

WESTERN HARBOUR TUNNEL AND BEACHES LINK

ALTERNATIVE PROPOSAL

BACKGROUND

The proposed Western Harbour Tunnel and Beaches Link proposal was announced by the NSW State Government on the 16th March 2017, prior to the Manly and North Sydney State By-elections.

The RMS provided a simplified map of the proposed route of the tunnel. The Beaches Link portion showed 2 portal locations, one at North Seaforth along the Wakehurst Parkway, and one at Balgowlah, connecting to Burnt Bridge Deviation near Serpentine Crescent.

CURRENTLY PROPOSED PORTAL AND EXHAUST STACK LOCATIONS

The Sydney morning Herald published leaked documents on 21st July, 2017, which showed details of the proposed portal and exhaust stack locations. The article showed diagrams of an RMS proposal for the locations of the two portals at North Seaforth and Balgowlah. The diagrams also showed proposed exhaust stack locations near each portal.

These exhaust stacks were shown close to homes and schools. In the case of the Balgowlah exhaust stack and portal, this was shown within 150m of Seaforth Primary School.

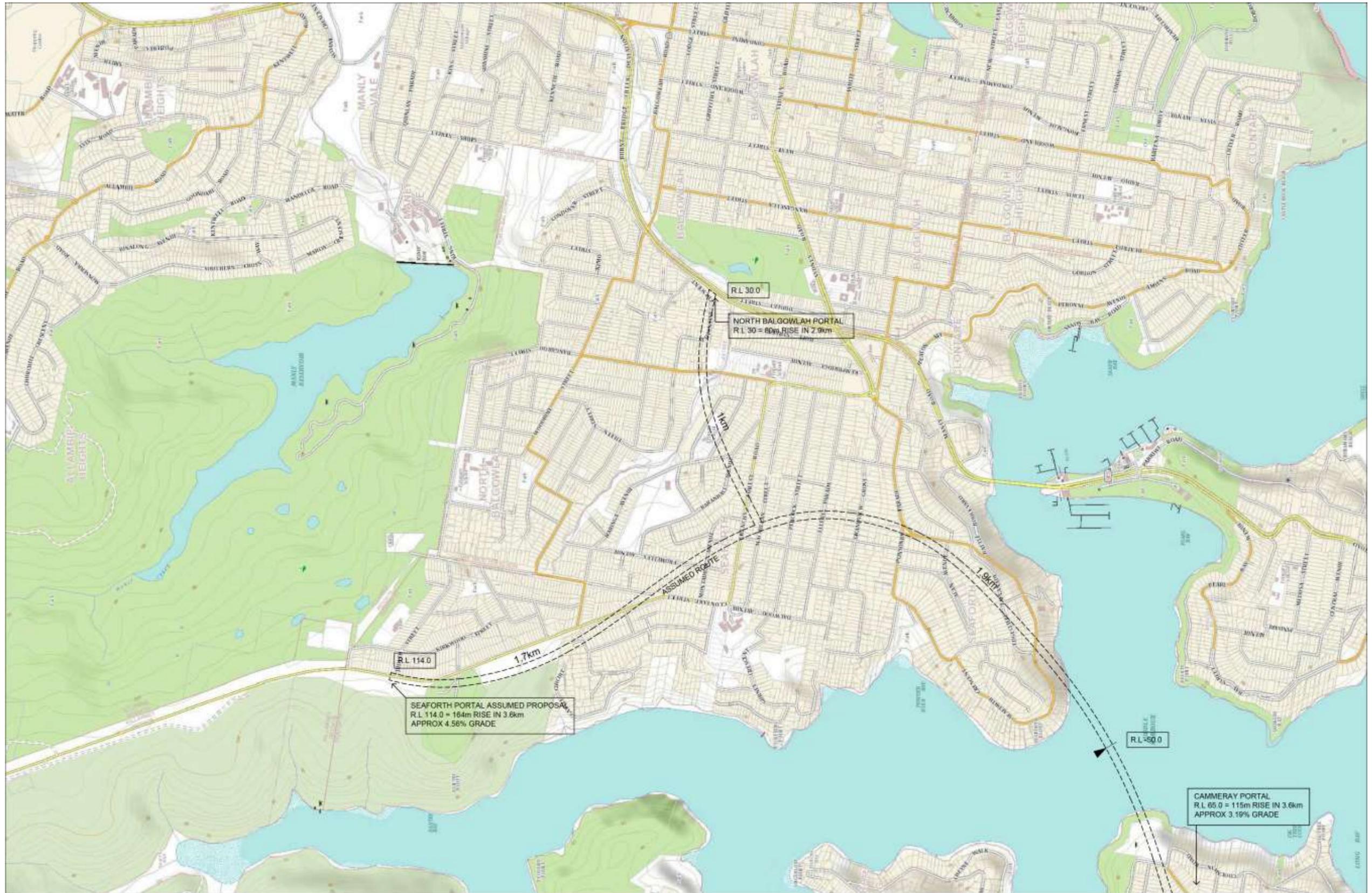
The "Beaches Link" portion of the tunnel extends from Cammeray to the lower northern beaches and requires a crossing at Middle Harbour between Clive Park at Northbridge and Seaforth Bluff.

