Northern Beaches Tunnel – Application Number: SSI_8862 3

Submission from Richard Jones

84 Kirkwood Street, Seaforth, NSW, 2020

I do not support the proposal in its current form for the reasons which are outlined in the attached document.

I declare I have not made any reportable political donations made in the previous two years.

25 February 2021

Introduction

The Northern Beaches Tunnel project will have a significant impact on the local community and none more so than those in the direct vicinity of the construction zone and tunnel areas, including my family home at 84 Kirkwood Street, Seaforth.

I have spent a significant amount of time going through the EIS, and have highlighted many areas of major concern throughout the docoument and the Appendices, although I've barely touched on the appendices as 12,000 pages is daunting.

We moved to Kirkwood Street with our young family back in 2000 (purchased the house in 1997) with the purpose of creating a lifestyle, sending our children to the local schools, supporting local businesses and clubs, volunteering in and participating in local community sports and generally immersing ourselves in the landscape and environment.

Over that time our property has been renovated and upgraded substantially both to the house and the gardens, costing enormous amount of time, effort and financial investment, all for the aim of our home and its surrounds to offer a quality of life we have worked hard for. I had hoped this quality of life would continue for many years to come – welcoming our extended family and grandkids and others. Now family and friends will be unable to visit.

The home, with its pool, spa and gardens, and outlook over the established trees on the Wakehurst Parkway, offers something which cannot be replaced, but replaced it appears, with a five-year construction site, a large wall, and a four-lane main road, changing the area forever.

Other issues of alarm include:

- Loss of firebreak with safety problematic
- Traffic and road congestion
- Loss of bushland and animal/bird habitat
- Parking
- Noise
- Dust and other contaminants
- Water run off contaminants affecting fauna and flora – both marine and land-based
- Lay down areas filled with dangerous chemicals, posing further fire risk
- Visual Amenity / Loss of view
- General Construction Fatigue

Some of these, amongst many others are highlighted in the following pages and I have posed them as questions – questions that are not unreasonable - for which I would like answers and reassurance.

Selected parts of my submission (highlighted in yellow) have been copied and pasted from the EIS and Appendices or Workcover.

The wording in blue are my responses and questions.

BEACHES TUNNEL RESPONSE

Chapter 0 Executive summary

P4 The 169-bus route has been removed

attractive transport option, supporting and encouraging a mode shift to public transport. The project would also create the opportunity for new express bus routes to be developed in response to diverse travel demands and future development.

P8 Why is BL13 called Killarney Heights it's a little confusing.

ventilation outlets and motorway facilities at the Warringah Freeway in Cammeray, the Gore Hill Freeway in Artarmon, Burnt Bridge Creek Deviation in Balgowlah and Wakehurst Parkway in Killarney Heights

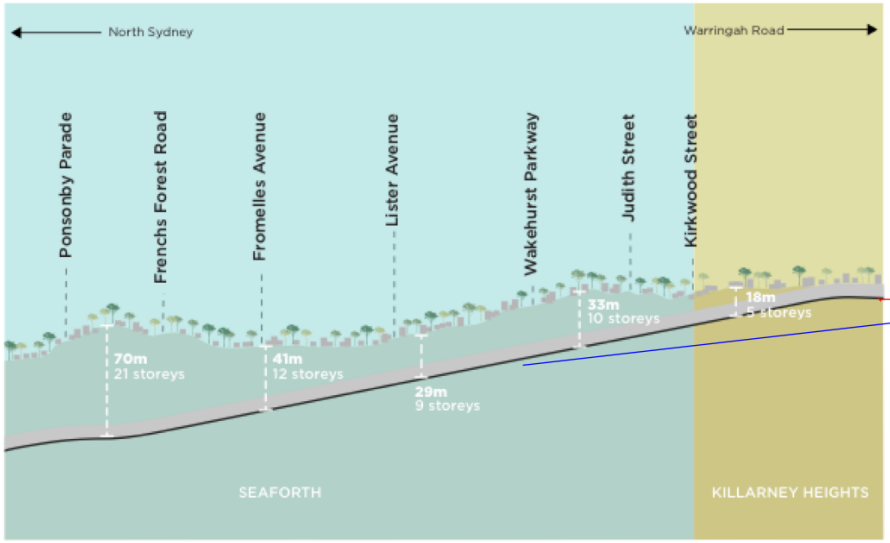
P15 (and p15 of the community guide)

Following preliminary technical and environmental analysis, five corridor alternatives were shortlisted for a new tunnelled motorway connection between Cammeray, Artarmon, Killarney Heights and Balgowlah (refer to Figure E-4). Selection of the preferred corridor required consideration of various technical, environmental and community factors including:

- Strategic traffic demands and how they define the required connectivity to achieve transport outcomes
- Results of geotechnical, groundwater and contamination investigations
- Topography along the alignment

Approximately 150m to the north of where I believe that the tunnel will exit on the Wakehurst PKY there is a decline in the road. Has it been investigated to utilize this? The benefits would be
- decreasing the incline of the whole tunnel from middle harbour
- reducing emissions
- move the tunnel further north resulting in less impact on the community

Wakehurst Parkway ramp



Just after your tunnel exit there is a dip in the topography why isn't it extended slightly to incorporate this.

P23 Noise and Vibration

Noise and vibration

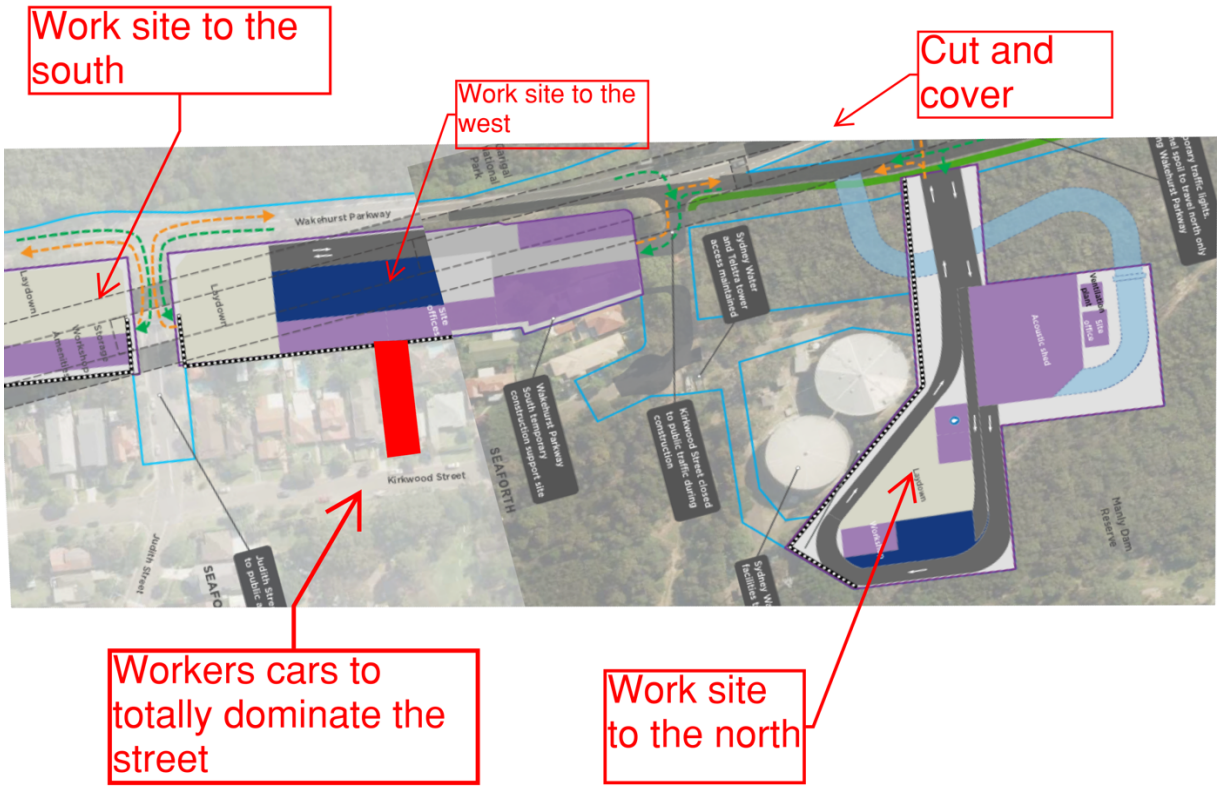
Noise and vibration impacts during construction

Proposed temporary construction support sites and activities have been designed to minimise noise and vibration impacts on sensitive receivers. Design considerations to reduce noise and vibration impacts include the proximity of temporary construction support sites to sensitive receivers, construction of acoustic sheds and temporary noise barriers, and positioning of vehicle entrances and exits to allow access directly to and from the arterial road network where possible.

We will have:

- a construction support site 200 m to the south of us
- a construction support site directly behind our house
- a construction site, tunnelling, directly under my house
- a construction site, cut and cover, to the north west of us
- a construction site, BL13, to the north & northeast

Despite repeated requests for RMS to come and discuss these issues personally over a couple of years I have had no reply until 11/2/2021.All door knocks from RMS have been in work hours, they leave a card, I ring the number with no reply until Timothy Kwok in the last week.



P27 The 15 hectares sounds like quite an impact on the local environment. To put this in layman's terms that's 23 football fields of native vegetation plus 8 more of non-native. Today I saw a flock of black Cockatoos in BL12, that will be no more. The general amenity of the whole area will be destroyed for 8 years

disturbed. Much of the vegetation consists of trees and shrubs in landscaped parks and reserves, private residential gardens and road verges. Native vegetation occurs in the northern parts of the construction footprint on either side of the Wakehurst Parkway (Seaforth to Frenchs Forest) and to a lesser extent, next to the Burnt Bridge Creek Deviation (Balgowlah). Construction of the project would require removal of:

- 15.44 hectares of native vegetation and native revegetation of which 1.38 hectares is consistent with the Duffys Forest Ecological Community in the Sydney Basin Bioregion (listed as Endangered under the Biodiversity Conservation Act)
- 5.48 hectares of other vegetation comprising native plantings, exotic plantings, and weeds and exotics.

P28 How long is long term and we will need on going structural monitoring of our house
As well as continual repairs to ceilings, cornices, walls internal and external etc until the subsidence ceases?

Ground movement would occur as a result of the construction of the project or associated components. Ground movement may occur as a result of removal of existing rock to form the

lining under the Flat Rock Creek area would be determined through additional investigations as part of further design development. A conservative estimate of maximum long-term surface settlement of over 30 millimetres is expected around the Warringah Freeway portal, Burnt Bridge Creek Deviation portal, Wakehurst Parkway portal, and the Balgowlah ventilation tunnel. All other project components are anticipated to be subject to total settlement of between 10 to 30 millimetres or less. Building settlement between 10 to 50 millimetres is considered to equate to a 'slight'

P29 What areas are considered to be at high risk of contamination and exactly what contaminate?

prediction.

The project is situated adjacent to a number of areas that are considered to have a 'moderate' or 'high' contamination risk. Further investigations of these sites would be required to quantify risk of soil contamination to construction works. These investigations would be carried out before construction activities so that contamination (if present) can be adequately planned for and managed.

P30 Exactly what are the permanent land use changes at BL13?

Permanent land use changes would occur at:

- Bantry Bay Reservoir, Sydney Water site.

P33 We in Kirkwood street north are obliviously the most impacted of all people in the whole project. Will we have appointed liaison officers to help with the daily issues we will encounter?

Management of impacts

This environmental impact statement identifies comprehensive environmental management measures to avoid, manage, mitigate, offset and/or monitor impacts during construction and operation of the project. These include best practice construction environmental planning and management techniques, urban design and landscaping treatments and noise mitigation measures. Further mitigation opportunities are likely to be identified during further design development and construction planning and in consultation with communities and relevant stakeholders.

COMMUNITY GUIDE TO THE EIS

P17 Can we have the details of the community contact system?

Managing community concerns

We know building a project of this scale and significance does not go without impact.

We will have a community contact system in place during construction and will ensure there is a number of different ways you can contact us and raise concerns or make enquiries at any time.

We will also be working closely with teams from nearby construction projects to help minimise the construction and consultation fatigue in your local area

P37 During the online community consultation it was confirmed twice that the hours of work at BL12 will be broken less than 1 % of the time, 3.5 days per year.

When we will be working

Standard construction hours are:

Monday to Friday	7am to 6pm
Saturday	8am until 1pm
Generally no work on Sundays or public holidays	

P39 Will we know any of this detail before the EIS is approved? A working document is fine but how much community consultation will be incorporated into the changing parameters.

Managing spoil and waste

Before we start building, a detailed Construction Environment Management Plan (CEMP) will be developed to detail how the project will preserve, protect and manage any potential impact to the local environment. The CEMP will need to be approved by DPIE before we can start any major construction work.

The CEMP will be a working document, subject

P41 I feel that almost no consideration has been given to the impact on my life. This is reflected in that until this week, despite repeated calls, I have had no contact.

To minimise impacts on the community, our temporary sites generally:

- are located as close as possible to the tunnels or surface work they support to minimise unnecessary tunnelling or heavy vehicle movements
- have direct access to main roads or water so our vehicles will not be travelling on your local streets, where possible
- reduce the amount of private property we need to acquire or impact
- avoid sensitive environments and community locations where possible
- are designed not to intrude on open space any more than is absolutely necessary
- avoid impact on heritage sites or items
- have acoustic sheds to reduce impacts when we will be tunnelling
- maintain access to public facilities such as pedestrian and cyclist paths, where possible.

P76 Will BL12 be returned to its natural state as well?

Final form

After construction, the portion of the site not required by Sydney Water for ongoing operations will be handed over to the Manly Warringah War Memorial Park Reserve Trust for the community to enjoy.

CHAPTER 2 ASSESSMENT PROCESS

P2-7 I would like to have some discussion regarding who reviews this and what community involvement is in this process.

2.3 Next steps

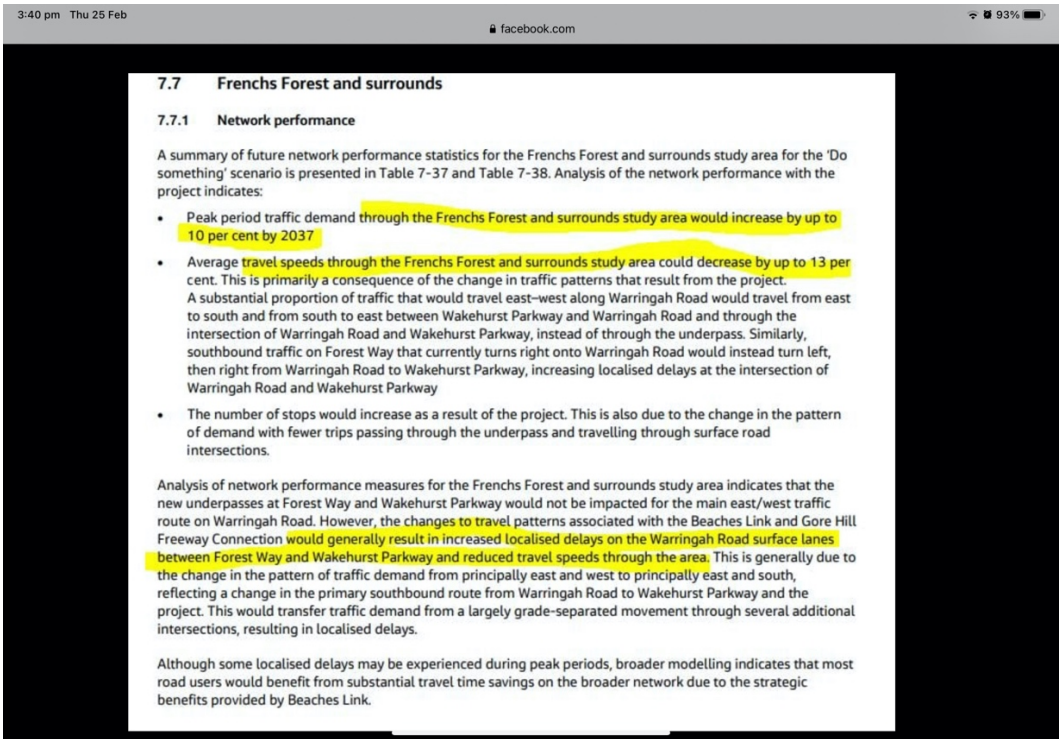
Any refinements to the approved project during the contractor's detailed design would be reviewed for consistency with the approval. This consistency review would be carried out to consider whether the refinement would:

CHAPTER 4 ALTERNATIVES

P4-16 During the online community consultation with RMS in early February I asked the question, how are 75,000 cars a day heading north going to cope when they hit the intersection of the Wakehurst Parkway and Warringah Rd traffic lights? The reply was that its not part of their scope and I would need to ask the Warringah Rd. team.
What does your modelling show with regards to traffic flow reduction and increased emissions? I would like to see the model.
Is the cost of the tunnel worth the 10% to 13% reduction in travel times?

