19 October 2017

Dear Sir/ Madam,

Proposed nbn™ Fixed Wireless Facility, 156 Boundary Road, Oakville (Lot 1 on DP569026)

Thank you for your submission regarding the proposed **nbn™** Fixed Wireless network facility at 156 Boundary Road, Oakville.

nbn received three submissions from Oakville residents, and two submissions from residents of surrounding communities, and has now has now considered the issues raised in submissions received regarding the proposal at Oakville.

We are pleased to take this opportunity to respond to the issues that have been raised. Please see below a detailed and lengthy response to the issues raised in the submissions, which is being issued to all parties that made submissions. To make it easier for residents to consider our response, we have listed the issues raised here first, which we will individually address:

- **network design;**
- **local development and impacts on network design;**
- **ISEPP review;**
- **alternate locations;**
- **visual amenity;**
- **health and safety;**
- **visual impact; and,**
- **property values.**

Please see below our consideration of these issues.

Network Design

nbn appreciates that the availability of fixed line services in some parts of Oakville has led to some submissions calling for the provision of fixed line services across the entire community. Some submissions have also suggested that the continuation of fixed line services across all of Oakville would better reflect the Government's *Statement of Expectations* to deliver the **nbn** *"at least cost to taxpayers"*.

In response, **nbn** advises that the local design and service delivery mix, which is based on macro design guidelines, also takes into consideration a complex combination of different local factors, including but not limited to:

- distance to the **nbn** fibre,
- commercial access to existing infrastructure in each Telstra Distribution Area (DA);
- the state of the existing infrastructure (including conduits) within each Telstra DA;

- lot sizes and lot frontages within different Telstra DAs;
- the location of a Telstra Exchange relative to the Telstra DA;
- the feasibility of providing contiguous fixed line service areas across adjoining Telstra DAs;
- density of development; and,
- the environmental and topographical characteristics of specific areas.

Oakville residents along the Windsor Rd corridor have received a fixed line service because the southern half of Oakville is situated between dense residential development at Vineyard and McGrath's Hill along Windsor Rd, enabling **nbn** to provide a contiguous fixed line service across these Telstra Distribution Areas (as per the design guidelines above).

However, it was determined that the more rural part of Oakville, which comprises varying lot composition / density, is located in different Telstra Distribution Area, and is further removed from the **nbn** fibre, would not meet the design criteria for a fixed line service, and that a fixed wireless service was the best fit technology for this part of the community. (It is not uncommon across Australian and even across the Hawkesbury for parts of a community to be services by fixed line while other less dense areas a serviced by fixed wireless. Some local examples include Cattai, Wilberforce, Pitt Town and Kurrajong.)

The proposed facility is designed to provide a fixed wireless service to the rural residential development of Oakville, as well as parts of Maraylya and reaching into Nelson. The fixed wireless service extends about 4km southeast to Nelson Rd, Nelson, about 1.5km north along Boundary Rd, 4km east to Pitt Town Rd, and more than 4km southeast to Windsor Rd, and delivers a fast and reliable broadband service to more than 270 properties.

This local service design for the rural residential area of Oakville, Maralya and Nelson communities is in keeping with the national design of the network, which represents an upgrade to Australia's existing telecommunications designed to provide Australians with access to fast, affordable and reliable internet services, as quickly and as cost effectively as possible.

Due to Australia's size and particular geographic challenges the cost of providing fixed line services to all Australian premises is prohibitive. The cost of running fibre to every property in Australia is, and has always been considered cost-prohibitive. At no time has the design of the **nbn™** provided for fibre to every rural property in the country.

More than 2,000 fixed wireless facilities have been proposed across Australia to deliver high quality broadband to smaller and / or sparsely developed communities - because it is a cost efficient and time efficient way to deliver high-quality services to our smaller communities. Rural communities such as Oakville, Maraylya and Nelson are typical of the regional communities receiving fixed wireless across the country and across the Hawkesbury Council area.

