Beaches Link EIS submission by Peter Egan

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I object to the Beaches Link as presented in the EIS due to the following:

--- The WHT-BL-WF project is a departure from the three-quarter built previous plan for a North Western Motorway and Warringah Freeway to the northern Beaches. It is a far inferior project created to make it difficult for a future government to cancel the Beaches Link as envisaged.

--- It accepts, rather than addresses vehicle pollution when an easy solution is to phase-out use of internal combustion engine vehicles in favour of battery-electric and hydrogen powered vehicles – a measure being announced in other countries.

--- If the project proceeds the changes suggested in this submission should be adopted to improve service and environmental outcomes for the North Shore and Sydney and particularly Artarmon.

BL EIS Appendix F, Annexure B (Figure 1) shows that just 25% of BL traffic is expected to use the western link through Artarmon. The Warringah Freeway-Gore Hill Freeway has the capacity for this traffic.

Blue – traffic increase, Yellow – traffic decrease
Thick blue lines at left illustrate extra traffic approaching/departing Reserve Rd due to RMS imposed restrictions on main road connections).

Figure 1 – Extract BL EIS App F Annex B – BL induced traffic changes

The project itself has poor connectivity issues and is 4 km longer than necessary as the maximum tunnel grade has been reduced from 6% to 4% as trucks pollute more on steep grades.

Trucks represent just 5% of expected traffic, and trucks of concern about 1%.

At a 6% grade, Beaches Link could have connected to the Warringah Freeway and Western Harbour Tunnel with a direct path from the Middle Harbour crossing to Tunks Park and upto the motorways at Cammeray under Cammeray Golf Course.

Detailed comments follows.

The better project – completing the North Western Motorway

The North-Western Motorway, from the Sydney CBD to the M2, is two-thirds complete missing tunnels under Drummoyne and Lane Cove and bridges across water crossings.

The North Western Motorway allows counter-peak flows between the Pacific Hwy and Falcon St connections. Completing the NWM allows the use of real time information to balance traffic across the harbour/Parramatta River.

The tunnel network under Rozelle had to be doubled to provide the WHT links. The extra work under Rozelle for the WHT is sufficient to complete North Western Motorway.

With a maximum grade of 6%, the Beaches Link can connect at Cammeray and make use of the connectivity of the surface motorway at this point. Figures 3 and 4.

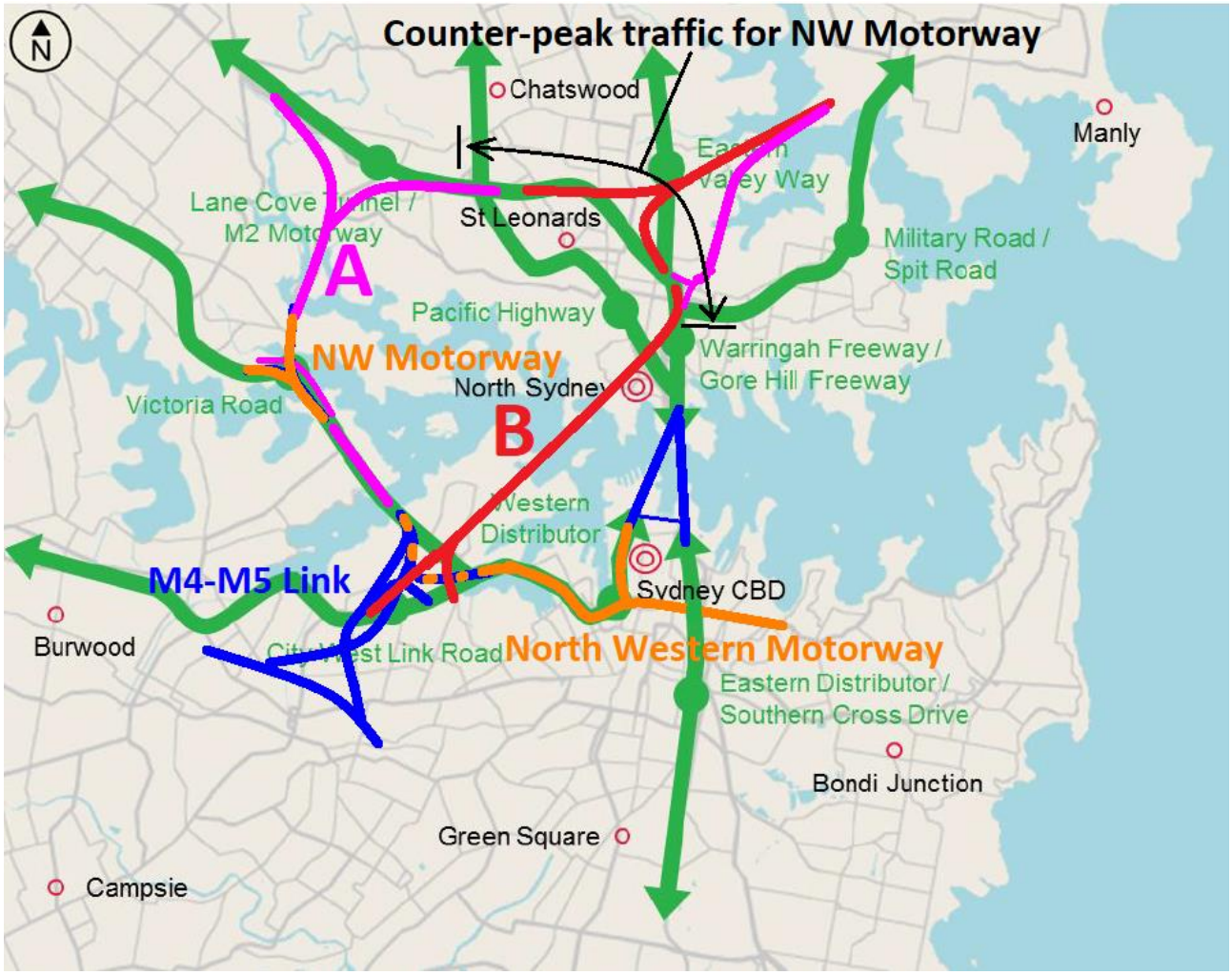
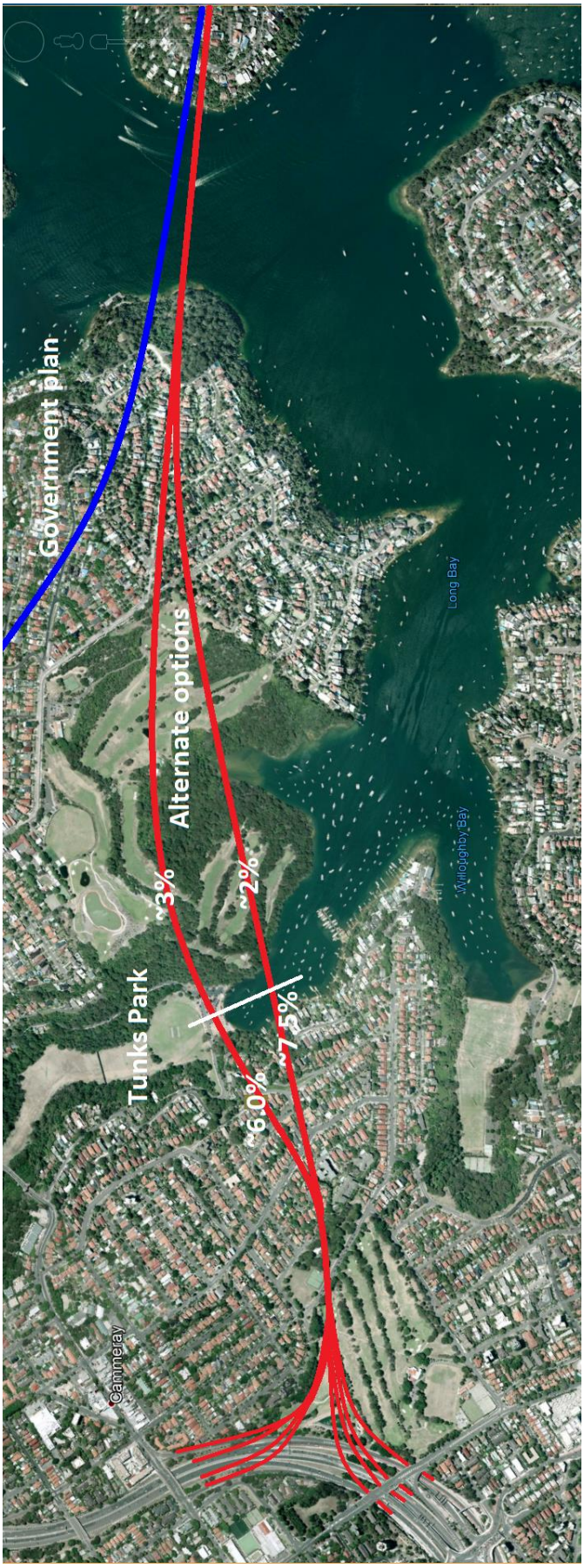


Figure 2 – The previous plan: completing the North Western Motorway with tunnels and bridges rather than huge cuttings through suburbs (route A in pink and orange). The project is route B in red)



Blue – Beaches Link, Red – a better solution (particularly the option under Tunks Park)

Figure 3 – Beaches Link option for Cammeray connection with steeper grade

Figure 4 – Illustration of Beaches Link connection at Cammeray with maximum 6% grades for 7 of 8 links

Environmental issues with the project in the EIS

Air quality

Vehicle pollution, as illustrated in EIS Appendix H Air quality, is addressed as being little changed by the project. A 2% improvement in fuel efficiency of vehicles is assumed between now and 2037. Rather than accept pollution, motorway projects should be accompanied by commitments to phase out internal combustion engines for battery-electric and hydrogen powered vehicles – the latter essentially for intercity trucks.

Loss of ground Water and related subsidence

BL EIS Chapter 16 Figure 13 illustrates groundwater draw down in 2128 (submission Figure 5).

At the end of the project (2028) it will be about 8 metres less.

The EIS advises groundwater draw-down would be further reduced by 8 metres if the tunnels are “waterproof” lined.

The EIS proposes the tunnels be lined for 300 metres – essentially to protect the North Shore Rail Line from subsidence.

Given the drawdown extent shown, the ‘waterproof’ lining should be extended for 900 metres (to Willoughby Rd) from the Artarmon portals to protect Artarmon Reserve (and its forest and threatened species) and neighbouring streets from loss of groundwater and subsidence.

