

SUBMISSION

29 September 2023

Mr Andrew Dyer
Australian Energy Infrastructure Commissioner
Community Engagement Review Taskforce
GPO Box 3090
Canberra ACT 2601

Submission sent via [webpage](#)

Dear Mr Dyer

Re: AEIC Review of Community Engagement Practices

The Queensland Water Directorate (**qldwater**) is the central advisory and advocacy body within Queensland's urban water industry, working with our members to provide safe, secure and sustainable urban water services (drinking water, sewerage and wastewater treatment) to Queensland communities.

In providing these essential services, the urban water sector own and operate sewer lines, water and wastewater treatment plants, pumping stations, reservoirs, and a range of other critical water technologies/ infrastructure.

There are currently 370 water supply schemes and 265 sewage schemes ranging from large-scale infrastructure in South-East Queensland (SEQ), to facilities in regional and remote Queensland (including those servicing island communities).

The Queensland sector is [comprised](#) of 75 service providers directly employing nearly 7,000 people. Of the 75 publicly owned water service providers, 66 are local councils outside of SEQ, 15 of these are Aboriginal councils and two are Torres Strait Island councils.

qldwater members include councils, the council owned statutory authorities in south-east Queensland (Urban Utilities and Unitywater) and the two state-government owned statutory authorities (Gladstone and Mt. Isa Water Boards).

We welcome the opportunity to provide a submission to the Australian Energy Infrastructure Commissioners (AEIC) review of community engagement practices. **qldwater** provides this submission without prejudice to any submissions from our members or other urban water providers.

Background

qldwater understands that the Australian Energy Infrastructure Commissioner is seeking feedback as part of a review to enhance community support and ensure that electricity transmission and renewable energy developments deliver for communities, landholders and traditional owners.

The Review considers community attitudes towards renewable energy infrastructure and will provide advice on the best way to maximise community engagement and benefit in planning, developing and operating renewable energy infrastructure. With particular regard to perceived or actual impacts on First Nations, environment, agricultural land, emergency management, social, cultural, community, tourism, business and local industry.

The Role of the Urban Water Sector

The role and functionality of urban water utilities has evolved, commencing with (safe) water supply, and then the provision of sewerage, drainage, environmental protection and, more recently, water security and reliability efforts.

Increasing pressures from climate change, population growth, urban densification and urban sprawl require water utilities and water service providers to adapt and innovate, to maintain service delivery standards. These pressures are contributing to a variety of challenges including water security and reliability concerns which, if not managed, will negatively impact community liveability, environmental flows and biodiversity, as well as economic prosperity.

The urban water sector is subject to the *Security of Critical Infrastructure Act 2018 (Cth)* (**SCI Act**) and some of our members manage obligated water assets. The *SCI Act* contains a range of powers, functions and obligations that only apply in relation to specific critical infrastructure assets across the electricity, gas, water and ports sectors.

For the purpose of the *SCI Act*, critical infrastructure refers to *critical water assets*, which is further defined as one or more systems or networks managed by a water utility where those systems or networks ultimately service more than 100,000 connections. This captures those critical water utilities, which if disrupted, would significantly impact the operations (and safety) of large population hubs, economic interests and Australian Government operations.

In May 2021, amendments made to the *SCI Act* widened the definition of critical water infrastructure beyond the 100,000 connections (sewer or water or both – see definition on page 26 and also Section 9). While under Part 2A of the *SCI Act*, Critical Infrastructure organisations were required to adopt a Critical Infrastructure Risk Management Program (CIRMP) by 17 August 2023. Numerous **qldwater** members are obligated entities and have submitted their programs.

Scope of Review – Ancillary Equipment

The review must also include consideration of the telecommunications and other ancillary equipment utilised by the renewable energy sector in its operation.

We seek to draw your urgent attention to several outstanding issues arising from the deficiencies in the regulatory legislation framework surrounding telecommunication deployment under telecommunication carriers under the *Telecommunication Act 1997 (Cth)* (Telco Act) impacting upon the water sector.