Options were developed and assessed by a multidisciplinary team including design engineers, construction engineers, transport planners and environmental advisors with direct experience in delivering major transport infrastructure in NSW, Australia and internationally. Selection of the preferred corridor required consideration of various technical, environmental and community factors including:

- Strategic traffic demands and how they define the required connectivity to achieve transport outcomes
- Physical and operational interfaces with other major infrastructure (eg Sydney Metro, the Warringah Freeway and Northern Beaches Hospital Precinct and associated road upgrades)
- Integration with the proposed Western Harbour Tunnel and Warringah Freeway Upgrade project in the future
- Horizontal alignments and waterway crossing methodologies that allow the tunnel to achieve acceptable vertical gradients to achieve the desired transport product, reduce whole of life emissions, operational costs, and improve safety outcomes
- Surface connections and interchanges that integrate with the arterial road network and connect bus routes and public transport nodes



7.7 Frenchs Forest and surrounds

7.7.1 Network performance

A summary of future network performance statistics for the Frenchs Forest and surrounds study area for the 'Do something' scenario is presented in Table 7-37 and Table 7-38. Analysis of the network performance with the project indicates:

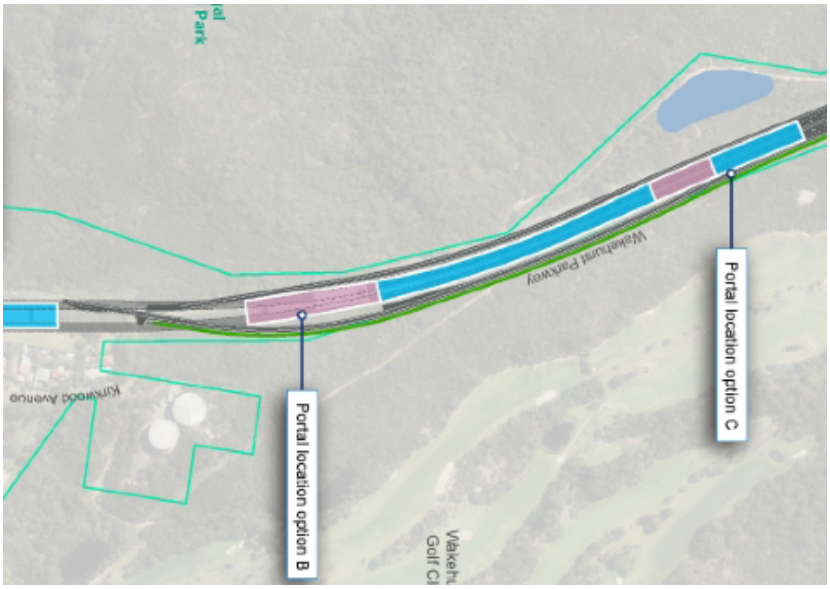
- Peak period traffic demand through the Frenchs Forest and surrounds study area would increase by up to 10 per cent by 2037
- Average travel speeds through the Frenchs Forest and surrounds study area could decrease by up to 13 per cent. This is primarily a consequence of the change in traffic patterns that result from the project. A substantial proportion of traffic that would travel east–west along Warringah Road would travel from east to south and from south to east between Wakehurst Parkway and Warringah Road and through the intersection of Warringah Road and Wakehurst Parkway, instead of through the underpass. Similarly, southbound traffic on Forest Way that currently turns right onto Warringah Road would instead turn left, then right from Warringah Road to Wakehurst Parkway, increasing localised delays at the intersection of Warringah Road and Wakehurst Parkway
- The number of stops would increase as a result of the project. This is also due to the change in the pattern of demand with fewer trips passing through the underpass and travelling through surface road intersections.

Analysis of network performance measures for the Frenchs Forest and surrounds study area indicates that the new underpasses at Forest Way and Wakehurst Parkway would not be impacted for the main east/west traffic route on Warringah Road. However, the changes to travel patterns associated with the Beaches Link and Gore Hill Freeway Connection would generally result in increased localised delays on the Warringah Road surface lanes between Forest Way and Wakehurst Parkway and reduced travel speeds through the area. This is generally due to the change in the pattern of traffic demand from principally east and west to principally east and south, reflecting a change in the primary southbound route from Warringah Road to Wakehurst Parkway and the project. This would transfer traffic demand from a largely grade-separated movement through several additional intersections, resulting in localised delays.

Although some localised delays may be experienced during peak periods, broader modelling indicates that most road users would benefit from substantial travel time savings on the broader network due to the strategic benefits provided by Beaches Link.

P4-47 The evaluation to choose portal B over portal C was purely a cost saving exercise at the expense of the local community. As a resident from Frenches Forrest was quoted as saying in the Manly Daily "The Warringah Rd project was a living hell for 5 years", this project will be bigger and longer, and RMS could have moved the tunnel entrance 200m further north and BL12 north of BL13 mitigating Kirkwood St resident's exposure.

Constructability and design	• Portal location option B would enable traffic to be diverted around the outside of a central work zone • Portal location option B would result in a reduction of about 450 metres of surface works compared to portal location option A • Portal location option B would include a tunnelling length of 200 metres at a maximum grade of six per cent compared to 750 metres at a maximum grade of six per cent at portal location option A • Portal location option B would require about 450 metres less tunnelling than portal location option C.
Community and environment	• There would be a reduced impact on Duffys Forest endangered ecological community compared to portal location option A



CHAPTER 5 PROJECT DESCRIPTION

P5-5 The tunnel portal position in all the drawings I have seen in the EIS so far has no exact dimension or the drawings have no scale. How accurate are these drawings? Can we get an accurate dimension drawing of what is planned in our vicinity?

P5-7 Why are these tests not carried out prior to the EIS - surely, they have bearing on the design?

5.1.3 Preparatory investigations and surveys

The project does not include preliminary works, including surveys, test drilling, test excavations, geotechnical or contamination investigations or other tests, sampling or investigations carried out for the purposes of the reference design or assessment of the project.

P20 Where are the lateral dimensions and can we have the portals and emission stacks shown on the drawing? The vertical dimension show the tunnel at 23m below my house is this correct?

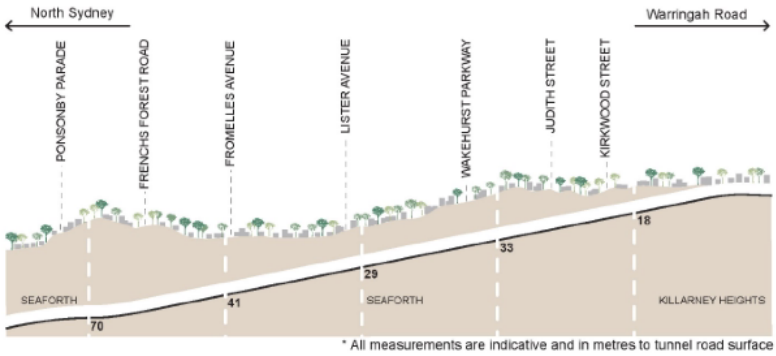
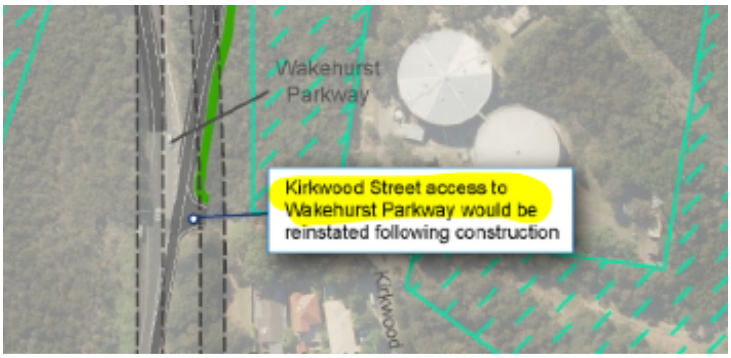


Figure 5-12 Indicative vertical alignment of the ramp tunnel connection to the Wakehurst Parkway

P5-29 The northern entry of Kirkwood St to the Wakehurst is used as a 'rat run'. I would like to see it remain permanently closed, or no right turn from Kirkwood to the Wakehurst and no left turn from the Wakehurst to Kirkwood St. Is this possible?



P5-46 I wonder if we need to go down this path as the more I read the EIS the more I realise the situation is becoming untenable?

5.2.10 Property acquisition

The project has been designed to minimise land acquisition and limit the severance of private properties. Property impacts are discussed further in Chapter 20 (Land use and property).

The total area and number of properties that would be acquired for the project may change as the project continues to be refined, or in response to changes resulting from the exhibition of the

P5-49 How much input to the "further design "of the barriers built at our back fence. During the community consultation in February we were told the double stacked site sheds will be kept away from our back fences and installed on the other side. How is the barrier going to be built on top of the sewer main there? Can we have confirmation of BL12 design?

Infrastructure	Summary
Noise attenuation measures	Noise attenuation measures as part of the project at Killarney Heights and Frenchs Forest would include two new noise barriers along the northern end of the Wakehurst Parkway in Frenchs Forest, with a nominal height between four and five metres installed where required. The final height and design of the noise barriers would be confirmed during further design development.

CHAPTER 6 CONSTRUCTION WORK

P6-7 When do we get to see the site establishment plan?

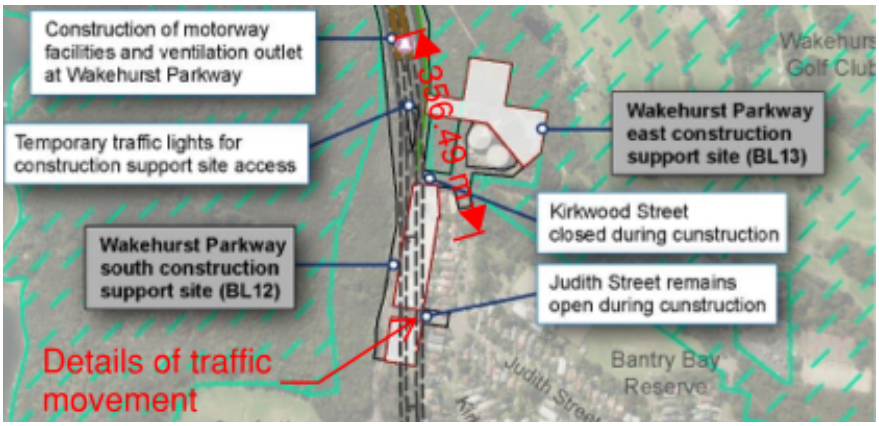
6.3.2 Site establishment

Site establishment would occur prior to the main construction activities commencing. Similar to the early works described above, subject to conditions of approval (and approval of relevant site establishment plans), site establishment activities also include works which are of low environmental impact and could be carried prior to the formal approval of the main works

P6-29 Where is all the mechanical and electrical infrastructure personnel and materials being located for the project as during the community online discussion in early February tony from the rms repeatedly said, that “BL12 laydown area was being used for the storage of bollards and barriers”?

Mechanical and electrical infrastructure	The mechanical and electrical infrastructure would include the installation of: • Tunnel lighting and surveillance cameras • Operations management and traffic management equipment • Toll points within the mainline tunnels • Cross passages and equipment rooms, including lighting, power, exit lights and signage • Emergency and surveillance systems • Fire systems and protection equipment • Underground pump stations • Ventilation system, jet fans and support frames • Cabling including high voltage and low voltage cables, power supply cables from substations, power and control cables from jet fans to substations and communications cables • Substation equipment.

P6-49 As we are close to the emissions exhaust stacks, I’m very concerned about the air quality I will be exposed to in the future. Could you possibly tell me how far it is from my front door to the stacks as the diagram has no scale

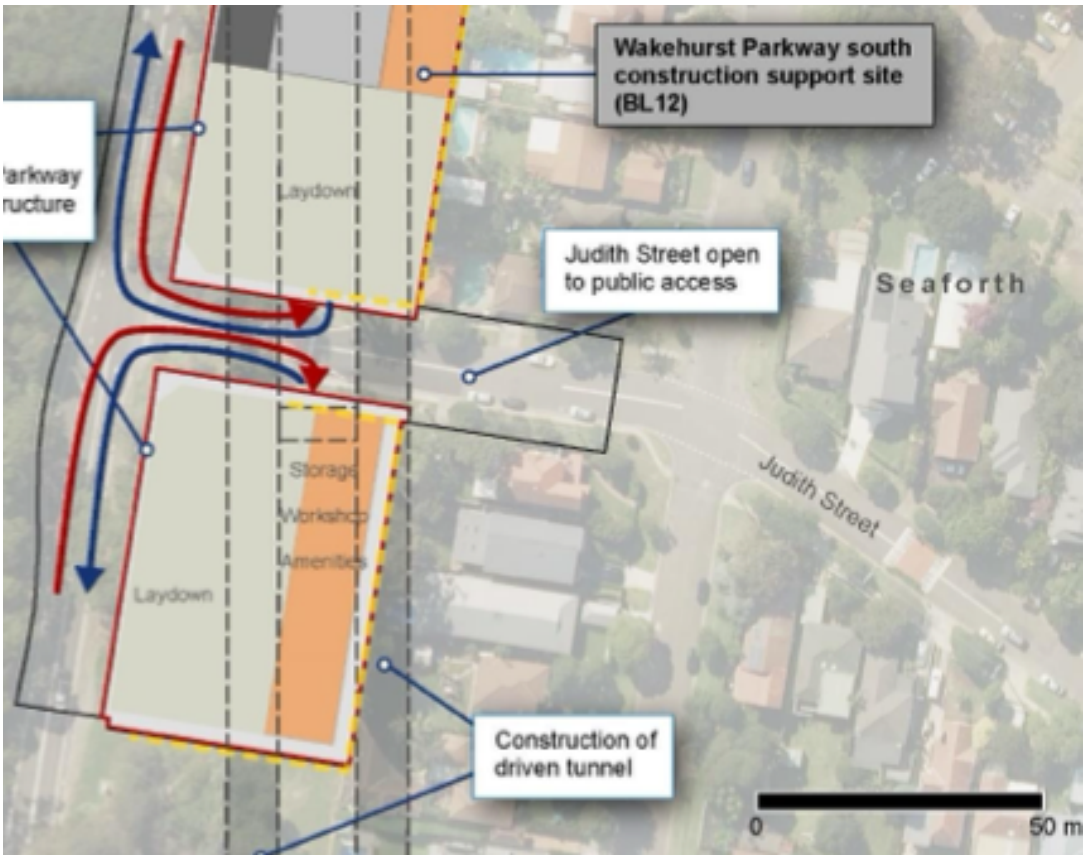


BL 12

P6-75 Wakehurst Parkway south BL 12

Key activities	Key activities that would occur on, or be supported by, this site would include: • Support site works including clearing and grubbing, topsoil stripping, bulk earthworks, minor retaining structures to reshape and regrade existing site • Construction and operation of temporary site facilities, including a workshops, staff offices and amenities, pavements and car parking • Support the upgrade of Wakehurst Parkway and also the construction of the cut and cover tunnel and trough and motorway facilities at Wakehurst Parkway • Supplementary office support for tunnelling works at Wakehurst Parkway east construction support site (BL13).

- During the community online information session Tim from TNSW repeatedly said its used for storage of bollards and barriers.is this correct?
- Do you have details of the regrade?
- How many car spaces are being made?
- How many workers do you envisage using BL 12&13 at its peak as I want to get an idea of how many workers will be parking on our streets?
- Typically, the parking is only for office staff is that the case here?
- Can you confirm that there will be no double height sheds along our back fences as they will cause privacy issues.



Hours of construction	General site activities and spoil haulage would be carried out during standard construction hours (7am to 6pm Monday to Friday, 8am to 1pm Saturday). No spoil haulage or surface civil works would occur on Sundays or public holidays. Occasional works outside of standard hours to support traffic staging and switches on the Wakehurst Parkway and intersection modifications during site establishment may be required.

As per your virtual information session, which was clarified twice, work outside of these hours will be less than %1 of the time. That's 10 days only in 3 years.

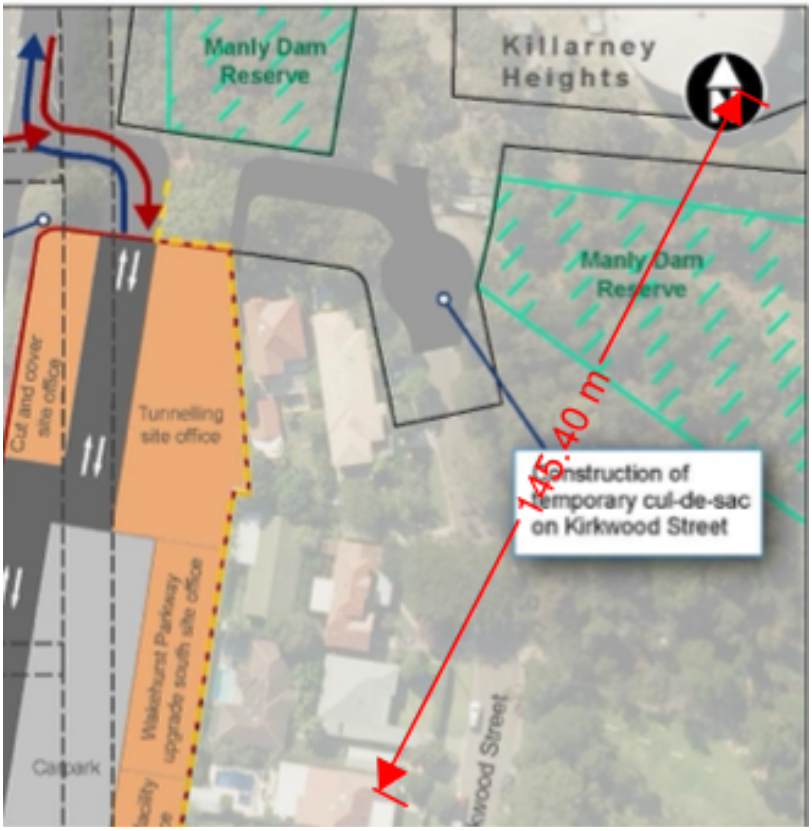
I have heard that there is no left turn from Judith St to the Wakehurst parkway. Your diagram shows a left turn or is that only for the RMS-TNSW

P6-76/78

Wakehurst Parkway east (BL13)

Key feature	Summary
	• Treatment of wastewater from tunnelling activities • Support for tunnel fitout and finishing works • Utility works associated with surface works, the temporary construction site, and permanent operational infrastructure • Excavation, handling and stockpiling of tunnel spoil • Backfill of access decline • Testing, commissioning and site rehabilitation.
Hours of construction	General site activities and spoil haulage would be carried out during standard construction hours (7am to 6pm Monday to Friday, 8am to 1pm Saturday). No spoil haulage or surface civil works would occur on Sundays or public holidays. Tunnel construction and fitout would be carried out up to 24 hours per day, seven days per week either within an acoustic shed or underground. Night time deliveries would be required to support the tunnelling activities.
Access arrangements	Access in and out of the site would be via a new temporary connection to the Wakehurst Parkway.

