

WATERWORKS



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SPECIAL FEATURE: TELCOS AND WATER ASSETS

WATERWORKS

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COEXISTING WITH TELCOS

Jason Ip

There are documented horror stories where the balance between the requirements of a Telecommunications Provider (Telco) and the responsibility of a Water Utility falls in favour of the Telcos. Documented impacts to Water Utility reservoirs have included:

- Compromised site security.
- Compromised health and safety of workers.
- Restricted access to reservoirs.
- Difficulties to water supply operations and asset management.
- Increased risk to water quality and public health.

One of the major consequences is that Water Utility staff are no longer allowed to access some structures, and in particular the roof because of the level of radiation and, in some cases, simply a lack of space (Figure 1).

Perhaps our water industry has unknowingly made things too easy for Telcos by simply (albeit sometimes grudgingly) allowing them to dictate

how they install and operate their communications equipment on our water assets.

There is now a stronger need for us to understand and exercise our legislative rights so we can meet operational and governance requirements, reduce business costs imposed by Telco facilities, and to highlight any legislative deficiencies so things can be fixed. For example, the rollout of 5G into the communities.

This article focuses on Telcos accessing Water Utility assets using the telecommunications legislation, outside commercial arrangements.

Legislative Framework

The current Commonwealth telecommunication legislation was introduced when Telstra was privatised in the late 1990s. This was at a time when other various state and national water legislation for public health, water quality and workers safety was not as developed as it is now.



Figure 1. Access to the roof of this storage is all but impossible.

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OUR COVER

A water storage reservoir in South East Queensland covered with telecommunications equipment.

The *Telecommunication Act 1997 Cth* (Telco Act) provides substantial powers and immunities allowing Telcos to access, install and operate communication facilities on private property, especially if the facility is categorised as “Low Impact”.

If the facility cannot be categorised as “Low Impact”, the Telco must obtain development approval through state and local government planning processes. This gives Water Utilities an opportunity to stipulate conditions to ensure the Telco’s facility is compatible with the Water Utility’s essential operations and governance requirements. Some of these include:

1. Site access protocols.
2. Installation and maintenance activities.
3. Water contamination.
4. Work health and safety.
5. Lease/licence agreements.

However, if the facility is categorised as “Low Impact”, then there is no need for the Telco to obtain approval. This is the area of greatest concern for the water industry because many of its reservoirs, towers and tanks are considered candidates to host Low Impact communication facilities.

This part of the legislation is best outlined in Schedule 3 of the Telco Act with an excerpt shown in Figure 3.

What are Low Impact Facilities?

Low Impact facilities are facilities that are considered to have a low visual impact because of their size and location. At the time the Telco Act was drafted, they were considered to be less likely to raise significant planning, heritage, or environmental concerns. Water supply reservoirs may be considered as a Low Impact facility more often than not.

The telecommunication industry has since significantly changed, with many other Telco Carriers competing for their own competitive advantage.

Land Access and Activity Notice and Objection Processes for Low Impact Facilities

Before a Telco can utilise this part of legislation to install equipment onto reservoirs, they must follow stringent processes that often begins with issuing a Land Access and Activity Notice (LAAN) 10 days before commencing works.

It’s very important for Water Utilities to immediately review a Telco’s proposal

and be prepared to lodge an objection on legitimate grounds at least 5 days before commencement of works... that’s only 5 days after receiving the notice!

The onus is on the Water Utility to identify noncompliance and lodge an objection, and failure to do this is interpreted as accepting the Telco’s proposal. This enables the Telco to carry out activities as stipulated in the LAAN.

It’s vital for organisations to have adequate correspondence systems that give the best opportunity to review the LAAN, and immediately submit an objection on legitimate grounds. Ironically, submitting an objection allows the first opportunity to commence proper consultation.

It is recommended that Water Utilities become familiar with other elements of this process, including referral to the Telecommunications Industry Ombudsman (TIO).

Valid Grounds for an Objection

Fortunately, Telcos must comply with a number of conditions that are contained within Division 5 of Schedule 3 to the Telco Act, and the Telco Code. Water utilities could use the objection process as a powerful mechanism to negotiate with Telcos, rather than accepting a notification of their planned installation or maintenance of facilities under the Telco Act.



Figure 2. A crane is the only way to access some reservoir due to Telco impacts.

