NORTHCONNEX
HORNSBY SHIRE COUNCIL SUBMISSION

The following specific concerns are raised about the impact of the proposal. Council's requests or actions are presented in bold text at the end of each item.

1 - ENVIRONMENT PROTECTION		
1.1	**AIR QUALITY**	All the conclusions and modelling revolving around air quality are based on previous traffic modelling. If the traffic modelling is found to be flawed in the future it is noted that this will in turn disqualify many of the assumptions entered into the air quality model.
1.1.1	**Portal emissions**	Council believes that tunnel portal emissions have not been quantified. [P14] "The project does not currently propose portal emissions from the main alignment tunnels. This approach may, however, be considered in the future, but would be subject to appropriate assessment and approval at the relevant time." It is noted that portal emissions at the Southern Interchange will be minimal as the ventilation facility is approximately 50m from the portal, resulting in approximately 50m of uncaptured tunnel air being discharged from the portal. It is noted that the Northern ventilation facility is approximately 1km from the tunnel portal and therefore there may exist the potential for significant emissions to be experienced at this location, which have not been quantified. **Council requests the Department to seek clarification regarding the potential for tunnel portal emissions from the tunnel portals.**
1.1.2	**Receptor spacing**	Dispersion modelling has been performed using nested receptors (that is, a various receptor grid of varying resolution, with receptor spacing decreasing for those areas closest to the emission points). To assess the impact from the tunnel ventilation stacks, the following receptor grids have been used.

		A uniform Cartesian receptor grid over the 10km x 17km modelling domain with an unspecified resolution (receptor spacing), although this is inferred from Figure 8 to be 300m. A uniform Cartesian receptor grid over 2no 5km x 5km areas centred around each of the tunnel stacks with a resolution of 150m. To assess the road traffic emissions, receptors were spaced at various distances (10m to 225m from the road centreline). The 'fine' receptor grid spacing of 150m is considered to be too coarse for a 15m stack emission point. Given that the ventilation stack height is proposed to be 15m, a grid resolution of approximately 15 m to 45m would be expected (1x-3x stack height). Merely based upon a desktop mapping exercise, there are a significant number of residential properties located within a 150m diameter of the stack that might be inadequately assessed in the current modelling configuration. Given that significant impacts are expected in near-field locations, using such a refined grid will enable a detailed assessment of the concentrations at and immediately beyond the ventilation facility boundary to be assessed. A similar limitation occurs between the 150m receptor locations, with the concentrations between those receptor points interpolated. The point of maximum impact in reality may therefore not coincide with the 150m grid, and the maximum impacts under-assessed. Section 4.2.7, Table 17, Pages 49-50. There are discrepancies between the text presented in

		Section 4.2.6 and those presented in Table 19, specifically, the extents of the modelling domain (Table 19: 15km x 10km), receptor grid resolution). **Council asks the Department to seek clarification on the correct data and ensure that the report is corrected for consistency. Should the 'correctly quoted' receptor resolution be as presented in Table 19, then the observations above would be exacerbated.**
1.1.3	**Emissions Estimation**	(a) Section 4.2.8, 4.2.9, Appendix H, There is very little auditable data presented to cross-check the emission estimations. It is acknowledged that the emission factors are derived from referenced material and the range of assumptions / road factors is presented, but there is no tabulated emission inventory that is auditable, and therefore the emission estimation and results are being asked to be taken on faith. For a project of this nature, it would be expected that the emissions inventory would be presented in a format that was auditable. **Council requests the Department to seek additional information to demonstrate that emissions calculations have been performed satisfactorily.** (b) Section 4.2.8, 4.2.9. Appendix H presents an 'example' emission calculation but that appears to be incorrectly calculated – based upon the data and the assumptions presented, the combined PC+LDV EF is calculated to be 28.2 g/h, compared against the 26.4 g/h presented in the report. **It is acknowledged that this is merely an example, but given the lack of auditable emissions calculations (see above) Council believes that it does not infer confidence that the emissions estimations are correct.**
1.1.4	**Emergency Extraction Outlets**	Table 7-88, on page 449, discusses the need for emergency extraction outlets at two locations, on the corner of Wilson Road and Pennant Hills Road and on the corner of Trelawney Street and Pennant Hills Road. Council assumes these facilities will be required during accidents/ fires.