Firstly, I have noted that BL 13 is the support site for the tunnel fit out and there will be no fit-out support from BL12. This hugely impacts me as BL 13 is a 24h a day operation for fit out which means there will be workers driving up and down Kirkwood street, waking me up every night for 5 years. Our house will need some noise remediation as a result of this to enable us to cope during this period. I'm used to having both front and back doors open when I'm home in the warmer month which provides natural cooling from the sea breeze. Now we will have to close the windows to keep the noise out which will necessitate the need for air conditioning and the associated costs.



My bedroom window is 145m from a 24h construction site noise for 5 years the impact of this on my family's health will be dramatic. I really need someone from RMS or TNSW to come and meet with me to discuss how we deal with these issues

P6-83

6.9.1 Construction workforce and hours

Construction workforce

The project would be expected to support up to 7500 full time equivalent jobs (direct employment) during the five to six years of construction. About 2350 full time equivalent jobs (2000 for Beaches Link and 350 for the Gore Hill Freeway Connection) would be expected to be supported during peak construction.

How many of these workers are on BL 12&13 site and where will they be parking?
At the moment I'm working on a government construction site that was lucky enough to have an area for the 250 workers to park near the site. Recently this area became closed and the workers started parking on residential streets. The workforce began parking in the residential streets for a radius of a 15min walk from the site. These workers cars take up every single available car space. Some even bring push bikes in their utilities to ride from their car to site. None of them bring tools daily as everyone has on site boxes. This question was raised numerous times during the virtual sessions with answers like
- "the work force will be tool boxed not to park in residential streets" this clearly doesn't work as I'm currently experiencing a work force that has gone through the same toolbox talk and totally ignores it.
- the other reply was its not our issue it's a local government issue, this is your issue as its your project, and you have the power to make the contractor provide transport or parking.
As an aside the government project I'm on provides a bus to connect from a transport hub and these issues still remain. These local residents were lucky as the project only ran

for 3 weeks after the parking area was closed. We are going to be exposed to this nightmare for 6 years. Photo supplied of Kirkwood ST at 7am 20.2.21 showing minimal on street parking available.

P6-84 WHEN DO WE SLEEP?

		hours for the above reasons.
Surface-based support of underground tunnelling, activities and tunnel fitout	Up to 24 hours per day, seven days per week	Surface-based activities at temporary construction support sites are typically required to support underground tunnelling and tunnel fitout. The support activities would need to occur 24 hours per day, seven days per week when tunnelling and tunnel fitout are occurring. Spoil handling outside of standard construction hours at the surface would be carried out within acoustic sheds at tunnel temporary construction support sites.

CHAPTER 7 STAKEHOLDER AND COMMUNITY ENGAGEMENT

P7-3

7.1.1 Engagement objectives and strategy

The engagement process aims to provide opportunities for community and stakeholder involvement throughout all phases of the project. To achieve this, the following engagement objectives have been applied:

- Provide clear, consistent and timely information about the project to stakeholders and the community
- Provide communications in a variety of mediums
- Promote and raise awareness of the project and engagement activities being carried out
- Foster and develop positive and meaningful relationships with stakeholders and the community
- Identify opportunities for community and stakeholder groups to be proactively involved in the project
- Collaborate with the community and stakeholders to help shape the design of the project at each key development phase
- Address and respond to community and stakeholder issues raised in a timely and transparent manner

As I have raised numerous issues already in this submission and as I proceed through the EIS there will probably be more issues. What will the time frame be for your response and what scope is there for change in the design?

P7-5 As a stake holder I would have expected considerably more consultation regarding the project and the impact om my family's life. Up until February 2021 I have had no direct individual contact with RMS or Transport NSW(TNSW) despite emails and phone calls. I have attended community feedback days and online sessions. We had a street meeting with the local member and RMS very early on. Every time TNSW has done a pamphlet drop I have called the number to tell them that I work during the day so am obviously unavailable for the face-to-face discussion and requested TNSW to send a representative out to have the discussion regarding the tunnels impact on our lives. On the 11.2.21 Timothy Kwok of TNSW called and we are in the process of arranging a meeting.

7.1.3 Stakeholders

Stakeholders were identified through consideration of the project's potential direct and indirect impacts and from records of previous correspondence with relevant government bodies, business groups and community groups. Engagement has included ongoing liaison and consultation with the following stakeholder groups:

- Government Ministers and elected representatives
- Australian and NSW government agencies
- Local councils
- Property owners and residents along and near the alignment

We have had almost zero direct engagement despite requests.

P7-17 In how many of the 3890 resident door knocks have you actually met with someone?

I have only ever seen the pamphlets left in my letter box and I don't know of anyone else in the street who has actually engaged with your representative

Direct engagement with individual stakeholders	
Stakeholder meetings	More than 88 meetings were held with local precinct committees, schools and associated Parents & Citizens (P&C) Associations, resident groups, special interest groups, sporting associations, Government agencies and local councils.
Door knocks	More than 3890 residences.

7.3.3 Issues raised by the community

All questions, comments and issues raised by the community have been recorded in the projec database. Feedback received during both consultation periods has been considered and addressed as part of the environmental assessment and, wherever possible, has been incorporated into the design.

Consultation process	Inadequate consultation and dissatisfaction with the process.	This chapter provides an overview of the communication and engagement activities carried out to date, and engagement and communication tools which would be used to support the public exhibition of this environmental impact statement and during project delivery. Communication tools and activities for informing and consulting with stakeholders would continue to be flexible, to suit the nature and scale of each stakeholder's interests and issues, and to reflect any restrictions on face to face engagement pending any COVID-19 requirements in place during the life of the project. A detailed Community communication strategy would be developed prior to the start of construction pending project approval. This would be based on the framework developed and included in Appendix E (Community consultation framework).
	Lack of transparency and community involvement as part of the early project development.	
	Timing and inadequacy of available project information and distribution.	
	Lack of trust in the validity of the information provided.	
	Dissatisfaction with project team response timeframes.	
	Accessibility, location selection and timing of community information sessions.	

CHAPTER 8 CONSTRUCTION TRAFFIC

P8-3 During the online community consultation in February there were numerous discussions regarding the parking of contractors on residential streets, and we were informed by TNSW that if contractors of employees are parking on residential streets they will be removed from the project. Can we confirm this is correct? We are going to need some community consultation regarding this issue. Out of interest what was the estimate of loss parking spaces. What is the maximum number of workers using BL12 & 13? What is the qualitative impact of parking overflow?

Car parking areas for construction workers would be provided at the Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites. Worker parking would be maximised within the constraints of the respective temporary construction support site. Parking for site vehicles associated with the realignment and upgrade of the Wakehurst Parkway would be managed as the works sites move and would be contained within the relevant work sites. The number of car parking spaces would be determined during construction planning.

Project impacts	Method of assessment	Assessment output
Road traffic	Analysis of road network performance during construction based on strategic traffic forecasting and modelling of the worst case construction traffic scenario.	Quantitative assessment of road network performance with and without the project.
Local roads and parking	Analysis of changes to local road access arrangements, loss of parking spaces and availability of comparable alternative parking in nearby locations. The analysis considers both temporary impacts (ie during construction) and permanent impacts.	Qualitative assessment of local road changes. Estimate of number of lost parking spaces. Qualitative assessment of the impact of parking overflow to parking in nearby locations.
Public transport	Analysis of changes to public transport routes and stops, and service timeliness and efficiency during construction.	Qualitative assessment of impacts on public transport performance (increase or decrease in travel times).

Ref	Phase	Impact	Environmental management measure	Location
CTT11	Construction	Construction traffic	Where provision of construction on-site parking cannot accommodate the full construction workforce, construction worker parking will be actively managed to minimise impacts on parking on local roads. Depending on the location, this will include encouraging the use of public transport and may include provision of shuttle buses for workforce transport where appropriate.	BL/GHF
CTT12	Construction	Construction traffic	Any adjustments to existing bus stops will be determined in consultation with relevant stakeholders including other	BL/GHF

P8-62 Why has the 169 route been changed as it's the perfect route to transport workers to site?

Bus stops within the construction footprint along Wakehurst Parkway in Seaforth, Killarney Heights and Frenchs Forest would be temporarily relocated during construction. This includes bus stops for bus services operating along Wakehurst Parkway (routes 141, 169, 173 and 169X) which provide connections to Austlink Corporate Centre, Narraweena, Manly and Sydney CBD. Adjustments to

P8-59 The diagram I have attached on page 11 from Ch 6 shows traffic exiting from Judith St to the Wakehurst parkway whereas you state a different scenario below.

The closure of Kirkwood Street to general traffic at its intersection with Wakehurst Parkway is predicted to result in a redistribution of traffic to Judith Street or Burnt Street. Given the relative difficulty in performing a right turn manoeuvre out of Judith Street across Wakehurst Parkway, the assessment has assumed that existing local traffic that currently turns right out of Judith Street and Kirkwood Street would use the traffic signals at Burnt Street instead. The impacts to the performance of the Wakehurst Parkway/Judith Street intersection are considered negligible and would worsen from LoS B to LoS C during the AM peak, however would improve from LoS D to LoS C in the PM peak.

Table 8-21 Modelled intersection performance in Frenchs Forest and surrounds (AM peak (8am-9am) and PM peak (5pm-6pm) during construction in 2024)

Intersection/peak period	Base case 2024 (without construction traffic)				Construction case 2024 (with construction traffic)			
	Demand flow (vehicles per hour)	Average delay (seconds)	LoS	V/C	Demand flow (vehicles per hour)	Average delay (seconds)	LoS	V/C
Wakehurst Parkway/Burnt Street/Seaforth Oval car park								
AM peak	1160	7	A	0.42	1470	21	B	0.67
PM peak	1430	6	A	0.47	1610	17	B	0.60
Wakehurst Parkway/Judith Street/BL12 construction support site access								
AM peak	1520	27	B	0.76	1640	30	C	0.51
PM peak	1800	49	D	0.82	1870	33	C	0.53
Wakehurst Parkway/Kirkwood Street/BL12 construction support site access								
AM peak	1470	52	D	0.65	1510	45	D	0.46
PM peak	1670	71	F	0.54	1710	59	E	0.44

CHAPTER CONSTRUCTION NOISE AND VIBRATION

P10-6 What noise mitigation and monitoring will be in place during the project as we are one of the most sensitive receivers having 5 work sites around us and 24 hour a day personnel movement at my front door?

10.3.1 Noise sensitive receivers and noise catchment areas

The location and type of noise sensitive receivers near temporary construction support sites, construction sites and haulage routes were identified using a combination of aerial photography and visual inspections. These noise sensitive receivers were then grouped into noise catchment areas (NCAs) along the project alignment, being areas of similar acoustic environments. The noise catchment areas are shown in Figure 10-2 to Figure 10-5.

10.3.2 Background noise monitoring

Noise monitoring was carried out at 47 locations between June 2017 and April 2019 to establish existing background and existing traffic noise levels within the noise catchment areas. The noise monitoring locations are shown in Figure 10-2 to Figure 10-5. Noise monitoring carried out from 2017 is considered representative of the 2020 noise environment and is applicable for the purposes of the construction and operational noise assessment.

Further details of the noise monitoring are provided in Section 2 and Annexure C of Appendix G (Technical working paper: Noise and vibration).

P10-9 Kirkwood is mostly area NCA 54..1.Near by is NCA 53.1&4. What is L42?

P10-13 Is this over the normal day time noise level? Can we get the ambient noise level measured in Kirkwood St in Kirkwood?

Table 10-3 Noise management levels at residential receivers

Time of day	Applicable noise management level ($L_{Aeq\ (15\ minute)}$)[1]
Recommended standard construction hours: Monday to Friday 7am to 6pm	Noise affected RBL + 10 dB(A)[2]
Saturday 8am to 1pm No work on Sundays or public holidays	Highly noise affected 75 dB(A)
Outside recommended standard construction hours	Noise affected RBL + 5 dB (A)

Note 1: $L_{Aeq(15\ minute)}$ is the A-weighted "equivalent noise level". It is the summation of noise events and integrated over a period of 15 minutes
Note 2: dB(A) stands for A-weighted decibel, a unit used to measure noise. Refer to Section 10.5 for a comparison of dB(A) for various activities

P10-14 I'm extremely concerned about the night-time noise levels as my wife has health concerns related to lack of sleep so it's vital that nighttime noise levels are kept to a minimum. For myself I often work night shift at the airport so I don't know how I will be able to get any daytime sleep and this becomes an occupational health and safety issue in my workplace.

Sleep disturbance criterion

A night time sleep disturbance 'screening criterion' noise goal of RBL + 15 dB(A) is used to identify the receivers where there is potential for sleep disturbance.

Where the sleep disturbance screening criterion is exceeded, further assessment is conducted to determine whether the 'awakening reaction' level of L_{Amax} 65 dB(A) would be exceeded and the likely number of these events. The awakening reaction level is the level above which sleep disturbance is considered likely.

P10-21 We need to get someone from NSWT to come and test the noise levels at the front at back of my house as the monitoring device for location L41 was taken at the Wakehurst Parkway which is not indicative of what I actually receive. I find it quite worrying not

knowing exactly what noise level I will be exposed to. The background rating levels I'm actually exposed to will be dramatically different to the figures below.

Suburb	NCA	Noise monitoring location	Rating background level (dB(A))[1](LA90)[2] Day (7am to 6pm)	Rating background level (dB(A))[1](LA90)[2] Evening (6pm to 10pm)	Rating background level (dB(A))[1](LA90)[2] Night (10pm to 7am)	Existing road noise level (dB(A)) Day (7am to 10pm) (LAeq(15 hour))[3]	Existing road noise level (dB(A)) Night (10pm to 7am) (LAeq(9 hour))[4]
Seaforth	42.1	Location L31	42	38	36	–	–
	44.1	Location L32	50	49	40	–	–
	47.1	Location L33	43	39	30	–	–
	49.1	Location L37	45	42	31	56	51
	49.1	Location L38	43	40	33	54	49
	53.1	Location L41	48	39	28	68	61
	54.1	Location L42	45	39	29	55	50

P22

The results show the following:

- Up to 107 residential receivers could experience ground-borne noise levels between 35 and 40 dB(A) from roadheader tunnelling, which would exceed the night time ground-borne noise management levels, but not the evening ground-borne noise management levels. The majority

Where rock hammers are required to be used for subsurface excavations outside standard construction hours, a large number of residential receivers could experience ground-borne noise levels that exceed either the night time ground-borne noise management level of 35 dB(A) or the evening ground-borne noise management level of 40 dB(A) as provided in Table 10-8.

The predictions for the use of rock hammers in the tunnel show the following:

- Up to 531 residential receivers could be exposed to ground-borne noise levels above 45 dB(A). The potentially affected residential receivers are mainly within Seaforth and in particular NCA 53.3 (north of Frenchs Forest Road)

P10-26 The rock tunnel hammering noise level I will be in excess of 45 dBa .is this over and above the background noise?

Suburb	NCA	Roadheader tunnelling					Rock hammer tunnelling				
		Residential receivers			Other sensitive receivers	Commercial /industrial receivers	Residential receivers			Other sensitive receivers	Commercial /industrial receivers
		> 35 to ≤ 40 dB(A)[1]	> 40 to ≤ 45 dB(A)	>45 dB(A)			> 35 to ≤ 40 dB(A)	> 40 to ≤ 45 dB(A)	>45 dB(A)		
	53.3	42	–	–	–	–	36	44	151	1	–
	54.1	12	–	–	–	–	6	6	33	–	–

Table 10-9 Number of receiver buildings exceeding construction vibration screening criteria from mainline tunnel construction

Suburb	Noise catchment area	Number of receiver buildings affected by mainline tunnelling	
		Roadheaders	Rock hammers
Risk of structural or cosmetic damage			
	All	–	–

P10-28 What does screening level mean exactly. What is the plan for temporarily relocating us when noise levels are excessive, or we can't cope? Do you find another house for us to

live in? When do we start getting a liaison person as we need to have all these relocation plans well in advance of the project starting?

Buildings with screening level above risk of human comfort

53.1	–	36
53.2	–	3
53.3	–	124
54.1	–	32

P10-32 We have 6 construction activities in our vicinity

1) BL 12 between Kirkwood, Judith and the Wakehurst to the west
2) BL 12 south of Judith
3) BL 13 spoil removal to the northeast
4) cut and cover construction to the north west
5) rock hammer, blasting and tunnelling below
6) Construction employee movement on Kirkwood St to the east

The cumulative effects of the noise from numerous work sites around us will significantly interrupt our sleep patterns which poses a great risk to our general health and wellbeing.

Cumulative airborne construction noise

Construction traffic noise

close proximity. Elevated noise levels from both projects might affect the same sensitive receivers. If this occurs, those receivers might experience amenity impacts over extended durations (construction fatigue). Also, works outside standard construction hours might be scheduled for both projects so that affected receivers do not get appropriate respite. In order to avoid these cumulative impacts, the project would consider and manage construction activities with consideration of amenity of the affected receivers, and would coordinate works outside standard

Construction ground-borne noise

Construction vibration

As we are effectively amongst numerous works sites and activities and with BL12 &BL13 only being 120m apart how do you propose to coordinate the noise so its simultaneous and what will the simultaneous level be and for what period?

10.6.12 Wakehurst Parkway south (BL12)

Construction airborne noise

Table 10-27 provides a summary of the number of residential receiver buildings predicted to experience airborne noise levels above noise management levels.

Up to 18 residential receiver buildings are predicted to experience noise levels greater than 75 dB(A) during standard construction hours when rock hammers, chainsaws and mulchers are in use as part of the site establishment and early works.