The length of the tunnel between Cammeray and North Seaforth as per this diagram, would be approximately 7.2km. The main tunnel from the Middle Harbour crossing to North Seaforth would be approximately 3.6km. The spur which extends from this main tunnel to Balgowlah would be approximately 1km in length.

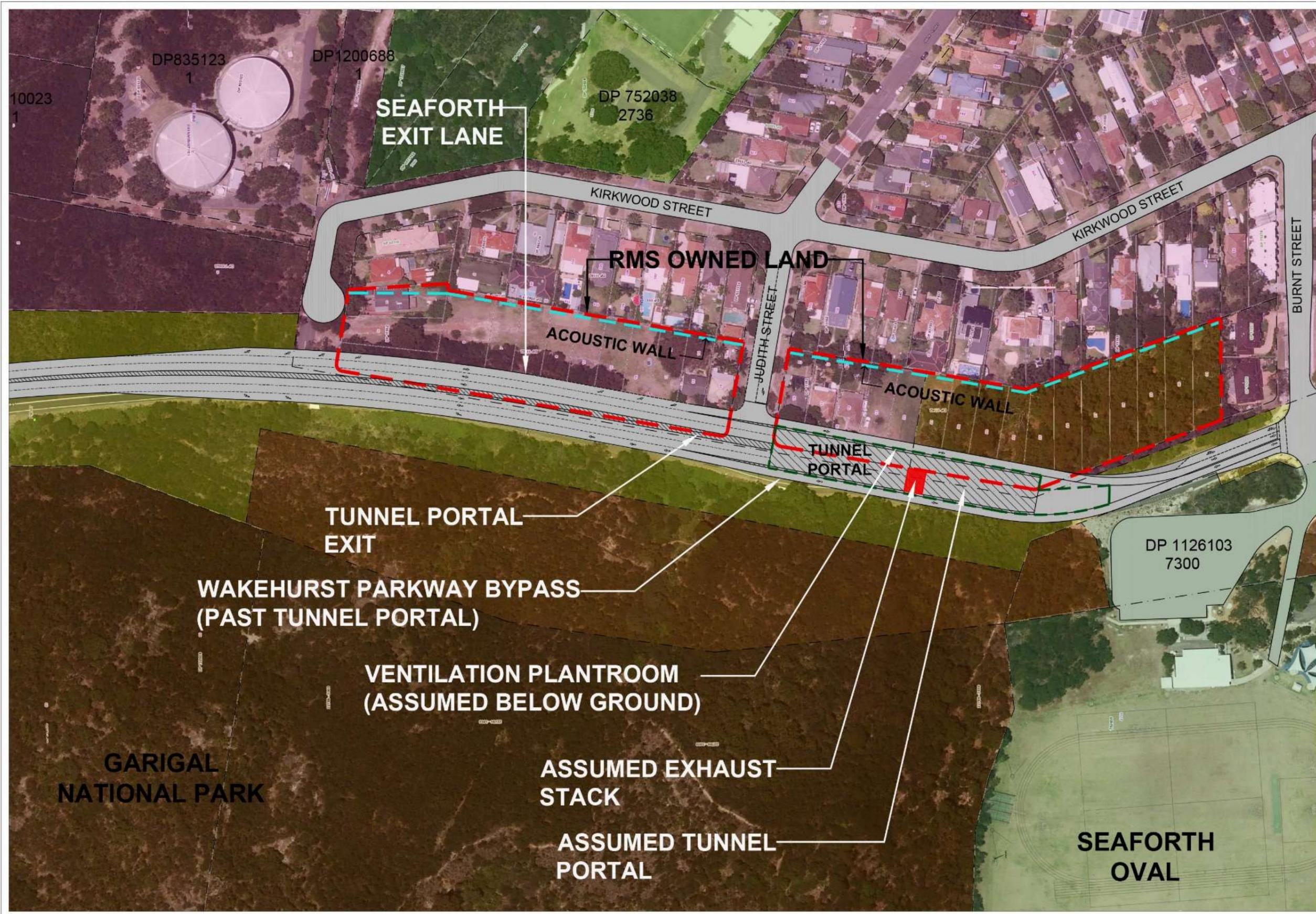
The depth of the Harbour at the proposed tunnel crossing point is known to be one of the deepest sections of Sydney Harbour. The portal location at North Seaforth would be on Seaforth ridge at a high point of approximately 114m above sea level. The portal at Balgowlah would be located in a valley at a relative low level of approximately 30m above sea level.



