

As a mother of 2 young children and a resident of 6 Nulgarra St Northbridge, our house backs onto Flat Rock Gully and will be 100m from the proposed dive site - I wholeheartedly object to the proposed Beaches Link Tunnel and in particular the dive site at Flat Rock Gully.

My objections are based on the threat to my home and family, our health and quality of life and that of the local community.

Flat Rock Gully is an integral part of our neighbourhood and our life. The idea of destruction and use of this priceless space as a dive site is utterly horrible. The loss of bushland, subsequent noise, air, water and soil pollution as well as light pollution at night, 100m from our bedrooms is UNACCEPTABLE.

If the project is to go ahead, it needs to take the following into account.

Specifically, my objections are outlined below:

- The proposed project counteracts the principles of Ecologically Sustainable Development in the Protection of the Environment Administration Act 1991 (NSW) which declares that the conservation of biological diversity and ecological integrity should be of fundamental consideration (PEAA Act Part 3(2)(c)).
- Bushland set aside for environmental protection should not be destroyed or disturbed. Flat Rock Reserve is a declared Wildlife Protection Area as it provides significant habitats that support a wide range of small birds, mammals, reptiles and frogs that are disappearing from our urban areas.
- Flat Rock Gully is a key part of the network of wildlife corridors across Sydney required to maintain biodiversity.
- Around 6.77 hectares of bushland will be flattened for the construction footprint (EIS Chapt. 19, p.19.9) at Flat Rock Gully. Around 54 acres of bushland, which provides important habitat for wildlife in the Willoughby and Manly local government areas, will be destroyed at the combined sites.
- Over 390 trees are targeted for potential destruction at Flat Rock Gully – only two-thirds will be replaced. Willoughby City Council (WCC) tree policy requires that 3 trees be replaced for each removal (WCC, Vegetation Management Strategy 2020). Local tree policies are required by the NSW Government to reflect the needs of different areas for tree canopy and wildlife habitat. These should not be overridden by the NSW State Government.
- The bushland at Flat Rock Gully has been targeted for destruction on the basis that it is 'only' regenerated bush. This regeneration has taken 25 years of work by WCC and bush care volunteers. Most of the plantings were propagated from local indigenous plants. Wildlife doesn't discriminate between regenerated and remnant indigenous trees and bushland.

- Biodiversity is poorly scoped in the EIS. The bulk of the biodiversity assessment concentrates and comments on 23 threatened species only. It side-steps the many hundreds of species which will lose their habitat, be driven away or bulldozed under including a wide range of bird species, frogs, reptiles, mammals and aquatic animals. See fauna list attached.
- A full study of wildlife has not been, and will not be, carried out in Flat Rock Gully, Middle Harbour and nearby bushland. Desktop assessments and a few walk-throughs are inadequate to reveal its full biodiversity.
- The EIS acknowledges that animals and birds on the construction footprint and nearby bush reserves will be driven away, in some cases permanently, by loss of habitat, food and breeding sites and by the noise, lights, vibration and traffic yet there are few well-developed mitigation plans for the variety of species which will be impacted. (EIS p.19-64).
- The proposed mitigation measures to protect wildlife during construction are weak. Checking that no animals are in the way 24 hours before construction or having people 'spot' them from barges and remove them during construction seems doomed to failure as it will not be the main focus or within the expertise of most constructors.
- The health of local creeks, waterways and the marine environments are at risk from scouring, elevated salinity, siltation, contamination by disturbed toxic materials from the tip site and accidental fuel or chemical spills. Groundwater drawdown of more than 20 metres will contribute to trees becoming stressed or dying in other parts of Flat Rock Gully away from the construction footprint, especially in times of drought.
- The EIS is inconclusive on the future of the destroyed site which is 5% of the Flat Rock Gully Reserve. Decision-making about its future should not be left to the end of the construction process. The EIS should confirm its rehabilitation and return it to bushland.

Spoil

- Over 3 Million Tonnes of ground-based spoil will be removed as part of the Beaches Link Project, trucked through our area and dumped at an unknown location.
- 500m3 of spoil is permitted under the EIS to be stored outside of sheds at Flat Rock - this presents a significant dust risk to the area

Drawdown of groundwater, quality of groundwater

- The EIS estimates that the drawdown in Northbridge as a result of the project will be 28m, in Flat Rock reserve 21m and at Willoughby Leisure Centre 22m, resulting in water stress/death for plants and trees and potential settlement issues