Table 10-27 Number of residential receiver buildings over the noise management levels during construction at Wakehurst Parkway south construction support site (BL12) (realistic worst case scenario)

Stage activity	Highly noise affected (L_{Aeq}[1]) >75 dB(A)[3]		Day (standard construction hours) (L_{Aeq})			Day (out of hours) (L_{Aeq})				Evening (L_{Aeq})				Night (L_{Aeq})				Sleep disturbance (L_{Amax}[2])	
	Standard hours	Outside standard hours	1 10 dB(A)	11 20 dB(A)	>20dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	Screening	Awakening
Early works	9	–	15	19	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Establish site	18	–	30	6	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Support surface works	0	–	0	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Support cut and cover and motorway facilities	0	–	0	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Site rehabilitation	0	–	6	17	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 10-27 Number of residential receiver buildings over the noise management levels during construction at Wakehurst Parkway south construction support site (BL12) (realistic worst case scenario)

Stage activity	Highly noise affected (L_{Aeq}[1]) >75 dB(A)[3]		Day (standard construction hours) (L_{Aeq})			Day (out of hours) (L_{Aeq})				Evening (L_{Aeq})				Night (L_{Aeq})				Sleep disturbance (L_{Amax}[2])	
	Standard hours	Outside standard hours	1 10 dB(A)	11 20 dB(A)	>20dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	Screening	Awakening
Early works	9	–	15	19	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Establish site	18	–	30	6	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Support surface works	0	–	0	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Support cut and cover and motorway facilities	0	–	0	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Site rehabilitation	0	–	6	17	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Cumulative airborne construction noise

The Wakehurst Parkway south construction support site (BL12) would be sufficiently far removed from locations where activities associated with other major projects would be occurring that cumulative impacts are unlikely.

While the temporary construction support site would be in use for an extended duration, the majority of the activities that would onsite would not be noise intensive. Site specific mitigation measures would be developed for this temporary construction support site with the aim of ensuring that relevant noise management levels are met during site use, minimising the potential for construction fatigue.

The use of Wakehurst Parkway south construction support site (BL12) outside standard construction hours would typically be to support the Wakehurst Parkway surface road works. The use of the temporary construction support site and the Wakehurst Parkway surface road works would be coordinated to ensure that affected receivers in the vicinity are provided with appropriate respite.

No cumulative airborne construction noise impacts are anticipated associated with this temporary construction support site.

BL 12 Is right next to BL13 - Cut & cover & tunnelling which all contribute to airborne noise.

Construction ground-borne noise

Ground-borne noise may be generated by vibration intensive works within the Wakehurst Parkway south construction support site (BL12). However, throughout these construction works it is likely that the airborne noise levels would be greater than ground-borne noise levels at the nearby noise sensitive receivers.

Construction vibration

Table 10-28 shows two heritage structures in NCA 54.1 (Bantry Bay Water Pumping Station and the Bantry Bay Reservoir) are predicted to be within the minimum working distances for major vibration generating activities. Up to 27 receiver buildings within NCA 54.1 (Seaforth) may be exposed to vibration above the human response screening level during early works. The locations of these properties are presented in Annexure L of Appendix G (Technical working paper: Noise and vibration). The most vibration intensive activity at this site is likely to be rock hammers for utility

P10-74

During standard construction hours, up to two residential receiver buildings in NCAs 54.1 (located on Kirkwood Street, Seaforth) are predicted to experience noise levels above the noise management level during early works and site establishment.

During night time works, noise levels are predicted to exceed noise management levels during site establishment works at up to 63 residential receiver buildings in NCAs 53.1 and 54.1 (within Seaforth). A high proportion of receivers (about 67 per cent) would experience exceedances of less than 5 dB(A).

Maximum noise levels at night could exceed the sleep disturbance screening level at up to 35 receiver buildings due to site establishment and tunnelling support works. None of these receivers are predicted to be exposed to maximum noise levels above the awakening reaction level.

No non-residential receivers are predicted to experience noise levels above the noise management levels.

Where noise management levels are exceeded there is a requirement to implement reasonable and feasible noise mitigation. Measures to avoid, minimise and mitigate the potential noise impacts from construction works during construction are provided in Section 10.7.

Exactly how many decibels above the ambiant noise level is the reaction wakening level,and surly its different for every person? Can I have the ambiant noise level measured at my house prior to the project commencing so I have a datum point? Will we have sound level recording devices at our homes for the duration of the project?

Table 10-29 Number of residential receiver buildings over the noise management levels during construction at Wakehurst Parkway east construction support site (BL13) (realistic worst case scenario)

Stage activity	Highly noise affected (L_{Aeq}[1]) >75 dB(A)[3]		Day (standard construction hours) (L_{Aeq})			Day (out of hours) (L_{Aeq})				Evening (L_{Aeq})				Night (L_{Aeq})				Sleep disturbance (L_{Amax}[2])	
	Standard hours	Outside standard hours	1 10 dB(A)	11 20 dB(A)	>20dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	1 5 dB(A)	6 15 dB(A)	16 25 dB(A)	>25dB(A)	Screening	Awakening
Early works	0	–	1	1	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Establish site	0	0	2	0	0	1	1	0	0	8	2	0	0	42	19	2	0	35	0

Can you explain the noise levels, my understanding is that increases in decibels are exponential? At 0 db a sound of 10 db is ten times more powerful,20db is 100 times more powerful and 30db is 1000 times more powerful. So, when you state noise levels are 5db above the ambient it could be quite dramatic. Can you have your sound expert visit our street and demonstrate the different noise levels you expect to endure so that we can get a better understanding of what to expect?

CHAPTER 11 OPERATIONAL NOISE

P11-4 I Know this chapter is about when the tunnel is complete but does the Environmental Noise Management Manual apply to the construction phase as well. Also, when the tunnel is up and running it will require ongoing maintenance. These truck movements will be at night with their reversing quackers running constantly. What are the noise effects of this on the residents as these works are typically carried out between 11pm and 4 am? Where are the service areas for the operational tunnel?

11.3.2 Sleep disturbance

Guidance for considering sleep disturbance due to maximum noise levels is provided in Practice Note (iii) of *Environmental Noise Management Manual* (RTA, 2001). The relevant considerations are:

P11-10 Does this mean we are eligible for noise mitigation?

As for the 'Do something' scenario, with the exception of Wakehurst Parkway at Frenchs Forest and certain local roads in Seaforth, North Balgowlah and Balgowlah indicated above, the majority of properties that are eligible for consideration of noise mitigation beyond the adoption of road design and traffic management measures (refer to Section 11.3.3) are due to predicted exceedances of the cumulative limit and acute noise levels, rather than increases due to the project. This indicates that existing road traffic noise levels, rather than changes due to the project, are the main driver for additional noise mitigation.

P11-12 How do you have a cumulative exceedance in one little pocket and no potential noise increase around that pocket?

P11-14 Where are the barriers planned for?

Noise barriers

Noise barriers are considered reasonable and feasible where four or more receivers are predicted to experience noise levels that exceed the noise criteria and are closely grouped (ie facades are separated by less than 20 metres), where the barriers do not make access to properties difficult, and where they are visually acceptable.

Noise mitigation options (quieter pavements, noise barriers, at-property treatment or a combination) will be confirmed as part of the further design development taking into consideration community preferences (refer to environmental management measure ONV1 in Table 11-12).

Due to the widening of the Burnt Bridge Creek Deviation and the Wakehurst Parkway and the traffic volume increases (refer to Section 11.5.2). This has resulted in a large number of receivers being considered for at-property treatment. Transport for NSW will investigate the implementation of traffic calming on the affected local roads with the aim of limiting road traffic noise increases to

Annexure R of Appendix G (Technical working paper: Noise and vibration) shows the locations of receiver buildings identified in Table 11-9. It is noted that Annexire R includes properties along

Table 11-9 Number of receivers considered for at–property treatment[1]

NCA[2]	Location	Number of receiver floors[3]	Number of receiver buildings
Seaforth to Frenchs Forest			
53.1	Seaforth	15	11
53.4	North Balgowlah	1	1
54.1	Seaforth	36	30

- NCAs 54.1 and 55.1 located in Seaforth, Allambie Heights, Killarney Heights and Frenchs Forest – sensitive receivers to the east and west of Wakehurst Parkway are predicted to experience an increase in maximum noise levels and the number of events compared to the existing situation. This is due to the realignment and upgrade of Wakehurst Parkway resulting in both the northbound and southbound carriageways moving closer to receivers and the introduction of new traffic light intersections or new bus stops in these NCAs, which in turn are likely to increases maximum noise levels and the number of events at the affected receivers.

P11-18 This is the noise level your operational tunnel will generate in our area. Is that daytime or nighttime? What is the tunnel shut down noise level? Is this over and above the ambient or is it total noise level.

Fixed facility location	NCA[2]	Project noise criteria[3]		Predicted noise level
		Intrusiveness	Amenity	
Wakehurst Parkway	NCA 54.1	35	43	<35

CHAPTER 12 AIR QUALITY

12 Air quality

This chapter outlines the potential air quality impacts associated with the project and identifies measures which address these impacts. A detailed air quality impact assessment has been carried out for the project and is included in Appendix H (Technical working paper: Air quality).

12.2.2 Construction air quality assessment methodology

Air quality impacts as a result of construction of the project include those associated with exhaust emissions from tunnelling operations, and from the generation of dust and odour.

Exhaust emissions during construction would occur due to the use of some plant and equipment. These impacts are considered to be minor and unlikely to have a noticeable impact on the surrounding environment including sensitive receivers. Any impacts associated with exhaust emissions would be managed through the environmental management measures described in Section 12.7.

Some construction activities could also result in the generation of dust and odours. The assessment methodology for the air quality impacts associated with the generation of dust and odour are described below.

Dust assessment

For the purpose of the construction dust assessment, construction activities have been categorised into four types to reflect their potential impacts:

- Demolition is any activity that involves the removal of existing structures
- Earthworks covers the processes of topsoil stripping, ground levelling, excavation (including blasting) and landscaping and primarily involves excavating, loading, hauling, tipping and compaction of material including stockpiling where required
- Construction is any activity that involves the provision of new structures, or modification or refurbishment of existing structures, including buildings, ventilation outlets and roads
- Track-out involves the transport of dust and dirt from the construction/demolition site onto the public road network using construction vehicles. These materials may then be deposited and re-suspended by vehicles using the road network.

It is difficult to quantify dust emissions from construction activities since it is not possible to predict the weather conditions that would prevail during specific construction activities. The effects of construction on airborne particulate matter would generally be temporary and of relatively short duration, and mitigation should be straightforward since dust suppression measures are routinely employed as 'good practice' at most construction sites.

This is not only because of weather conditions but the mitigation practices incorporated differ. I would expect best practice at all times. Just because something is difficult it doesn't mean standards do not have to be maintained. You need to have plans in place for all wind directions and strengths. There are ample accurate wind prediction apps available. From my experience good practice is employed at some sites not most. Today I was working on a government construction site and a worker was operating a street sweeper with an inoperable vacuum. The clouds of dust were such that the sweeper was barley visible. He was requested to stop but carried on regardless. You may put in writing what is 'good practice', but the reality is far different. How do you envisage we live through these circumstances? This is why it's necessary to move the tunnel entrance further north.

The IAQM guidance (IAQM, 2014) specifies that a dust assessment is required where:

- Human receivers are within 350 metres of the assessment zone boundary. A human receiver refers to any location where a person or property may experience the adverse effects of airborne dust or dust settlement, or exposure to dust emissions over a time period that is relevant to air quality standards and goals

As we live within 350m of the dust assessment zone boundary we are receivers.
These extracts are from Workcover. As you can see there are numerous risks involved with inhaling silicon dust. The other issue identified in the EIS is the asbestos contaminate in the soils at BL12&BL13 that will be disturbed. One of the most important issues is the workers are typically exposed for a 8 hour period where as we will be exposed for 24 hour periods.

What diseases can silica dust cause?

If a worker is exposed to and breathes in silica dust they could develop:

- chronic bronchitis
- emphysema
- acute silicosis
  - can develop after a short exposure to very high levels of silica dust, within a few weeks or years, and causes severe inflammation and an outpouring of protein into the lung
- accelerated silicosis
  - can develop after exposures of 3 to 10 years to moderate to high levels of silica dust and causes inflammation, protein in the lung and scarring of the lung (fibrotic nodules)
- chronic silicosis
  - can develop after long term exposure to lower levels of silica dust and causes fibrotic nodules and shortness of breath
  - can include progressive massive fibrosis where the fibrotic nodules in the lung aggregate
- lung cancer
- kidney damage, or
- scleroderma
  - a disease of the connective tissue of the body resulting in the formation of scar tissue in the skin, joints and other organs of the body.

As you know Worksafe changed the regulations in relation to dust exposure in July 2020 and the WES (Workplace Exposure Standard) was reduced to 0.05mg/m3 over a 8h period for 5 days. As this project runs for 24 hours 7 days our I have calculated our exposure limit would be .00148 mg/m3 ti weighted average. Is that calculation correct. How do you propose to manage and monitor this for the duration of the project?

Choosing the best control measure

Under the *model WHS Regulations*, *PCBUs* have specific duties to manage the *risks* to health and safety when using, handling, generating and storing hazardous chemicals, including silica. *PCBUs* also have a duty to ensure the workplace exposure standard for crystalline silica is not exceeded and to provide health monitoring to workers.

Managing *risks* and worker exposures to silica can be achieved by selecting and implementing measures using the hierarchy of controls:

- **substitution** such as sourcing composite stone benchtops with a lower percentage of silica
- **isolation** of the hazard – using principles of safe work design to designate areas for tasks that generate dust and appropriate worker positioning during these tasks, using enclosures and automation to conduct dust generating tasks
- **engineering controls** that minimise the risk of exposure to generated dust, for example, local exhaust ventilation, water suppression (wet cutting) or using tools with dust collection attachments
- should a risk still remain; **administrative controls**, including good housekeeping policies, shift rotations and modifying cutting sequences
- should a risk still remain; **personal protective equipment** including appropriate respiratory equipment (generally a minimum of a P2 efficiency half face respirator) and work clothing that does not collect dust.

You could isolate the hazard by moving the tunnel further north and BL12 north BL13. Administrative controls, we can't rotate shifts may have to seek temporary accommodation. Wearing PPE at home will only be for evacuation purposes.

The workplace exposure standard

The workplace exposure standard for respirable crystalline silica (silica dust) that must not be exceeded is 0.05 mg/m^3 (eight-hour ti weighted average).

PCBUs should keep worker exposure to silica dust as low as reasonably practicable. Air monitoring must be conducted if there is any uncertainty that the exposure standard is being exceeded or to find out if there is a risk to a worker's health.

Learn more about the changes to the WES for silica dust and use the silica dust workplace checklist to manage the change in your workplace.

We will require monitoring as per WHS.

Health monitoring for workers exposed to crystalline silica

Under the *model WHS Regulations*, *PCBUs* must provide health monitoring for workers if they carrying out ongoing work using, handling, generating or storing crystalline silica and there is a significant risk to the worker's health because of exposure.

Due to the high dust exposure risk we will be exposed to it will be necessary for us to have dust monitors for both silica and asbestos with real time readings otherwise we will need to err on the side of caution and treat all dust from your sites as dangerous and evacuate.

12.2.3 Operational air quality assessment methodology

Air quality impacts from the operation of the project are associated with emissions from vehicles using the project. The impact of vehicle emissions was considered in terms of effects on in-tunnel air quality, local air quality, regional air quality and odour.

Your test point of CR35 was 515m form the portal and the EIS appendix stated it as one of the worst 10 recivers.CR35 is 65% further away from the portal than where I live. Surely the air I will be breathing will be considerably worse. Have you modelled the expected air quality for our street? We need to meet with TNSW to resolve this. This just reinforces the need for a filtration system to be installed on the ventilation stacks as your modelling hasn't told us what the people in Kirkwood Street will be exposed. If CR35 is in the top ten worst receivers and we are going to be much worse off than that.

P12-12

The identified community and residential, workplace and recreational receiver locations were representative and not exhaustive. They have been selected using professional judgement to demonstrate potential impacts at a more detailed level. While some sensitive locations might not have been selected as representative community receivers, they have still been assessed as residential, workplace and recreational receivers in the model. For example, while the Northern

Can we have the air quality model results for the northern end of Kirkwood St?

12.5.1 Dust

Overall, dust generated as a result of construction works, with best practice management measures in place, is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short-lived and would likely only arise during dry weather where the wind is blowing towards a receiver at a time when dust is being generated and environmental management measures are not fully effective.

Due to the serious nature of dust exposure potentially containing asbestos and silica and that we will be living amongst 4 work zones what measures will be in place for us to find accommodation elsewhere. Wind predictions are extremely accurate so it will be possible to plan ahead. What is the process for the remediation of our property after each dust event to make it habitable again? The better your practices the less my health will be compromised.

Zone 5	Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13), Wakehurst Parkway north (BL14)	Connections and integration of Beaches Link with Wakehurst Parkway at Seaforth, Killarney Heights and Frenchs Forest. This includes surface road works associated with the realignment and upgrade of Wakehurst Parkway and minor changes to intersections, as well as the construction of the Wakehurst Parkway motorway facility and ventilation outlet.

Type of activity	Site category by assessment zone				
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Demolition	Large	Small	N/A	Medium	Small
Earthworks	Large	Medium	Small	Large	Large
Construction	Large	Medium	Small	Large	Large
Track-out	Large	Medium	Medium	Large	Large

- For construction dust settlement effects:
  - Zone 1, zone 2, zone 4 and zone 5 were considered to have a high sensitivity to dust settlement effects due to the high number of receivers, located near the surface construction works
- For human health impacts,
  - The sensitivity of receivers in zone 1, zone 2, zone 4 and zone 5 would be considered high, due to the high number of receivers located near surface construction works
- Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites: Medium risk of dust settlement, human health and ecological impacts as a result of demolition activities. High risk of dust settlement, human health and ecological impacts as a result of earthworks, construction and track-out activities.