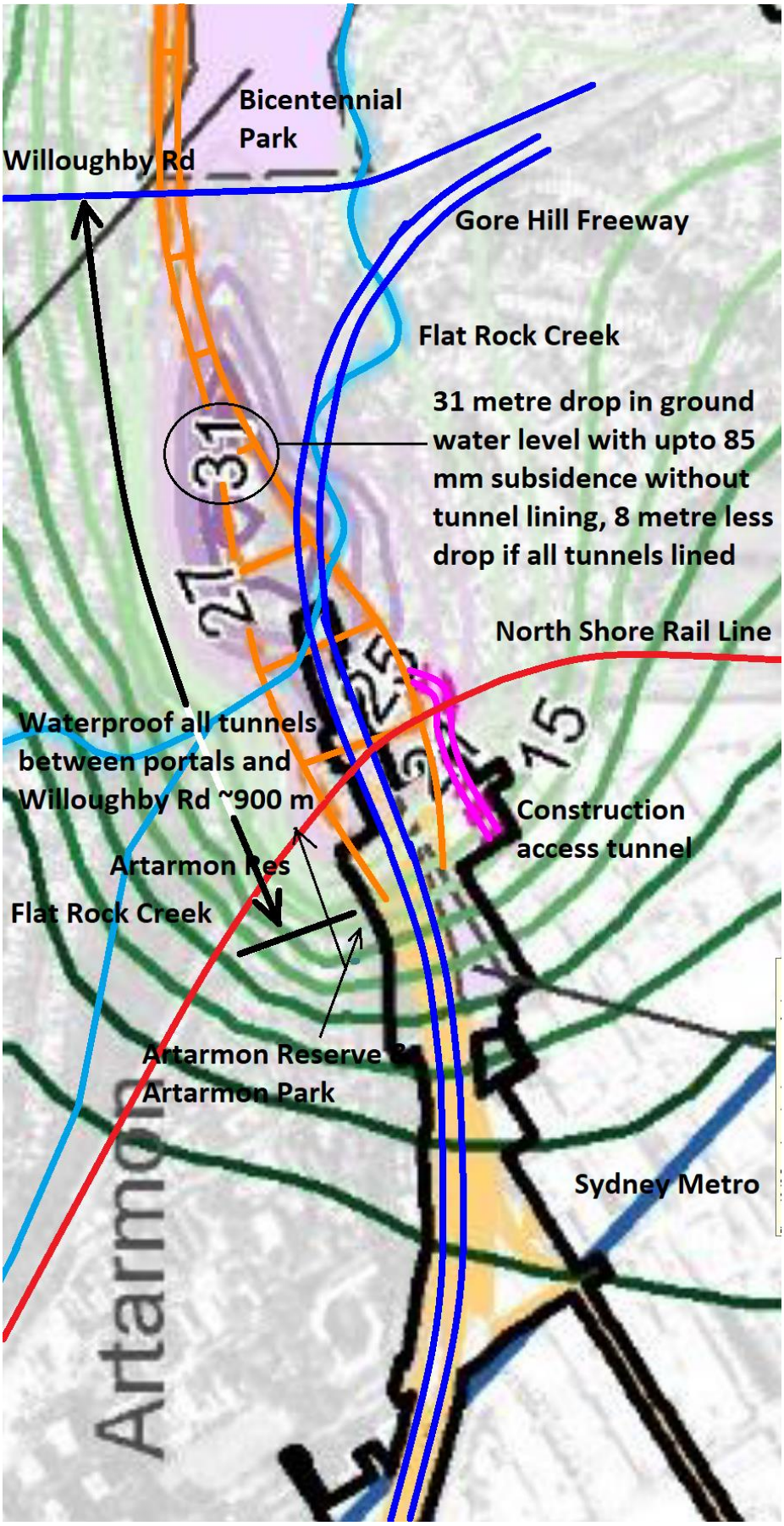


Figure 5 – BL EIS Figure 16-13 extract with major infrastructure added.

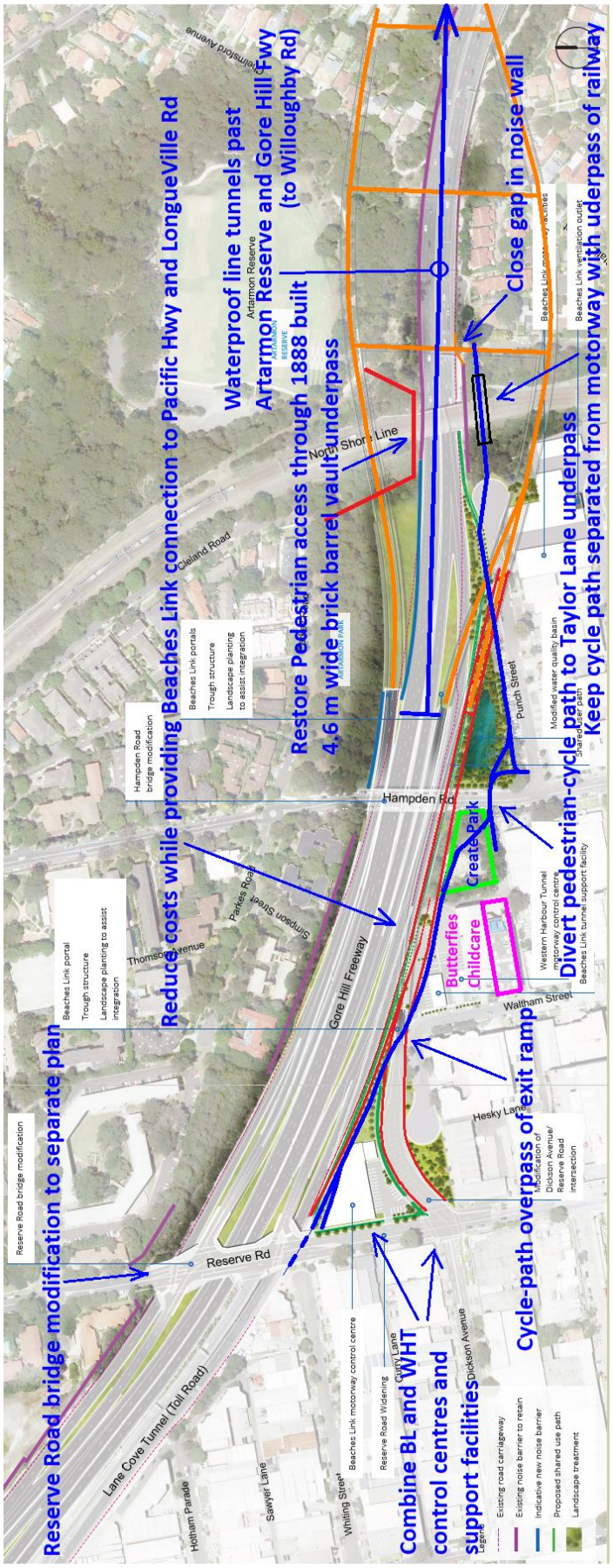


Figure 6 – Illustration of tunnel waterproof lining, BL ramp connections, cyclepath improvements, park creation and pedestrian access improvements in neighbourhood of motorway works.

Service (connectivity, congestion and resultant community impact)

Tolls

High motorway tolls result in toll avoidance strategies which are now supported by electronic navigation aids.

Virtually all suburbs across Sydney feel the weight of traffic using local roads to avoid tolls somewhere in the metropolitan area.

A consistent low per km charge with revenue going to the government would maximise motorway use and minimise local road rat-running. As revenue going to government, tolls can be varied in line with government social, economic and environmental policies. The current system of private tolls frozen for 40 years is highly destructive.

Increased traffic in Artarmon

Increased traffic through Artarmon local roads is a major adverse outcome of the Beaches Link as critical main road connections are made via local roads (managed by Council) to the avoidable detriment of the local community. The increased traffic is illustrated in submission Figure 1.

As the only other north shore entry/exit point for the Beaches Link is in North Sydney, Artarmon will experience an increase in traffic through both its residential and industrial areas as traffic heads to and from Reserve Road.

The EIS identifies the current and expected performance of various intersections, some of which are summarised in Table 1 below.

Reserve Rd/Gore Hill Freeway, Reserve Rd/Dickson Ave and Reserve Rd/Barton Rd should be regarded as one intersection 300 metres long.

The separation between them is around 90 metres and at least two must be entered to proceed to, or past, the motorway. In peak-hour, some paths, such as from Barton Rd, can take five minutes to traverse the triple intersection.

Table 1 – selected data BL EIS Tables 8.22, 8.23, 8.14, 8.15

	Do minimum				**Do something cumulative**			
	AM 2027		**PM 2027**		**AM 2037**		**PM 2037**	
Intersection	**delay**	**rating**	**delay**	**rating**	**delay**	**rating**	**delay**	**rating**
Reserve Rd/Gore Hill Freeway	61	C	55	D	60	E	51	D
Reserve Rd/Dickson Ave	14	A	**73**	**F**	27	B	**95**	**F**
Reserve Rd/Barton Rd	**69**	**E**	**>100**	**F**	**85**	**F**	**>100**	**F**
Pacific Hwy/GHF	29	B	29	C	25	B	29	B
Willoughby Rd/GHF	**>100**	**F**	38	C	10	A	11	A
Brook St/Warringah Fwy on ramp	**>100**	**F**	14	B	**64**	**E**	25	B
Brook St/Warringah Fwy off ramp	**61**	**F**	22	B	16	B	29	C
Brook St/Merrenburn Ave	**>100**	**F**	11	A	50	D	39	C
Miller St/Warringah Fwy on ramp	7	A	6	A	5	A	7	A
Miller St/Warringah Fwy off ramp	12	A	15	B	8	A	8	A

Missing connections for the Beaches Link project are:
--- Beaches Link to and from the Sydney Harbour Tunnel (however, a northbound connection may now be included with RMS's latest go at median strip placement). The Sydney Harbour Bridge must be used and traffic has to mix with Sydney CBD traffic;
--- Beaches Link to and from the Pacific Hwy. Dickson and Reserve Roads must be used.
---Beaches Link to Longueville Rd. Dickson Rd and Pacific Hwy must be used.

A missing Gore Hill Freeway connection is from the Pacific Highway northbound.
--- Campbell St and Reserve Rd must be used, or Howarth Rd must be used for a U-turn.
--- Northbound traffic could also go to the Lane Cove CBD and do a U-turn at the roundabout, or turn right onto Mowbray Rd and approach the Reserve Rd entry via the Artarmon Village.

Sydney Metro EIS City & SW EIS tech paper 1 -traffic and transport Figure 3.8 ((Chatswood dive site assessed intersection locations - base and construction level of service)) somewhat disagrees with the BL EIS traffic data (submission Figure 7). However, it indicates traffic improvements are also required on the Pacific Hwy.

Figure 7 - Sydney Metro City & SW EIS tech paper 1 -traffic and transport Figure 3.8 - Chatswood dive site assessed intersection locations - base and construction level of service

The RMS has tried to maintain two-phase signalling along the Pacific Hwy, but often has two 1.5 phase signals at intersections. Three and four phase signals can be fitted in the time given for signal cycles at present – 1.5 to 2.5 minutes depending on time of day and congestion.

The 3 km of Pacific Hwy (A1) from Boundary St to Longueville Rd is a major source of North Shore traffic congestion due to lack of right turn provision to maintain the some-what mythical two-phase regime. The lack of right-turn capacity is as follows:
--- Boundary St (A38) – extra right turn lane
--- Fullers Rd (A38) – extra right turn lane
--- Mowbray Rd – 2 right turn lanes Pacific Hwy southbound (in Sydney Metro EIS and approved by Council); and on right turn lane for Mowbray Rd West to turn onto the Pacific Hwy.
--- Gore Hill Freeway ramps (M1, M2) – two right turn lanes for Pacific Hwy northbound to turn onto Gore Hill Freeway and Beaches Link.

