

June 21, 2013

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cc: **Ms Gladys Berejiklian, Minister for Transport** [Willoughby@parliament.nsw.gov.au](mailto:Willoughby@parliament.nsw.gov.au)

**Willoughby City Mayor and Councillors** [email@willoughby.nsw.gov.au](mailto:email@willoughby.nsw.gov.au)

**Artarmon Progress Association submission - Ausgrid 132 kV North Shore upgrade project - 2 circuits from East Lindfield to Artarmon Industrial Area switchyard**

**APA objection to proposed route through Artarmon Reserve**

The APA objects to the new electrical circuits crossing the Artarmon Reserve as proposed by Ausgrid for the reasons set out below, which include damage to bushland and long-term impact on future use of the Reserve.

**Route acceptable to the APA**

As Ausgrid wants only minimal change to their route, the APA will support a route from the Ausgrid pit in the south-west corner of the Reserve along the north bank of the artificial creek near the motorway to Chelmsford Ave as described below in text and images. Based on Ausgrid advice on the spacing of utilities, this route will require the relocation of 150 metres of watermain serving 12 properties closer to the eastern property boundary of Chelmsford Ave.

The APA would be pleased to discuss on-site options for the cable route with Ausgrid representatives.

**Reserve Infrastructure and Ausgrid proposal**

The new electric cable ducts can expect to have a life of more than 100 years. The conduits will contain electric cables forming two circuits (six cables in total). The cables will be replaced every thirty to forty years. The cables will bring power from the Hunter Valley to the Lower North Shore. Thus they will be critical infrastructure for the community. 132 kV is extremely dangerous. Protection of this critical infrastructure thus becomes a prime governmental and community objective.

Normally, in urban areas, this infrastructure is buried in roads along with gas, water and telecoms infrastructure to keep it safe for a 100 year life. While road pavements can be reprofiled, the basic pavement level is generally unchanged over centuries. This makes roads an ideal environment for this utility infrastructure. However, Ausgrid wants to depart from using roads for part of the route for this project for short-term cost reasons. Ausgrid wants to cut corners with a 280 metre short cut across the Artarmon Reserve. Ausgrid wants to make use of 120 metre bored tunnel from the corner of Punch St/Lambs Rd under the motorway and railway to Artarmon Reserve constructed in 2007. This tunnel already carries two circuits (six cables) that continue across the Reserve under the path on the southside of the stormwater retention basin wall and then up Chelmsford Ave.

For network integrity reasons, the circuits running between a pair of switchyards normally take different routes. As a cost saving measure, this principle is being compromised and the tunnel under the motorway will be used for four circuits.

Ausgrid wishes to save itself some money and force costs onto the local community in the form of damage to important bushland and restrictions on the future use of the Reserve. Due to the installation of two circuits in 2007, the prime governmental and community duty in regard to Artarmon Reserve is protection of these cables.

Ausgrid staff advise there was a change of "delivery method" a few months ago – likely with the objective of cutting cost. This \$50 million project has become a design and construct project by Ausgrid. Ausgrid appears to have already signed up a construction contractor and this is a major issue with any changes to the route. Even so, the wider community interest must come ahead of Ausgrid saving a few per cent of project. Clearly, there was a planning failure around 2005 that permitted Ausgrid to seek to cross the Reserve with the first two circuits. As the contentious Lane Cove Tunnel project was being constructed at the same time, too little attention was paid the 132 kV cables project. Mistakes made by a state government authorities should be borne by all the people of NSW, and not solely borne by the local community where the mistake was made.

In the past 100 years the Reserve has served as a garbage dump, sportsfields and stormwater retention basin. The NSW Government, Council and bushcare volunteers have invested considerable money and personal effort into restoring the bushland, developing the sporting fields and providing stormwater protection measures for the motorway and suburbs downstream of the motorway. In the next twenty to thirty years we can expect investment to restore a more natural waterflow through the Reserve. The proposed cable route through the Reserve will severely compromise the opportunity for this restoration.

As the population density on the North Shore increases, the value of the Reserve to the community will rise. Investment is likely to enable greater sporting use of the fields. The Reserve also fulfils the important function of being a space where people can escape suburbia, play with their pets, walk and think. It also forms part of the main North Shore bike route. Cycling along the route will grow as electrically-assisted bikes reduce in price. These activities mean the Reserve will see significant community investment over the next century. However, the uses that can be made of the Reserve have been compromised by the 2007 cables and will be impacted by another order of magnitude by the proposed Ausgrid route for the two new circuits.

Artarmon lost many hectares of bushland to the Gore Hill Freeway and its massive widening for the Lane Cove Tunnel. We put a high value on preserving the bushland we still have.