		The Department may wish to clarify how often it is anticipated that these emergency extraction outlets would need to be utilised and the increased risk posed by the extraction of polluted air at ground level on the surrounding environment. **On page 450, Low speed traffic conditions: Council believes there is a need for real time air-quality monitoring in the tunnel and the EIS should clarify that this will be the case.**
1.1.5	**Electrostatic precipitators and ventilation in road tunnels in Japan**	A report from the RTA, "Electrostatic Precipitators and Ventilation in Road Tunnels in Japan. A report of a visit by a delegation from the New South Wales Roads and Traffic Authority to Japan from 30th of September to 10th of October 2003 (February 2004)", makes the following statement in its discussion, "There would be some logistical advantages in considering incorporating ESPs and NO2 removal technology for a pilot in a new tunnel, where bypass passages and ESPs could be included in the design submitted for planning approval." **Council believes this key report from the New South Wales State Government (RTA) supports the installation of air-quality treatment at the design phase and even mentions the possibility of including such in the forecast F3-M2 tunnel.**
1.1.6	**Filtration**	On page 451,paragraph 1, it is suggested that the M5 East motorway filtration trial was not successful for a variety of reasons. These reasons were dominated by cost and efficiency of the pollutant removal technologies. The CSIRO produced two reports analysing the M5 East Motorway Filtration Trial, neither of these two reports are directly referenced in the EIS. The first report, Air filtration plant of the M5 tunnel.

		• Determination of particle removal efficiencies. Report No. EP 117216 (November 2011). The second report, Air filtration plant of the M5 tunnel. • Determination of nitric oxide and nitrogen dioxide removal efficiencies. Report No. EP EP 117222 (November 2011). These reports determined that the particle removal efficiency of the treatment plant was; • PM 2.5 = 69% +/-3% and • PM 10 = 70% +/-2% Further, the NO2 removal efficiency of the activated carbon system was determined to be 99% or greater over a wide range of gas flow rates. It is clear from assessing the AMOG 2012 reference, page 451, paragraph 1, that one of the main reasons contributing to the inefficiency of the treatment plant was the fact that it needed to be retrospectively fitted to a system not designed for its installation. It is therefore suggested that if the air filtration system had been designed into the M5 East Motorway at the beginning the cost/efficiency of the plant would have been much greater. The EIS also concludes that current background pollution levels are relatively high compared to the relatively low pollutant levels from the NorthConnex project and therefore there is no need to fit pollution reduction systems. This does not take into account the cumulative effects of pollution. This project will produce new point sources of pollution which need to be dealt with to avoid cumulative effects from this pollution through time (See Figure 7-20 page 487).

		Having regard to the findings of the M5 East study, which noted the inefficiencies of retrospectively fitting air quality treatment systems, Council believes that - **(a) Air-quality treatment systems should be incorporated into the design of the NorthConnex project.** **(b) If not incorporated then the NorthConnex project should be designed to include allowance for the retrospective fitting of such treatment systems in the future, if required.**
1.1.7	**Various sources of air pollution**	Table 7-89, page 451, outlines various sources of air pollution and the predicted impact from those sources e.g. wood fires etc. Council believes that sources of other air pollution are irrelevant to the current EIS and that this particular study needs to deal with the construction of new pollution point sources which need to be managed into the future. Any argument regarding its scale compared to other polluting sources is of little consequence as the effects from the current project are what need to be dealt with here. **Council asks the Department to satisfy itself that the current project is objectively assessed using relevant criteria.**
1.1.8	**Health benefits**	On page 451, paragraph 3, a report by PAEHolmes (2013) is referenced regarding the health benefits of removing certain amounts of PM 2.5 in Sydney. On examining this referenced report it becomes clear that it is based almost entirely on work conducted in the United Kingdom. Of the work conducted in the United Kingdom one significant report, Quantification of the Health Effects of Air Pollution in the UK For Revised PM 10 Objective Analysis (Steadman et al 2002) clearly outlines that meteorological conditions play an extremely important role in determining particle concentrations in the atmosphere by: Extended periods of low wind speeds can reduce dispersion and lead to a build-up of high

		concentrations of all pollutants. In the UK, easterly air flows increase the contribution from secondary particles formed from sulphur and nitrogen oxide emissions in Europe. Low temperatures or increasingly high temperatures can lead to increased energy demand for heating or for air-conditioning which increases emissions. This UK report clearly demonstrates how important meteorological conditions are to the human health effects of air pollution. **Council asks the Department to ensure that local meteorological data is obtained and used to improve the findings applicability to the Sydney environment.**
1.1.9	**Air quality monitoring**	On page 467 there is a discussion of project/air quality monitoring. It is stated that monitoring stations along the project, were commissioned in late 2013. Such a short monitoring period, till the current time, is not adequate as the variability in climate through time has not been assessed in any way. It is clear that there has been no modelling of the cumulative effects of these pollutants through time and their effect on the environment and the local community. **Council believes that this cumulative effect through time needs to be understood and added to the current EIS.**
1.1.10	**Existing background air quality**	On page 477 section 7.3.3, Existing Environment, Background Air-quality, it is stated that the most recent New South Wales State of the Environment report states that transport emissions are the most important human related source of air pollution in Sydney. In 2008, motor vehicles were the largest source of emissions of oxides of nitrogen (63% of total emissions) and the second largest source of volatile organic compounds (24% of total emissions) in the Sydney region.