These deficiencies include (but are not limited to) the following:

1. conflicts associated with a water service provider's ability to meet their legislative obligations and statutory functions (which include public health functions) and the ability to control (including maintaining and operating) its assets due to the impacts associated with telecommunication equipment being deployed directly onto water infrastructure and/or on sites. Some of this equipment is powered by renewable energy technologies;
2. deficiencies in the regulatory legislative framework surrounding the telecommunication deployment in general, and unacceptable risks to drinking water quality, public health, asset protection and worker safety (including exposure to electro-magnetic emissions radiation). We note, these issues have been extensively articulated by the water sector in a number of submissions;
3. amendments being made to the regulatory framework in a piecemeal fashion to expedite the rollout out of technologies (5G infrastructure and other telecommunications facilities) in circumstances where water public utility landowners/asset owners' interests and concerns have not been adequately addressed or sufficiently advanced despite these concerns being notified to the Department in 2017, and noting that these concerns also include legacy issues associated with redundant and unknown equipment; and
4. conflicts between the Commonwealth legislated critical infrastructure security obligations, owed by water services providers who are responsible for critical infrastructure to prevent "material risks" by the requirement to develop, adopt and maintain risk management plans applying to critical assets along with codified "physical security obligations"; and mandatory annual reporting which includes attestations from boards and their equivalents), under the SCI Act and land obligations owed to telecommunication carriers under the Telco Act.

The direct conflict associated with a water service provider's ability to meet its legislative obligations and statutory functions and the ability to control (including maintaining and operating) its assets due to the impacts associated with telecommunication equipment has been problematic for a number of water services providers across Australia. The issues are escalating with the increasing deployment of 5G and occupation of telecommunication equipment on water assets.

An increasing number of telecommunications infrastructures also have a renewable energy component (usually a solar photovoltaic cell and battery) which varies in size, subject to location and energy requirement.

This raises safety, security and operational issues, particular in relation to drinking water quality, public health, asset protection, and worker safety. For example, ensuring workers are not exposed to electromagnetic emissions (EME) radiation from the telecommunication equipment and/or renewable energy component, or the potentially fatal impact of a high-pressure water main physical breach).

First Right of Refusal

Due to the critical nature of public health water services functions and statutory obligations, water service providers require the first right to refuse carrier access to install and operate telecommunication equipment as well as renewable energy infrastructure from their sites including high-level water towers.

Other Considerations

In Queensland, solar facilities/farms are currently assessed by local government under local planning schemes, and for example, do not trigger an assessment under the Regional Planning Interests Act 2014, even if they are in an area of regional interest such as a Priority Agricultural Area (PAA) or a Strategic Cropping Area (SCA), because they are not resource or regulated activities.

As such, the placement of renewable energy facilities close (up to fence lines as has been occurring in Queensland) to critical urban water infrastructure is not regulated nor does it have to be consulted with the impacted party. This is unacceptable to the urban water sector, not least due to 'heat island' concerns but also increased fire and other risks associated with renewable energy facilities.

Climatic Impacts to Adjacent Land

There is a growing body of empirical research and genuine concern surrounding large-scale PV facilities and their 'heat island' (PVHI) effect. The PVHI effect warms surrounding areas, thereby potentially influencing biodiversity and wildlife habitat, ecosystem functions and human health, and potentially infrastructure performance and operation.

One study¹ determined that temperatures around a solar PV plant were regularly 3–4°C warmer. This study went on to state:

"As with the Urban Heat Island (UHI) effect, large PV power plants induce a landscape change that reduces albedo so that the modified landscape is darker and, therefore, less reflective. Lowering the terrestrial albedo from ~20 per cent in natural deserts to ~5 per cent over PV panels alters the energy balance of absorption, storage, and release of short- and long-wave radiation".