### **Ausgrid 132 kV circuits**

A circuit consists of three cables (one for each phase) in ducts 'nested' into each other like snooker balls. A circuit is placed down each side of a 1.5 metre wide trench. In service, the cables can reach 90 degrees Centigrade. They likely operate at around 45 degrees C for most of the day. The each cable of the circuit is in a separate plastic duct. The six conduits are buried in weak concrete (7 MPa). The concrete will heat up to the average cable temperature - maybe 45 deg C. At ground level, the temperature is just a few degrees above the normal ground temperature. The heating of the ground means the new circuits must be a few metres away from existing circuits - even ones due to be decommissioned. Ausgrid say, due to the ground heating issue, that there is insufficient space in the southern end of Chelmsford Ave for more circuits and thus they want to cut across the Reserve.

Were the cable trench to cross the sportsfields, we should expect the heat thrown off by the cables to leave a visible mark on the grass surface due to faster growth and faster drying of the soil.

### **Bushland Impact**

The APA endorses the views of the local bushcare groups who advise:

“ As members of several Artarmon Bushcare Groups who regularly meet to effect maintenance and enhancement of native vegetation and wildlife within the Reserve, we have become aware of an Ausgrid proposal to dig a trench and lay cable through the area for which we are responsible.

Of particular concern to us is the deleterious effect such a trench would have on --

- (i) the listed threatened species: *Epacris purpurascens*, var. *purpurascens*
- (ii) the listed endangered ecological community: Sydney Turpentine-Ironbark Forest.

We understand that the trench would permanently interfere with the current water drainage pattern, with concomitant harmful consequences to the fragile *Epacris* community.

Additionally, disturbance of the soil profile will impact negatively on the currently dormant seed bank upon which regrowth of the plant community (especially the Turpentine Ironbark), depends.

While appreciating that the laying of underground power lines is an important and progressive part of urban infrastructure, we hope that you will give due consideration to our concerns, and that the very invasive trenching might be avoided by using an alternative less damaging procedure or use an area which is already degraded, such as the area adjacent to the expressway.”

The Ausgrid route across the reserve includes a nearly 90 metre section through protected bushland on a steep slope (about 22 percent). This is extremely difficult terrain. While Ausgrid says they will only need a 6 metre wide clearing through the bush, the contractor will more likely need double that for the huge machinery necessary to do deep rock excavation on the slope. Only tracked machinery can work on the bottom half of the bushland crossing. Ausgrid should not be permitted to clear the bushland and excavate through the rock in this manner.

### **Future infrastructure works in the Reserve**

The works could include artificial turf on the sporting fields to increase the hours they are available for sport.

In the images below, the thick light blue lines show the current artificial stream beside the motorway and possible new streams which would restore the relationship the forest should have with the water that flows through it. The new streams will improve the quality of the water as it flows across the Reserve. The western creek would flow into the artificial creek next to the motorway. The existing western creek bottom is less than 1.5 metres below the north-west corner of the field. The western stream would be relatively cheap to construct. The eastern creek will require more work due to greater depth. The re-established creeks would just need a flow restriction where they pass the stormwater retention basin wall. There would be some loss of sporting fields and carparking space, but a slight reorientation of the sports fields and carparking should mean field size and carparking spaces can be retained.

### **APA preferred route**

The figures below show the proposed Ausgrid cable route through Artarmon and possible alternate routes. Noting Ausgrid's reluctance to relocate the cables away from the Reserve, the APA favours a route proposed by Council.

This route runs along the north side of the manmade creek immediately north of the motorway. Council advises the vegetation along this route is of low value. Removing a six metre wide strip of vegetation for construction purposes, which will include twenty to thirty trees, in this location is acceptable to the APA. This route provides a level path to Chelmsford Ave. The restoration could include a gravelled walking path beside the creek.

Ausgrid advise there is insufficient space in the lower half of Chelmsford Avenue for two more circuits due the ground slope and other services. The APA proposes 150 metres of watermain serving the dozen properties in lower Chelmsford Ave be relocated closer to the property boundaries to provide room for the extra Ausgrid cables. The new watermain would go next to the kerb, or under the footpath. The cost of the watermain relocation is miniscule compared to the cost of the electrical circuits.