Network Design & Local Development

Some submissions have suggested that future / impending residential development of the area should dictate the provision of fixed line services.

nbn recognises that there is urban growth in the Hawkesbury, and that in the longer term, current rural and rural residential properties may convert to urban residential development. However these changes in development are not immediate, nor even necessarily imminent, and in the medium to long term (over the 20-year span of a fixed wireless lease) there will still be significant pockets of rural development requiring **nbn** service. For example, we note that the proposed Oakville facility is still zoned RU4 Rural Primary Production Small Lots, and has not yet been zoned for Transition.

Should the area convert entirely to dense residential development in the long term, **nbn** broadband services will become available to those new residents via **nbn**'s Greenfields Program, however in the meantime, there is a need for fixed wireless services to address poor existing broadband quality and connectivity at Oakville.

nbn highlights that the Federal Government's National Map[1] demonstrates the median ADSL speed across rural Oakville ranges between 1.7Mbps and 5Mbps. Rural Oakville also has the lowest ranking for broadband quality in Australia ("E" ranking) . These existing speeds fall well below the minimum Australian Government wholesale speed objectives of "at least 25 megabits per second to all premises" outlined in the *Statement of Expectation.*[2]

In providing access to wholesale speeds consistent with Government objectives the **nbn** fixed wireless network will provide a substantial improvement to existing broadband services.

Notwithstanding, the fixed wireless facility will not preclude future urban residential development from occurring near the facility.

Review of the Infrastructure SEPP

Several submissions reference the current review of the NSW Infrastructure State Environmental Planning Policy (ISEPP), which is considering a change that would require telecommunications proposals located within 100m of a residence be subject to development consent.

nbn highlights that first and foremost, the proposed facility at Oakville is *not* within 100m of any residence, and therefore this potential amendment to ISEPP would not affect the current proposal for a 45m fixed wireless facility at Oakville.

We would also like to take this opportunity to advise that this potential amendment to the ISEPP legislation would not preclude a proposal being made within 100m of a residence, but would only require a Development Application to be lodged to Council, rather than such a proposal being considered Complying Development. Importantly, any such changes to ISEPP would not preclude any residential development from occurring in closer proximity to a telecommunications facility; and would therefore not constrain any future development from occurring. It is also important to highlight that the setbacks being considered relate only to assessment of amenity impacts, and are not related to health and safety. Facilities that comply with safety standards are considered safe in any location.

[1] https://nationalmap.gov.au/#share=s-80jNNI2tRUosiaGKhKfFgFn9dy5

[2] www.nbnco.com.au/content/dam/nbnco2/documents/soe-shareholder-minister-letter.pdf

We note that several submissions have suggested that setbacks be imposed to property boundaries, and we advise that there are no such planning restrictions within ISEPP. **nbn** respects and abides by all relevant planning legislation in all jurisdictions, and does comply with setbacks where they are required.

Alternate Locations

1) Sydney Water Property

Several submissions queried why **nbn** could not co-locate on the existing Telstra facility. **nbn** advises that it always considers the potential for co-location as a first recourse, before proposing a new structure, and did investigate a co-location on the Telstra facility within the Sydney Water compound. Unfortunately, this alternative candidate failed for both technical and property reasons.

The available height on the existing pole of 30m is insufficient to provide a fixed wireless service across rural and rural residential Oakville, parts of Maralya and parts of Nelson. To deliver service across this area, and to connect the adjoining fixed wireless facility at Maraylya to the **nbn**, a minimum height of 42m to is required to be considered technically feasible. Co-location at a height of 30m is considered a significant technical failure.

nbn recognises that several submissions have suggested that a second structure be located, or the existing facility replaced to enable co-location, and regrettably, we advise that **nbn** could not secure acceptable tenure at this location.

2) Scheyville National Park

One submission has suggested the Scheyville National Park as an alternative location. In response, **nbn** advises that locations inside National Parks are considered unviable and inaccessible for clear planning, environmental and property reasons. The *Scheyville National Park* is zoned E1 National Parks and Reserves. As such all development is prohibited in this zone unless permitted under the *National Parks and Wildlife Service Act 1974*.

Importantly, the NPWS Act (Section 153) explicitly states that leases for telecommunications facilities must not be granted unless the Minister is satisfied that:

> *"... there is no feasible alternative site for the proposed broadcasting or telecommunications facility concerned on land that is not reserved under this Act".* [3]

This is not the case at Oakville, where a feasible alternative is available outside the National Park.