"PV panels are thin and have little heat capacity per unit area but PV modules emit thermal radiation both up and down, and this is particularly significant during the day when PV modules are often over 20°C warmer than ambient temperatures, (iii) vegetation is usually removed from PV power plants, reducing the amount of cooling due to transpiration, (iv) electric power removes energy from PV power plants, and (v) PV panels reflect and absorb upwelling longwave radiation, and thus can prevent the soil from cooling as much as it might under a dark sky at night".

A potential change in critical climatic conditions (e.g. the associated temperature rise) may impact adjacent land owners, effecting infrastructure performance or requiring changes to operational processes (such as frequency of reservoir cleaning due to increased water temperatures and risks posed of algal outbreaks etc).

¹ Barron-Gafford, G. A. et al. (2016). The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. Sci. Rep. 6, 35070; doi: 10.1038/srep35070.

Worker Health Concerns

PV arrays and the associated electrical infrastructure emits electric magnetic fields (EMF), usually at extra low frequency (ELF) when generating and transmitting electricity. Magnetic fields which are only generated when a device is operating, are not easily shielded and will pass through most objects resulting in higher potential exposure. Magnetic fields are higher at the inverters and transformers of the panels themselves and, as such, site design must minimise potential risks to sensitive receptors. PV cells (particularly on dwellings) have also been linked to electromagnetic hypersensitivity (EHS). The medical literature defines EHS as 'an idiopathic environmental intolerance attributed to electromagnetic fields'. The World Health Organization's (WHO) fact sheet on EHS states that "*while some individuals report mild symptoms and react by avoiding the fields as best they can, others are so severely affected that they cease work and change their entire lifestyle*"².

Estimations of the prevalence of EHS within the community vary and there is no determination for the Queensland or Australian populations. The UK-based EM Radiation Research Trust state that it is currently estimated that between 2.5 and 8 per cent of the population could have this condition³. Research has previously indicated that up to 50 per cent of the Australian population will be electrically sensitive in the near future⁴. With regards to the weakness of the evidence for a link between exposure to ELF magnetic fields and childhood leukaemia, the WHO provide the following advice⁵:

- Government and industry should monitor science and promote research programmes to further reduce the uncertainty of the scientific evidence on the health effects of ELF field exposure. Through the ELF risk assessment process, gaps in knowledge have been identified and these form the basis of a new research agenda.
- Member States are encouraged to establish effective and open communication programmes with all stakeholders to enable informed decision-making. These may include improving coordination and consultation among industry, local government, and citizens in the planning process for ELF EMF-emitting facilities.
- When constructing new facilities and designing new equipment, including appliances, low-cost ways of reducing exposures may be explored. Appropriate exposure reduction measures will vary from one country to another.

According to the *Disability Discrimination Act 1992 (Cth)*, the definition of a disability includes the malfunction of a part of the person's body, as well as a disorder that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour. It also includes a disability that presently exists, previously existed or may exist in the future. The Act specifically outlines that to avoid doubt, a disability that is otherwise covered by this definition includes behaviour that is a symptom or manifestation of the disability. EHS clearly fits this definition.

EHS can cause both a malfunction of people's bodies (for instance, skin rashes, nausea, heart palpitations), as well as affecting sufferers' cognitive processes.

² World Health Organization. Extremely low frequency fields. Environmental Health Criteria, Vol. 238. Geneva, World Health Organization, 2007

³ EM Radiation Research Trust 2015, Electromagnetic Hypersensitivity, Online, Available: <http://www.radiationresearch.org/campaigns/electromagnetic-hypersensitivity>.

⁴ Hallberg, O. & Oberfeld, G. 2006, 'Will we all become electrosensitive', letter to the editor, Electromagnetic Biology and Medicine 25 (3), 2006. pp. 189-91

⁵ World Health Organisation – Electromagnetic Fields and Public Health. <http://www.who.int/pehemf/publications/facts/fs322/en/>

qldwater notes the 2013 Administrative Appeals Tribunal case, (*David McDonald v Comcare*)⁶, where the decision was made to award Dr McDonald compensation in accordance with the *Safety, Rehabilitation and Compensation Act 1988*, in respect of an injury incurred due to exposure to low-level electromagnetic fields. The claim, for aggravation of EHS syndrome, was satisfied by Dr McDonald having suffered either an aggravation of sensitivities to EMFs; or, an aggravation of his symptoms by reason of his honest belief that he suffered from the condition of EMF sensitivity and that his exposure at his workplace worsened his sensitivity. This precedent may have implications for urban water sector workers where they are working in close proximity to renewable energy (and telecoms) infrastructure for prolonged periods while undertaking critical workforce tasks.