- Groundwater dependent ecosystems are located at the upper reaches of Flat Rock Creek & Quarry Creek such as the rare turpentine scrub and these will be impacted.
- The EIS states that “tunnelling works could potentially lower the groundwater table within poorly consolidated fill .. FRG - at this location, the tunnelling works could drain the groundwater, currently ‘ponded’ within landfill in the former creek” (23.2.3 p 23-14)
- The changes in the groundwater level, because there is a tunnel underneath, has the potential to spread contamination around and downstream from the site. (Appendix N page 88 lists potential for further contamination as works can create contaminated plumes etc)
- 39% reduction in creek flow in Flat Rock Gully - impacts identified for fauna and flora ecosystems
- 117,000 kL from the tunneling will be flushed down Flat Rock Creek each day during construction. It is not clear if the water will be adequately treated for the full range of chemicals detected in the area.
- Water drawdown is estimated to flow into tunnel at a rate of 1.39L/s/km – during construction

Settlement and Subsidence Risk

- Potential cracks in property due to settlement - definition of slight is 50mm (building and structure settlement classification chapter 16 page 29). This definition in the EIS needs to change
- Settlement induced by groundwater drawdown (table 50-75mm is moderate, greater than 75cm is severe). Settlement at Flat Rock Reserve is considered category 5 and up to 85cm which is categorised as severe settlement (p29-32 Chpt 16). see table 16-9 page 30, lists all max total settlement predictions for identified sites
- Disturbance of the water table can lead to instability because of the fault zone, which may alter the tunnel route and depth. When there is a change proposed that change is analysed and stakeholders consulted before the change proceeds

Property Impacts/ Vibration (See Health for noise impacts)

- Risks to heritage sites have been identified at Clive Park (incl. Aboriginal), Flat Rock Gully (1 Aboriginal), Cammeray (1 Built) and Artarmon due to vibration
- Widespread substratum acquisition is intended according to the EIS, 50mtr's either side of the twin tunnel route and ramps. The route can however change after approval due to the uncertain geology of the area.

Flooding

- The flood study fails to recognise that water and sediment may be from a contaminated source.
- “The Flat Rock Creek catchment drains in an easterly direction from the Pacific Highway in Artarmon and has a total catchment area of about 3.9

square kilometres (390 hectares) at Willoughby Road". The proposed dive site is within the Creek area where flooding occurs which then continues to downstream habitats. There appears to be little assessment of flooding impact on the Flat Rock dive site and downstream habitats, parks and waterways. The flood study limits the Flat Rock Creek assessment to the upper reaches around Gore Freeway. Given the size of the catchment, the location of the dive site in and around the diverted creek and in a flood zone it would be appropriate to continue the flood study around Flat Rock Gully and down into Tunks. This information should inform the health risk and waterways assessment.

Pollution

- Particulate Matter is already higher than what is recommended or considered "safe" - PM2.5 and PM10 levels are already above the guidelines for both the 24-hour average and the annual average (including the 2025 goal set by NEPC (2016). However there is no local data for this and data from the temporary monitor put in place to establish our background levels at Naremburn was not used. Only long term monitoring has occurred in Chullora, Earlwood and Liverpool away from the project footprint
- Lost opportunity in not filtering/ treating stack pollution – although the EIS suggests PM2.5 levels will not be significantly changed with the construction and operation of unfiltered stacks, we are already living in an environment where levels of PM2.5 and PM10 is above the level of what is considered safe and the EIS demonstrates that this will continue well past the tunnel opening. Would filtering stacks reduce PM 2.5 levels to acceptable levels? Or could a public transport alternative address our growing PM levels. The government has a duty of care to do what it can to reduce these levels now that it has monitored and confirmed the issue.
- The Western Harbour and Beaches Link program of works cuts through the largest school corridor in Sydney with 500-1000 pupils at approx. 26 schools. The precautionary principle must be applied to ensure the health of children across the project footprint. Some examples of schools, pre-schools and parks that receive higher pollution levels are as follows (please note these points are indicative of the pollution expected in the nearby area):
 - CR10 Neutral Bay Public School – 24 hr PM2.5 increases by 2037 if all projects proceed.
 - CR16 Anzac Park School – largest increase in 1 hr mean NO2 if Beaches Link and WF only proceed, Increase in PM10 if all projects go ahead, PM10 24hr mean goes up by 2037, Annual Mean 2.5 will be increased by 2037 if all projects proceed.
 - CR17 KU Pre-School Green Park – 24hr mean PM 10 goes up by 2037 if all projects proceed, 24hr PM 2.5 goes up by 2037 if all projects proceed,
 - CR18 Cammeray Public School – increase in 1 hr NO2 by 2037 in all projects proceed, Annual Mean 2.5 will be increased by 2037 if all projects proceed.

- CR20 Berry Cottage Naremburn – increase in annual average PM10 if all projects proceed.
- CR25 Artarmon Sues Childcare: (Closest point to Willoughby Leisure Centre/ Bicentennial Reserve) – Max 24hr PM2.5 increases if all projects go ahead. This represents the largest increase of 24hr PM2.5 across the project.
- CR 26 Northside Baptist Preschool (only point assessed in Northbridge)– slight increase NO2 1 hr mean by 2037 if both go ahead, slight increase 24hr mean PM10 by 2037 if all projects go ahead.
- Given PM2.5 pollution levels are over limits already and WHO states that there is no safe level of PM2.5 any increase no matter how small is unacceptable.