In general, **nbn** highlights that the location of telecommunications facilities in national parks typically requires significant vegetation removal to introduce power and access, which is considered to be wholly inconsistent with the environmental objectives of the E1 Zone, and represents a poor planning and environmental outcome.

nbn recognises that the *Scheyville National Park* takes a more unusual form and has large tracts of sparsely vegetated land which might appear suitable for a telecommunications facility. However, we

[3] http://www.austlii.edu.au/au/legis/nsw/consol_act/npawa1974247/s153d.html

also advise that the entire park is listed as a heritage item of State significance on the State Heritage Register. Its' heritage values are described on the State Register as follows:

> *"Scheyville National Park is of State heritage significance as it demonstrates a continuous history of significant use since pre European settlement when the area supported the Dharug people with plentiful food supplies. The park also contains a number of historic features and places which demonstrate the early settlement of the Cumberland Plain, farming, defence and migrant uses of the area, and is significant as a relatively large surviving element of the first commons declared in the colony. The ongoing use and development of the area closely reflects and articulates the economic and agricultural development of the colony and later the development of the nation in relation to its autonomy, defence and populating the land. It is a rare example of a site demonstrating the continuous layers of history which reflects the history of the State and the Nation….. It meets this criterion of State significance because as it is a site unique in its ability to demonstrate all the layers of its significant historical use which closely reflect and articulate the history of the state and the nation. Scheyville National Park is of State significance for the rarity of several of its constituent elements."*[4]

nbn notes that *Aboriginal Heritage Information Management System* (AHIMS)[5], which is administered by the NSW Office of Environment and Heritage, also identifies 3 separate recorded Aboriginal sites within the *Scheyville National Park*.

nbn advises that the *Scheyville National Park* is not considered a viable alternative due to the incompatibility with the E1 zoning, restrictions on tenure enshrined in the NPWS Act, and the significant planning (heritage and cultural) impacts that would arise from proposing a facility within a national park listed as having State significance on the State Heritage Register.

3) On the Sydney Water Boundary of 156 Boundary Rd

One submission has suggested relocating the facility to the other side of 156 Boundary Rd, adjoining the Sydney Water property boundary, instead of residential boundaries. **nbn** advises that a relocation to this part of the property would *not* maximise separation to the closest adjoining neighbours, but instead would result in the facility being located within 100m of the closest neighbour, an outcome that submissions have explicitly spoken against. As such, this suggested relocation would not result in a minimisation of planning or visual impacts at Oakville.

Notwithstanding the planning impacts, **nbn** advises that the electricity transmission line cutting across the property contains an easement that cannot be accessed, and further, that an occupational health and safety zone is also applied immediately around the high voltage electricity easement to ensure any development can be safely built and maintained. Please see below an illustration of the easement and the construction OH&S zone that applies to 156 Boundary Rd, Oakville. It demonstrates that there is in fact no room to viably construct a telecommunications facility along the Sydney Water boundary.

[4] http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5053634
[5] www.environment.nsw.gov.au/awssapp/Login.aspx?ReturnUrl=%2fawssapp

Figure 1: HV electricity easement (red) and OH&S construction safety zone (yellow)

Visual Amenity

nbn appreciates that there is a balance between providing a valuable service to the community and minimising impacts on visual amenity. We endeavour to minimise the visual prominence of the facility wherever it is possible to do so. There are restrictions in lowering the height of a telecommunications facility, as the panel antennas must be at a height where there are no obstructions to the signal transmission and transmission dishes must achieve a direct line of sight between upstream and downstream facilities.

Our ability to minimise visual impact at Oakville is limited by the open, sparse rural nature of the area – there are limited opportunities for screening our facility while still locating it in an area that can provide service to rural Oakville.

nbn has sought to locate the facility as far away from all adjoining residences as much as possible, especially adjoining residences to the north and northwest, while also having regard to the location of the electricity easement, the dam, the trees, (seeking to avoid any vegetation removal) and the landowner's wishes regarding the use of their property.