Telco Act, Schedule 3 – Carriers power and immunities

- **A carrier may enter on land and exercise any of the following:**
 - (a) the power to inspect the land to determine whether the land is suitable for the Carrier’s purposes;
 - (b) the power to install a facility on the land; and
 - (c) the power to maintain a facility that is situated on the land.
- **The power to install a facility may only be exercised if:**
 - (a) the Carrier holds a facility installation permit;
 - (b) **the facility is a Low Impact Facility;** or
 - (c) the facility is a temporary facility for use by, or on behalf of, a defence organisation for defence purposes

Figure 3. Schedule 3 of the Telco Act.

Exercising the objection process could (perhaps) even encourage Telcos to enter into a mutually agreed commercial arrangement, or even go elsewhere.

Some legitimate grounds to object are summarised in Figure 4.

Where to Next?

Since the proposed amendments to the telecommunications powers and immunities legislation was raised in June–July 2017, the water industry representatives have established a working group comprising WSAA, NSW and Queensland Water Directorates and other key water industry organisations (such as SEQ Water). The concerns of the group included potential legislation changes that would increase the burden on Water Utilities for the establishment and operation of Telco facilities on reservoirs.

Department of Communication and the Arts (DoCA) has established a stakeholder representative community, Powers and Immunities Reference Group (PIRG), that includes representation from the water industry, road and railways authorities, affiliated Telco associations, and other federal agencies, such as

Australian Communications Media Authority (ACMA) and DoCA.

The PIRG meets regularly and is now part of the formal consultation process to discuss current Telco impacts to Water Utilities (as described in this article), and negotiating better ways to coexist with respect to current and future changes to Telco legislation.

The Author

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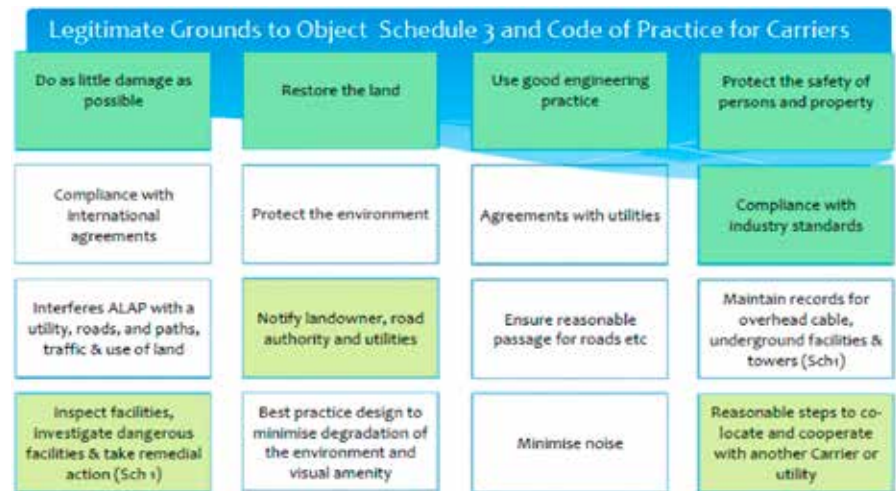


Figure 4. Some legitimate grounds to object to Land Activity Access Notices (LAANs).



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IMPACT OF TELCO STRUCTURES ON WATER STORAGE RESERVOIRS

Carmel Serratore and Jill Busch

The installation of telecommunications equipment on drinking water reservoirs can present additional operational challenges and increase risks to water quality, worker safety and the ability of the owners to meet their statutory obligations and maintain assets. Some of these risks are presented below.

Electro-magnetic Energy (EME) Emission Zones and Access Areas

All reservoir sites that have telecommunications fixtures are to be registered with the Radio Frequency National Site Archive (RFNSA, see website www.rfnsa.com.au), and prepare and maintain an EME Guide for Site Safety report (previously known as a Radio Communications Site Management Handbook). EME guides are meant to list all carrier equipment at the site and identify restrictions that the emission zones have on the areas of the tank. Carriers registered with RFNSA have an obligation to ensure the EME guide is kept up to date. Site owners should note that that there may be significant

differences between the theoretical field mapping of EME exclusion zones specified in the EME guide and the actual field mapping of EME exclusion zones on site. This can occur when the EME guides have not been kept up to date or are inaccurate for example, where a desktop study has been used by the carrier as opposed to actual site/field inspection.