Contamination

- Currently there is inadequate information in relation to health impacts (secondary to landfill gas and odours) of proposed tunnelling works at Flat Rock Drive. A Phase 2 assessment is needed to check for contaminants and quantify risk. Approval should not proceed until the risks are known and mitigation possibilities scoped. Testing around the freeway and at Cammeray site has also confirmed contamination. Serious consideration of the cost/benefits of the project in light of the risk to residents and children as well as the cost to mitigate and remediate sites should be given.
- The EIS allows for a considerable amount of spoil to be held outside of sheds during construction which poses both a silica dust risk and contamination risk to nearby parks, residents and bushland

Noise

- Flat Rock – highest noise is day-time clearing, excavation, establishing buildings and widening of Alpha Rd and night-time Alpha Rd. estimated 9 months. Ground vibration at a human response level is recognised from Flat Rock Dive Site (P173) affecting 2 houses in Calbina South West. Site will be operational for 5 years.
- A key concern at Flat Rock Drive is the noise generated from truck air brakes as they slow down the long hill leading to the excavation site entry point at the bottom, and then the exhaust and engine noise from those fully loaded trucks accelerating up the hill from the site. This noise could be suitably attenuated by constructing a permanent acoustic wall along Flat Rock Drive fronting the bush - i.e. an acoustic wall similar to those normally constructed during road infrastructure projects. Noise will also impact wildlife in the area esp. nocturnal species such as bats
- Northbridge - noise from tunneling Rock Hammering (following road headers) will be at a detectable level for several homes at either end of Northbridge (29 West , 92 East) however this will be less than 45dB so not expected to be intrusive. Vibration levels above screening levels will also be experienced by 295 homeowners around Middle Harbour (Seaforth, Castlecrag and Northbridge) in relation to the crossing works. Noise will be heard around the Flat Rock site esp. during site establishment works. One house in Calbina West (P93) is > 75 dB(A) so actual monitoring is required.

Green Space & Active Transport Links

- see biodiversity objections on Flat Rock Gully. No guarantee FRG will be returned to bushland
- Green spaces have been extremely important during Covid and the area has a very low percentage available and a growing population - any impacts on green spaces in the area are likely to be significant
- Active transport links will be significantly impacted at Artarmon, Naremburn and Cammeray during construction and the EIS does not make clear

Safety

- The sheer volume of additional vehicle movements which will be on the road around a dense area of schools and children's sport presents a significant safety risk. Close to 5000 additional vehicle movements will be required across the route during construction.. Heavy vehicles should not be permitted to marshal or transport loads on residential roads or within school zones
- 900 additional vehicle movements will be required on Flat Rock Drive - this is a key transport corridor for children accessing North Shore schools and school sport. Given the site is contaminated the conflict between spoil trucks and children is even more concerning for the community. Flat Rock Drive/ Brook St is also a key active transport corridor for children accessing Cammeray Schools due to zoning.

Ask for:

Flat Rock Gully not to be used as the primary drive for the Beaches Link due a number of reasons outlined above. If so, we would like to request assistance in ensuring that our property is as unaffected as possible in relation to vibration, noise, dust and light pollution

- **If the proposal is approved, it is vital that, at the end of the project, the construction site in Flat Rock Gully is restored to bushland consistent with the Environmental Conservation zoning of the site and in accordance with the local Urban Bushland Plan of Management and the Flat Rock Gully Reserve Action Plan.**
- **Undertake full bush regeneration and provide three for one tree plantings as required by the local vegetation strategy.**
- **If a short duration noise event during night construction, we should be offered alternative accommodation for the period or other appropriate mitigation as required. For longer duration noise such as FRG and Cammeray Oval construct an acoustic wall around the site to protect residents and fauna from noise impacts - i.e. an acoustic wall similar to those normally constructed during road infrastructure projects.**