		Council believes that this information further supports the need to address air quality issues associated with establishing this project.
1.2	**WATER QUALITY**	In general the EIS does not provide enough information to determine the potential impact from the project on surface water or if mitigation measures will be adequate. **Council requests that the Department satisfy itself that the section of the EIS referring to the stated likely impacts of wash water quality reflects current best practice.** The surface water section outlines a number of strategies by which water pollution will be avoided. Little detail is however supplied as to how this will happen. For example, while the need for a Sediment and Erosion Control Plan is acknowledged no such plan exists. **Council requests that this plan, when completed, is supplied to Council for comment.**
1.2.1	**Berowra creek subcatchment**	On page 848, paragraph 3, it is stated that water quality within the Berowra Creek sub catchment is generally poor and references are given. The most up-to-date reference is Hornsby Shire Council (2012 C), Water Quality Report Card 2012 (quoted in the reference section of the EIS), which highlights that the majority of sites in the Berowra catchment are currently rated at either good or fair. **Council requests that this statement and reference needs to be updated and corrected.**
1.2.2	**Existing pollution**	On page 851, paragraph 1, the EIS again attempts to make the case that the environment is already polluted so a relatively small amount of pollution emanating from the current project does not need to be seriously addressed. **Council asks the Department to be satisfied that the cumulative effect of multiple pollution points on the receiving body are adequately considered.**

1.2.3	**Water quality issues generally**	(a) On page 861, paragraph 2, the statement is made that the quality of the discharge water from the project will be better than the receiving water quality. **Council believes that this does not address the need or otherwise to clean up pollution from a designated point source.** (b) The process of water quality treatment through time, once the project is operational, seems adequate. Detail of how this will be designed and constructed is not presented. **Council requests that it be consulted once such designs and operational strategies are completed.** (c) The potential impacts to downstream flooding, and erosion/disturbance of downstream systems, needs to be designed and implemented in a satisfactory manner. **Council believes that such information should be added to the EIS as the potential impacts on flooding and downstream erosion/ecological impacts could be significant and far reaching.**
1.2.4	**Environmental management measures**	(a) Table 7-179, Environmental Management measures - surface water, page 879, third point, Water treatment and discharge, No. OpSW3, states that the project has been designed to achieve a maximum water discharge quality equivalent to the 95% protection level specified for freshwater ecosystems in accordance with ANZECC guidelines. (b) No mention is made of a minimum discharge water quality. **Council requests the Department to consider whether the 95% protection level should be the minimum discharge quality and that with the application of reverse osmosis technology the ultimate goal should be a no net increase in pollutant loads to local waterways.**
1.3	**SPOIL SITES**	Council notes Section 8.8 the NorthConnex Environmental Impact Statement suggests the Hornsby

		Quarry site as one of six potential options for the delivery of spoil from the NorthConnex tunnels. Council is supportive of consideration being given to such a proposal and the benefits it might bring to the Hornsby Shire, subject to the outcomes of a detailed assessment which outlined the details of such a proposal and addressed any potential impacts. **The disposal of fill into the quarry, if adopted, will require waste classification and liaison with the relevant Hornsby Council officer managing the site.**
1.4	**DEMOLITION**	Section 10.4. Possible asbestos/hazardous materials (lead paint) in older properties. **Council asks the Department to condition the development to ensure the materials are appropriately removed and disposed of.**
1.5	**NOISE & VIBRATION**	Section 7.2 and Volume 2 Appendix F. **No issues at this stage however Council asks that further details be forwarded for review upon receipt of the Detailed Environmental Management Plan.**
2 - HERITAGE		
2.1	**NON-ABORIGINAL HERITAGE**	Section 7.10 – Non-Aboriginal heritage - The proposal would impact 53 heritage listed items, including 4 archaeological items and 3 heritage conservation areas within the Hornsby Shire LGA. However, it is understood that only 5 items would be directly impacted. (a) The project would involve the acquisition and demolition of parts of the heritage listed former maltworks site in Thornleigh of local significance under the provisions of Schedule 5 (Environmental Heritage) of the Hornsby Local Environmental Plan (HLEP) 2013. Although the original germination building would be retained, the connection of the structure to the rest of the site would be lost. **Archival recording of this site should be undertaken and submitted to Council's Local Studies Library catalogue prior to the commencement of any demolition or construction work.**