RMS PROPOSED TUNNEL ROUTE



PROPOSED TUNNEL ROUTE LOWER NORTHERN BEACHES



ASSUMED LAYOUT OF NORTH SEAFOORTH PORTAL



ASSUMED LAYOUT OF BALGOWLAH PORTAL

THE CURRENT RMS PROPOSAL

There are a number of substantive reasons why we believe the current RMS concept design for the beaches link component of the Western Harbour Tunnel and beaches link project is unacceptable in its current form. The substantive negative impacts include:

North Seaforth Portal and Exhaust Stack

1. The length of excessive Tunnel Grade potentially slowing traffic and increasing pollutants in the North Seaforth Tunnel leg. Based on a deep crossing under Middle Harbour, the current north Seaforth Portal location would result in an overall tunnel grade greater than 4.5%. This not only exceeds the RMS' own maximum grade guidelines (4%), but grades this steep over long distances (as would be the case in the Beaches link tunnel) are known to be unsafe and are not recommended under Austroads Design Guidelines. To achieve the maximum 4% grade, the North Seaforth leg of the tunnel need to be extended at least 500m further north. **A preferable grade would require the tunnel to be even longer.**
2. The impact of Tunnel Exhaust Emissions. The North Seaforth tunnel exhaust stack is currently shown immediately adjacent to an established residential area and Seaforth oval. These impacts can be avoided if the tunnel portal and exhaust stack are simply relocated further north along the Parkway.
3. Environmental Considerations - The proposed location would irreplaceably displace the geographically significant and ecologically rich, southern tip of the endangered Duffy's Forest Communities as well as three and possibly a fourth, State and Nationally significant endangered plant species under the Threatened Species Act 1995.
4. Avoidable resumption of privately owned homes,
5. Avoidable increase in noise, affecting nearby residents and associated mitigating measures such as high concrete walls, double glazing, inability to open windows etc.
6. Avoidable loss of existing visual amenity. The local area is a leafy bushland setting, this would be cleared to allow the construction of the new tunnel portal, associated infrastructure and Wakehurst Parkway road widening.
7. Avoidable creation of rat runs due to the proposed tunnel location blocking access to Judith Street which currently acts as the main traffic feed through North Seaforth to North Balgowlah.
8. The widening of Wakehurst Parkway would worsen the existing Fauna hazard without some mitigation initiatives. (New Fauna Crossings).

Balgowlah Portal and Exhaust Stack

- 1 The resumption of at least 12 homes along Serpentine Crescent. There would appear to be other options available to the RMS rather than resuming these homes.

