Comments on the Powering Sydney's Future EIS

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I am a resident in one of the streets along which TransGrid proposes put to the new 330 kilovolt (kV) underground transmission cable. I am both surprised and saddened to find TransGrid has selected this route as the preferred solution to address existing issues they have identified in the electricity supply network.

According to the EIS, the street in which I live is the third-narrowest street along which the proposed cable would go. It is just seven metres wide, and the narrowest, nearby Fairfowl Street, is only five point five metres wide.

In every way this project reads as a piece of major infrastructure, and as such belongs in land set aside for such purposes, not in residential areas. The reasons cited in 3.3.3.1 as to why the proposed route is not co-located with other infrastructure corridors point to a significant failure in long-term planning.

The type of reasons given in the EIS for the choice of this route including that there was 'insufficient available land' to co-locate in rail corridors such as Sydenham-Bankstown corridor, and that co-location with WestConnex, was limited due to "design integration challenges" and "construction timing " with the M5 St Peters interchange and the M4-M5 Link tunnel (3.3.3.1), do not inspire confidence in the city's planners among local citizens.

Prolonged exposure to additional EMF generated by the new cable is a key concern of the people in this street. The World Health Organisation recommends a *"precautionary approach"* to activities that introduce prolonged exposure to EMF, even for lower frequencies such as 50 Hz from electrical power.

TransGrid's EIS states that assessing the cumulative magnetic fields from multiple sources in modern urban environments is *"a complex exercise"* (10.6.4 – cumulative impacts). In the same paragraph, the EIS states that *"in a residential environment, it can be expected that the proposed transmission cable circuit would be the* ***dominant source,"*** and that *"the dominant source will influence the cumulative magnetic field*". So, in effect the addition of this cable to a very narrow residential street will introduce an additional source of EMF, that will also very likely be the largest source of EMF exposure for humans living nearby, significantly larger than EMF levels from MV and LV distribution lines and which citizens have no means of avoiding. We do not believe this is an acceptable impost on citizens living in an area zoned for residential purposes.

In the section on environmental management and mitigation measures, the EIS states that Transgrid, *"will be taking a prudent avoidance approach includes designing and siting electricity infrastructure to reduce long-term public exposure to electric and magnetic fields*". (10.7)

The EIS gives three main EMF mitigation measures, the first of which is that Transgrid will *"maximise cable separation to property boundaries, in particular normally occupied buildings (such as businesses and residences)by locating the cable in the centre of the roadway where practical;"* (10.7). While we are fully aware that exposure levels diminish rapidly with increased distance, with a cable trench that's three metres wide, in a road that is only seven metres wide, locating the trench in the middle of the road, rather than favouring one side will not add much distance for reduction of EMF.

The EIS also says *"The primary reference points for calculations of magnetic fields should be in the locations where people are expected to spend* ***prolonged periods*** *of time. The magnetic field levels out to 20 metres from the edge of the trench have therefore been calculated.* (10.4). Our whole house, and many of those in the street fits within 20 metres of the trench, so these people will be spending prolonged periods of time in a proximity to the cable that TransGrid has found worth measuring.

Given the expected 40-year life of the cable, Chapter 10's discussion of potential public health effects from long-term EMF exposure, is surprisingly short compared to more voluminous chapters on short-term effects that would occur during the construction phase and the assessment of other environmental impacts listed on page 30 of the EIS.

We believe the modelling of several more specific calculations of EMF levels should be stated in the EIS. The only table the EIS presents, of predicted magnetic field levels generated by the operation of the transmission cable circuit, uses a time-weighted average approach. (Table 10-2 in 10.6.1). While, a time-weighted average calculation is valid and important concept in considering public exposure to EMF, because of variation in demand for electricity at different times during each day and from season to season, a time-weighted average alone is only part of the public exposure picture and can even make the health impacts seem less.

The EIS presents no tables or calculations showing what the EMF is expected to be during peak demand on different days of the week, or at different times of the year, such as mid-winter and midsummer. We believe the EIS does not present enough specific detail regarding different types of exposure. We are surprised there are no are no calculations presented for public information indicating the proportion of time, day-to-day, and month-to-month that the cable will carry a load of more than 480 MVA, and we believe this information should be part of the information for the public to consider.

Given that the proposed cable can carry loads up to 900MVA, it is reasonable to expect that at many times of the day and year it will be operating at higher than that. 480 MVA is only just over half its load capacity. For example, if the cable was carrying 600MVA (1800 amps) of reactive power, our calculation using pure physics, is that the EMF generated at 10 metres is 360 mG, considerably more than the 221 mG (standing directly above the cable) or 8 mG (at 10metres from the trench) in the EIS 10-2 table.