		(b) Property No. 1 Pacific Highway, Wahroonga is proposed to be acquired for the northern interchange. The subject site is listed as a heritage item (Garden) of local significance under the provisions of Schedule 5 of the HLEP 2013. The garden contains "Landmark palm trees and other remnants of an earlier garden with local historical and aesthetic significance derived from their species and horticultural qualities". Two locally listed Canary Island Palm Trees would be removed during construction. **Options for relocating the Canary Island Palms should be investigated during the detailed design phase for Council's review.** **Similarly, any heritage trees likely to be affected in the road reserve should be included in the investigation.** (c) The proposal also involves works in the Beecroft-Cheltenham and Wahroonga North Heritage Conservation Areas. **These works should be localised to specific areas already associated with major transport network infrastructure to minimise impacts on the heritage values of the areas.** (d) Furthermore, it is understood that two heritage listed properties in Wahroonga (St Pauls Church - Pearce's Corner and "Cherrygarth" and garden) have been identified for acoustic treatment due to the potential for exceeding appropriate noise criteria. **If it is determined at the detailed design stage that acoustic treatment is required, Council requests that the proposed works should be discussed with landowners and a heritage architect to limit the potential impacts to heritage values.**

3 - PROPERTY		
3.1	**PROPERTY AQUISITION**	Property Acquisition (Section 8.1 – Land Use and Property) The proposal will require land acquisitions and land use change for temporarily affected land. **Council requests that the future use of residual land for parks, recreational areas or redevelopment sites should be investigated in consultation with Council. Council should also be consulted when considering future local embellishments including recreational facilities, cycling infrastructure, and public transport initiatives.**
3.2	**PROPERTY IDENTIFICAION**	Council believes that no mechanism exists under Section 149(2) of the Environmental Planning and Assessment Act for Council to identify the location of the tunnel in relation to affected land. This is required to ensure that future owners of land impacted by the proposal are appropriately informed. **If not done so already, Council requests that the Department to initiate an amendment of EP&A Regulation to address this issue.**
4 - TRAFFIC AND TRANSPORT		
4.1	**CONSTRUCTION TRAFFIC**	Council notes that most of the suggested construction traffic routes are subject to further development however Council believes these matter require particular consideration - (a) How heavy vehicle access can be managed at the Wilson Road, Trelawney Street and Pioneer Avenue compounds. (b) The geometry of the existing roundabout at the intersection of Phyllis Avenue/Central Avenue is sufficient to safely accommodate heavy vehicles from the Trelawney Street and Northern Interchange compounds. (c) How access can be managed after hours from Trelawney Street compound. (d) Capacity of local roads and operation of intersections used to access Pioneer Avenue compound given the daily volumes will exceed 600 vehicles per day. Queues in Duffy Avenue regularly form past Pioneer Avenue, and traffic turning right out of Lymoore Avenue will obstruct traffic trying to

		turn left out of Lymoore Avenue, and traffic turning into Lymoore Avenue due to the narrow road width. Sefton Road and its intersections are also affected by traffic generated by Thornleigh Public School. (e) How workers will be encourage to park and ride from Pioneer Avenue compound. (f) For local roads that will be used by haulage and construction vehicles, dilapidation surveys will be required and commitment provided for remediation of road pavement if required. (g) Details of localized traffic impacts that would arise from providing access for building works at the Bareena Avenue compound from Woonona Avenue North are documented. Council and local residents should be consulted and advised of proposed mitigation measures. (h) Given the existing delays incurred at a number of intersections, including Pennant Hills Rd/Phyllis Ave and Pennant Hills Rd/Duffy Ave, the impacts additional construction and workers vehicles will have on Pennant Hills Road and local roads is properly assessed and quantified. (i) Vehicle location monitoring devices are used to ensure heavy vehicles are not deviating from approved routes. **Council requests the Department to consider these issues and satisfy itself that the construction traffic management plans will provide enough detail to give confidence that construction traffic will be managed safely and efficiently with minimal impacts on other road users, residents and businesses.**
4.2	**OPERATIONAL TRAFFIC**	Council endorses the M2 integration works to ensure southbound traffic in the tunnel is not delayed by problems on the M2 westbound. Based on current experience during weekday afternoon peaks and weekend morning peaks, Council believes there is also potential for traffic northbound in the tunnel to be delayed when merging with northbound surface traffic on the M1. **The Department may wish to verify with the proponent that northbound traffic from the tunnel has adequate merge opportunities with M1 surface traffic to prevent queues forming back into the tunnel during peaks.**
4.3	**OPERATIONAL**	Council welcomes the NorthConnex project because it will generally improve traffic conditions along