- 2 Unacceptable impact of Exhaust Emissions. - Not only is it within close proximity to existing houses and immediately adjacent to Seaforth Primary School, it is located at the low point of a valley that is known locally as a trapped low point. The prevailing winds are from the ocean (northeast and south east). The existing ridge to the west of the valley will block emissions from clearing from the trapped low point in all but relatively windy conditions. Exhaust fumes from the Balgowlah portal will be emitted from the Balgowlah exhaust stack continuously, 24 hours a day, 7 days a week. This will have the impact of concentrating exhaust emissions within this trapped low point. The trapped low point extends from Seaforth to Manly and up to Brookvale and North Curl Curl. The area includes North Balgowlah, Balgowlah, Manly Vale, North Manly, Freshwater, Queenscliff, Curl Curl, North Curl Curl and northern parts of Fairlight and Manly. This is a densely populated residential area containing several (at least 12) schools and numerous kindergartens and day care centres. It was also noted in the leaked RMS document that there are concerns with "Plume Downwash entering homes"
- 3 Seaforth Primary School is immediately adjacent to both the proposed Tunnel Portal and Exhaust Stack. The proximity of any school next to infrastructure of this nature is would be considered unacceptable by any community. Seaforth Primary would also be particularly susceptible to exhaust emissions from the tunnel exhaust stack as Seaforth Primary is downwind of the exhaust stack.
- 4 The Balgowlah Portal would be constructed within the existing Burnt Bridge Creek Watercourse. The riparian zone adjacent to this waterway has recently been rehabilitated by the local community and is highly valued by local residents and the nearby Seaforth Primary School. The construction of the Balgowlah Portal in this location would cause the loss of this highly valued environmental asset. The construction would interrupt the watercourse which would have to be piped. An alternative location which did not impact on an established watercourse would appear more appropriate
- 5 The Proposed Balgowlah Portal would be located at the low point in the valley. Most of the nearby residents overlook this area. The remaining houses that would be left (and not resumed) are very close to the proposed portal location. The impact to these local residents would include noise and loss of visual amenity.
- 6 As with the North Seaforth Portal, the impact of noise on nearby residents is a factor of the proposed close proximity of the tunnel portal to existing residents. Both the noise and associated mitigating measures, such as concrete acoustic screen walls, would result in a major impact to these nearby residents.
- 7 Nearby residents will be faced with two consequential losses associated with the proposed Portal location. Firstly, the outlook to the Vegetated watercourse corridor would be lost. Nearby residents currently enjoy an outlook onto a leafy bushland setting. This would be cleared as part of the Portal construction works. Secondly, the view that would present local residents in place of the leafy outlook they currently enjoy, would be either, high concrete acoustic screen walls or an outlook over a busy tunnel portal, or both. A relocation of the portal to an alternative location would eliminate these negative impacts.

ALTERNATIVE PROPOSAL

We believe there is a possible alternative proposal which would potentially mitigate most if not all of the negative issues noted above. This proposal is potentially cost neutral and additionally in comparison, achieves a lesser maximum grade in the main tunnel that is acceptable. Our alternative proposal seeks to shorten the length of the Balgowlah tunnel leg to a nominal distance of 500m to shorten it to the extent where it did not require an exhaust stack, and all exhaust emissions could be vented at the North Seaforth Portal, which in turn would be relocated at least 600m further north along the Wakehurst Parkway well away from residential areas and schools.

At this location the exhaust stack would be positioned on the ridge, where exhaust emissions can dissipate as intended. The Balgowlah Portal would be used as a fresh air intake only.

The proposal would also provide cost offsets as follows:

- Eliminate Exhaust Stack and associated ventilation facility at the Balgowlah Portal
- Tunnel Grade - Whilst our alternative proposal is only 170m longer than the RMS concept design, it achieves a much flatter and safer grade. By reducing the Balgowlah spur to just 500m long compared to the RMS concept design (1km long), the extra length (500m) can be shifted into main tunnel where it is needed, to improve grade. The proposal allows the tunnel to start much deeper under Middle Harbour, and stay flatter for longer due to the flatter grade. Both these initiatives keep the tunnel deeper under ground level where the tunnel crosses Burnt Bridge Creek low point.
- Provide a more Cost Effective driven tunnel Harbour Crossing Option. This method would also be quicker to construct.
- When potential cost offsets are factored in, the alternative proposal could potentially be cost neutral.