Artarmon Park restoration and pedestrian links between Artarmon Park and Artarmon Reserve

The stopping of organised amateur sport in 2020 to minimise Covid transmission has revealed a high demand to use Thomson Park Artarmon by the local residents. Organised sport should more elsewhere. The restoration of Artarmon Park over the motorway will yield two football fields while retaining the forest along Parkes Rd. See Figures 22 to 24

Temporary cyclepath during construction

The Station St/Francis St route proposed in the EIS has a 30-metre rise in height from the Flat Rock Creek crossing to the Lambs Rd railway overpass – much of this at a 10% grade. A better location for a temporary cyclepath is along the western side of the railway embankment as illustrated in Figures 25 to 28. This route has an 11 metre height increase at a grade of about 12% over a length of 90 metres.

Beaches Link, Gore Hill Freeway and Pacific Highway connection improvements

Works to improve arterial road performance, reduce rat-running through the North Shore, particularly Artarmon, and cut project costs are proposed in Figures 8 to 21.

As the works suggested are cheap relative to the project, they should be done in conjunction with the project. Project saving to be made are:
--- Signalizing the Pacific Hwy/Dickson Ave intersection:
--- Reduced length of tunnel for Beaches Link exit to Reserve Rd.

A prime outcome of the proposed Pacific Hwy works is a reduction of traffic on local roads that would prefer to be on arterial roads. This has major benefits for local residents and local businesses in suburbs like Artarmon.

Another prime outcome is saving over five minutes on many journeys where Beaches Link, Gore Hill Freeway and Lane Cove Tunnel travel is preferred.

The EIS has North Shore Beaches Link egress at Alfred St North, North Sydney and the Reserve Rd/Dickson Ave intersection, and entry at Berry St, North Sydney, Longueville Rd, Lane Cove and Reserve Rd.

The RMS proposals worsen traffic on Reserve Rd and connecting roads which is not adequately ameliorated by RMS proposed traffic changes on Reserve Rd. Indeed, it appears some traffic improvement will lead to project savings.

The traffic measures proposed include:

A) Alternate Reserve Rd-Gore Hill Freeway intersection options for improved Level of Service (LoS).

B) Bifurcation of the Pacific Hwy on-ramp to the Gore Hill Freeway to also serve Beaches Link - attached

C) Bifurcation of the Beaches Link exit ramp to the Reserve Rd-Dickson Ave intersection, to provide a link to the Gore Hill Freeway's Pacific Hwy & Longueville Rd exit ramp. This link is parallel to the Beaches Link connection to the Lane Cove Tunnel. To facilitate this link, the Tier 1 pedestrian-cycle path is directed along the Punch St alignment to pass under the Hampden-Herbert road at the Taylor Lane underpass. This measure reduces 'cut & cover' tunnel length and likely reduces costs. - attached

D) Addition of a right turn for northbound traffic on the Pacific Hwy to directly access the Gore Hill Freeway and Beaches Link

((Measures D) and E) avoid the need to signalise the Pacific Hwy-Dickson Ave intersection. The Pacific Hwy already has two signalised intersections 220 metres either side of Dickson Ave at Hotham Pde and Campbell St. The Dickson Ave signals would cause a deterioration in Pacific Hwy performance.))

E) Provision of a right turn for eastbound traffic on Mowbray Rd West to access the Pacific Hwy southbound - attached. This directs traffic heading to the motorway and North Sydney directly there via the Pacific Hwy, rather than via the Artarmon Village and local roads including Reserve Rd.

F) Provision of a right turn for southbound Pacific Hwy traffic to access Mowbray Rd West - this has the effect of reducing Pacific Hwy southbound traffic passing through the Pacific Hwy/motorway intersection to turn right at Longueville Rd. This provision was a proposal of

Sydney Metro (TfNSW agency) to replace the 'G' to Mowbray Rd West eliminated when Sydney Metro removed the Nelson St bridge across the rail corridor. Council has approved this work via a Council resolution.

G) Provision of a second right turn lane from the Pacific Hwy at Fullers Rd and Boundary St.

Measure F) increases signal phases at the Pacific Hwy-Mowbray Rd intersection from 2.5 to 3.5 phases.

Measure E) increases signal phases at the same intersection from 3.5 to 4 phases.

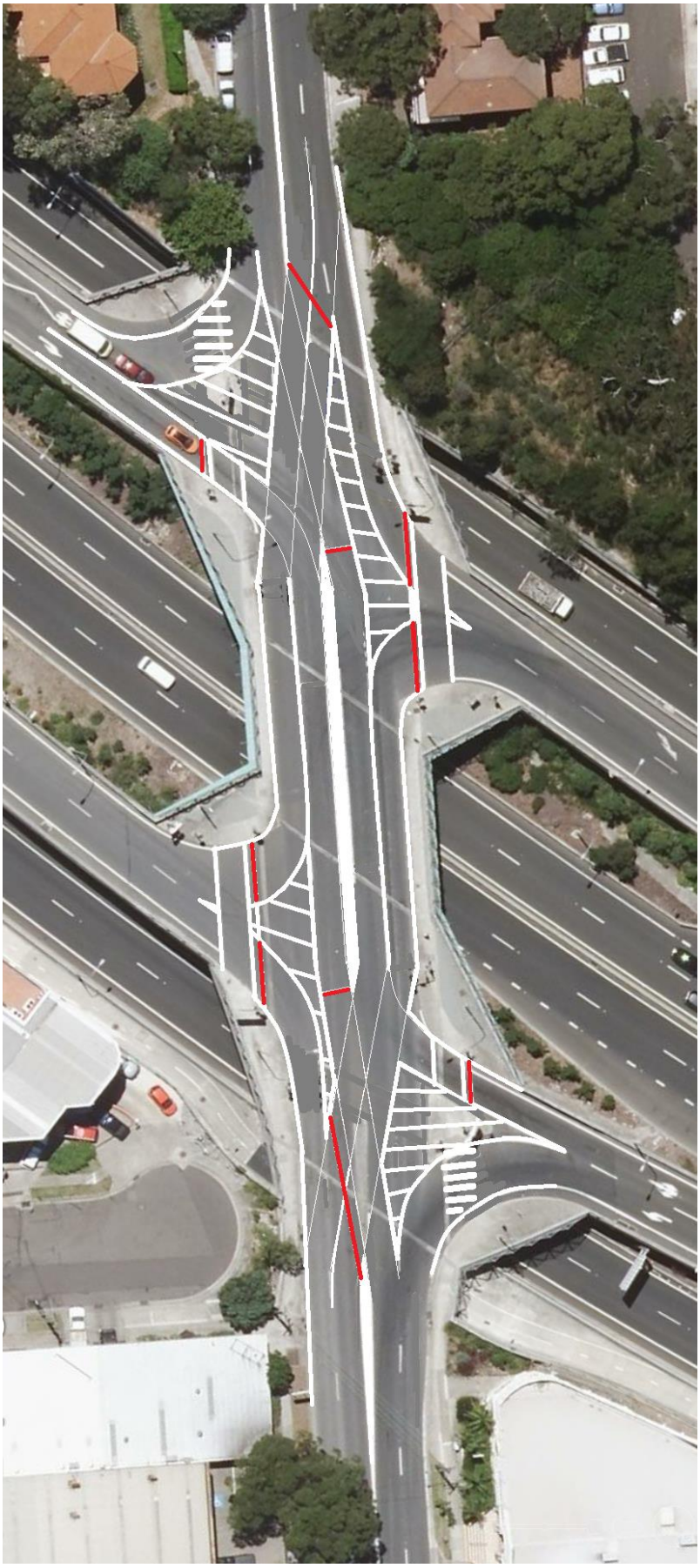
Measure D) increases signal phases at the Pacific Hwy-GHF intersection from 2 to 3 phases.

In the key AM peak southbound direction of the Pacific Hwy, traffic is reduced by one-third between Boundary St and Mowbray Rd. There is capacity on the Pacific Hwy for more traffic south of Mowbray Rd.

The Pacific Hwy-Fullers Rd intersection is effectively two 1.5 signal phases (effectively 3 phases). The Pacific Hwy-Boundary St intersection is 2.5 signal phases.

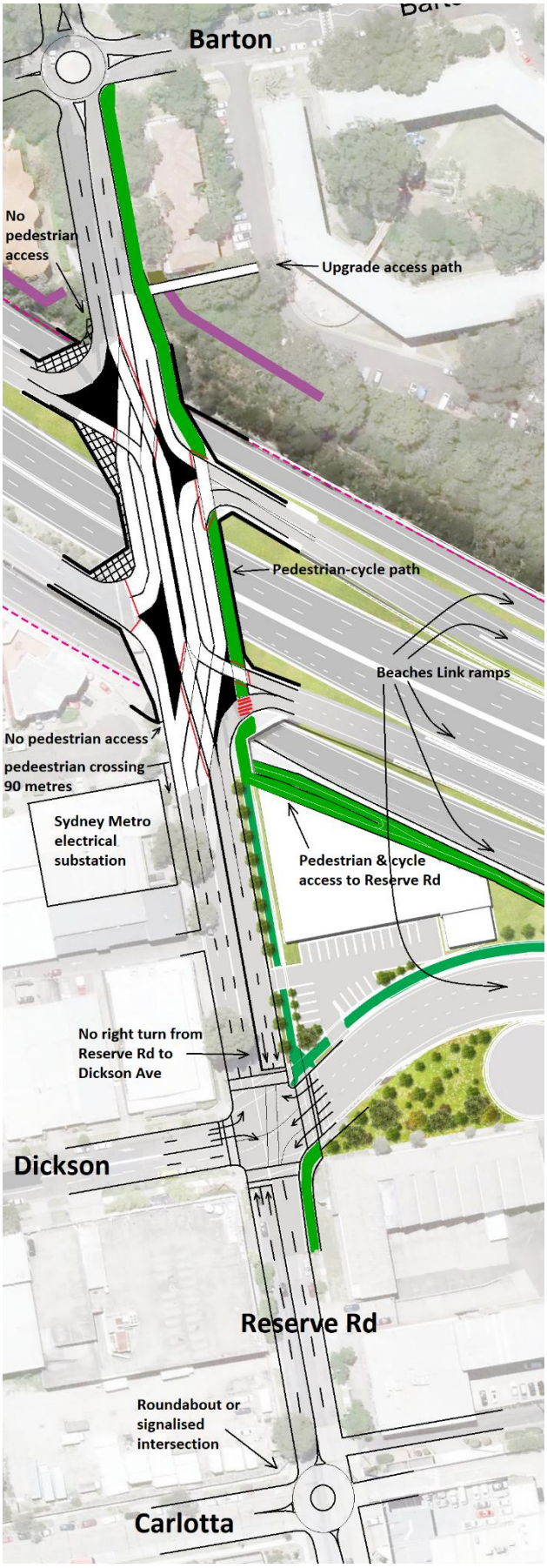
The large volume of traffic turning right off the Pacific Hwy to continue on the A38 corridor, is presently constrained to a single right turn lane at each location - reducing time for other traffic to transit the intersection.