The effects of airborne dust during construction works would likely be temporary and of relatively short duration. For all construction works, the aim would be to prevent dust related impacts on receivers, through the implementation of best management practices routinely used on construction sites. The proposed environmental management measures are outlined in Section

However, even with rigorous air quality management in place and the effective best practice management measures described above, there is the risk that nearby residences, commercial premises and schools near construction works might experience occasional dust impacts. This does not imply that impacts are likely, or that if they did occur, that they would be frequent or

Best practice just needs to get better. Can you please find out what occasional is? Once a month, Once a Year?

Table 12-9 Summary of potential risk relating to construction dust (without mitigation)

Zone	Activity	Step 2A: Potential for dust emissions	Step 2B: Sensitivity of area			Step 2C: Risk of dust impacts		
			Dust settlement	Human health	Ecological	Dust settlement	Human health	Ecological
Zone 5 (BL12, BL13 and BL14)	Demolition	Small	High	High	High	Medium	Medium	Medium
	Earthworks	Large	High	High	High	High	High	High
	Construction	Large	High	High	High	High	High	High
	Track-out	Large	High	High	High	High	High	High

P12-24 The risk of inhaling asbestos partials, even with best practice is too great and we will need to be relocated when ever these works are being carried out.

Dust emissions containing contaminants

There is the potential for dust emissions to contain contaminants mobilised through the disturbance of contaminated soils, and other hazardous materials (such as asbestos fibres or organic matter) during demolition of buildings and other structures. These issues would be considered on a site-by-site basis and would be effectively managed through standard air quality mitigation and management measures as outlined in Table 12-11.

- Judith Street and Kirkwood Street, Seaforth

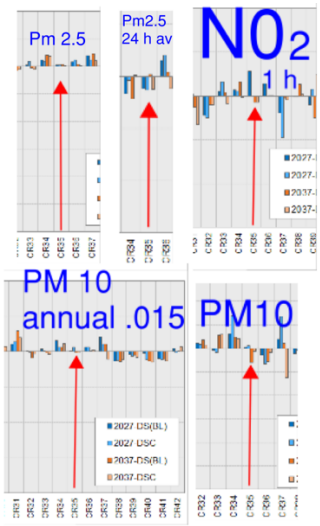
Can we have the predicted modelling data for north Kirkwood St as CR35, Alto Avenue is too far away from our residences to truly reflect the air we may breathe once the tunnel is operational?

12.6 Assessment of potential operational impacts

Key areas of consideration with regards to air quality impacts during the operation of the project would include:

- In-tunnel air quality, including protection of amenity and motorist health when using the project tunnels and during longer trips through other parts of the motorway network
- Ambient air quality for receivers at ground level, as a result of changes in the distribution of surface traffic and operation of the project's ventilation facilities

CR35 modelling of particulate and NO2



What is the predicted CO levels at CR35 and at north Kirkwood Street?
The EIS states that we have restrictions on our residence regarding the height we can build because of the POOR air quality emitted from the ventilation stacks yet say we are unaffected.
What are the expected emission levels to be received in north Kirkwood St?
This reinforces the need to filter the stacks and move them north.

CHAPTER 13 HUMAN HEALTH

13 Human health

This chapter outlines the potential human health impacts associated with the project and identifies measures to address these impacts. A human health impact assessment has been carried out for the project and is included in Appendix I (Technical working paper: Health impact assessment).

The Secretary's environmental assessment requirements as they relate to human health impacts, and where in the environmental impact statement these have been addressed, are detailed in Table 13-1 (Secretary's environmental assessment requirements checklist).

Avoiding or minimising impacts has been a key consideration throughout the design and development process for the Beaches Link and Gore Hill Freeway Connection project. A

13.2 Assessment methodology

The methodology for the human health impact assessment is aimed at assessing impacts and risks to human health from the construction and operation of the project. The human health assessment has focused on health related impacts associated with key air quality, noise and vibration and social aspects.

As previously mentioned in my submission the air quality, noise & vibration are of great concern to the health of my family. Asbestosis and Silicosis are serious issues. Lack of sleep due to noise and vibration is especially important due to the varying shift work 3 members of my family participate in and the medically related sleep problems experienced. The unknown levels of toxic emission gases we will receive.

13.2.1 Air quality

We will be affected by Silica and asbestos dust and exhaust fumes during construction and exhaust fumes from the tunnel after construction. Issues have been mentioned previously.

13.2.2 Noise and vibration

As annoyance would usually occur before physiological and other health-based impacts, annoyance-based criteria are considered to be conservative from a human health impact perspective. Some of the other criteria are based on specific health impacts such as sleep disturbance for the assessment of night-time noise.

'Usually' ??? - could you find out what percentage for me?
I have mentioned previously how this will affect us.

- 3 out of 4 of our household members work some shift work. How do you comply with OHS in the workplace if over tired?
- lack of sleep affecting general wellbeing and health
- general annoyance when awake

13.2.3 Social

One of the major losses for us will be the bushland view we have. Some people are not fazed by this but one of my joys is seeing the bush to the west of me.That will all be gone.

- Assessment of potential human health impacts associated with public safety, traffic changes, property acquisitions, impacts on open space, changes in community access and connectivity, visual amenity, construction fatigue, economic access and stress and anxiety issues during construction and operation of the project, including short-term and long-term impacts.

- Assessment of potential human health impacts associated with public safety, traffic changes, property acquisitions, impacts on open space, changes in community access and connectivity, visual amenity, construction fatigue, economic access and stress and anxiety issues during construction and operation of the project, including short-term and long-term impacts.

P13-7 BL 12 is 0.3m from us and we have BL12 south BL13 ,cut and cover ,road widening etc. We are totally surrounded.

13.3.2 Potentially impacted communities

The human health impact assessment considers community receivers identified in the suburbs close to the project. Community receivers are locations in the local community where more sensitive members of the population, such as infants and young children, the elderly or those with

Due to the serious nature of the dusts involved we need to meet with someone from TNSW to resolve these issues. A zero tolerance to silica and asbestos must be adhered to. How do you plan to monitor & keep under the 0.00148mg/m3 of dust allowed per 8 hours?

13.4.1 Health related air quality impacts during construction

Air quality impacts and details of the distribution of impacts in the construction period are presented in Chapter 12 (Air quality).

The assessment of construction air quality was carried out using a qualitative assessment approach for dust, emissions and odour impacts.

The construction air quality assessment found that for almost all construction activities, substantial impacts on receivers would be avoided through project design and the implementation of effective, industry standard mitigation and management measures. However, dust management measures may not be fully effective all the time. In situations where the construction air quality management

13.4.2 Health related noise and vibration impacts during construction

Potential noise and vibration impacts during construction are presented in Chapter 10 (Construction noise and vibration). Noise impacts in relation to human health have been considered in relation to sleep disturbance, annoyance, hearing impairment, interference with speech and other daily activities, children's cognitive function, and cardiovascular health.

All these are potential issues which we need to meet with TNSW to address

Construction noise impacts from the movement of construction vehicles

Has the noise from hundreds of workers coming and going 24h a day been addressed?

Ground-borne construction noise

Being so close the construction sites and levels up to 75db is dramatic. At what level is it feasible for us to be relocated and how will we monitor the sound.

Airborne construction noise

Construction vibration

How do we cope with the cumulative effects of the various types we are going to encounter?

13.4.3 Health related social impacts during construction

Public safety and contamination

As per the EIS we will be exposed to dust and the dusts contain asbestos and silica, both very deadly.

Property acquisition

We need to potentially talk to TNSW regarding this depending what changes if any are made to the EIS.

Loss of open space

The loss of open space impacts me directly as the view I currently experience will be gone and the space around it the community uses as well.

Visual amenity

Landscape and visual impacts are presented in Chapter 22 (Urban design and visual amenity).

This is the view I will lose, and it will be replaced by a brick wall.

Construction fatigue

Construction fatigue relates to receivers that experience construction impacts from a variety of projects over an extended period with few or no breaks between construction periods. Construction fatigue typically relates to traffic and access disruptions, noise and vibration, air quality, visual amenity and social impacts from projects that have overlapping construction phases or are back to back.

The assessment of construction fatigue in this report includes the following projects that may immediately precede or overlap with the construction phase of the project:

As we have BL12 south, BL 12 west, BL 13 to the north, cut and cover, tunnel boring, road widening, etc we will be totally surrounded by concurrent projects.

13.5 Assessment of potential operational impacts

Why was the closest air model point over 500m away when people live as close as 200m to the portal?

Open space

Why are some areas being returned to open space, and there is no mention of BL12.I would like to see it returned to open space.

Visual amenity

The operational project would include changes to local visual amenity due to the presence of new and amended infrastructure (including motorway facilities, ventilation outlets, water treatment plants, substations, bridges, retaining walls, flood walls, noise walls and drainage channels), landscaping and urban design features.

There is the potential to return BL12 to allow some trees to return to replicate the view I will lose. The tress also provide a significant sound barrier.

13.6 Environmental management measures

Key environmental management measures specific to human health impacts are provided in Table 13-2. In addition, environmental management measures relating to human health impacts are also provided in other chapters within this environmental impact statement, particularly:

- Transport and travel management measures – Chapter 8 (Construction traffic and transport and Chapter 9 (Operational traffic and transport)
- Air quality management measures – Chapter 12 (Air quality)
- Noise and vibration management measures – Chapter 10 (Construction noise and vibration) and Chapter 11 (Operational noise and vibration)
- Contamination management measures – Chapter 16 (Geology, soils and groundwater)
- Property acquisition and relocation services – Chapter 20 (Land use and property)
- Social impact management measures – Chapter 21 (Socio-economics)
- Visual amenity measures – Chapter 22 (Urban design and visual amenity)
- Cumulative impact measures – Chapter 27 (Cumulative impacts).

CHAPTER 16 GEOLOGY, SOILS & GROUNDWATER

As well as the asbestos at BL12 I have note a substantial amount of rubble fill around BL13.
Has this been investigated for asbestos as its not mentioned below?

Surface disturbance area	Potential contamination issue
Wakehurst Parkway south (BL12)	• Contamination resulting from degradation of asphalt road surface • Degradation of hazardous building materials from structures currently present on site.
Wakehurst Parkway east (BL13)	• Contamination resulting from degradation of asphalt road surface • Degradation of paint from use of the adjacent site as water reservoirs.

16.4.2 Ground movement

An assessment of ground settlement induced by tunnel excavation due to both stress redistributior in the surrounding ground (due to the removal of subsurface materials during tunnelling activities) and groundwater drawdown around drained tunnels has been carried out (Arup & WSP, 2020). The assessment approach and findings are summarised in Appendix N (Technical working paper: Groundwater).

Ground movement may occur as a result of:

- Tunnel induced movement caused by the relief of stress from the removal of intact rock during tunnelling
- Settlement induced by groundwater drawdown.

Damage category	Maximum settlement of building (mm)	Degree of severity	Typical impact

3	50 to 75	Moderate	Cracks may require some opening and may be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows may stick. Service pipes may fracture. Weather tightness often impaired. Typical crack widths between five to 15 millimetres.

Earlier in the EIS our residence was earmarked for a potential 50mm of ground subsidence due to earth works. Is this 40mm plus a total or combined with the 50mm to make a potential of 90mm?

Table 16-9 Maximum predicted surface settlement

Location	Maximum stress redistribution induced settlement (mm)	Maximum groundwater drawdown induced settlement (mm)	Maximum total settlement (mm)
Wakehurst Parkway portal	35 – 40	Less than five	35 – 40

A maximum of 40 mm plus less than 5mm totals more than 40mm not 35-40mm

No buildings were predicted to be in the 'slight' to 'very severe' damage categories. Sixty-one buildings are categorised as potentially within the 'very slight' damage category. These buildings are mainly in the vicinity of locations where the tunnel would have shallow cover near portals and larger span caverns, including:

- Wakehurst Parkway cavern and portal.

Building/structure condition surveys would be carried out as applicable prior to commencement of construction (refer to environmental management measure SG7 in Table 16-19).

We will require a survey to be carried out due to our proximity to the caverns.

16.4.3 Land contamination

P16-34 As previously mentioned we have zero tolerance for my family to be exposed to asbestos dust as a result of tunnel works being carried out .We will require to be relocated while these are carried out and remediation cleaning of our premises and clearance certificate prior to returning.

Residential properties, Judith Street & Kirkwood Street, Seaforth [B15]

Potential soil contamination may be present within surface soils adjacent to the existing residential premises located at the corners of Judith Street and Kirkwood Street with Wakehurst Parkway at Seaforth. The potential contamination could be associated with the degradation of hazardous building materials which may have been used in these structures. These areas pose a moderate contamination risk to construction given the potential for contamination and that soils are expected to be excavated and exposed during construction of the Wakehurst Parkway south construction support site (BL12).

Sydney Water Bantry Bay Reservoir site, Killarney Heights [B16]

There is the potential for possible contaminated soils at the Sydney Water Bantry Bay Reservoir site at Killarney Heights from the deposition of degraded materials from the surface of the reservoir. These areas pose a moderate contamination risk to construction given the potential for contamination and that soils are expected to be excavated and exposed during construction of the Wakehurst Parkway east support site (BL13).

Wakehurst Parkway, Seaforth to Frenchs Forest [B17]

Isolated contamination has been reported in surface soils adjacent to the Wakehurst Parkway (Seaforth to Frenchs Forest). The contamination is likely to be associated with the degradation of asphaltic road surfaces. The absence of formalised kerb and guttering along some sections of the Wakehurst Parkway may have caused asphalt to enter surface soils along these sections. These areas pose a high contamination risk to construction given the presence known soil contamination and that soils are expected to be excavated and exposed during the upgrade works to Wakehurst Parkway and adjacent construction of the support sites, Wakehurst Parkway south (BL12) and Wakehurst Parkway north (BL14).

The non-urbanised areas immediately surrounding the Wakehurst Parkway may have been historically subject to the small-scale illegal dumping of waste. Illegally dumped waste presents a moderate contamination risk to construction given the potential for contamination and that soils/wastes are expected to be excavated and exposed during the upgrade works to the Wakehurst Parkway.

P16-48

Location	Location relative to construction footprint	Construction works	Potential contaminants and associated impacts	Risk of land contamination	Risk of existing groundwater contamination
Residential properties – Judith Street/ Kirkwood Street and Wakehurst Parkway at Seaforth. [B15]	Above tunnel and adjacent to footprint of construction support site (BL12).	• Temporary construction support site establishment works • Tunnelling and associated excavation and stockpiling • Surface roadworks.	Localised contamination may be present as a result of the degradation of hazardous building materials from structures present on site. If contamination is present and not appropriately controlled, there is the potential for: • Excavation activities may mobilise and spread buried contaminants • Inhalation and/or ingestion risk to site workers and nearby residents of hazardous building materials via dust July 2020 OHS changes • Cross contamination associated with the incorrect handling or disposal of spoil/unexpected finds • Accidental leaks and spills during use of the temporary construction support site.	**Moderate** Possible contamination/ excavation activities for tunnel portal and construction compound within site footprint, within potential contamination distribution range (laterally, not vertically). Potential contamination distribution unlikely to affect tunnelling below surface levels (based on depth of tunnel).	**Low** No known groundwater contamination.

P16-49 BL 13 has potential for asbestos to be present. When are these areas going to be tested or are they going to be treated as its asbestos during earth works?

Location	Location relative to construction footprint	Construction works	Potential contaminants and associated impacts	Risk of land contamination	Risk of existing groundwater contamination
Sydney Water Bantry Bay Reservoir site (and surrounding areas), Killarney Heights [B16]	Area within and adjacent to Wakehurst Parkway east construction support site (BL13) footprint and tunnel (laterally, not vertically)	• Temporary construction support site establishment works • Tunnelling and associated excavation and stockpiling • Roadworks.	Potential soil contamination may be present within the surface soils at the location of the Wakehurst Parkway east construction support site (BL13) and the areas adjacent to it. The potential contamination could be associated with the degradation of painted surfaces on the reservoirs and windblown deposition of paints on adjoining areas. Contamination could also be potentially associated with the demolition of waste material observed across the surface of the site.	**Moderate** Possible contamination/ excavation activities for construction compound and roadwork within site footprint and within potential contamination distribution range (laterally, not vertically) Potential contamination distribution unlikely to affect tunnelling (based on depth of tunnel).	**Low** No known groundwater contamination.

P16-50 We have this risk all around us for 6 years. We need to meet with TNSW to discuss the issues and solutions.

Location	Location relative to construction footprint	Construction works	Potential contaminants and associated impacts	Risk of land contamination	Risk of existing groundwater contamination
Wakehurst Parkway, Seaforth to Frenchs Forest [B17]	Within construction footprint and Wakehurst Parkway south construction support site (BL12). Above proposed tunnel alignment.	• Temporary construction support site establishment works • Tunnelling and associated excavation and stockpiling • Surface roadworks.	Localised contamination as a result of degrading asphalt road surfaces may be present along the length of Wakehurst Parkway from Seaforth to Frenchs Forest. Hydrocarbon contamination may be present in the surface soils along the road way. The non-urbanised areas immediately surrounding the Wakehurst Parkway may have been historically subject to the illegal dumping of waste. Illegally dumped waste may include heavy metals, hydrocarbons, pesticides and/or asbestos. If contamination is present and not appropriately controlled, there is the potential for: • Excavation activities may mobilise and spread buried contaminants • Cross contamination associated with the incorrect handling or disposal of spoil/unexpected finds • Accidental leaks and spills during use of the temporary construction support site • Erosion and off site transport of sediment and contamination via overland flow and stormwater runoff, affecting the water quality of local waterways.	**High** Known contamination/ excavation activities for construction compound and roadwork within site footprint and within potential contamination distribution range (laterally and vertically) Potential contamination distribution unlikely to affect tunnelling below surface levels (based on depth of tunnel).	**Low** No known groundwater contamination.