The flatter grade achieves a number of benefits in comparison to the RMS concept design. These include:

- A safer, better performing tunnel
- Improved vehicle performance
- Reduction in exhaust emissions
- Less variance in vehicle speeds (especially in relation to heavy vehicles). Variations in vehicle speeds are known to increase the risk of accidents. Reducing variance in vehicle speeds reduces the risk of accidents in the tunnel.

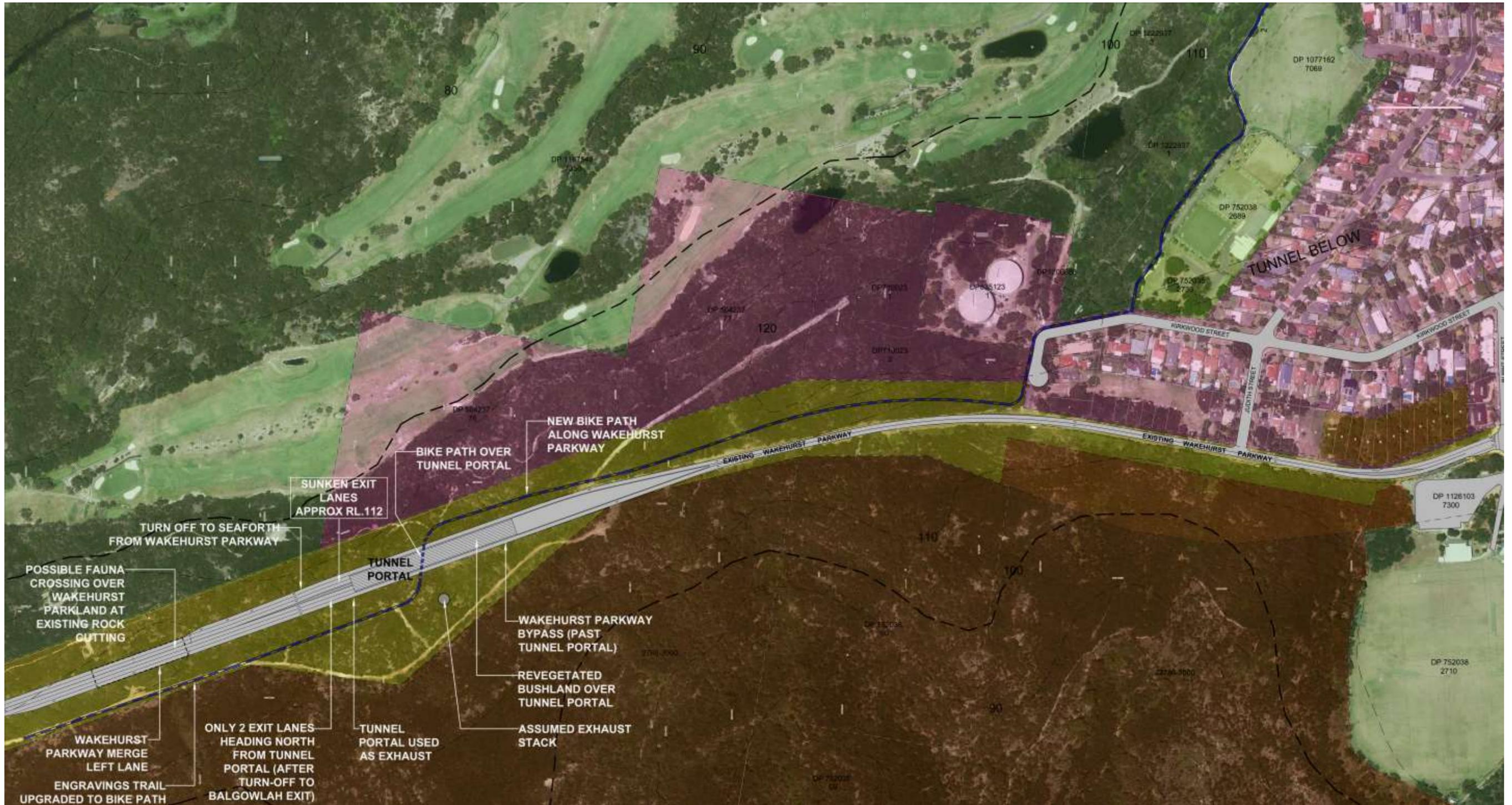
- Environmental Benefits - Though yet to be confirmed in relation to the environmental status of the proposed alternative portal site, the proposal would move the tunnel portal away from the known environmentally sensitive vegetated areas east of the Wakehurst Parkway between Burnt Street and Kirkwood Streets which contain what is believed to be the southern extent of Duffy's Forest Communities as well as at least three and possibly a fourth threatened plant species. The creation of Fauna Crossings. The widening of Wakehurst Parkway would have worsened the existing Fauna hazard without some mitigation initiatives. The alternative proposal provides substantial areas where animals can cross between the two parklands safely. The net result is a dramatic improvement even in comparison to the existing situation (before road widening). Noise The proposal would also eliminate most (if not all) of the negative acoustic impacts associated with locating the Tunnel Portal where it is currently proposed in an urban setting. These include issues relating to noise, and the associated mitigating measures that would be employed (such as large acoustic walls etc).