Due to reduced traffic, and the long signal cycles needed at Fullers Rd and Boundary St, there is cycle time capacity for extra phases at the Pacific Hwy-GHF intersection and Pacific Hwy-Mowbray Rd intersection.



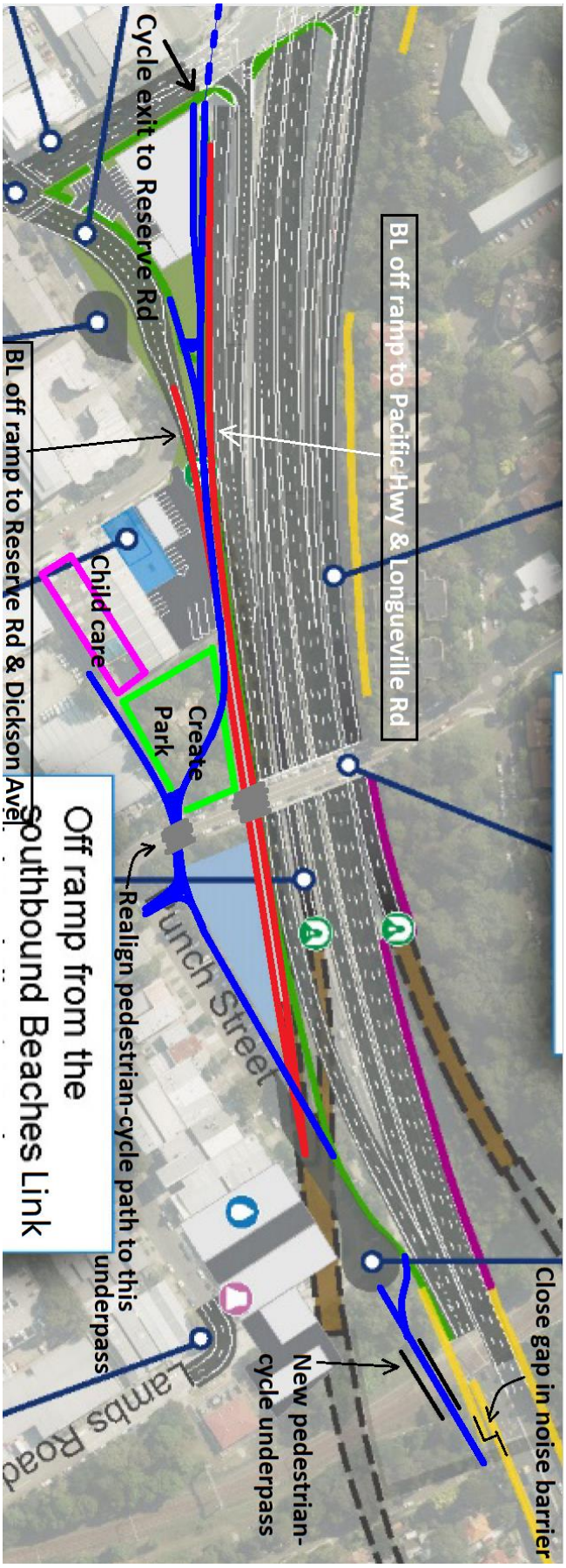
This change could be implemented immediately. Include the changes suggested in Figure 8 at Dickson Ave (right turn ban), Carlotta St (roundabout to ease right turns) and Cleg St (permit left turns)

Figure 8 – Diverging diamond intersection with one right turn lane each way



Remove right turn to Dickson Ave. At Cleg St allow left in and left out turns

Figure 9 – Diverging diamond intersection with two right turn lane each way



Cyclepath diverted to Punch St alignment and Taylors Lane cycle underpass. Add park near Child Care centre.

Figure 10 – Beaches Link ramp to Reserve Rd and Pacific Hwy/Longueville Rd parallel to LCT connection

Figure 11 – Bifurcate on-ramp from the Pacific Hwy to provide access to both Gore Hill Freeway and Beaches Link

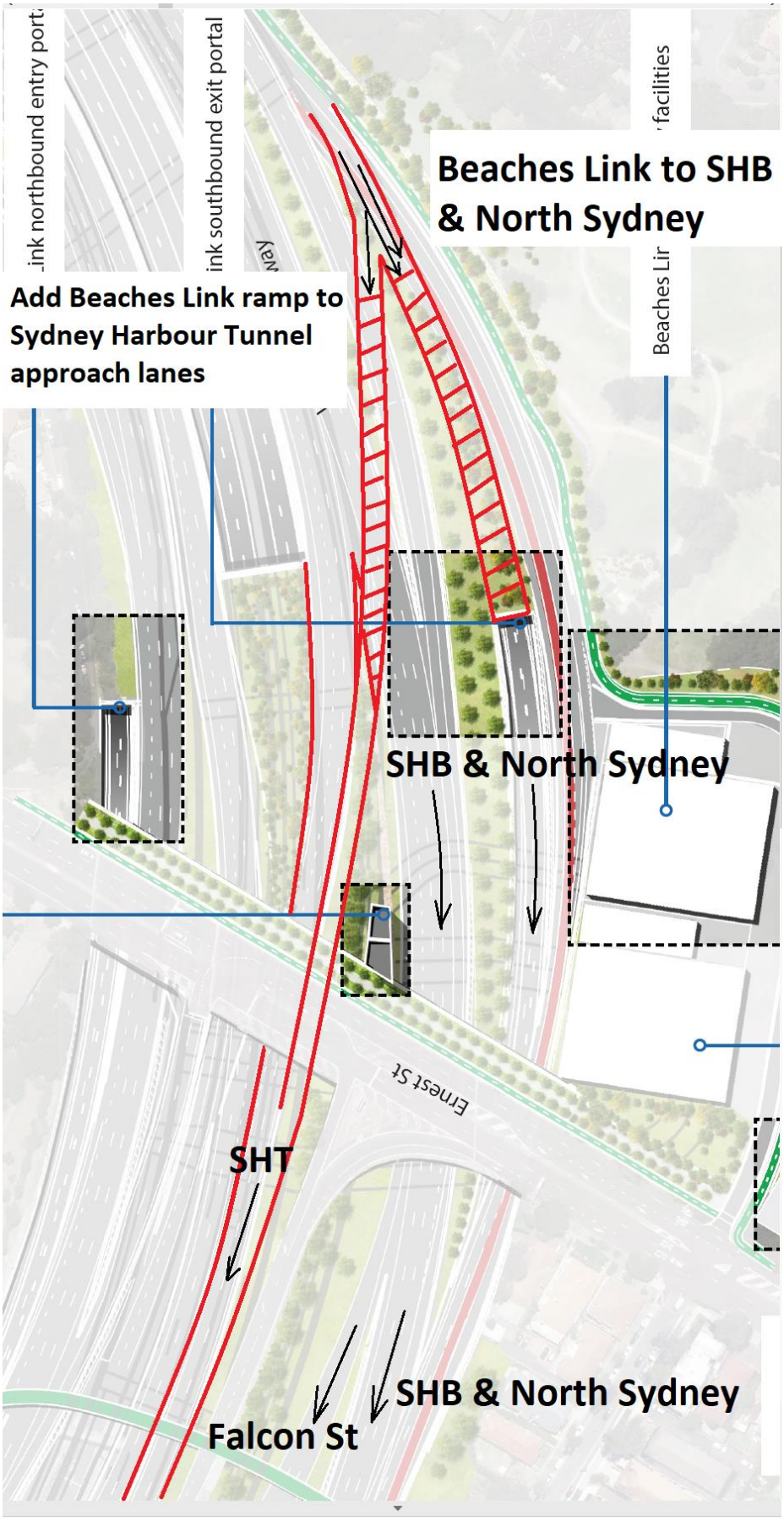


Figure 12 – Beaches Link southbound exit to Harbour Bridge and North Sydney bifurcated to provide direct link to Harbour Tunnel ramps

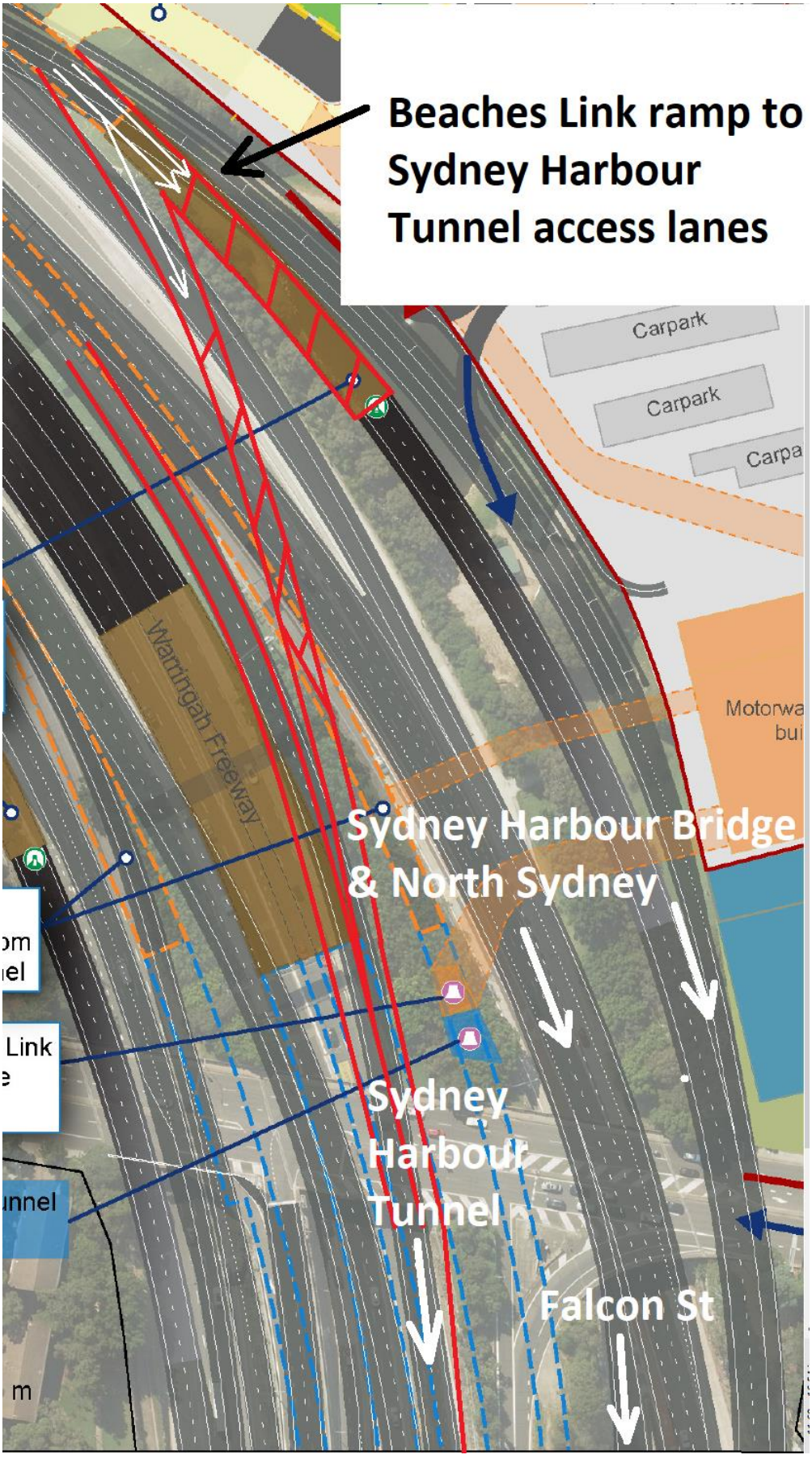


Figure 13 – 2nd illustration – Beaches Link southbound exit to Harbour Bridge and North Sydney bifurcated to provide direct link to Harbour Tunnel ramps

