on Figure TJ500-01-6-1-3-1 027b-3 (r8) dated 16/1/2018, being page 844 of Appendix G as highlighted in the figure below. Any response to the EIS must be **CONDITIONED** to require that this feature be subject to environmental impact assessment and approval before overall project approval.

Figure 2 Red circle highlighting unidentified and unassessed feature impacting Carradah Park, Waverton Source App G, page 844

AIR QUALITY

IN VICINITY OF EXHAUST STACKS

The air quality both inside the tunnels and near the stacks will be poor, a situation exacerbated by the Federal Government's refusal to adopt the highest international standards of vehicle emissions and fuel cleanliness (eg, Euro 6 and 7), so that ***vehicles in Australia are 'dirtier' than most others***. Further, neither State nor Federal Governments have been proactive in supporting the uptake of electric vehicles, and are literally miles behind many European countries – to our shame. Consequently, the suggested percentages of EVs will lag years behind the assumptions in the EIS, rendering conclusions ***technically flawed to the point that its conclusions should be REJECTED***.

If exhaust fumes and particulates from the unfiltered smokestacks are added to the air on days when bushfire smoke is already raising the air quality index (AQI) to danger levels (as it did during the 2019–20 bushfires and the cool burn winter before that), the situation will only be made much worse. The EIS should be **REQUIRED TO BE REDONE**, accounting for the historical and emerging smoke landscape pervading the Sydney region.

I STRONGLY OBJECT TO THE LACK OF FILTRATION IN THE EXHAUST STACKS FOR THE WESTERN HARBOUR TUNNEL & BEACHES LINK. Whilst the EIS argues it is following world's best practice, it is clearly not doing this, with these proposed tunnels being longer than recommended overseas for a system with no intermediate air treatment or injection. In 2000 the Lærdal Tunnel in Norway was the first in the world to be equipped with an air treatment plant. This plant removes both particulates and nitrogen dioxide from the tunnel air by use of electrostatic precipitators and carbon filters. This technology must, 20 years on, be regarded as well established, and to be included in any description of World's Best Practice.

Despite RMS claims in the Environmental Impact Statement (EIS), exhaust fumes and microscopic particulates from vehicles emitted via smokestacks in the close proximity of schools, day-care centres and thousands of homes will – as confirmed by the latest medical research, and ***contrary to the outdated advice from the State Chief Medical Officer*** – put our children, grandchildren and the elderly at unacceptable risk for generations.

I URGE Government /Department Of Planning to **REJECT THIS PROPOSAL AS IT STANDS** and to **REQUIRE FILTRATION**. If at some point the quality of exhaust air is to a standard the community accepts without filtration, then the filtration system could be turned off. This is simply implementation of the Cautionary Principle, and failure to implement this may leave those responsible liable when harm is subsequently proven.

AIR QUALITY INSIDE THE TUNNELS

I OBJECT to the proposed air quality criteria within the tunnel, which fail to limit particulates, using only a generalized visibility criterion instead of specific limits for PM2.5 and PM10. This is presumably because they know they will fail Australian and international standards for much of the time, and fail by huge margins for a lot of that time. The users of the tunnel will be poisoned for much of their travel distance in each tunnel, with the responsible authority refusing to measure the key levels of that poison. Any approval **MUST BE CONDITIONED** to set standards for particulate air quality in the tunnels (not just visibility), with the combined AQI and related pollutant concentrations being measured in the tunnels and further, to require long term monitoring (publicly available online) which is used to shut the tunnels when allowable levels are exceeded. Data should be in a similar form to that currently posted on the Department of Planning, Industry and Environment website. Noting that medical advice is that there is **NO SAFE LEVEL** for these pollutants, (acknowledged in the IES, second paragraph, Section 4.4.2 of App H) closure of the tunnels should **BE A CONDITION OF OPERATION** if, as a minimum, any measures exceed the Very Poor concentrations shown on the DPIE website:

Air Quality Index rating		AQI value	Pollutant concentration			
			1 hour PM_{10}	1 hour $PM_{2.5}$	1 hour NO_2	1 hour SO_2
			$\mu g/m^3$	$\mu g/m^3$	pphm	pphm
	Very Good	0 - 33	< 27.2	< 21.1	< 4.1	< 6.8
	Good	34 - 66	27.2 - 53.6	21.1 - 41.5	4.1 - 8.0	6.8 - 13.4
	Fair	67 - 99	53.7 - 80.0	41.6 - 62.0	8.1 - 12.0	13.5 - 20.0
	Poor	100 - 149	80.1 - 120.0	62.1 - 93.0	12.1 - 18.0	20.1 - 30.0
	Very Poor	150 - 199	120.1 - 160.0	93.1 - 124.0	18.1 - 24.0	30.1 - 40.0
	Hazardous	> 200	> 160.0	> 124.0	> 24.0	> 40.0

INTERNATIONAL EXPERT ADVICE SHOULD BE SOUGHT to agree on whether these criteria are sufficiently prudent for the safety of tunnel users.

Further, rather than using 1 hour averages, **INTERNATIONAL EXPERT ADVICE SHOULD BE SOUGHT** on use of 15 minute averages, as this more closely represents the time in the tunnels, and allows quicker response to poor air events.

Further Points on Air Quality

If the scheme goes ahead, it should be redesigned to reflect actual World Best Practice which is to provide progressive changeout of air, requiring longitudinal supply and exhaust ducts. ***I PROPOSE THAT THIS BE MADE A CONDITION FOR APPROVAL.***

The construction phase tunnel ventilation exhaust will be 40m from my bedroom. I call for the Department of Planning to **REQUIRE** that such exhausts be filtered to remove dust, and exhaust particulates and gases to the same standard as called for above for the operational tunnels. There is no excuse for less.

NOISE AND VIBRATION

- **I OBJECT** to the lack of identified noise abatement measures and structures during construction for sensitive receivers (residences & schools) and not just assessed on operational impact of increased traffic. Eg. Anzac Park school (and others) have an atrium structure so noise can get in easily.
- **I OBJECT** to noisy daytime work on the Freeway upgrade or the tunnel site within 500m of schools during school term.
- **I OBJECT** to evening/night freeway work during school examination periods, including Naplan and High School exams, plus 1 week before.
- **I OBJECT** to the failure of construction operation plans to prohibit heavy vehicle movements to or from construction sites on local or arterial roads past schools and childcare/preschools 7.30 to 9.30 am and 2.30 to 4 pm given health and safety risk of heavy vehicles mixed with children crossing roads, many without traffic light control and the risks of increased diesel exhaust in the area for the health of children walking to and from school
- **I OBJECT** to the potential for vibration damage to the Coal Loader heritage structure. It consists of quite rare WWI era unreinforced mass concrete, including arches and unreinforced walls. **CONDITIONS** of approval must be the assessment of the ability of this structure to withstand proposed vibrations without damage and accelerometer monitoring during works.
- Further **I OBJECT** to the use of Heavy Impact Equipment in the tunnels in the vicinity of the Coal Loader, and call for its prohibition in this area to be a **CONDITION** of approval**.**
- **I OBJECT** to the inadequate modelling and documentation relating to Early Works at Berrys Bay. Noise contours shown for the Standard Hours Early Works Fig TJ500-01-6-1-4-1 023-1-6(r15) on page 800 of Appendix G are shown to emanate from one point only, being at a location where NO particular construction activities are proposed. It **FAILS** to address noise levels from impact breakers digging the decline before it goes underground. It also **FAILS** to address noise generated by piledriving for the three proposed wharf structures in the bay, the location of which will cause wider noise spreading than the protected site shown on page 800 of the pdf of Appendix G.
- **I OBJECT** to the inadequate modelling of the out of hours noise at Berrys Bay as shown in Fig TJ500-01-6-1-4-1 023-1-6(r15) on page 802 of the pdf of Appendix G. This shows noise centred around the loadout wharf and associated service wharf but fails to address point source noise from the tunnel ventilation intakes and exhausts and associated motors nor the water plant, all of which will presumably operate 24/7. Any approval should **CONDITION** this work to be redone to address all noise sources.
- **I OBJECT** to the inferred construction sequence at Berrys Bay where it appears that the decline excavation will occur before the acoustic building is erected to cover it. Any approval should be **CONDITIONED** to require the acoustic shed to be constructed before decline excavation.