There is a growing body of scientific research seeking to determine if there is an association between PV installations (at both domestic and large-scale commercial scale) and the incidence of cancer including childhood leukaemia. Many of these studies exploring a range of negative medical outcomes are inconsistent, furthering community concern between PV installations and cancer rates. The WHO has designated ELF-EMF as a possible carcinogen⁷.

Further studies concerning electromagnetic radiation must be considered as part of the science-based evidence to determine the location of large-scale PV arrays where they are in proximity to sensitive receptors such as critical water infrastructure.

There is growing evidence that high frequency voltage transients can produce negative biological effects, for example:

- Cancer – American Journal of Industrial Medicine, 51(8): 579-586, 2008.
- Diabetes – Bioelectromagnetics, 25(3): 160-166, 2001; Proceedings from the International Conference of Childhood Leukaemia, London, September 6-10, 2004; Electromagnetic Biology & Medicine, 25: 259-268, 2006; Electromagnetic Biology & Medicine, 27: 135-146, 2008.
- Neurotransmitter levels – Electromagnetic Biology & Medicine (online), Informa Healthcare, January 18, 2013.
- Multiple Sclerosis – Proceedings from the International Conference of Childhood Leukaemia, London, September 6-10, 2004; Electromagnetic Biology & Medicine, 25: 259-268, 2006.
- Headaches – Proceedings from the International Conference of Childhood Leukaemia, London, September 6-10, 2004.
- Childhood Leukaemia – Medical Hypothesis, 56(3): 290-295, 2001.
- Amyotrophic Lateral Sclerosis (ALS) – Medical Hypothesis, 74(6): 1086-1087, 2010.
- Symptoms of Electromagnetic Hypersensitivity (EHS) – Proceedings from World Health Organization Workshop on Electrical Hypersensitivity, Prague, Czech Republic, October 25-26, 2004; Science of the Total Environment, November 1, 2011.

Urban water workers will be undertaking high risk activity (working at heights) with unacceptable hazards working in proximity to infrastructure and equipment that they have no control over and that they cannot safely isolate.

⁶ See *Administrative Appeals Tribunal of Australia Dr Alexander McDonald and Comcare 28_02_2013*

⁷ The use of the label 'possible carcinogen' indicates that there is not enough evidence to designate low frequency EMF as a human carcinogen at this time.

AEMC Draft Rule Change

On 10 August 2023, the Australian Energy Market Commission (AEMC) published a draft determination and draft rule that seeks to enhance transmission network service providers (TNSPs) engagement with communities to build and maintain social licence. The objective is to improve the quality of planning undertaken by TNSPs for transmission projects and to identify any risks to timely delivery.

The draft rules are designed to clarify that TNSPs are required to engage with stakeholders as part of preparatory activities who are reasonably expected to be affected by the development of a project, including local landowners, local council, local community members and traditional owners. Queensland's urban water sector welcomes the draft determination and rule change.

The urban water sector is a highly climate-impacted sector. As such, we are highly supportive of the transition to renewable energy technologies and we have significant commitments (regulated and non-regulated) to the decarbonisation of the sector.

qldwater welcomes the inquiry by the Australian Energy Infrastructure Commissioner into community engagement practices. Any risks to community safety, worker safety and critical urban water infrastructure must be abated. We firmly believe that the renewable energy sector and the urban water sector are synergistic and can coexist and prosper within the right frameworks.

Please do not hesitate to contact me if you have any questions.

Yours faithfully

A handwritten signature in blue ink, appearing to read "Georgina".

Dr Georgina Davis
Chief Executive Officer