The fixed wireless facility has been sited within very close proximity to the large, existing high voltage power lines, and this provides some meaningful context for the telecommunications infrastructure – as the telecommunications and electricity facilities are closely co-sited. **nbn** is not proposing infrastructure where none already exists, but has consciously co-sited the proposed fixed wireless facility as close as possible to a high voltage electricity transmission line, to minimise changes to amenity across Oakville.

The proposed facility has been sited amongst existing vegetation that will aid in concealing ground equipment to surrounding residential properties as best as possible, while seeking to avoid any impacts to existing vegetation. **nbn** understands that additional landscaping has been planted on the proposed site, which will increase any possible vegetation screening as these plants mature. **nbn**

believes that painting the structure a pale eucalypt colour would also further soften the appearance to surrounding residential dwellings.

Property Values

Several residents have raised the issue of how the fixed wireless facility will impact on property values as grounds for objection. The issue of property value is an extremely complex one, with fluctuations in price being subject to a vast number of factors – many of which are subjective, such as the amount of light, access to services, the condition of the house, views, amenity of the local area and the availability of high quality services such as telecommunications.

nbn appreciates that infrastructure designed to deliver a broadband service across an entire community, which has broad public interest, can have varying impacts on individual properties, with some having no amenity impacts at all, while others are in relatively close proximity to proposed facilities. We understand that some residents regard this as intrinsically unfair, despite the fact that all public utility services (telecommunications, water, electricity etc) require infrastructure that unavoidably results in varying amenity impacts within different communities.

nbn also appreciates that impacts to amenity are associated with perceptions of property value. As above, in delivering this public utility service, **nbn** seeks to the best of our ability to minimise amenity impacts, both generally and to specific surrounding properties. By minimising our impacts on amenity, **nbn** has due regard to the value of surrounding properties.

We respect that some members of the community will not regard the public interest to outweigh the more immediate impacts to amenity. However, we highlight that the development is both permissible and commonplace, and must be considered on its planning merits; which is not a question of whether it does or does not have impacts, but rather whether those impacts to amenity are reasonable, have public interest, and are sufficiently consistent with planning regulations. **nbn** notes that property values are not considered in the NSW Land and Environment Court *Planning Principle for Impact on Neighbouring Properties*.[6]

At Oakville, **nbn** notes that the facility has been proposed immediately adjacent a large, high voltage electricity transmission line, and the co-siting of this utility infrastructure significantly mitigates the impacts to amenity of the proposal, and has no impact on future residential development of surrounding properties.

EME Health & Safety

We understand that some people are concerned about possible health effects from the radiofrequency electromagnetic energy (EME) from radio communications networks, and we are committed to addressing these concerns responsibly. We hope that this advice can be communicated sensibly so as to alleviate any alarm felt in the community.

Radio Communications in the Environment

Importantly, the fixed wireless network, and many various communications networks, transmits radio signals or radiofrequency electromagnetic energy (EME) – the same kind of signal as radio and

[6] http://www.lec.justice.nsw.gov.au/Pages/practice_procedure/principles/planning_principles.aspx

television broadcasts, which are subject to the same public health and safety standard, and have been present in the environment for generations. Wherever you can watch television or listen to the radio, a radiofrequency signal is present in your environment.

Today, communities depend on radio communications for many day-to-day communications. Radio communications facilities commonly found in urban areas include television, AM and FM radio broadcast towers, paging network antennas, mobile network facilities, and many 2-way radio systems supporting emergency services, council services, hospitals, roadside assistance, taxi-services, sports clubs, transit authorities, utility providers, and large commercial operations such as shopping centres and property development sites.

Putting the various radio signals into perspective, the World Health Organisation (WHO) states:

> *Until mobile phones became widely used, members of the public were mainly exposed to radiofrequency emissions from radio and TV stations. Even today, the phone towers themselves add little to our total exposure, as signal strengths in places of public access are normally similar to or lower than those from distant radio and TV stations.*[7]
>
> *In fact, due to their lower frequency, at similar RF exposure levels, the body absorbs up to five times more of the signal from FM radio and television than from base stations….Further, radio and television broadcast stations have been in operation for the past 50 or more years without any adverse health consequence being established.*[8]

Safety Regulations & Scientific Research

We do want to highlight some aspects of the public health and safety standards that we hope give residents in the area greater peace of mind.