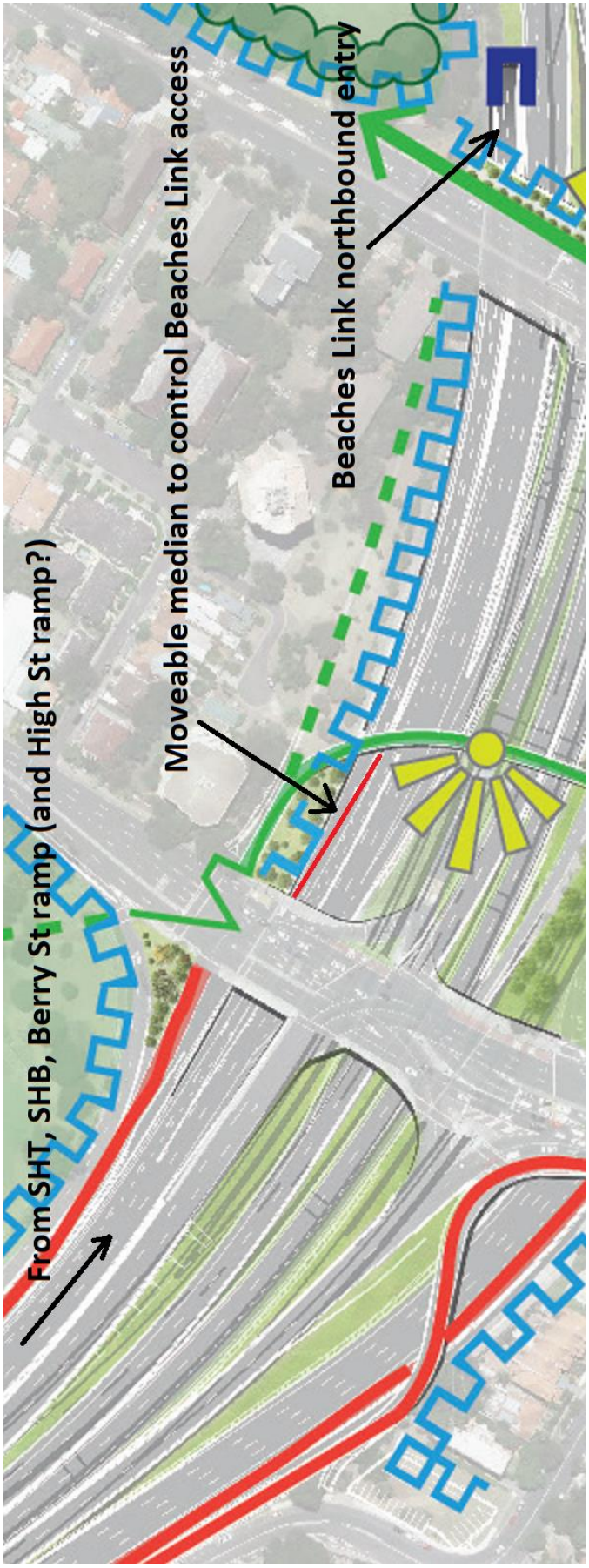


Figure 14 – A direct link from the Harbour Tunnel northbound may now be included in the works. If not, this figure illustrates the ease of inclusion

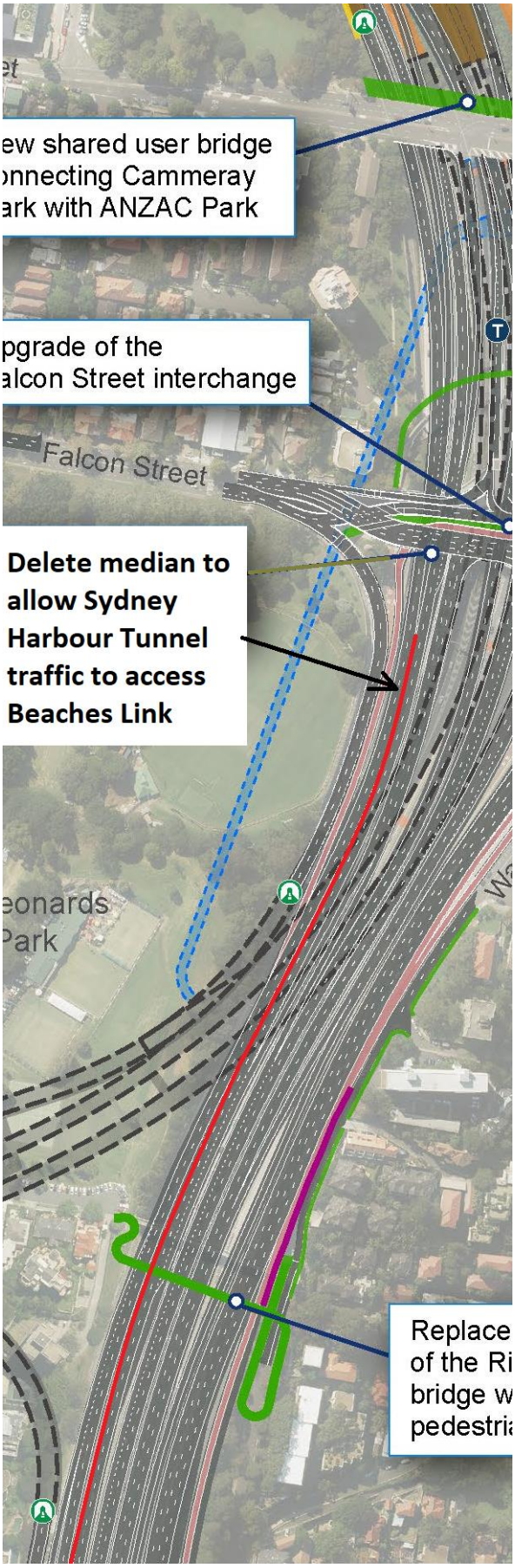


Figure 15 – WHT EIS shows a median preventing northbound access from the Harbour Tunnel to Beaches Link. If this median (red line) is still planned, it should be removed.

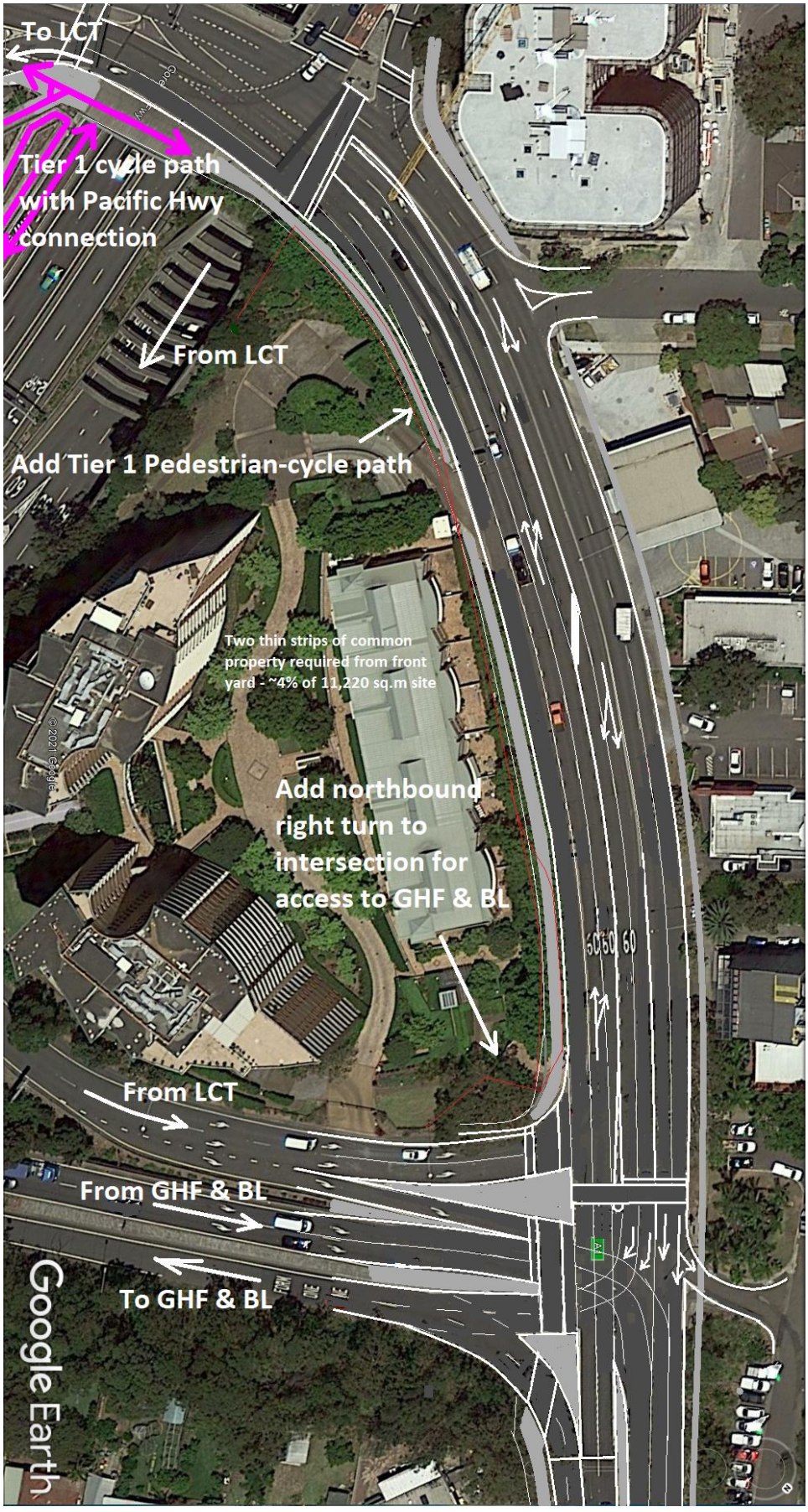


Figure 16 – Pacific Hwy-Gore Hill Freeway junction with two right turn lanes added for Pacific Highway northbound traffic to turn onto the motorway