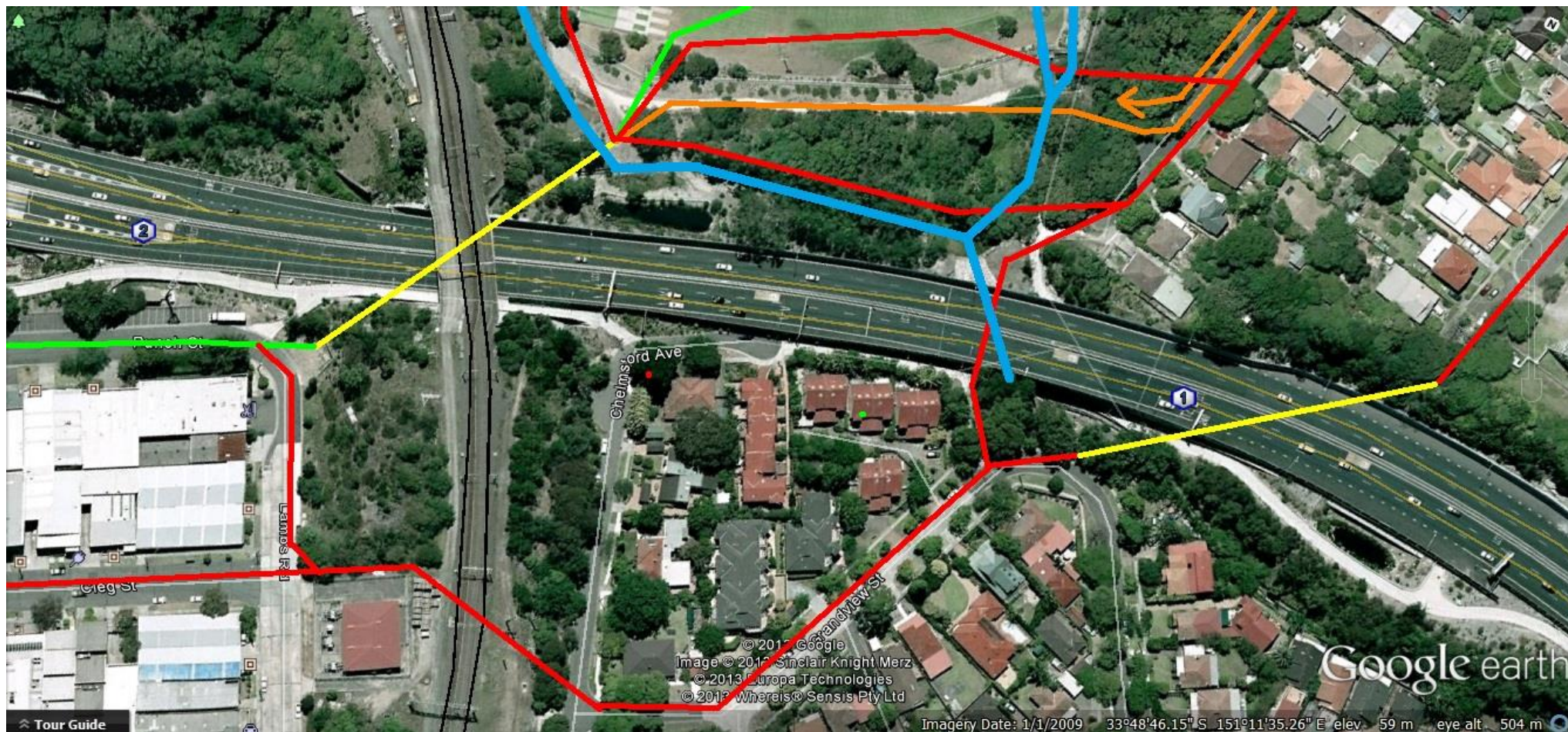




**Possible routes for the new Ausgrid circuits through Artarmon**

- ■ ■ Ausgrid proposed route
- ■ ■ Alternate routes
- ■ ■ Existing bored tunnel and bored tunnels required by alternate routes
- ■ ■ Circuits installed in the Reserve in 2007
- ■ ■ Watermain relocated closer to the kerb, or under the footpath





### Possible routes for the new Ausgrid circuits through Artarmon – motorway precinct

- ■ ■ Ausgrid proposed route
- ■ ■ Alternate routes
- ■ ■ Existing bored tunnel and bored tunnels required by alternate routes
- ■ ■ Circuits installed in the Reserve in 2007
- ■ ■ Existing re-established stream north of motorway and proposed extensions around sportsfields to improve water quality and re-establish a more natural relationship between the bushland and stream flow. Presently, the waterflows through pipes under the sportsfields.