	TRAFFIC LONG TERM	Pennant Hills Road and other routes along the north south transport corridor, however Council believes it will not fully resolve the congestion problems in the area in the long term. According to the EIS, some of the key intersections along Pennant Hills Road will still experience significant congestion during one or both of the AM and PM peak hours in 2019 and 2029 irrespective of the project as a result of background traffic growth. Future traffic growth falls outside the scope of this EIS, however, Council seeks a commitment from the government to resolve longer term congestion problems on Pennant Hills Road and other routes along the north south transport corridor. The long term solutions should include the following options: (a) Planning commence immediately for a second Hawkesbury River crossing connecting the M7 and M1 Pacific Motorway as per the Pearlman Report (2007) recommendations. (b) Widen Pennant Hills Road to six lanes (3 travel lanes in each direction) from Carlingford Road to Murray Farm Road (c) Silverwater Road extension by providing a tunnel from Kissing Point Road to Pennant Hills Road, Carlingford (d) Provide direct connection from Pacific Highway/ Yirra Road the intersection to Ku-ring-gai Chase Road. A road corridor to facilitate this connection has already been reserved. (e) Public transport improvements and intersection upgrades along Pennant Hills Road. (f) The Northern Interchange will result in increased traffic flows and degradation of local residential amenity in adjoining streets. In this regard, there should be a commitment that traffic entering and exiting the Northern Interchange does not reduce the amenity of adjacent residential areas. A program to monitor the post operation impacts on adjoining roads should be developed. The roads to be monitored should include Pennant Hills Road between the M1 Motorway and Pacific Highway, Pacific Highway between Pennant Hills Road and Ingram Road, Ingram Road, Hinemoa, Havilah, Hewitt and Eastbourne Avenues. (g) The current proposal is absent of any provision for future connections to either Castle Hill Road

		or Boundary Road. These routes will be under increasing pressure over the next few decades as development in the North West Growth Centre and North West Railway Corridor proceed. Council supports direct connections between these State Roads and the tunnel subject to such connections not adversely impacting on the traffic flows in the tunnel.
5 – BUSHLAND AND NATURAL RESOURCES		
5.1	**BIODIVERSITY GENERAL**	It is Council's view that additional environmental management measures for biodiversity need to be added to those outlined in Section 7.6.4, Table 7-156. Environmental management measures - biodiversity should also include: **B5 - 'Reuse of trees' needs to be included under the impact of 'clearing native vegetation' during construction. This has been successfully undertaken at the recent North West Rail Link project where trunks were salvaged and removed for later reuse in bushland reserves as bush furniture, seats and children's play structures.** **B8 & B9 - 'Weed management during construction' needs to be included under 'adverse impacts to riparian zones and aquatic habitats' and 'spread of weeds and pathogens'. This will ensure weed issues are minimised during works, resulting in less weed control required into the future.** **(a) B8, B9 & OpB1 – 'Revegetation, restoration and weed management is to be carried out by qualified Bush Regeneration Companies' needs to occur to ensure professional works occur and to minimise ongoing costs. This will avoid poor quality work as seen in the recent M2 Upgrade project, expensive recurring weed problems and community dissatisfaction.**
5.2	**BIODIVERSITY IMPACTS & OFFSETS**	The tunnel dissects the Hornsby Shire and the loss of 2.81 ha of the Critically Endangered Ecological Community Blue Gum High Forest, primarily from Hornsby Shire, will be significant because the community is at very low levels. Where possible offsets should occur on Hornsby Council reserves

		using Biobanking. **Should the project receive planning approval Council requests that the Department condition the proponent to -** **(a) Offset the loss of the Critically Endangered Community by permanent conservation management of Blue Gum High Forest in the Hornsby Shire through the creation of a Biobanking Agreement.** **(b) Investigate Council land suitable for Biobanking to offset the loss of Blue Gum High Forest as well as the sandstone communities, and potentially for Epacris purpurascens var. purpurascens and Gang-gang Cockatoo.**
5.3	**BIODIVERSITY OFFSETS STRATEGY**	**Council recommends that -** **(a) Offsets should occur within close proximity to impacts within Hornsby Shire.** **(b) Offsets should include biobanking as the highest priority.** **(c) Offsets should be like for like.** **(d) The Strategy should include a Weed Management Strategy, a Nest Box Plan and Site Landscape Plans utilising indigenous plant species.**