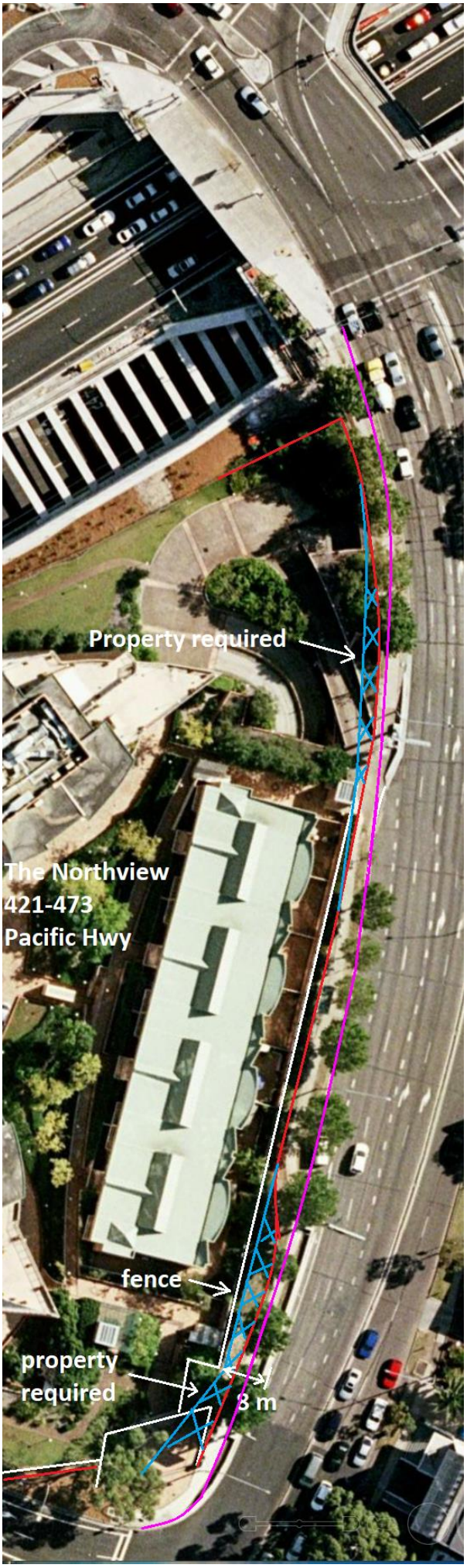


Figure 17 – impact of additional lanes at Pacific Hwy-Motorway intersection on Northview Apartments. Land requirement mainly outside property fence

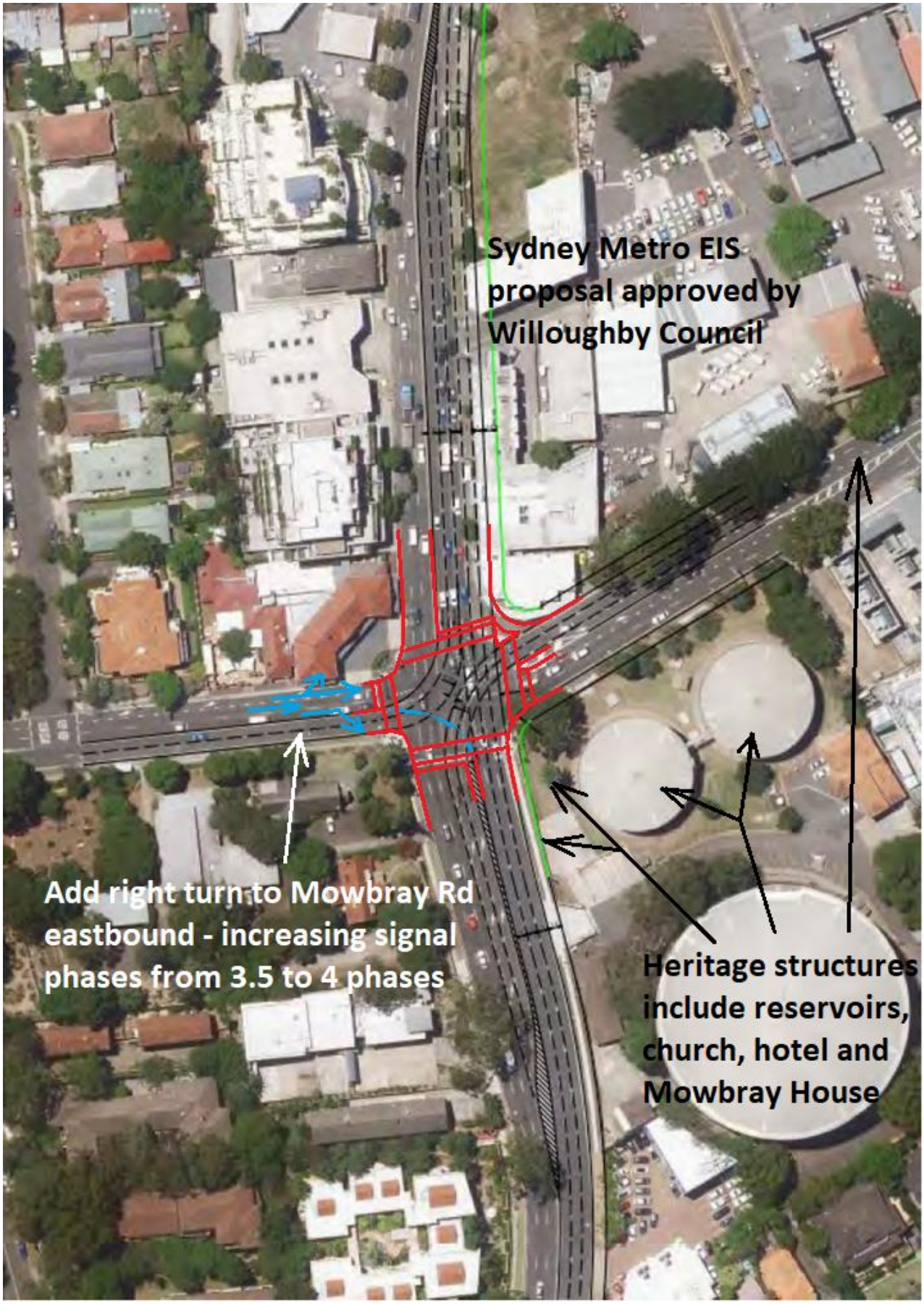


Figure 18 – Additional lanes proposed by Sydney Metro and Willoughby Council for Pacific Hwy Intersection. Proposed is a three-phase signalling. A fourth phase for a Mowbray Rd West right turn lane will fit in the signal cycle time. Compare with Figure 19.

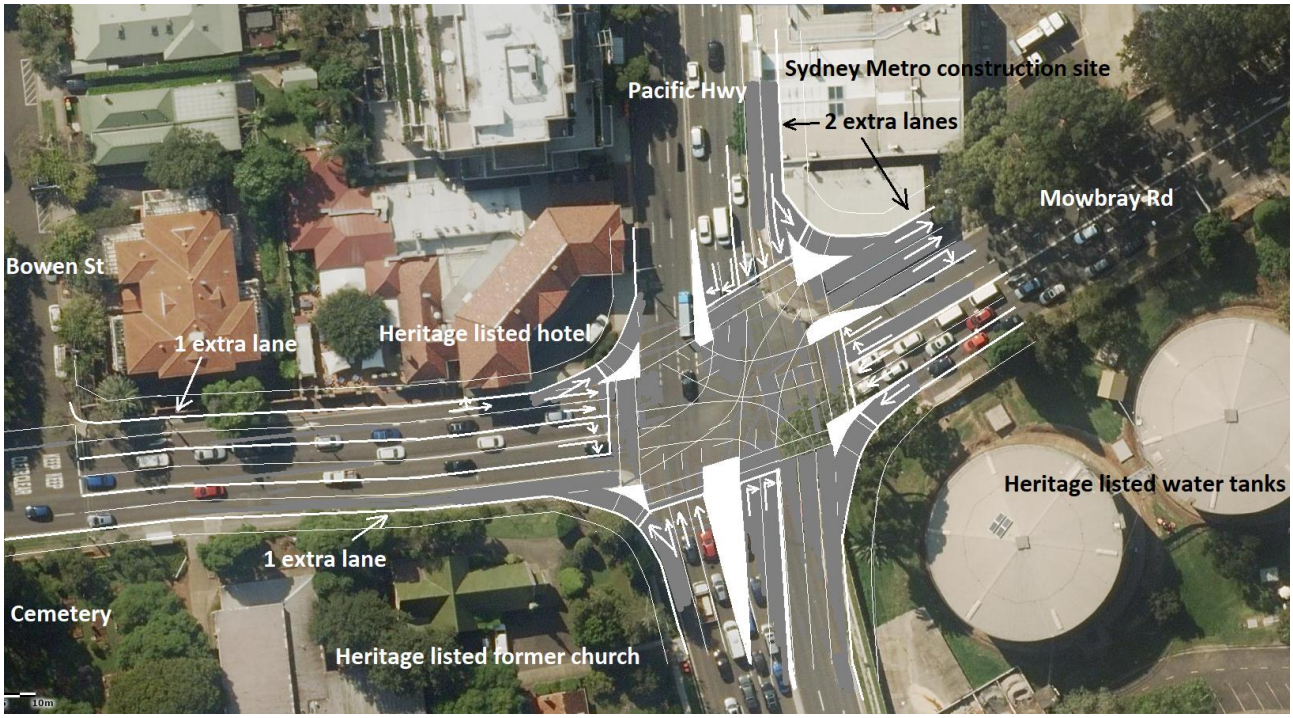


Figure 19 – RMS should consider a Pacific Hwy-Mowbray Rd intersection with better performance that of Figure 18 with small property intrusions that do not impact heritage buildings.

Figure 20 – Pacific Hwy – Fullers Rd/Help St intersection – Reduce the northbound Pacific Hwy lanes from 3 to 2 at the intersection, rather than 16 metres north, to provide a 200-metre long second right turn lane for A38 connection.