Linking the Parks - The benefits include:

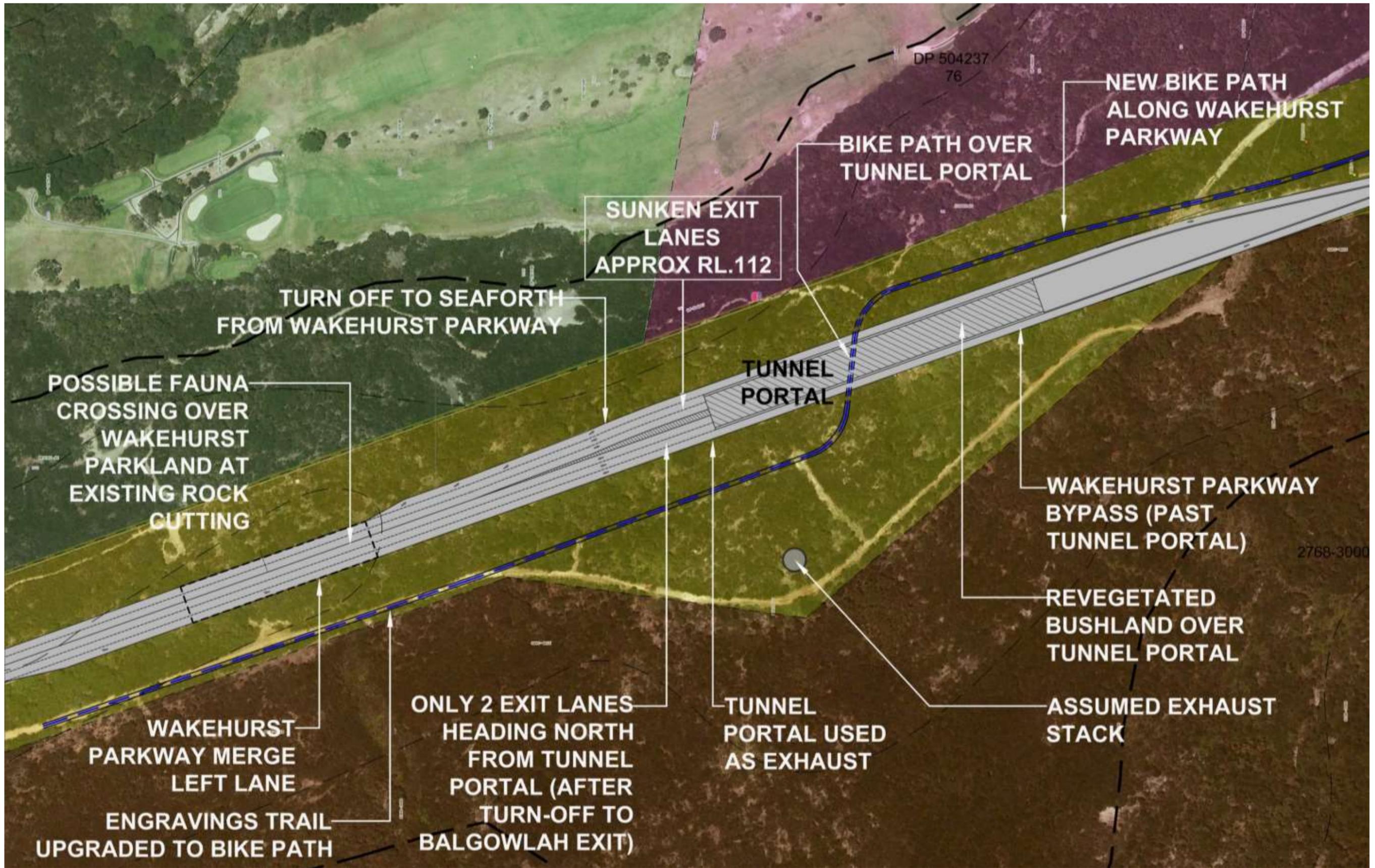
- The introduction of Substantive Vegetated links between the Garigal National Park and the Manly Warringah War Memorial Reserve to act as Fauna crossings
- The provision of bicycle paths linking the two parks.
- The potential provision of a bicycle path linking North Seaforth to Frenchs Forest
- The potential to link existing Mountain Bike trails both sides of Wakehurst Parkway.
- The potential to link the parks to allow better public access, amenity and utilization of the parks, particularly the existing National Park west of Wakehurst Parkway. Visual Amenity The "sinking" and re-vegetation of the tunnel portal will lessen the visual impact of the new infrastructure on the sensitive Garigal National Park and the Manly Warringah War Memorial Reserve parkland settings.