- Consider ecologically sustainable alternatives to the car tunnel. Fully scope alternative public transport options.
- Carry out full assessment of biodiversity in and around area to be destroyed in Flat Rock Gully. Check trees for hollows across the gully area. Carry out fish and macroinvertebrate sampling in creeks and waterways.
- In consultation with wildlife experts, develop a full suite of mitigation measures to protect the wildlife in local bushland from noise, light and traffic in Flat Rock Gully.
- Biodiversity credits are likely to be applied to areas too far from the construction footprint. We need additional work done before construction to provide nest boxes and rock habitats for displaced wildlife. Biodiversity credits should also be applied long term to weeding and bush regeneration in Flat Rock Gully Reserve.
- Ensure all landfill exposed by tunnelling is capped at the end of tunnelling and reinstate crushed sandstone as a contoured base for re-establishment of locally indigenous vegetation and habitat. Remove all temporary structures (including noise mitigation sheds).
- Engage consultants (independent of contractors) to measure water quality in the creek before, during and after construction to check for scouring, contamination from the site and elevated salinity and sediment levels. Make this information publicly available.
- Include clear strategies in the EIS to counteract the release of contaminants into Middle Harbour following storms or due to silt curtain damage during construction.
- Reassess baseline noise level. For instance on Flat Rock Drive was the initial monitoring done when a double truck had their airbrakes on going down the hill? Given the geography of the area and 900 movements a day on a steep hill in a residential area it seems unlikely that noise will be undetectable as stated in documents
- Average noise readings pre-construction should be monitored over a 24 period and averaged to be a more indicative measure of current noise levels
- Greenspace - ensure all landfill exposed by tunnelling is capped at the end of tunnelling and reinstate crushed sandstone as a contoured base for re-establishment of locally indigenous vegetation and habitat. Remove all temporary structures (including noise mitigation sheds). Decision making about the future of the dive site at FRG should not be left to the end of the consultation process and should involve the community. The EIS should confirm its rehabilitation and return to bushland.

- Active transport links between Artarmon, Naremburn, Cammeray and the City should be made seamless and improved as a result of this project to compensate in part for community construction fatigue. The current active transport links are fragmented at best and construction will make this worse with no clear plan to improve it. School P&C's should be involved in this planning to ensure the best routes for children accessing local schools.
- The Brook St/Flat Rock Drive Corridor is a key corridor for children accessing local schools. An active transport overpass or underpass should be put in place to ensure safe passage.
- Trucks should be fitted with noise and pollution control devices given the highly residential nature of the route and the large proportion of children.

Spoil removal

- Contaminated spoil not to be stored onsite in Flat Rock Gully or Cammeray. The spoil should be immediately be sealed and carried away from residential areas or stored underground.
- Improve the site, remediate better than before, to compensate for pain and suffering during the 5 years of construction and restore ecosystems. This was done at Barrangaroo. No contaminated soil to remain onsite, site rehabilitated back to bushland in FRG, improved walking tracks and bicycle paths and ecosystems restored.
- Silica dust created by tunnelling sandstone more adequately dealt with than just a water cart and covering the load.
- Real time monitoring and alerts around air quality at The Baseball Diamond and Netball courts at Flat Rock Gully as they do in the Hunter Valley near mine sites for recreational users of adjoining ovals, recreation fields, towns etc

Groundwater drawdown, quality of groundwater

- Groundwater Dependent Ecosystem –provide an additional study to confirm the importance of the ecosystem to local community in the EIS. Argument that it is in an area that is contaminated therefore not worth keeping has lots of examples where residents have managed to show importance of ecosystems in disturbed areas.
- Groundwater contamination as confirmed in the EIS, including Flat Rock Gully, Quarry Creek, Tunks Park - ask for ongoing ground water quality monitoring and not just during the early operation of the tunnel.
- Contaminants from Flat Rock Reserve, Willoughby Leisure Centre etc may be mobilised with change in groundwater (through drawdown or surface water).

The EIS assumes a shallower depth of fill than the historic record shows and leachate/ landfill can permeate fissures underground.

- Water monitoring station results to be made publicly available and placed downstream of the dive site, around the Baseball Diamond and in Long Bay to assess run off. Run off modelling should be completed once an expanded flood study is done.
- 16-63 - In the EIS Chapter 16 it is stated further investigations are required to determine the potential for impact to gw 02 3150 and to identify appropriate mitigation and rectification for implementation as required. Complete and publish mitigation and rectification.
- Groundwater improvement strategies over the long term implemented. Suggested in EIS Chapter 16 - modelling of tunnel lining for a 300m section under FRG reduces the drawdown by 8m, this lining could extend along the route of the tunnel and especially around Flat Rock Gully and under the Conservation Area of naremburn where properties are at greater risk of subsidence.
- Request a resident review/consultation ongoing review forum – e.g. regular meetings, with key stakeholders, including residents to discuss results from monitoring and mitigation. There should be a portal where information can be accessed in real time.
- The method of wastewater treatment needs clarification - where will they be placed, how long will they be there, what level will they treat the water to.

Settlement

- **Tunneling induced movement - compensation for house cracking and settlement even if slight - currently up to 50mm which means a 5cm crack in houses not repaired. This criteria is UNACCEPTABLE for the majority of homeowners in the area such as ourselves.**
- **All properties above the tunnel route to be offered a free and independent pre-construction property condition survey providing a clear record of a property's condition before work starts. If any damage is found to be directly related to the project, the damage will be addressed at no cost to the property owner.**
- Further investigation needed on the definition of the Luna Park fault zone required and instability toward Clive Park.