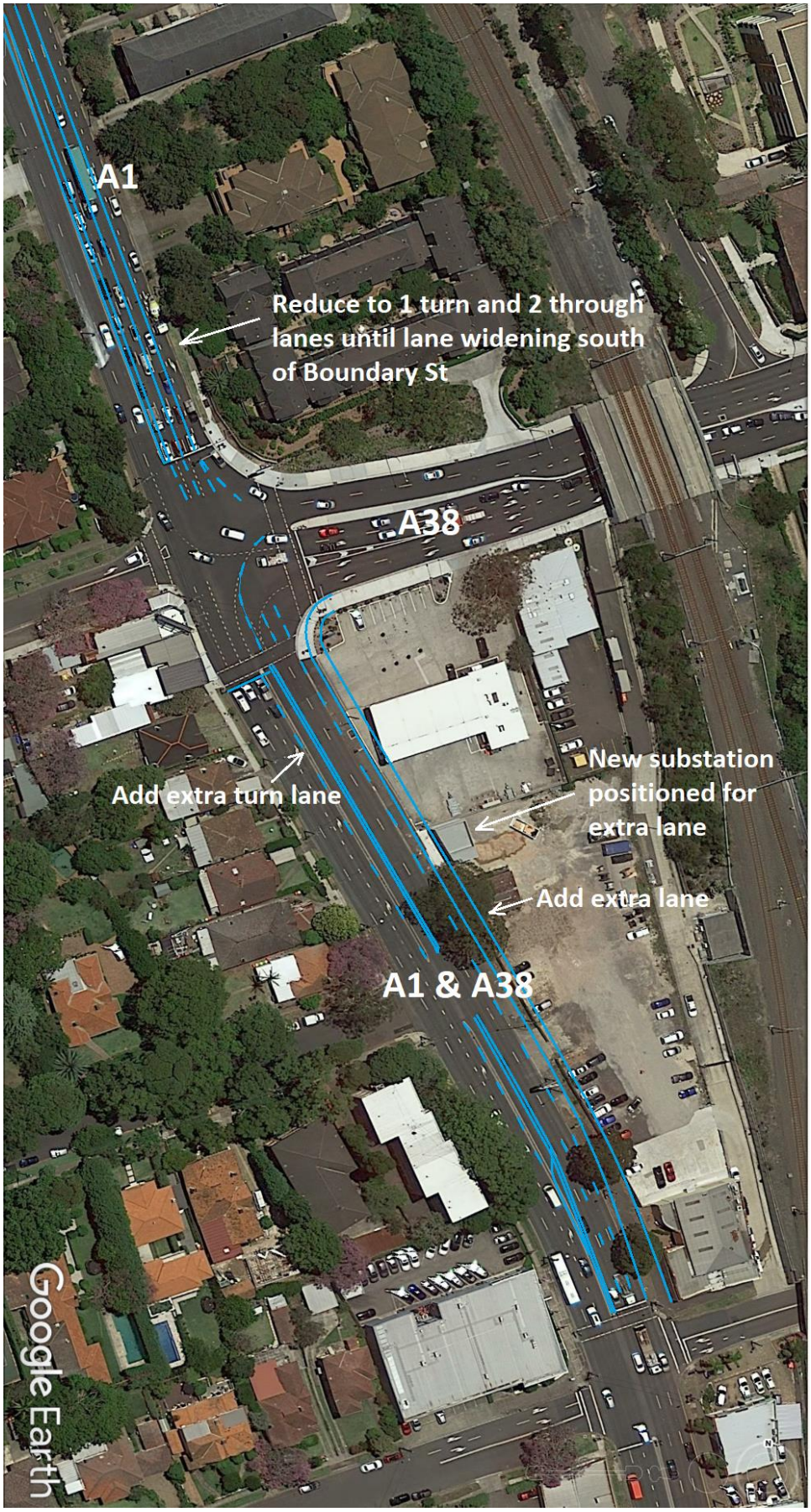


Figure 21 – Pacific Hwy/Boundary St intersection – either add theb planned extra lane south of Boundary St now, or reduce the southbound through lanes from 3 to 2 north and south of the intersection to provide and extra right turn lane 160 metres long.

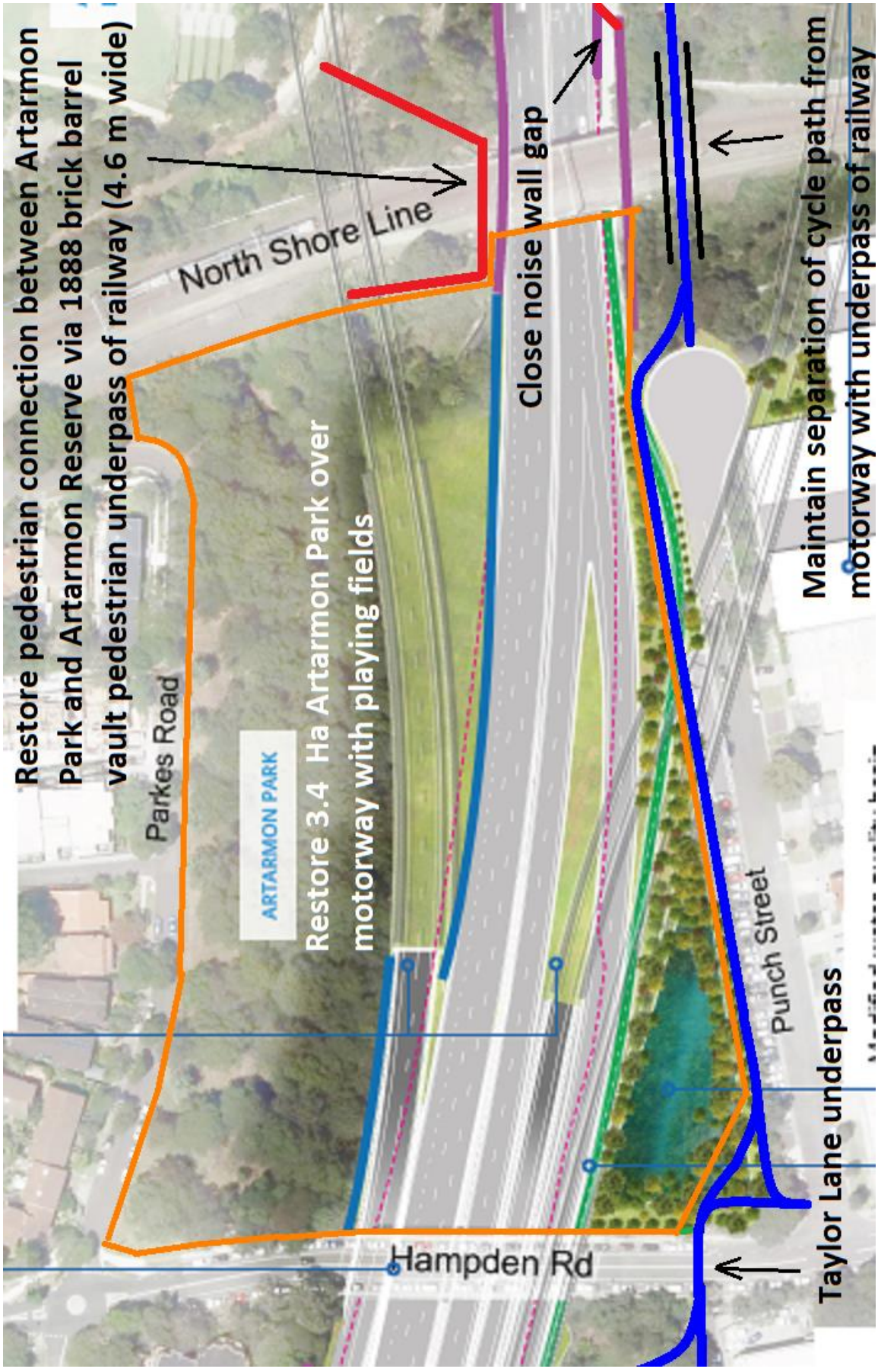


Figure 22 – Due to the lack of team sport playing fields in the Artarmon-Naremburn area, restore Artarmon Park with a deck over the motorway between Hampden Rd and the North Shore Railway Line. There is space available for two football fields while retaining the native forest along Parkes Rd.

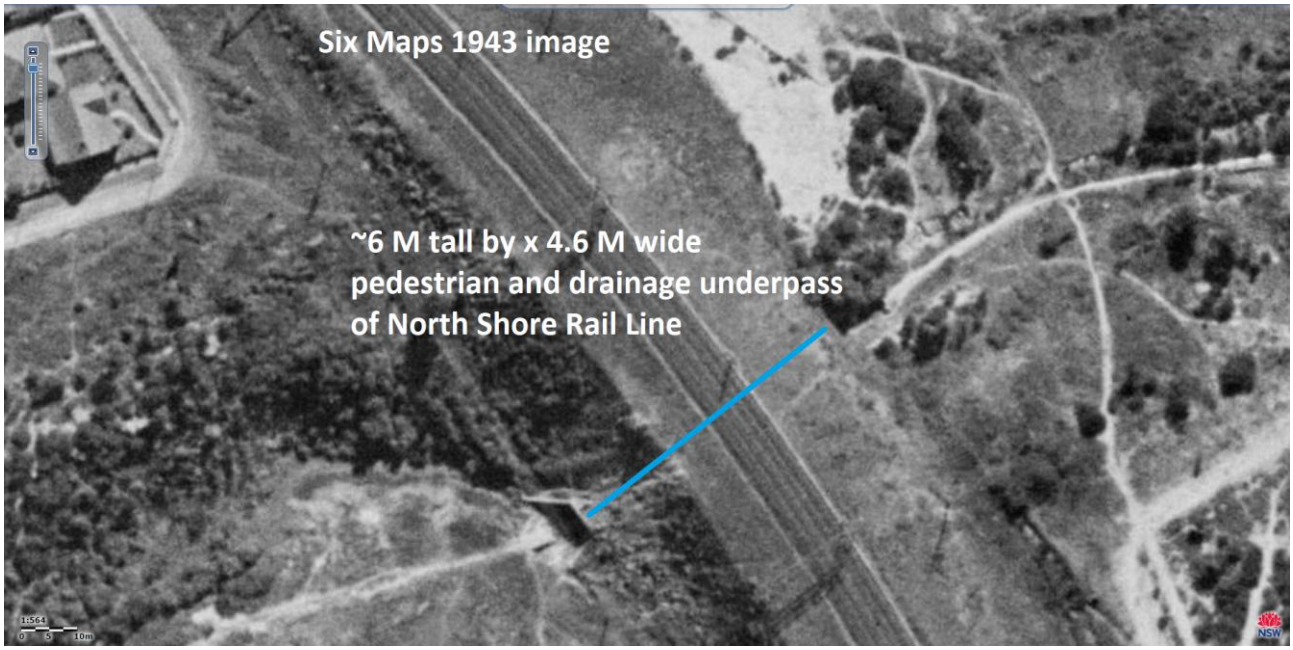


Figure 23 – A combined footpath and drain tunnel was built in 1888 to maintain access and drainage along Flat Rock Creek. This heritage 4.6 metre diameter vaulted tunnel is still there. Pedestrian access should be restored.

Figure 24 – 4.6 metre diameter tunnel (same diameter as the vaulted tunnel under Willoughby Rd) is in good structural condition. The corrugated metal extension should be removed and the headwalls restored. The brick construction must date from the railway construction in 1888.

