SUBMISSION ON THE NORTHCONNEX PROJECT BY SYDNEY ADVENTIST HOSPITAL, NSW, AUSTRALIA

Sydney Adventist Hospital is a division of Adventist HealthCare Limited. Adventist HealthCare Limited (formerly known as 'Sydney Adventist Hospital Limited'), is owned by the Seventh-day Adventist Church, and is a 'Not-For-Profit' organisation that operates a number of healthcare businesses including: Sydney Adventist Hospital, Dalcross Adventist Hospital, San Day Surgery Hornsby, and San Diagnostics & Pharmacy Services.

Sydney Adventist Hospital (SAH), known as 'the San', is an acute-care private hospital with 360 licensed overnight beds. It is the largest private hospital in NSW.

The San is the largest single employer in the Hornsby-Ku-ring-gai Council area. Approximately 2,400 staff, 500 volunteers and 900 accredited medical practitioners care for more than 53,000 inpatients and 180,000 outpatients annually and approximately 2,000 babies are delivered each year.

As a significant healthcare provider to the local community of Wahroonga and beyond, as well as a major employer in the area, Sydney Adventist Hospital would like to oppose the proposed NorthConnex project in its current design.

We are opposed to the current design of the NorthConnex tunnel due to concerns that we have regarding the health of local residents living around the proposed tunnel stacks and portals. We also have concerns for our staff, both at San Day Surgery (600 metres from proposed northern stack) and Sydney Adventist Hospital (Main campus, 2 km from proposed northern stack). We feel it is our duty of care to our community (for which we have cared for over a century) and our staff, to have their wellbeing and health seen as the overall priority insight of major infrastructure projects.

We have concerns that air quality modelling performed in the NorthConnex EIS may be subject to significant flaws and omissions.

A local study by Cowie et al looking at health effects of the Lane Cove tunnel in Sydney, NSW, studied participants before and after the opening of the tunnel. The study found that residents living within 650m of the tunnel ventilation stack reported more upper and lower respiratory symptoms and had lower lung volumes in the first two years after the tunnel opened. There was also, unfortunately, no consistent evidence of improvement in respiratory health in residents living along the bypassed main road, despite a reduction in traffic from 90,000 to 45,000 vehicles per day. Gauderman et al followed school children from the age of 10 for 8 years to observe the effects of air pollution on lung development. He showed that lung development

is significantly affected through reductions in lung volumes such as FVC, FEV1 and MMEF, as would be expected if the children had been exposed to maternal smoking.

Exposure to particulate pollution is associated with reduced lung function growth in children, and even children relocating from high to low pollution areas (or vice versa) were shown to experience changes in lung function growth that mirrored changes in exposure to particulate matter, i.e. the changes in their lung function growth was permanent.

Our concerns regarding the current proposal are based on the following facts regarding air pollution which are researched and documented in scientific literature:

There is an increased risk of death in people exposed to particulate matter, even when exposure is within concentration ranges well below the present European standards.

Air pollution causes Lung Cancer and is associated with Bladder cancer.

In 2010, 223,000 deaths from lung cancer worldwide resulted from air pollution, according to the World Health Organisation (WHO).

WHO classifies diesel exhaust fumes as a carcinogen (cancer causing).

Ultrafine particles (median diameter <0·1 micrometres) are more toxic when inhaled than other measurable particles. They are greatly absorbed into tissues and the circulation and are important factors in determining cardiopulmonary toxicity.

Both short- and long-term exposures to particulate matter are associated with a host of cardiovascular diseases, including heart attacks, arrhythmias, strokes and increased risk of death from the above cardiovascular causes.

Children show reduced lung function growth which persists later into life, even when exposure stops, i.e. the damage for growing lungs is permanent.

Children have been found to suffer from symptoms of bronchitis following exposure.

Residents living around tunnel ventilation stacks report more upper and lower respiratory symptoms and have lower lung volumes.

Low birth weights are more common in pregnant women exposed to traffic pollution.

Exposure to traffic-related air pollution during pregnancy and during the first year of life is associated with autism.

Higher levels of long-term pollution are associated with significantly faster cognitive decline, i.e. development of dementia.

Outdoor pollutant levels correlate with those measured indoors in houses exposed to air traffic pollution.

We are concerned that any modelling of air quality and drawing conclusions on their resultant health impacts drawn from this modelling prior to construction will be inaccurate, as little scientific evidence exists for long term health impacts of unmeasured particles. Please refer to the section on Air quality for further details.

Our concerns are therefore validated by the existing medical data which suggests that lung damage to children is permanent when due to air pollution. We have seen this happen locally by Cowie, and even though measurable particles did not significantly increase in the studied areas, health impacts occurred. This heightens our concerns that it is unmeasured particles, such as ultrafine PMs, which contribute to these adverse health impacts.

The NorthConnex EIS includes a human health impacts assessment.

The impacts outlined in this section of the EIS are directly calculated from the air quality data derived from the Air quality section of the EIS.

Hence, the health impacts are directly linked to the air quality calculations.

We are of the opinion that the air quality calculations in the EIS show major flaws and hence the health impacts thus derived are subject to questionable validity.

It is our understanding that the EIS contains some major flaws which will have a negative impact on pollution dispersion calculations, and hence, on health impact assessments.

Meteorology:

We are aware that meteorological data for the stack locations was gathered from remote sites around greater Sydney. These locations include Sydney Airport, Terrey Hills and Penrith.

No local weather data was collected from West Pennant Hills or Wahroonga for dispersion calculations.

We feel that the proposed stack locations have their own climatic conditions, especially with regard to average wind speeds, and that these differ from those found at the measured locations.

This will have effects on dispersion calculations.

Topography:

Local topography was measured using software accurate to 250 meters.

Please refer to independent air quality assessment by Jacobs Group (Australia) Pty Ltd as per Ku-ring-gai Council submission.

The true valley contours are different to "measured" contours by 5 to 10 metres in parts.

Background air quality data:

PM1 are not measured • There is a total failure to collect site specific ambient air quality data and meteorological data. No local area data has been collected for more than few months.

Background air quality was measured distant from Wahroonga, at Lindfield (10km away) and Prospect (20km away)! Lindfield monitoring station does not comply with Australian Standards and does not measure PM2.5!

In tunnel air quality:

Failure to consider and include the polluted intake of air from the busy M2/Pennant Hills Road interchange as part of contribution to air quality at Wahroonga.

Levels of toxins such as PM2.5 reaching very high levels (500 mcg/m3) at the ends of the tunnels with potential health impacts on commuters and residents.

Current practice and recommendations:

The NHMRC (National Health and Medical Research Council) states that the great advantage of tunnels is that their portals and stacks can be deliberately sited away from residential areas. These recommendations are also found internationally.

There are no other tunnels of this length in Australia.

Of the tunnels that do exist on our continent, there are none that have ventilation stacks sited in comparable areas.

We are concerned that as a result of the magnitude and length of this tunnel, there will be greater than estimated pollution levels ejected out of single stacks at either ends of this tunnel.

Solution:

1. As the medical and scientific knowledge of these toxins is evolving, we urge the approach of using precautionary principles to avoid long term harm to the affected community.

2. Application of the precautionary principle is best achieved by relocation of the ventilation stacks away from densely populated areas.

3. Any ventilation stacks sited within metropolitan Sydney need to be filtered with the utilisation of the filtration systems being enforced by an independent overseer.

4. Transurban needs to repeat the air quality assessment and recalculate the resultant health impacts, taking into account the local topography, stack height, local meteorology and true total emission values in various traffic situations.

5. The project, if approved, must take into consideration the above elements.