Firstly, licensed radio frequency transmitters, including the **nbn™** fixed wireless communications facilities and commercial radio and TV broadcast towers, are regulated to protect all people in all environments at all times including vulnerable members of the community (people who are ill, children and the elderly), 24-hours a day, 7- days a week.

Australia has adopted the safety regulations recommended by the World Health Organisation (WHO). These regulations also have a significant safety margin, or precautionary approach built into them. We also highlight that by operating the fixed wireless network at signal strengths significantly below that safety standard **nbn** has additionally applied a precautionary approach to the operation of its network.

Secondly, we highlight that the national safety regulations protect the public by placing a limit on the strength of the signal that any licensed radio facility may transmit. They do not impose any general public distance-based restrictions. Consequently, radio facilities are found in all environments.

For example, the Australian Communications & Media Authority (ACMA) Register of Licensed Radio Communications facilities shows that there are more than 200 licensed radio facilities in the Hawkesbury local government area[9]. Operators of these local sites include *Hawkesbury City Council,*

[7] WHO Fact Sheet: Typical Exposure Levels at Home and in the Environment

[8] WHO Fact Sheet: Electromagnetic Fields and Public Health – Base Stations and Wireless Technologies

[9] http://web.acma.gov.au/pls/radcom/register_search.main_page

Telstra, Optus & Vodafone, the Department of Defence, Endeavour Energy, NSW Rural Fire Service, Western Sydney Local Health District, Transgrid, and the *NSW Police Force.*

The vast majority of the 190+ existing radio facilities in Hawkesbury City are located within close proximity of surrounding properties, including residences. Please image below identifying the 200+ licensed radio communications facilities already operating in the Hawkesbury.

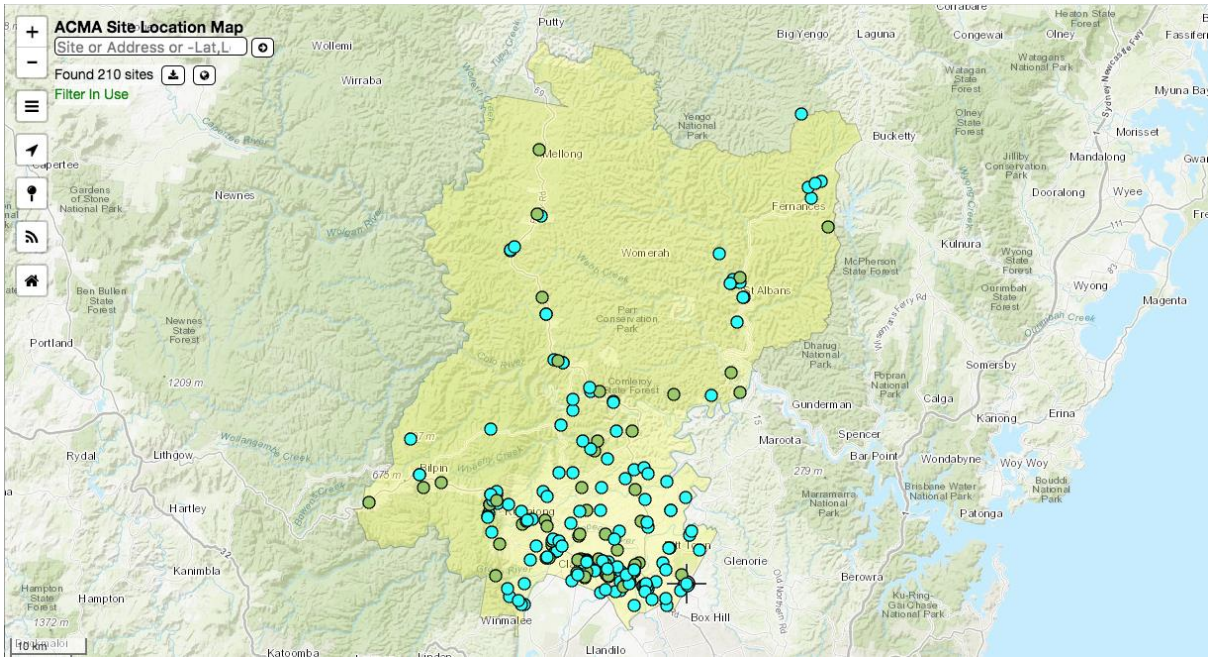

Figure 2: ACMA Register of Radio Communications Licences, Hawkesbury LGA

Looking at the bigger picture, there are more than 200 licensed facilities across the Hawkesbury LGA, more than 12,000 licensed radio facilities operating across the Greater Sydney Metropolitan area, and more than 160,000 licensed radio communications facilities operating across NSW.