16.6.2 Consistency with Water Sharing Plan rules

All groundwater and surface water in the project area is managed through the Greater Metropolitan Region Water Sharing Plan. The Greater Metropolitan Region Water Sharing Plan provides rules to manage and allocate the groundwater resource, including specific rules on taking groundwater

How does the groundwater reduction effect the amount of surface water entering Burnt Creek. The 96% reduction of water entering Burnt Creek is a major concern. Is there a way of maintaining this water flow?

When will this panel be formed and when will we be contacted as we require an assessment?

SG5	Pre-construction	Ground movement impacts	An Independent Property Impact Assessment Panel, comprising geotechnical and engineering experts, will be established prior to the commencement of works to independently verify building condition survey reports, resolve any property damage disputes and establish ongoing settlement monitoring requirements	BL/GHF

How long after the tunnel is complete do you expect there to be on going ground movement? We will require a pre and post construction inspection. I may as well book them in now. Pre for February 2023 and post for 1 month after the completion of works that may cause damage. Do you expect any ongoing settlement.

Ref	Phase	Impact	Environmental management measure	Location
SG7	Pre-construction, construction	Ground movement impacts	Pre-construction building structure condition surveys will be offered and prepared (where the offer is accepted by the owner) for properties (and heritage assets) within the zone of influence of tunnel settlement where the degree of severity has been assessed as 'slight' or above and within the minimum working distances for cosmetic and structural damage due to vibration. The surveys will be carried out by a suitably qualified person prior to the commencement of the tunnelling and vibration intensive activities in the vicinity with the potential to affect the building/structure. Within three (3) months of the completion of construction activities that have the potential to cause settlement or vibration-related damage to the subject surface/subsurface structure, all property owners of buildings for which a pre-construction building condition survey was carried out will be offered a second building condition survey. Where an offer is accepted, a post-construction building condition survey will be carried out by a suitably qualified person. The results of the survey will be documented in a post-construction building condition survey report for each building surveyed. Copies of building condition survey reports will be provided to the owners of the buildings surveyed within one (1) month of the survey being completed. Any building and/or property damage from settlement caused by the project will be repaired at no cost to the owner. Any repairs to listed heritage items required as a result of the settlement damage, will be carried out under the guidance of a suitably qualified and experienced heritage professional.	BL/GHF

P16-77 When will we have access to the independent auditor as we need to be across the plan? When will the contamination report come out which determines the suitability of the site?

Ref	Phase	Impact	Environmental management measure	Location
SG8	Pre-construction and construction	Impacts on site workers and/or local community through disturbance and mobilisation of contaminated material	Potentially contaminated areas directly affected by the project will be further investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 2008*. This includes, but is not limited to, further investigations in potential areas of environmental interest in the project footprint, including: • Warringah Freeway (from North Sydney to Cammeray) • Punch Street, Artarmon • Willoughby Leisure Centre and Bicentennial Reserve, Willoughby • Flat Rock Reserve, Northbridge • Spit West Reserve, Mosman • Balgowlah Golf Course, Balgowlah • Wakehurst Parkway (from Seaforth to Frenchs Forest). Subject to the outcomes of the investigations, a Remediation Action Plan will be implemented in the event that site remediation is warranted. The Remediation Action Plan will be prepared in accordance with *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998). If Remediation Action Plan(s) are required for works at Flat Rock Drive (BL2), Balgowlah Golf Course (BL10) construction support sites and surface works and construction support site locations along the Wakehurst Parkway (BL12, BL13 and BL14) these will be developed with consideration of environmental management measure WM6. An independent NSW EPA Accredited Site Auditor will be engaged where contamination is complex to review applicable contamination reports and evaluate the suitability of sites for a specified use as part of the project.	BL/GHF

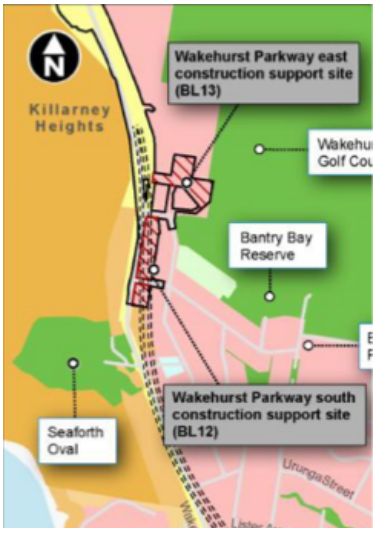
As we are going to be potentially expose 24 hours a day and the eight hour time weighted average (TWA) of 0.1f/mL is the maximum exposure what is the 24 hour (TWA)?

SG10	Construction	Impacts on site workers and/or local community through disturbance and mobilisation of contaminated material	Asbestos handling, management and disposal will be carried out in accordance with relevant legislation, codes of practice and Australian standards.	BL/GHF
SG11	Construction	Impacts on site workers and/or local community through disturbance and mobilisation of contaminated material	A hazardous materials assessment will be carried out prior to and during the demolition of structures. Demolition works will be carried out in accordance with the relevant Australian Standards and relevant NSW WorkCover Codes of Practice, including the Work Health and Safety Regulation 2011 (NSW) to minimise potential exposure of construction personnel and the public to hazardous materials.	BL/GHF

Ref	Phase	Impact	Environmental management measure	Location
SG13	Construction	Impacts on site workers and/or local community through disturbance and mobilisation of contaminated material	The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contamination discovery procedure, as outlined in the *Guideline for the Management of Contamination* (Roads and Maritime Services, 2013).	BL/GHF

CHAPTER 20 LAND USE AND PROPERTY

P20-13 Why isn't BL12 north mentioned for any land use?



P20-15 Again BL12 north is not listed as a construction support site is this correct? It's very good news.

Figure 20-5 Land use and zoning – Seaforth to Frenchs Forest

The residual land bounded by Judith, Wakehurst Parkway & Kirkwood Street. I would like to see returned to the current state or community use on completion of the project.

20.4 Assessment of potential impacts

The project has the potential to impact on properties and land use in the following ways:

- Occupation of surface properties, including temporary use during construction and perma acquisition for operational infrastructure
- Acquisition of substratum (below ground) land for the project tunnels
- Return of residual land (full or partial lots) required for construction but not for operation c project
- Disruption of existing activities and limitations on the development potential of directly aff properties
- Changes in public open space availability
- Ground movement impacts to properties during construction and operation of the project.

Further assessment of impacts to boat moorings and jetties are discussed in Chapter 8 (Construction traffic and transport) and Chapter 21 (Socio-economics).

20.4.1 Property

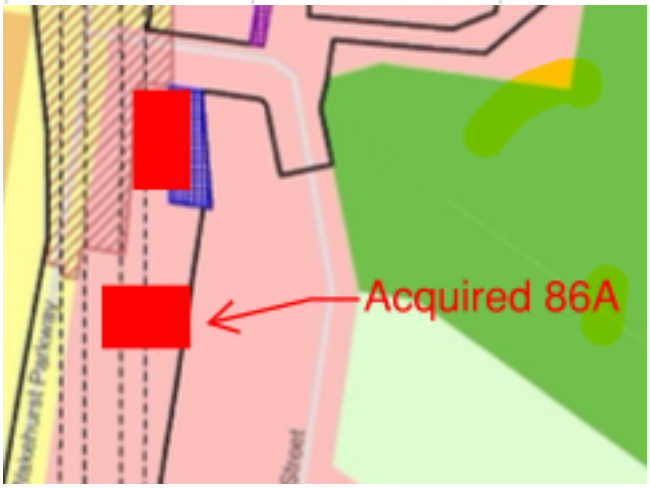
Acquisition and temporary use of surface properties

Transport for NSW currently owns a number of properties at Seaforth between the Wakehurst Parkway, Kirkwood Street and Judith Street that were acquired in the 1970s and 1980s for the Warringah Transport Corridor that was proposed at the time. The properties are vacant lots. These

Two properties have been acquired, (shown in red), so far in Kirkwood St since the announcement of the tunnel. Will they be returned to green space?

Table 20-2 Anticipated property acquisition required for the project

Location	Ownership	No. of property acquisitions[1]		Properties acquired for Beaches Link (as of 15 September 2020)
		Full property acquisition	Partial property acquisition	
Beaches Link component				
Seaforth and Killarney Heights	Private - residential	-	-	1



P20-23 Will the BL 12 &13 sites be remediated to be consistent use post construction? There is no mention of BL12 in table 20-4. Why?

Temporary leases

Lease agreements identified in Table 20-2 would mainly be required for temporary construction support sites. Leased land would be rehabilitated in consultation with the relevant landowners, which are councils and government agencies, and returned as soon as practicable at the completion of construction. It is expected that following construction, sites would generally continue to be used consistent with their existing use. Table 20-3 provides a summary of the property leases associated with temporary construction support sites.

Residual land

Residual land comprises lots that are created either when a property is only partially acquired to construct or operate the project or when land acquired to facilitate construction of the project is not required for the operational footprint.

P20-29 Due to the ongoing nature of the ground movement we will require annual ongoing structural building assessments until the ground movement ceases and remediation when required.

Ground movement impacts

Excavation below ground has the potential to result in ground movement at the surface (settlement). Depending on the amount and nature of the ground movement, settlement may present a risk to nearby buildings and other structures during construction and operation of the project.

An assessment of potential ground movement impacts associated with the project is provided in Chapter 16 (Geology, soils and groundwater). The assessment identified the worst case risk of settlement impacts to buildings as 'very slight', where any damage can be easily treated during normal decoration. The areas where the most settlement is predicted to occur would be in the vicinity of the tunnel alignment, primarily above Flat Rock Reserve, the Wakehurst Parkway tunnel portal, and at the Burnt Bridge Creek Deviation tunnel portal, though no buildings are present at these locations. As such, the risk of building impacts due to settlement is therefore very low during both construction and operation of the project. Environmental management measures to manage the potential impacts from ground movement are included in Chapter 16 (Geology, soils and groundwater).

20.4.2 Land Use

Potential land use impacts during construction

Wakehurst Parkway south construction support site (BL12)	The Wakehurst Parkway south construction support site (BL12) would occupy land east of the Wakehurst Parkway between a point just south of Judith Street and the northern end of Kirkwood Street at Seaforth. The site would be located on land owned by Transport for NSW that is zoned and used for low density residential development. The temporary construction support site would temporarily change the existing land use from low density residential to construction infrastructure. At the completion of construction, all of the remaining land at the site would be rehabilitated and reinstated and made available for other uses. Reinstatement of the site may require the replacement of boundary fences for existing residential properties along Kirkwood Street located adjacent to the site. Any future development on the affected land would be subject to separate assessment and approval in accordance with the *Environmental Planning and Assessment Act 1979* and is beyond the scope of this project.

Will the BL12 site be returned to open green space for community use?

Potential land use impacts during operation

P20-45 Table 20-7 As there will be restrictions on land use imposed on us as a result of the close proximity of the emissions portal is there any recourse for compensation. I could easily see in 20 years' time the opportunity for this land to be rezoned for low rise residential units would be prohibited resulting financial loss.

Potential implications for existing and future planning controls
All land use zones within 300 metres of the ventilation outlet, where habitable residential or commercial structures would be permissible, currently have height restrictions of less than 20 metres. Where height restrictions do not exist, particularly in RE1 Public Recreation and SP2 Infrastructure (road infrastructure) zones, development of elevated habitable structures would either be prohibited or inconsistent with the aims of the zone. No additional development controls would be required to manage the interaction between the operation of the ventilation outlet and currently permissible habitable structures in the area. However, if zoning and/or development controls were to be reviewed in the future, the potential for interactions between the project and future development for buildings above 20 metres and within 300 metres of the ventilation outlet would need to be considered.

Table 20-8 Issues to be considered for projects adjoining Office of Environment and Heritage land

Issues to be considered for projects adjoining Office of Environment and Heritage land	Where addressed in the EIS
Fire and the location of asset protection zones	An assessment of bushfire risks relating to construction and operation is presented in Chapter 23 (Hazards and risks).

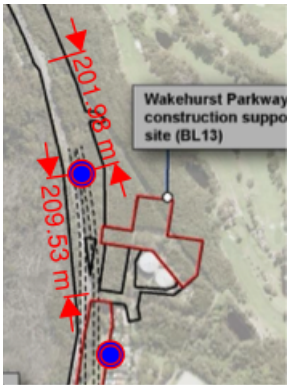
CHAPTER 21 SOCIO- ECONOMICS

21 Socio-economics

This chapter considers the potential impacts of the project on socio-economic issues from the construction and operation of the project and identifies management measures which address these impacts.

Avoiding or minimising impacts has been a key consideration throughout the design and development process for the Beaches Link and Gore Hill Freeway Connection project. A

As you can see from my submission so far, we will be dramatically affected. At the moment the tunnel is 300m from my house ,200 m north of Kirkwood Street. Moving the tunnel entrance further north and BL12 north of Bl13 would greatly reduce many impacts on my life.



21.3.3 Community values

21.3.3 Community values

This section provides an overview of those values or features within the precinct areas that are likely to be important to local and regional communities within Greater Sydney. This has been

Local amenity and character

Community values relating to local amenity and character refer to natural and physical qualities and characteristics that contribute to a person's appreciation of their surroundings. They relate to

This is the view from my living room. All the trees above the fence line will be gone and replaced with a claustrophobic concrete wall.

Community cohesion

Community cohesion refers to the connections and relationships between individuals, groups and neighbourhoods, and is encouraged by the existence of local social infrastructure, a sense of local

Already my next door neighbour has had his house acquired, this is someone who I would walk the dogs with almost daily, watch the football with or just chat to almost daily. Gone !

Community health and wellbeing

As well as my concerns regarding air quality and noise during construction and the emissions from the ventilation outlets, as a regular swimmer at Queenscliff Beach, the change to the water quality from the Tunnel pollutants into the lagoon and out on to Queenscliff. To say I'm a regular swimmer is a huge understatement. Summer holidays 3 times a day, summer at least once every day, spring Autumn 2-4 days a week, winter 1 day a week. Due to the amount of time, I spend swimming what effect will these pollutants have on my health?

P21-27 What scope is there for our property to be temporarily leased by TNSW due to us not coping with the increased stress, anxiety and the cumulative health impacts caused by the tunnel construction?

21.4 Assessment of potential construction impacts

Construction of the project would have the potential to affect the social and economic environment of the precinct areas. These potential impacts are assessed in this section.

21.4.1 Property impacts and acquisition.

The project has been designed to minimise the need for surface property acquisition. This has been done by locating road infrastructure in tunnels and, where possible, using government owned land for construction and operation of the project. Nonetheless, some property acquisition would be required to facilitate construction of the project.

Property acquisition and temporary leases

The project would require the full and partial acquisition of 46 properties. This includes temporary leases of land required for temporary construction support sites and other construction works. The tunnel alignment would also pass under numerous residential and commercial properties and social infrastructure. The nature of direct property impacts, including details of property acquisitions, temporary occupation of land is discussed further in Chapter 20 (Land use and property).

Some residents and communities near the project may experience a level of stress and anxiety due to uncertainty about potential property impacts, property acquisition and proposed changes that may be associated with the project. These concerns were raised by community members during consultation for the project.

Twenty-eight residential properties would be fully acquired for the project, requiring affected households to relocate prior to construction. Some individuals impacted by acquisition of residential properties may also experience impacts on health and wellbeing associated with disruptions to social networks and personal relationships associated with their permanent or temporary relocation or relocation of neighbours. These impacts are likely to have the greatest effect on groups such as elderly, people with a disability, longer term residents and people on

P21-28 As previously discussed we are concerned at the impact the tunnel will have on our property and require an engineer's structural report prior to commencement and annual reports until settlement is complete.

Other property impacts

The mainline and ramp tunnels would pass beneath numerous properties, including residential, commercial, industrial and social infrastructure properties. Potential impacts of relatively deep

Concerns were raised during community and stakeholder consultation about potential for property damage, including to basement car parks, unit developments and pools, due to vibration from tunnelling activities. During construction, some properties located above or near the tunnel alignment may experience short term vibration and ground-borne noise impacts due to the use of equipment such as rock hammers and road headers. For most properties, vibration levels would generally be below levels that may cause potential risk to buildings or structures, including minor cracking. However, there is potential for cosmetic damage risks to a small number of properties, particularly more sensitive heritage buildings, closest to vibration intensive construction activities. Further discussion about potential vibration impacts on buildings and structures is provided in

The excavation of tunnels has potential to result in settlement at the ground surface, potentially impacting properties above or near the project. Some buildings near the project may experience very slight cosmetic damage due to settlement (for example, fine cracks that are easily treated during normal decoration), although this is not expected to impact on the serviceability or stability

P21-29 A well as the construction related issues, I have a major issue with the liveability of the area, and this will not be 'relatively short term 'it will be for a minimum of 6 years. A major issue is the movement and parking of the 500 strong workforces past my bedroom every window 24 hours a day. I'm currently working on a government project with a 200-person workforce that was lucky enough to have off street parking for the first 12 weeks but for the last 3 weeks that parking was not available. Now from 5.30 in the morning

they start arriving to get the closest on street paring to site. They take up every single space of on street parking for a 15min walking radius,1. 5Km.This will affect when I go shopping, the beach, sailing or work as I will not have anywhere to park when I return. This is in spite of the Builder toolbox talking everyone about parking and providing shuttle busses from a transport hub to site. This issue needs to be addressed as part of the EIS and Construction Company's contractual conditions.