The proposal is likely to achieve a net retention and possibly an Increase in vegetated ground cover, through the strategy of sinking and landscaping the tunnel portal and sections of the Wakehurst Parkway to create vegetated Fauna Crossings.

The proposal provides solutions to serious issues relating to tunnel exhaust and portal locations, tunnel grade and safety, disruption to personal and public infrastructure and destruction of environmentally sensitive bushland, and provides a public benefit windfall as part of the solution. It provides a much better outcome for the proposed infrastructure in the bushland setting



**ALTERNATIVE TUNNEL PORTAL AND EXHAUST STACK - NORTH SEAFORTH
(INCORPORATING VEGETATED FAUNA CROSSING)**



ALTERNATIVE PROPOSAL NORTH SEAFORTH PORTAL – CLOSE -UP



**ALTERNATIVE PROPOSAL NORTH SEAFORTH PORTAL
AERIAL VIEW SHOWING PROPOSED VEGETATED FAUNA CROSSING AND BIKE PATH**

BALGOWLAH PORTAL (SERPENTINE CRESCENT)

We don't have a workable alternative portal location for the Balgowlah portal at present, but we understand the RMS is seriously considering an alternative to utilize the nearby road reserve close to the proposed entry/exit points rather than resuming people's homes. We would strongly encourage the RMS to seriously consider options which would result in no residents losing their homes. The elimination of the exhaust stack at this portal should be considered essential, due to the reasons as previously stated. Additionally, any option for a portal at this location should be sunken and covered with a vegetated treatment rather than employing visually intrusive concrete acoustic screen walls, as per the example based on the current portal location shown below.



**ALTERNATIVE TREATMENT FOR BALGOWLAH TUNNEL PORTAL
CREATE VEGETATED LINK AND BIKE PATHS OVER BURNT BRIDGE DEVIATION**



CLOSE-UP VEGETATED COVER OVER TUNNEL PORTAL AND BURNT BRIDGE DEVIATION