In our opinion the EIS discussion of EMF should contain a more precise definition of what is meant by 'temporary exposure'. At present with regard to human exposure directly above the cable, all the EIS states is that, *"the highest magnetic field levels are expected to occur directly above the cable trenches, **where people would only be temporarily located for short durations of time** (i.e. passing vehicles, pedestrians and cyclists)*. (10.4).

The road in Surrey Street in Marrickville, is cycled on, on every school day by a surprisingly high number of primary and high school children and by adults going to work or study etc. Being a quiet tree-lined, one-way street that's only 7 metres wide, it is a preferred cycle route for children in the area travelling to Wilkins Primary School and Marrickville Primary school, to avoid the busier Addison Road. In fact, it is the only alternative road parallel to Addison Road between Addison Road and Henson Park.

Surrey Street is so popular with cyclists, that local government has designated the road as two-way for cyclists, whereas for cars it's only one-way. There is no mention of this usage in the current EIS or discussion of frequent 'temporary exposure', particularly for children.

We believe Chapter 10 of the EIS should also contain clear predicted figures for the EMF exposure directly above the cable trenches when the cable is carrying maximum emergency load. Currently in the EIS, for a 900MVA load scenario, TransGrid only makes a general claim and unspecific assurance, "*the magnetic field levels in and around publicly accessible areas of the transmission cable circuit would still be below the ICNIRP reference levels of 2,000 mG for general public exposure and 1,000 mG for older type AIMDs." (10.6.2)*

If the cable was carrying 900MVA (1575 amps) load, our calculations, based on pure physics, are that on the road surface, at a distance of 1 metre above the cable, the exposure levels could be as high as 315 micro-tesla or 3,150 milli-gauss, which is well above WHO levels for exposure to the general public.

Like the usage by cyclists we've mentioned above, the footpaths in Surrey Street are also used by more schoolchildren and parents, than just those who live in the street. We acknowledge that calculating specific exposures is difficult but working on the information provided by TransGrid, it would appear that in a worst-case scenario, users of our street's footpaths could be exposed to levels in excess of WHO, ICNIRP and ARPANSA advice. Our calculations, based on pure physics, are that with a load of 900MVA (1575 amps), and at a distance of 2.24 metres, the exposure levels of people walking down the footpath, could be as high as 141 micro-tesla or 1,410 milli-gauss, which is still above WHO reference levels for exposure for the general public and for the older type cochlear implant immunity level of 1,000 mG.

The current EIS also has no specific figures regarding EMF levels at joint bays. All that is said in Chapter 10 is that, *"the magnetic field is 50% higher directly above the joint bay compared to directly over a typical trench." (10.4.3)* Given the

number of joint bays along the proposed route, e believe the EIS should contain specific calculations of EMF for joint bays at various distances is to give a more complete picture for the public record.

All that is currently stated is, "*While higher than for the trench, the magnetic field levels in and around joint bays would still be below the ICNIRP reference levels of 2,000 mG for general public exposure and 1,000 mG for older type AIMDs."*

Chapter 10.7 of the EIS also contains a Table 10-3 titled Environmental management and mitigation measures.The third point of three points tabled in it states that "*within six months of operations commencing, magnetic field levels will be measured at selected locations close to receptors along the transmission cable route to verify that levels are below the ICNIRP reference levels."*

We believe this stated undertaking should also contain an undertaking that the data obtained is published in a format and place that is easily accessible to the public, particularly for people living nearby to any cbale that is built.

The EIS states*, "there are uncertainties about the existence of chronic effects, because of the limited evidence for a link between exposure to ELF magnetic fields and childhood leukaemia. Therefore, the use of precautionary approaches is warranted."*

Given the uncertainties regarding long-term effects of low-frequency EMF particular in regards to cancer and other illness, what processes will be put in place to ensure people whose health may be unduly affected in the future, can be compensated, without them having to undertake many years of litigation as happened with asbestos victims?

A proposal, which instead of minimising potential health impacts on the local community, maximises the number of residential areas a new power cable would run through has inspired a deep scepticism in nearby residents. In discussions in our street, the project, as currently proposed, seems so unlikely and counter-intuitive, people can hardly believe it might happen.

Comments have included, words to the effect, "it's just penny-pinching", "they don't really care about the locals more than they have to" and many are also sceptical of the community consultation process, seeing it all as a "fait accompli". Ultimately a proposal which affects this many residents, a cable which goes down suburban streets, past homes and schools, when the WHO suggests a precautionary approach, reads more like a lowest-cost business case, than a visionary infrastructure project that takes into full consideration community and health impacts into the future. The proposal as it stands in the current EIS, runs the danger, I believe, of ultimately harming the TransGrid brand, rather than confirming it as a skilled trusted entity that delivers a modern public good.