21.4.2 Equity

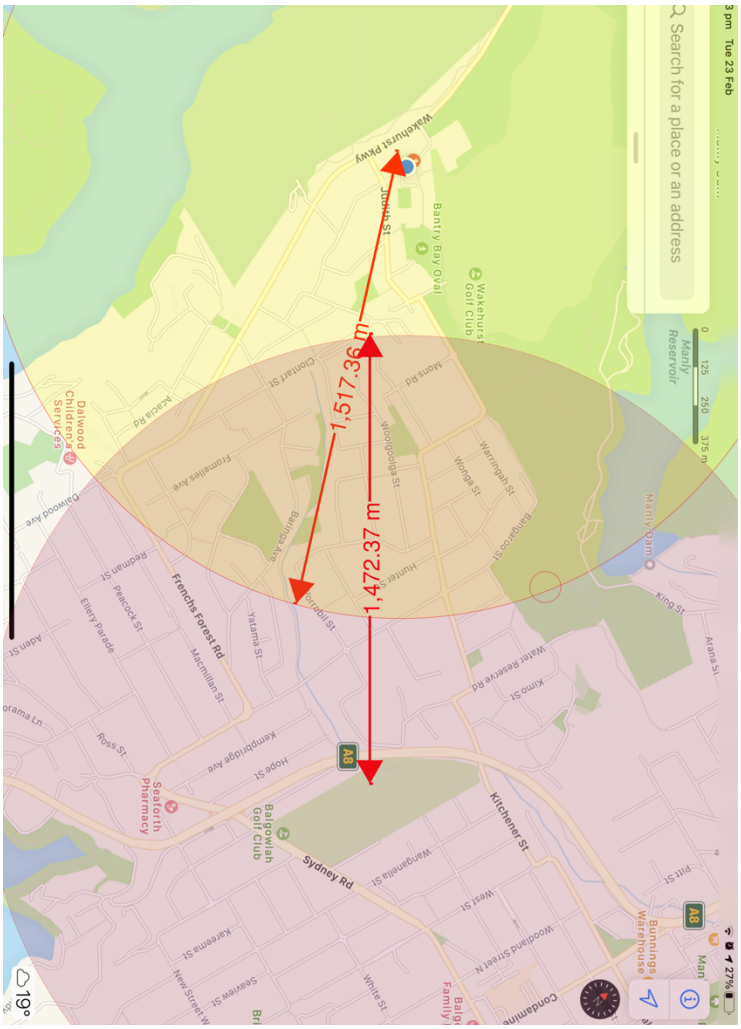
Equity refers to a fair distribution of the resources that allow residents full participation in their community. Equity requires that the well-being of people with fewer resources is protected. Changes to conditions which may affect equity in the precinct areas include impacts to amenity, liveability, access and connectivity.

During construction, it is anticipated that impacts to equity would be more acutely experienced by those communities closest to surface works, temporary construction support sites, or occupants of properties above the tunnel alignment. Potential equity impacts would mainly relate to construction noise, dust and vibration affecting the amenity and liveability of the area, as well as changes in local access and connectivity. These impacts would be relatively short-term and localised to discrete locations as construction activities at each temporary construction support site would be comparatively less than the overall construction program. After construction, many of these communities would experience benefits relating to improved access and connectivity to destinations across the Greater Sydney region.

The overall significance of potential impacts on equity during construction is considered moderate, with the sensitivity of affected residents and the magnitude of change considered to be moderate.

This is the amount of off-street parking we would expect to lose with a 200 strong work force for 6 years.

I have measured and circled the radiuses from the two northern beaches work sites to estimate the on-street parking loss. This will probably be far greater than my estimate as 70% of BL12&13 is water or park as well my estimate is from a 400 person workforce. How many people do you expect to work on the two sites? How much parking is available?



21.4.3 Population and demography

The construction workforce would generally be sourced from across the Greater Sydney region and is not expected to result in an influx of workers at a scale that would impact population and demography in the precinct areas.

The relocation of residents associated with the acquisition of residential properties have potential to result in changes to population and demography at a local neighbourhood level, although

From experience the work force will greatly impact the community. The parking issue is going to be a nightmare & TNSW needs to meet & consult with local residents to put a plan in place to deal with this issue. This is not a local council issue. The closer you live to the construction support sites exponentially greater the problem will be.

P21-30

21.4.4 Social infrastructure

During construction, potential impacts on social infrastructure in the precinct areas may result from:

- Loss of open space, parks and recreational facilities, due to use for temporary construction support sites and permanent project facilities
- Reduced visual amenity and increased air-borne construction noise, dust and visual environment, impacting on amenity for users of some social infrastructure
- Ground-borne noise and vibration from construction of the tunnels, impacting on amenity for users of social infrastructure above the tunnel alignment
- Changes in local access and traffic disruptions and delays due to construction activities and increased construction traffic

Directly impacted social infrastructure

- Reduced amenity due to location of construction works and temporary construction support sites and changes in noise, dust and visual environment, potentially detracting from the use and enjoyment for people using the remaining parts of the social infrastructure.

All of these issues effect my family as mentioned previously. One I haven't mentioned is how do I use or entertain in my back yard now, use the pool, spa ,deck & BBQ in the middle of a construction site? How do guests get here with no parking?

21.4.5 Community values

- Light spill from night time construction activities at temporary construction support sites and construction works in road reserve areas at the Warringah Freeway, the Gore Hill Freeway and Burnt Bridge Creek Deviation/Sydney Road

How much light spill do you expect and how can you mitigate the impact?

Local amenity and character

Noise, dust, vibration, traffic, and visual impacts from construction activities may temporarily impact on the amenity for some residents and social infrastructure closest to surface works. Impacts on night time amenity due to construction noise and vibration and light spill may also be experienced should works need to be carried out outside of standard daytime hours. This may impact on night time amenity or sleeping patterns for some residents. These impacts would be short-term and may

We need to discuss the actual impact with TNSW. We may need short term respite.?

P21-36 When the noise levels result in sleep loss, stress or anxiety we may need to seek respite. When will a TNSW liaison office become available to discuss how and where they will be temporally relocating us when these situations occur?

Community health and wellbeing

Some areas near temporary construction support sites and along the Warringah Freeway and surface connections such as to the Gore Hill Freeway have potential to experience impacts from construction activities that create extended periods of noise potentially above the relevant assessment thresholds including for sleep disturbance. This has the potential to result in sleep disturbance for some residents and occupants of buildings nearest to these works, potentially

P21-37 If the beaches link has 2000 jobs how many will be using BL12&13? Did I grossly underestimate the parking situation?

21.4.6 Economics

Employment

During construction, the project would benefit employment through direct employment opportunities on the project and indirect employment opportunities in businesses and industries that support this construction.

A project of this scale is expected to support up to 7500 full time equivalent job years (direct employment) during the five years of construction, including construction workers and professional and administration staff. About 2350 full time equivalent jobs (2000 for Beaches Link and 350 for the Gore Hill Freeway Connection) would be expected to be supported during peak construction. Indirect employment opportunities would be generated across local, regional and national

P21-38 As previously discussed this approach does not work. We need to meet with TNSW to discuss this issue

Employee and customer access

accessible location. A reduction in parking spaces may also impact on visitor numbers to the broader area and therefore reduce opportunities for passing trade. Limitations on business parking could also reduce productivity, employee attraction and retention. For example, competition for

workers in the area. Construction workers will be actively encouraged to use public transport rather than travelling to work by car. Where public transport availability to temporary construction support sites is limited, shuttle bus transfers may also be provided from public transport centres where

My wife and I both work from home regularly what plans do you have in place when our work is starting to become affected?

Employee productivity and communication

During construction, there would be a temporary increase in noise levels due to the use of construction plant, equipment and vehicles that may affect employee productivity and communication. The significance of impacts on employee productivity and communication for

P21-43 Why was the 169-route removed as it was the major way your work force would get to BL12&13? During the online session it was stated 'it's a TNSW discussion'.

Public and active transport

The following potential public transport impacts are anticipated:

Changes to local bus routes and bus stops would be determined prior to the start of works in consultation with relevant stakeholders, including other divisions of Transport for NSW and bus operators. Advanced notification would be provided to affected bus customers and bus stops would

21.5.3 Social infrastructure

As discussed in Section 21.4.4, a number of open spaces would be used during construction of the project. At completion, land not required for operation of the project would be rehabilitated and reinstated. However, some land would be retained for operational purposes as follows:

Where are the permanent support facilities for the tunnel operation located?

21.5.4 Community values

Local amenity and character

Operation of the project may result in changes to traffic noise levels for communities near the tunnel connections and the Warringah Freeway. In particular, increased traffic noise may be experienced by some receivers near the surface connections at the Gore Hill Freeway, Balgowlah and the Wakehurst Parkway due to forecast increases in traffic volumes and realignment or widening of roads closer to receivers. Conversely, decreased traffic noise impacts may be

Is there an accurate drawing of the road widening? How much closer will it be to my property than the current position of the Wakehurst Parkway?

P21-48 As previously stated the issues below are already affecting my family?

Community health and wellbeing

Some residents and communities near the project may experience a level of stress and anxiety (refer to Chapter 13 (Human health)) due to uncertainty about potential property impacts and proposed changes. This may impact on the health and wellbeing of some individuals. Some residents impacted by acquisition of residential properties may also experience impacts on health and wellbeing associated with disruptions to social networks and personal relationships associated with the relocation of residents.

P21-53 We have just had our bus services reduced and with the tunnel project will lose our bus stops. Is the diagram below accurate? We need to meet with TNSW and discuss this.

Public and active transport

The project would provide opportunity for improved access to public transport for local and regional communities. The new tunnels would allow the opportunity for new public transport routes including express buses within the tunnel to be developed in response to diverse travel demands and support new social and economic development such as the Northern Beaches Hospital precinct in Frenchs Forest. The new tunnels would reduce congestion on key arterial routes like Warringah

CHAPTER 22 URBAN DESIGN AND VISUAL AMENITY

Urban elements	Design principle	Relevant urban design objective
Noise walls	Visually integrate noise walls into the road corridor and urban/landscape setting as part of a coordinated whole-of-corridor design.	• Identity and user experience • Integrated design • Sustainability.

What noise walls are planned in and around BL12&13 in the construction period and once the tunnel is operational? What do they look like? Where are they located? Is there a drawing showing the locations? What will their heights be? How will they be constructed?

During the online information session with TNSW they stated that the noise wall was 300mm behind our back fence, on top of the sewer main is this still the case.

22.3.2 Visual impact assessment

Representative viewpoints with the potential to be visually impacted by elements of the project were identified for further analysis. Viewpoints were selected to show:

- A range of receiver types including public and private domain views (residents, motorists and users of public open space)

As per the previously attached photo looking from my living room it shows how much greenery will be lost from my view to be replaced by a concrete wall This change of amenity is disturbing.

22.3.3 Landscape character and visual impact rating

Landscape character and visual impacts were measured by completing a sensitivity analysis of existing landscape character zones and views and assessing the magnitude of change on those zones and views.

22.3.4 Night lighting impact assessment

A broad assessment of the impacts of night lighting during both the construction and operation of the project was carried out by applying the methodology for assessment of visual impacts as described Section 22.3.2 above. Key visual receivers have been separately assessed and include neighbouring residential properties, users of recreational space and motorists in local streets.

How can the light pollution be lessened?

Wakehurst Parkway precinct

Wakehurst Parkway would be realigned and upgraded to two lanes each way, to provide north facing ramps that would connect the Beaches Link mainline tunnel with Wakehurst Parkway.

Project elements within the Wakehurst Parkway precinct would include:

- Two lane entry and exit ramps to the Beaches Link mainline tunnel
- Cut and cover tunnel within the Wakehurst Parkway road corridor likely to comprise a twin box structure (about 130 metres in length)
- Motorway facilities and ventilation outlet located directly above the portal
- Permanent tunnel support facilities on eastern side of Wakehurst Parkway at the Warringah Road/Wakehurst Parkway intersection
- Beaches Link maintenance facility south of Seaforth Oval
- Realignment and upgrade of Wakehurst Parkway in the vicinity of the portal
- New drainage network designed to minimise the amount of water approaching the tunnels
- Reinstatement of northbound and southbound bus stops
- Fauna rope crossings and fauna underpasses where appropriate along road corridor
- Widening of Wakehurst Parkway, facilitated mostly on the eastern side to avoid impacts on the Garigal National Park. The existing road would become the new northbound carriageway
- Water quality basins along the Wakehurst Parkway road corridor
- A new shared user path along the eastern side of the Wakehurst Parkway, from the northern end of Kirkwood Street at Seaforth to the intersection with Warringah Road at Frenchs Forest. The new shared user path includes a new bridge over a drainage culvert and fauna underpass (constructed as part of Northern Beaches Hospital road upgrade project), about 150 metres south of the intersection with Warringah Road
- A new shared user underpass beneath the Wakehurst Parkway about 700 metres north of Kirkwood Street to connect Garigal National Park and the Engravings Trail to the Manly Dam Reserve
- A new shared user underpass beneath the Wakehurst Parkway about 1150 metres north of Kirkwood Street to connect Garigal National Park to the Manly Dam Reserve
- A new shared user underpass beneath the Wakehurst Parkway about 750 metres south of the intersection with Warringah Road
- Reconstruction and lengthening of the existing shared user bridge across the Wakehurst Parkway opposite the Warringah Aquatic Centre.

Is there a diagram to show the size and location of the Beaches link maintenance facility? This states it will be south of Seaforth Oval. I saw in another chapter that it is at BL13. What will the truck movements be from there? Time, how many and how often? Is there a detailed dimensioned drawing showing the location of all these infrastructures?

Wakehurst Parkway precinct

Construction activities within the Wakehurst Parkway precinct would include surface roadworks and associated activities (such as earthworks, bridgeworks, installation of retaining walls, new shared user path and underpasses, fauna rope crossings and fauna underpasses) and the construction of a cut and cover tunnel, two entry and exit ramps to the tunnel, motorway facilities ventilation outlet, maintenance facility and tunnel support facilities.

High to moderate impacts are anticipated for the Seaforth residential (LCZ 2), Wakehurst Parkway road corridor (LCZ 3) and Remnant bushland (LCZ 4) landscape character zones during construction, due to the removal of vegetation, an increased visibility of construction activities, vehicle movements, earthworks, surface roadworks and exposure to built form in these landscapes.

Temporary construction support sites would be rehabilitated after construction and revegetated with appropriate native species. Landscape character impact ratings may therefore reduce as replacement planting matures over the duration of the construction period. The retention and re

P22-34 Is this the case for BL12?

Table 22-8 Landscape character impacts during construction – Wakehurst Parkway precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 2 – Seaforth residential	Moderate	High	**High – moderate**

As a result of losing 31 football fields of vegetation in this corridor

Wakehurst Parkway precinct

Construction activities within the Wakehurst Parkway precinct would include surface roadworks and associated activities (such as earthworks, bridgeworks, installation of retaining walls, new

High to moderate visual impacts are also expected for residential receivers at Kirkwood Street (Viewpoint 4) and users of the Engravings track (Viewpoint 5). Residential receivers at Kirkwood Street (Viewpoint 4) would have direct views of site hoardings, increased vehicle movements, road realignment and construction equipment associated with the Wakehurst Parkway south (BL12) and Wakehurst Parkway east (BL13) construction support sites. There would also be the discernible removal of vegetation across the two sites, increasing exposure to the Wakehurst Parkway road corridor. Users of the Engravings track (Viewpoint 5) are likely to have filtered views of temporary

The loss of vegetation is not only a loss of amenity but also a natural sound barrier.

Table 22-14 Visual impacts during construction – Wakehurst Parkway precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 4 – Kirkwood Street residential	Moderate	High	**High – moderate**

Wakehurst Parkway precinct

The landscape character impact assessment for the Wakehurst Parkway precinct identified the potential for a high to moderate landscape character impact for the Remnant bushland (LCZ 4) landscape character zone surrounding the Wakehurst Parkway road corridor, due to the widening

Moderate to low landscape character impacts are anticipated for the Seaforth residential (LCZ 2) landscape character zone. Despite the zones residential land use, retained dense vegetation is expected to screen the majority of views towards the project.

Table 22-20 Landscape character impact during operation – Wakehurst Parkway precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 2 – Seaforth residential	Moderate	Low	Moderate – low

Will BL12 be rehabilitated with native vegetation as per page 22-34?

Wakehurst Parkway precinct

Visual impacts of the project within the Wakehurst Parkway precinct would generally be negligible or moderate to low since views of the new built form of the project (including the motorway facilities, ventilation outlet and portal) would be mostly screened by existing vegetation and replacement planting. The largest visual impacts are expected on residential development and bushland in close proximity to the realigned and upgraded Wakehurst Parkway. The retention and re-establishment of vegetation along the road corridor, where possible, would assist in reducing these impacts as the vegetation matures and provides a visual buffer to pedestrians, motorists and residential receivers.

Moderate impacts are expected for the Wakehurst Parkway road corridor (Viewpoints 3 and 6). This would be due to the widening of Wakehurst Parkway, the introduction of new built form (including the motorway facilities and ventilation outlet) within the road corridor and the removal of vegetation along the road corridor, which may increase visibility of the road and the proposed motorway facilities and ventilation outlet. The retention of foreground vegetation, where possible, to the south of the motorway facilities would help to screen views from the southern approach, including dwellings along Kirkwood Street. A comparison of the existing and proposed views to the south and north along Wakehurst Parkway is provided in Figure 22-26 to Figure 22-29.

Are there any artistic photos of the area between Judith and Kirkwood St?

CHAPTER 23 HAZARDS AND RISKS

23.2.1 Storage and handling of dangerous goods and hazardous substances

The anticipated types and quantities of dangerous goods and hazardous substances that would be stored and used at the temporary construction support sites are listed in Table 23-2. The types and quantities of dangerous goods and hazardous substances are indicative and would be confirmed during further design development and detailed construction planning, and if necessary, further screening of potential risks would be carried out at that time. The screening would be used to confirm that the project would not pose a substantial off-site risk.