- **I OBJECT** to the failure to properly address the impact of 24 hour concrete agitator truck deliveries to the Berrys Bay construction site and elsewhere on the project. With four faces being worked progressed simultaneously, it is not credible (nor demonstrated by data) that only one truck per hour will be required to keep up with shotcrete demands on an ongoing basis. Note also that one truck per hour results in two truck movements along Balls Head Road and tributary roads, with sleep impacts for a great many people. Any approval should **REQUIRE** that night delivery vehicles be fitted with noise suppression equipment to exhausts and engine bays and that this be tested before such vehicles are permitted to make night deliveries. Note that this is no more demanding than the strategy implemented at Gore Bay where oil tankers are excluded if they fail noise abatement criteria.

- **I OBJECT** to the high level of noise predicted during night operations at Berrys Bay site. As the resident of the house (2A Larkin St) closest to the tunnel adit, I presume from Table 5.97 on page 254 of Appendix G that my house is predicted to experience Sleep Disturbance and Awakening levels of noise during tunneling operations. These operations include concrete deliveries and tunnel fitout deliveries, and will extend for a number of years. **I STRONGLY REQUEST** that the mitigation measures foreshadowed in Clause 5.7.2.6 of Appendix G be **REQUIRED as a CONDITION** of approval.

- **I OBJECT** in principle to the failure of the EIS to specifically identify house and other buildings which will be affected by noise, and the level to which they will be affected. The tabular results of Tables 5.96 and 5.97 should be **REQUIRED** to be shown on large scale maps. In that regard, the type of presentation shown on page 844 of Appendix G (vibration information) is insufficient in detail to allow a resident to properly understand the impact on his residence, whereas the Ground Borne Noise graphic on page 828 is sufficiently clear.

- **I OBJECT** to the high levels of ground borne noise to which residents over the tunneling will be subjected, and in particular the noise produced by impact hammers relative to roadheaders. By comparing page 823 with page 828, the additional effect is obvious. Any approval of the project should be **CONDITIONED TO PROHIBIT THE USE OF LARGE ROCK HAMMERS FOR BENCHING.** Where use of Large Rock Hammers is unavoidable (if at all), they should be **CONDITIONED** to only be used during normal working hours to prevent excessive sleep deprivation for those affected.

- I propose that as a **CONDITION,** noise reduction pavement be specified on the Freeway especially where any lanes are changed and at the tunnel portals to reduce impacts of increased traffic volume

- **I OBJECT** to the **FAILURE** to model noise and vibration effects due to whatever connection is proposed to Waverton Park as shown on Figure 2 above.

HERITAGE

- **I OBJECT** to the poor heritage assessment carried out for the BP Site in Berrys Bay and reported in Appendix J. It appears that the main area to be used for construction was not even inspected on foot, but merely viewed through the fence, (see photos Figures A..7.11 and A.7.12) and this is despite the fact that RMS owns the land and is the keyholder for the access gate. In *Table A.7.3, Item 6, Stone and concrete foundations* it is stated that "During field survey, the location of this feature was not accessible." The laziness of this is indicative of a shallow, form filling

approach to heritage which shows no respect whatsoever for the subject. To leave the proper investigation till later, as proposed in *Appendix J Section 7, Management of Impacts*, by photographic recording prior to bulldozing, is lazy and disrespectful. This aspect of the EIS should be **REJECTED** and **REDONE** before assessment. Indicative of this shallow assessment is Figures 5-13 and A.7.6 which show two areas, A & B, of archaeological potential yet excludes the area to the east where there are artifacts of prior industrial usage including excavated rock faces and concrete structures which will be destroyed by the proposed decline tunnel.

- **I OBJECT** to the proposed siting of one of three wharves in Berrys Bay. The wharf proposed near Woodleys Shed has the potential to destroy any remaining evidence of use of the site by the NSW Torpedo Corps, an aspect of the military history of Sydney Harbour which carries high interest among those interested in the history of the defence of Sydney Harbour. The every existence of potential archaeological remains of this slipway are not mentioned at all in Clause A& of Appendix J although mention is made of onshore usage by the Corps in other areas of the EIS. Instead of the proposed wharf siting, I **PROPOSE** that any approval be **CONDITIONAL** on the location of this wharf being moved so that it clears the NSW Torpedo Corps slipway area and does not require dredging of that area.
  I FURTHER PROPOSE that as an act of goodwill, that the proponent negotiate with relevant stakeholders with a view to installing a wharf which can be left on completion of the project and provide a lasting item of value as part of repurposing Berrys Bay. Such stakeholders would include North Sydney Council, Waverton Precinct/SaveBerrys Bay,Waverton Peninsula Working Group and possibly representatives of kayak/boat user groups.