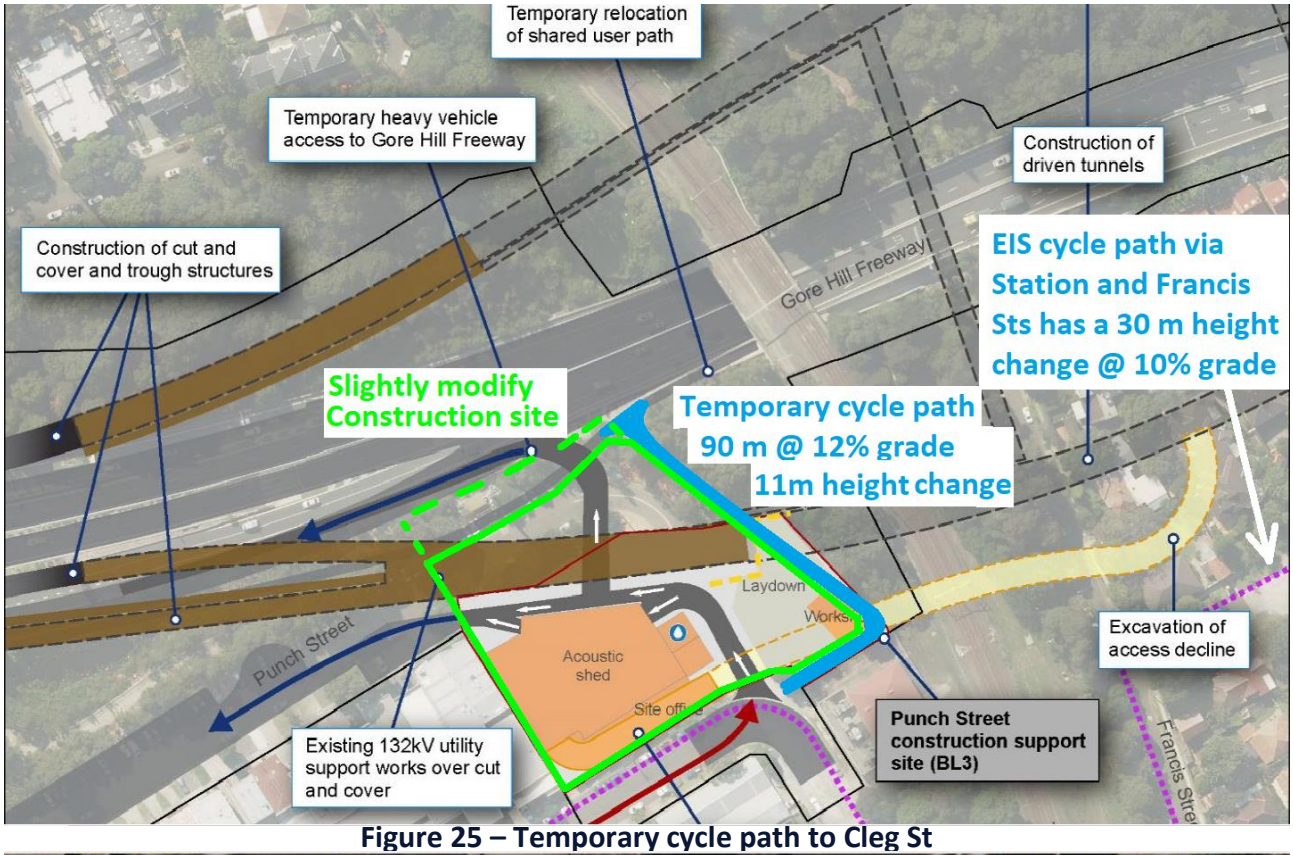


Figure 25 – Temporary cycle path to Cleg St

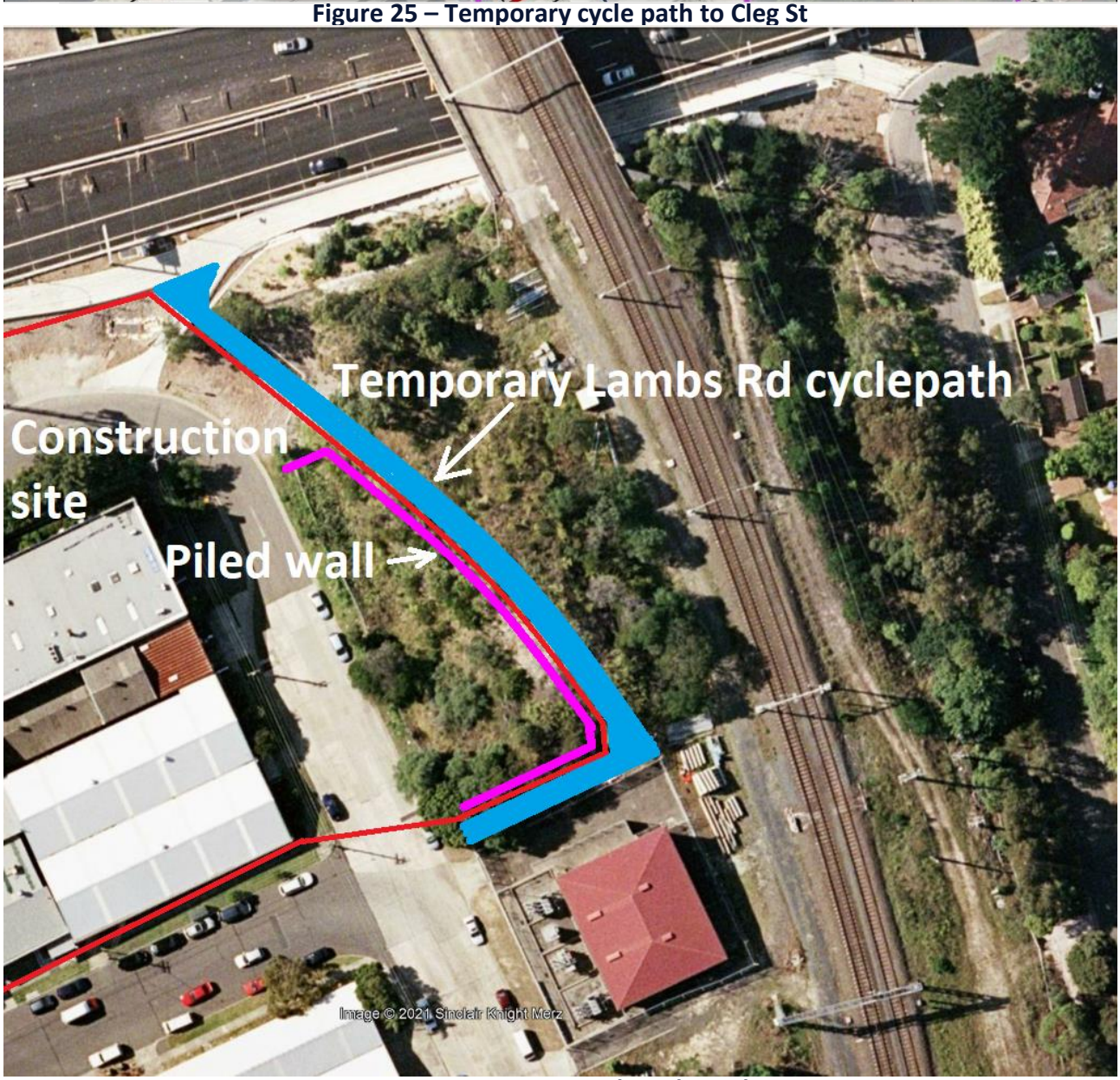


Figure 26 – Temporary cyclepath to Cleg St

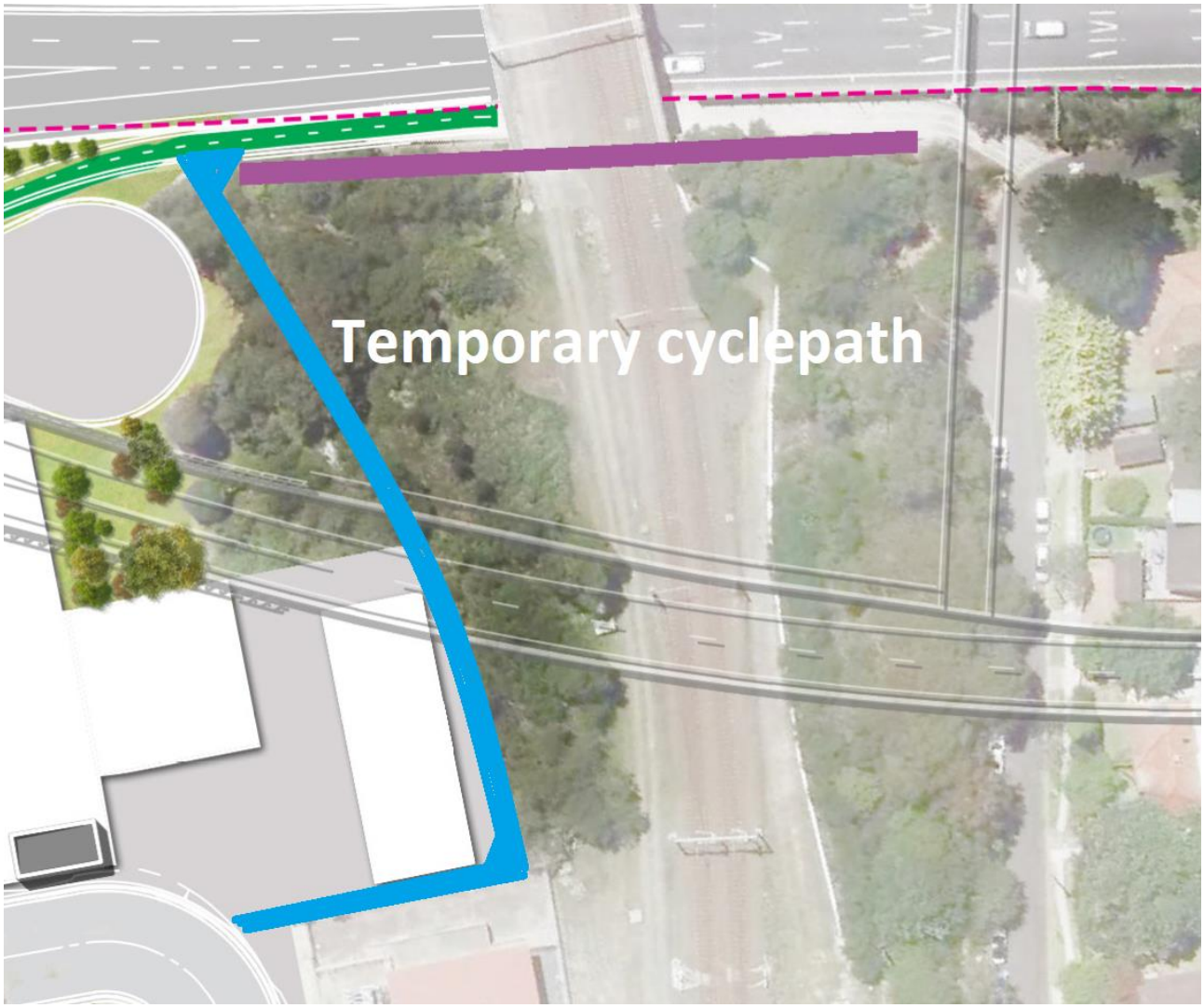


Figure 27 – Temporary cycle path in relation to finished works

Figure 28 – Approximate 12% grade of temporary cycle path to Cleg St