Of interest, the ACMA's Register of Licensed Radio Communications also shows that nationally, there are more than 68 licensed radio facilities (including mobile network facilities) located within high schools and more than 800 licensed radio facilities located within hospitals across Australia.[10]

nbn has more than 1,700 fixed wireless facilities already operating across Australia, servicing more than 500,000 properties across rural and regional Australia. The overwhelming majority of these are safely and legally located in close proximity to the communities they are designed to service.

Thirdly, and importantly, the public health and safety standards recommended by the WHO are based on a very large body of peer-reviewed science. The WHO, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and other international safety bodies advise that the weight of evidence shows that there are no substantiated or established health effects from radio frequencies employed within safety limits.

The citation of individual papers does not undermine the rigorous, weight-of-evidence, approach that is undertaken by public health authorities when establishing safety limits. This approach

[10] http://web.acma.gov.au/pls/radcom/register_search.main_page

includes the consideration of thousands of scientific papers published over many decades. The WHO advises:

> *From all evidence accumulated so far, no adverse short- or long-term health effects have been shown to occur from the RF signals produced by base stations. Since wireless networks produce generally lower RF signals than base stations, no adverse health effects are expected from exposure to them…. Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects.*[11]

With respect to health risks including cancer, the WHO states:

> *Studies to date provide no indication that environmental exposure to RF fields, such as from base stations, increases the risk of cancer or any other disease.*[12]

Further, while the current standard, Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (RPS3), was introduced to Australia in 2002, in June 2014 an independent, expert Review Panel reconfirmed the adequacy of the standard following a detailed assessment of recent scientific literature. ARPANSA advises that its Review Panel considered more than 1300 separate pieces of scientific literature as well as the results of 72 major panel reviews. ARPANSA states:

> *Based on the assessment of the scientific evidence from January 2000 till August 2012, the Expert Panel find that the underlying basis of the ARPANSA RF exposure Standard remains sound and that the exposure limits in the Standard continue to provide a high degree of protection against the known health effects of RF electromagnetic fields.*[13]

ARPANSA also constantly evaluates emerging science, publishing a Literature Survey which is updated monthly, and is available on their website – www.arpansa.gov.au.

nbn Compliance with Safety Standard

nbn™ fixed wireless facilities contribute very little radio signal to the environment. The maximum signal strength at Oakville from a 45m monopole facility would be 0.11% of the safety limit, or more than 900 times below the safety limit for radiofrequency transmissions. This represents a very significant margin of compliance with relevant safety standards.

nbn has a legal, environmental and ethical obligation to deliver a network that operates safely and responsibly, without posing risk to any members of the general public. At all times, and in any location, **nbn** operates its fixed wireless radio network safely and responsibly at signals strengths significantly below WHO and Australian standards.

We hope that the information provided within does provide residents and business of Oakville, Maraylya and Nelson much greater peace of mind regarding the safety, regulation and operation of radio networks general, and specifically the fixed wireless network.

Outcomes of Consultation

We advise that, having addressed the issues raised, we intend to proceed with the facility as at 156 Boundary Road, Oakville, with an amendment to paint the structure pale eucalypt green. **nbn** is

[11] Electromagnetic Fields and Public Health: Base Stations and Wireless Technologies
[12] http://www.who.int/features/qa/30/en/
[13] Review of the Radiofrequency Health Effects Research – Scientific Literature 2000 – 2012, Technical Report Series No. 164

confident that this location will result in the best possible, available balance between community offset and service capability. We also maintain that the proposed facility will be operated safely and responsibly, within scientifically mandated safety limits for radio communications.

Yours sincerely

Katherine Klouda
Town Planner,
Visionstream