- **I OBJECT** that Section A.6.2 of Appendix J provides an inadequate description of the heritage features of the site in that it omits entirely any description of the slipways and associated winding gear which were the core of the business for most of Woodleys life. The extant remains, including the concrete aprons, rails and winding gear have heritage significance and should be assessed and **SPECIFICALLY PROTECTED** as part of early works.

- **I OBJECT,** as laid out above in the section LAYOUT above, that the heritage fabric of the Coal Loader dolphins are at risk from a clash with the proposed cofferdam, which should be relocated.

- **I OBJECT** to the failure of the EIS to address the heritage aspects of the proposed link to Waverton Park/Carradah Park as shown in Fig 2 above. If such link is intended to break out into the semi-circular excavated rockface forming the perimeter of one of the BP tanks, then a full heritage impact statement should be **REQUIRED** as it will mar the integrity of the current configuration.

DREDGING

- **I OBJECT** to the proposed method of excavating contaminated sediments for the installation of the immersed tubes. Silt curtains are nothing more than a prop to make the public feel safe when they will have no material beneficial effect whatsoever in a location where work will proceed as tidal currents sweep any spillage either upstream or downstream, circulating at will to distribute any contamination momentarily restrained by a curtain only a few metres deep. Their proposed use is an insult to the intelligence of the community. As a minimum, any approval should be **CONDITIONED** to require that the clamshell work raising contaminated fill be fully enclosed over the full height of the water column by means of a moveable cofferdam or similar.

- **Contaminated seafloor in Berrys Bay**: The document *Technical Working Paper: Contamination* reports at p56 that sampling was taken at the Sydney Harbour crossing and WHT3 and WHT7 support sites. Contaminant levels above guidelines were detected to 1.5m. (p68). In light of this, it is an omission that this contaminated material is not addressed where dredging is proposed in Berrys Bay at the sites of the three new wharves. Further, there is no reference in the contamination reports to residues of the oil spill which occurred in Berrys Bay when it was a working oil transfer port which resulted in a layer of contaminants across the seafloor and beach. Any approval must **CONDITION** that a proper study of the seafloor in Berrys Bay be carried out and that both dredging and piling be carried out in such a way that contaminants are either not disturbed or fully contained by a moveable cofferdam or similar.

MATTERS OF PRACTISE

As a formal CONDITION of any Approval for this project I insist on the following:

- **NO CLAUSE** in any sale/lease contract preventing development of public transport or mass transport options on routes served by/parallel to the tunnel (unlike the M2 arrangements that prevented the North West Metro for 20 years)
- No Western Harbour or Beaches Link tunnel approval until the above **REQUIRED EIS REWORKS** are done and until NorthConnex (due to open mid 2020) has been open and operating for 18 months with at least 12 months of full operation air quality date available and reviewed as proof of "concept" for unfiltered stack on a long (9km) urban road tunnel using longitudinal ventilation
- Increased green and open space returned to the community as compensation for project traffic & construction impacts. Landbridging of the Warringah Freeway should be **ACTIVELY CONSIDERED** as part of the required price for social acceptance of this project.
- Dust suppression – noting the school population has been grossly underestimated in the dust impact analysis (100 estimated as schools population in Appendix H when local schools at or built for capacity of at least 1000 students each), all measures contemplated to reduce this High risk of High impact to over 18,000 sensitive receivers must be **CONDITIONED** if the projects are approved.
- Before commencement of the work, plans and dedicated budget for the repair of all nominated construction sites at the end of the project to be **RELEASED AND BACKED BY GOVERNMENT COMMITMENT.**
- Ventilation Buildings housing tunnel exhaust scrubbing equipment **TO BE UNDERGROUNDED** rather than occupying existing green space.