**Possible routes for the new Ausgrid circuits through Artarmon – Reserve precinct**

- ■ ■ ■ ■ Ausgrid proposed route
- ■ ■ ■ ■ Alternate routes
- ■ ■ ■ ■ Existing bored tunnel and bored tunnels required by alternate routes
- ■ ■ ■ ■ Circuits installed in the Reserve in 2007
- ■ ■ ■ ■ Existing re-established stream north of motorway and proposed extensions around sportsfields to improve water quality and re-establish a more natural relationship between the bushland and stream flow. Presently, the waterflows through pipes under the sportsfields.
- ■ ■ ■ ■ Watermain relocated closer to the kerb, or under the footpath

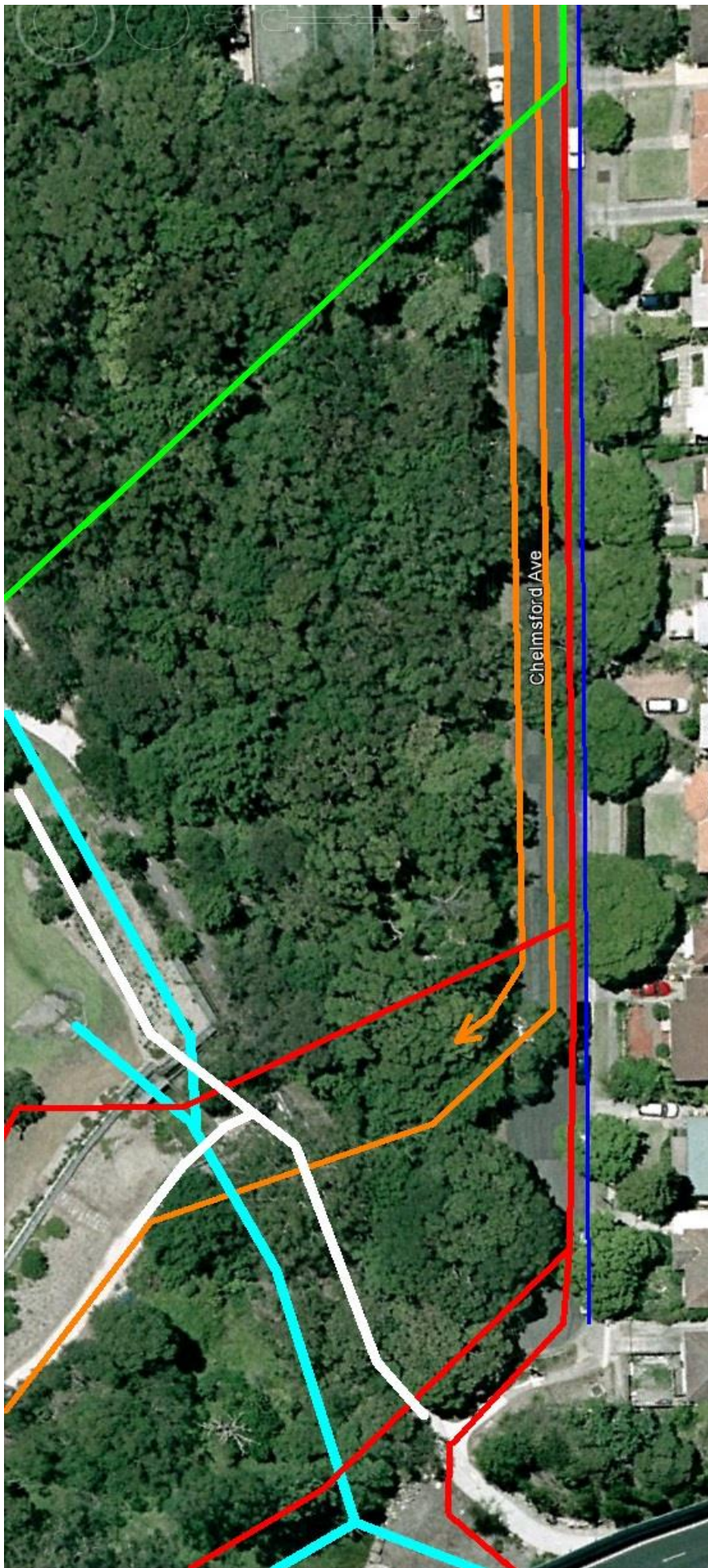




**Possible routes for the new Ausgrid circuits through Artarmon – motorway to stormwater retention basin wall**

- ■ ■ ■ ■ Ausgrid proposed route
  - ■ ■ ■ ■ Alternate routes
  - ■ ■ ■ ■ Existing bored tunnel and bored tunnels required by alternate routes
  - ■ ■ ■ ■ Circuits installed in the Reserve in 2007
  - ■ ■ ■ ■ Existing re-established stream north of motorway and proposed extensions around sportsfields to improve water quality and re-establish a more natural relationship between the bushland and stream flow. Presently, the waterflows through pipes under the sportsfields.
  - ■ ■ ■ ■ Watermain relocated closer to the kerb, or under the footpath
- Gravel path shown above preferred cable trench with a dashed line. Relocated cycle/walking path after stream restoration shown with a solid white line





**Lower Chelmsford Avenue precinct**