Would it be possible to store hazardous goods and materials at BL 13 so as to not endanger residents as it is further away? During the community online discussion with TNSW in early February Tony repeatedly stated that the laydown component of BL12 was for the storage of bollards and barriers now it looks like it will be used to store hazardous and flammable chemicals. Can you confirm its actual use and layout?

P23-5 Is it wise to store these types of materials near residents houses in a fire zone?

Table 23-2 Indicative dangerous goods and hazardous substances stored at temporary construction support sites

Material	Australian Dangerous Goods Code class	Storage method	Assessment against Applying SEPP 33 inventory thresholds	Temporary construction support site
Explosives	1.1	No on site storage – delivery would be timed to avoid the need for on-site storage	Explosives would not be stored on site and would therefore not be subject to the Applying SEPP 33 thresholds.	N/A
Diesel	C1[1], 3 PG III[2]	Self-bunded fuel tank (up to 2.5 kilolitres) and 20 litre drums	Diesel would be less than five tonnes and would not be stored with Class 3 (flammable liquids) materials. It would therefore not be subject to the Applying SEPP 33 thresholds.	All land based temporary construction support sites.
Petrol	C1[1], 3 PG III[2]	Self-bunded fuel tank (up to 2.5 kilolitres) and 20 litre drums	Petrol would be less than five tonnes and would not be stored with Class 3 materials. It would therefore not be subject to the Applying SEPP 33 thresholds.	All land based temporary construction support sites.
Lubricating and hydraulic oils and grease	C2	20 litre drums	Lubricating and hydraulic oils and grease would not be stored with Class 3 materials and would therefore not be subject to the Applying SEPP 33 thresholds.	All temporary construction support sites.
Industrial grade acetylene	2.1	3.2 m^3 cylinders (13 kilograms)	Individual cylinders containing acetylene would not trigger the Applying SEPP 33 thresholds (100 kilograms). Maximum stored inventories (250 kilograms) would be located more than 25 metres away from the temporary construction support site boundary and would therefore also not trigger the Applying SEPP 33 thresholds if considered in aggregate.	All temporary construction support sites.
Industrial grade oxygen	2.2	8.9 m^3 cylinders	Industrial grade oxygen is a class 2.2 dangerous good and is therefore not subject to the Applying SEPP 33 thresholds.	All temporary construction support sites.
Accelerator for shotcrete	3.2	1000 litre intermediate bulk containers (IBC)	Individual IBCs containing accelerator fluid would not trigger the Applying SEPP 33 thresholds (five tonnes). Maximum stored inventories (20,000 litres) would be located more than eight metres away from the temporary construction support site boundary and would therefore also not trigger the Applying SEPP 33 thresholds if considered in aggregate.	• Cammeray Golf Course (BL1) • Flat Rock Drive (BL2) • Punch Street (BL3) • Balgowlah Golf Course (BL10) • Wakehurst Parkway east (BL13) • Wakehurst Parkway north (BL14).
Retardants for concrete	3 PGIII	205 litre drums	Retardants would not trigger the Applying SEPP 33 thresholds if considered as individual containers or in aggregate.	All land based temporary construction support sites.
Epoxies	3 PGIII	20 litre drums	Epoxies would not trigger the Applying SEPP 33 thresholds if considered as individual containers or in aggregate.	All temporary construction support sites.
Paint for tunnel roof	N/A	1000 litre IBCs	Paint is not a dangerous good and therefore does not trigger the Applying SEPP 33 thresholds.	• Cammeray Golf Course (BL1) • Flat Rock Drive (BL2) • Punch Street (BL3) • Balgowlah Golf Course (BL10) • Wakehurst Parkway east (BL13).
Paints	N/A	50 litre drums	Paints are not a dangerous good and therefore do not trigger the Applying SEPP 33 thresholds.	All land based temporary construction support sites.

23.2.3 Ground movement and geological uncertainty

Ground movement (or settlement) refers to a localised lowering of the ground level due to construction activities involving excavation or disturbance below ground. If unmanaged, ground movement can present a risk to the stability of nearby buildings and other structures, including building basements and ground support structures.

Ground movement may occur as a result of:

- Tunnel induced movement caused by the relief of stress from the removal of intact rock during tunnelling
- Settlement induced by groundwater drawdown.

The construction of tunnels, even using the most modern machinery and control methods, results in some volume loss and corresponding ground movement. Geotechnical investigations have confirmed that high quality Hawkesbury Sandstone would be encountered for the majority of the proposed tunnel alignment. Furthermore, the alignment of the proposed tunnels means that they would be very deep for the majority of their length, with a substantial amount of sandstone between the tunnels and surface. Most of the induced settlement along the alignment due to tunnel excavation would therefore likely be as a result of stress redistribution within the rock mass.

An assessment of potential ground movement associated with the project is provided in Chapter 16 (Geology, soils and groundwater). Preliminary ground movement predictions indicate that there may be potential settlement of up to 40 millimetres around the Burnt Bridge Creek Deviation and Wakehurst Parkway portals. This would be considered 'slight' severity under relevant guidelines. Potential settlement at Flat Rock Creek Reserve could reach 85 millimetres, however no buildings

P23-14 As mentioned previously we will need a structural engineer to inspect our house prior to commencement of work and annually until settlement is of the ground is complete.

23.2.6 Bushfires

A bushfire risk assessment was carried out to assess potential bushfire implications of the project. In accordance with *Planning for Bushfire Protection* (RFS, 2019) the predominant vegetation class (bushfire prone land) has been assessed to a distance of 140 metres from the project in all directions. Table 23-4 provides the assessed bushfire risk level for temporary construction support sites located on, or close to, bushfire prone land. The level of bushfire risk is determined using a combination of likelihood and consequence, with the likelihood of bushfire risk for all assets being defined as the chance of a bushfire igniting and spreading and the consequence being the outcome or impact of a bushfire event (RFS, 2008).

The land between Kirkwood, Judith and the Wakehurst Parkway was cleared as a Fire Break in the 1960/70's. How does TNSW plan to build the new temporary buildings and storage of Hazardous chemicals in a fire zone and not increase the risk to the community?
Back in about 1999 there was a fire in Killarney Heights which jumped the water at Bantry Bay and raced up the hill burning 82 Kirkwood Street and numerous other houses in the street. As you know when you have a steep incline with a copious amount of fuel load a chimney effect takes place accelerating the speed of the fire. The added factor being a valley centralizes the fire in the direction of BL12.Your historical records would show this. With that fire break going and the storage of hazardous flammable chemicals in the fire path how do you propose to protect the residents from fire risk? I would like to meet with TNSWs fire engineer to discuss these matters.

Temporary construction support site(s)	Bushfire risk level	Proximity to bushfire prone land
Wakehurst Parkway south (BL12) Wakehurst Parkway east (BL13)	Medium	These two temporary construction support sites would be located in an area classified as bushfire prone land.
Wakehurst Parkway north (BL14)	High	This temporary construction support site would be located in an area classified as bushfire prone land.

The bushfire risk assessment identified that during construction, all areas of the project, with the exception of areas along the Wakehurst Parkway, would have a bushfire risk level of 'low'. With respect to the Wakehurst Parkway, the risk of bushfires would be considered higher, with the Wakehurst Parkway south (BL12) and Wakehurst Parkway east (BL13) temporary construction support sites assessed as having a bushfire risk level of 'medium' and Wakehurst Parkway north construction support site (BL14) having a rating of 'high'. The difference in these ratings is largely as a result of greater consequences should a bushfire occur.

Are you sure this assessment is accurate? I would like to see the modelling.

23.3.1 Storage and handling of dangerous goods and hazardous substances

Dangerous goods and hazardous materials would be stored at the operational facilities to be provided as part of the project and used during operation of the project. The types and quantities of dangerous goods and hazardous materials to be stored on-site during operation are summarised in

Are the dangerous goods going to be stored in fireproof sprinkler protected buildings?

Ref	Phase	Impact	Environmental management measure	Location
HR5	Construction	Bushfire	An emergency response plan will be prepared for the construction of the project at the Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites, including a bushfire risk matrix.	Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites.
HR6	Construction	Bushfire	First response capabilities, including fire extinguishers, water carts and hoses will be assessed and provided at the Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites, where needed.	Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13) and Wakehurst Parkway north (BL14) construction support sites.

As I work in the fire industry, I believe the highlighted passage above to be inadequate.

We need to have a detailed plan. Water storage tanks and pumps at BL 12 should be a minimum due to the high fire risk and close proximity.

CHAPTER 27 CUMULATIVE IMPACTS

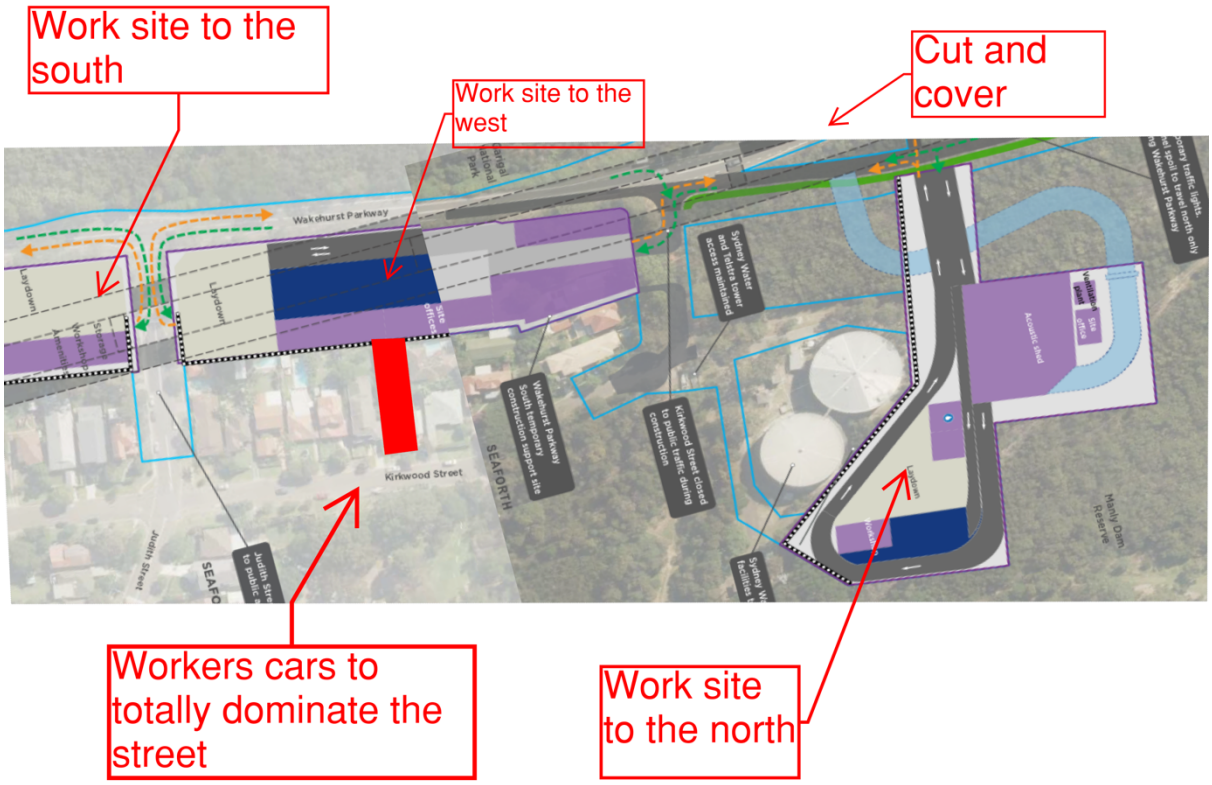
27.3.7 Construction and complaint fatigue

Construction fatigue

There is potential for construction fatigue to be experienced by receivers near the project. Construction fatigue may be experienced by receivers that are near concurrent or consecutive project construction activities where the activities overlap or have little or no break between the activities of one project, or multiple adjacent projects.

I believe we are prime candidates to a potentially experience construction fatigue . We are situated amongst numerous activities associated with the tunnel project. We have:

- BL 12 south (between Judith and Burnt St)- 150m
- BL12 north (between Judith and Kirkwood St)-0.3m
- BL 13 to the north of us -120m
- Tunnel excavation and boring below us 10m?
- Cut and Cover project to the north west of us 250m
- Hundreds of the workforce parking and walking up and down the street 24h a day



We will be living amongst numerous construction activities just because they all belong to the one project doesn't mean we are not susceptible to construction fatigue.

How do you think it will be possible to best manage these concurrent noise, dust ,change of amenity issues we will be faced with? This is such a quiet little area about to become inundated 24hours a day with workers and machinery.

CHAPTER 28 SYNTHESIS OF THE EIS

Synthesis of the EIS

P28-6 This diagram shows a permanent motorway facility at BL13.Is this the case as in Chapter 22 it said it will be South of Seaforth Oval. Is there a detailed drawing of this facility and its location? What are the hours of operation of this facility? Will it service the tunnel during maintenance shutdowns and if so, how often? I know these shut downs are very noisy with numerous trucks and reversing quackers going all night.

28.3 Project uncertainties

As with any project of the nature and scale of this project, the project design presented in this environmental impact statement would continue to be refined during further design development. This design development would be guided by the key principles adopted during the planning and assessment phase of the project. Some flexibility has been provided in the design to:

- Allow for refinement during further design and construction planning phase to consider alternative construction techniques
- Allow for refinement in response to submissions received following the exhibition of this environmental impact statement
- Respond to improved technologies or materials
- Improve value for money.

The final design may vary from that described in Chapter 5 (Project description). If approval is granted, any changes to the project would be reviewed for consistency with the assessment contained in the environmental impact statement including relevant environmental management measures, environmental performance outcomes and any future conditions of approval. If design refinements are not consistent with the approval issued by the Minister for Planning and Public Spaces, approval would be sought from the Minister for any such modifications in accordance with the requirements of Division 5.2 of the *Environmental Planning and Assessment Act 1979*.

Areas where further work would be carried out to optimise the design outcomes and construction planning include refinements to:

- Avoid utilities that present substantial construction difficulties in terms of logistics, time and/or cost
- Reduce the duration of construction
- Avoid areas of environmental sensitivity
- Reduce impacts on the community during construction and/or operation
- Improve operation of the project without increasing the potential environmental impacts.

For any future design refinements, a screening assessment would be carried out to consider whether the refinement would result in:

- Any inconsistency with the conditions of approval
- Any inconsistency with the objectives and operation of the project as described in the environmental impact statement
- A change to the approved project that may require a modification of the approval
- Any potential environmental or social impacts of a greater scale or impact on previously unaffected receivers than that considered by the environmental impact statement or the submissions and preferred infrastructure report.

Table 28-2 outlines key project components that have been identified as requiring resolution during further design development, construction and/or operation of the project and references where these uncertainties are discussed in this environmental impact statement.

BEACHES TUNNEL RESPONSE (by Richard Jones)

Key Recommendations:

After surveying the EIS, these are my recommendations:

- The Tunnel entrance and emissions to be moved 200m further north up the Wakehurst Parkway to utilise the typography, decrease the incline of the tunnel and reduce the exhaust emissions.
- BL12 moved to north of BL13 to reduce the dramatic impact on the community
- Water Flow at Burnt Bridge Creek to be revisited – the waterways should be 100% protected and improved – not decimated.
- Effective and efficient filters to be installed on the tunnel emission stacks.
- Noise, drilling, vibration, dust, parking and traffic issues to be taken seriously.
- No pollutants to flow out of Queenscliff lagoon.

Summary:

The Northern Beaches Tunnel project **poses some extremely concerning elements** which greatly affect Kirkwood Street and my home.

I do not feel they have been addressed with any real sincerity for our community and there is a definite **'fait accomplait'** feeling of the whole project which is very disappointing. Many others in the community area also feeling stranded and unsupported, creating a 'why bother as they will do what they want regardless of how we feel' attitude.

The northern part of Kirkwood Street will be fully surrounded by construction and the huge amount of infrastructure that goes with a project of this magnitude. We will be **enclosed by the construction zones at all times**, 24 hours per day, 7 days per week for 6 years:

- Support work site to the south
- Work site to the west
- Support site directly behind the back fence
- Drilling and tunnelling behind and under the property
- 'Cut and cover' to the north and northeast.

Our home will be devalued (and I am assuming it already is); those in the household will have to face a great many **challenges** such as lack of sleep, noise disturbance, dust and other waste, noise, vibrations, drilling affects, noise annoyance, construction fatigue etc.

Three of us are required to do **night shift** at various times and my wife suffers from sleep deprivation seizures, and son from allergies to dust.

If the BL12 is not moved to the north, there is no doubt the dust, noise and drilling effects will be disastrous for my family, and thus I require consideration of:

- Respite during work periods

- Consideration of our house being leased during the construction period.
- Sound proofing our home.
- On-going and continual cleaning of dust and other waste contaminants that come in the house, pool/spa and gardens.
- Solutions to the traffic and roads disturbance.
- Solution to the parking issue and associated noise.
- The pain and suffering we will endure as a result of this project

Conclusion:

The short term and long-term effects on the small community of northern Kirkwood Street and the surrounding bushlands as a result of this project, need to be taken seriously and considered with respect, regard and empathy.

Much of this could be resolved by revisiting the 'Key Issues' in this document:

- The Tunnel entrance and emissions to be moved 2a further 00m north up the Wakehurst Parkway to utilise the typography, decrease the incline of the tunnel and thus the emissions.
- BL12 moved to the north.
- Water Flow at Burnt Creek to be totally revisited – the waterways should be 100% protected and improved – not decimated.
- Effective and efficient filters to be installed on the tunnel stacks.
- Noise, drilling, vibration, dust, parking and traffic issues to be taken seriously.

I wish to have my recommendations and the concerns outlined throughout this whole document addressed.

I wish to have the personal requests for my home and family as highlighted in the Summary considered.

Until these real issues are addressed, and movements taken to resolve them, then I do not accept the proposal in its current form.

Thank you,

Richard Jones
84 Kirkwood Street, Seaforth, NSW, 2092