Some EME guides do not list or identify the tank features, making it difficult to gain a perspective and determine if the EME exclusion zones encroach on the entry hatch to reservoirs or access stairs (Figure 1). These EME guides need to be reviewed before visiting sites, and to view if any "limited" conditions exist such as the presence/exclusion of unknown antennas. This is making the determination of safe work areas difficult, thus impacting on worker safety. Site owners should check that the EME Guides are up to date, accurate and clearly detail all EME exclusion zone clearances. It is also good practice to leave a copy of the EME guide on site for the use of

workers and contractors who are required to access and maintain water reservoirs.

Workers and contractors accessing or working near EME fields must be appropriately trained (RADHAZ) and wear appropriate instruments for monitoring EME exposure. This training must be kept up to date.

WH&S Concerns

There can be unacceptable worker safety risks associated with the installation of telecommunication equipment on water infrastructure. Some examples are provided below.

Controlling Operational Access to Undertake Inspections of Reservoirs

Positioning of Telco equipment has occurred in the past without due regard to the operational and functional requirements of the tanks. In some examples, this has led to site owners being unable to access the tank roof area due to emission zones over the ladders, or antennas installed on the roof area limiting the ability to carry out emergency, routine and maintenance requirements (Figures 1 and 2). This can lead to a loss of control of a site owner's ability to manage its assets. This can also be in conflict with a site owner's statutory obligations to ensure the water is safe to drink or to maintain continuance of supply of drinking water to the public.



Figure 1. Reservoir entry hatch fully surrounded by aerials.

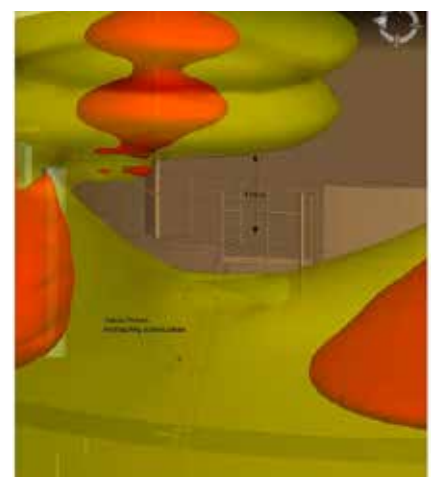


Figure 2. RF emission plume over an access ladder.

Fire Risks and Smoke Hazards

Installation of carrier batteries and communication racks within a restrictive site of a reservoir structure can lead to fire risks and smoke hazards for workers, i.e. by installation of battery/electrical installations, which can overload the inside of a high-level reservoir structure that has been designed with one access route, meaning the main entry can be compromised by smoke. Telecommunication equipment not being earthed properly (or not at all) can be susceptible to lightning strikes and become another source of fire hazard on rooftops. This could be a risk for sites located within bushfire classification overlays.

Trip/Slip and Unattached Overhead Hazards

This can occur with installation of cable trays running across access areas causing trip/slip hazards. Cable tray covers also require ongoing maintenance, and numerous covers have been found unattached on site or in neighbouring areas after being dislodged during a wind event.

Electrical Wiring

Many carriers have installed telecommunications equipment sourcing power directly from the site owners' switchboards instead of using an independent supply of mains power. This can be problematic for site owners who operate pumps and water treatment plants, as they can experience power surges, in particular where a site has single phase power. It may also be a problem during an emergency as it can lead to site owners being unable to isolate power in a timely manner. This is because it is an offence to interfere with telecommunication

equipment under the *Criminal Code Act (Cth)* 1995. Consent to switch off, or to interfere with, carrier equipment requires carrier consent. In many instances, carriers are reluctant to allow site owners to "power-down" telecommunication antennas on water reservoirs so that workers can safely access, and carry out operations and maintenance of its water reservoirs. This is on the basis that carriers operate under conflicting obligations to ensure that service coverage is maintained without any outages. This makes dissimilar obligations difficult to coexist on drinking water reservoirs and associated infrastructure, without compromising safety, asset management and water quality. The existence of unknown equipment can also become a problem for site owners as consent cannot be obtained, requiring site owners to make an application to the court to obtain consent otherwise risk committing an offence under the *Criminal Code Act (Cth)* 1995. This is not a good position for a site owner to be in. The water industry has been advocating for change in this regard.

Redundant Equipment

Removal of redundant and buried infrastructure such as cabling has been an issue for some asset owners. The redundant equipment can become a problem for worker safety with increased overhead hazards due to equipment falling into disrepair and/or becoming unsecured and susceptible to weather events. Future site expansions to meet the water utilities demands associated with increases in population growth may be compromised (for example, equipment underground would need to be relocated at the expense of a site owner). Redundant equipment can also be a security issue for site owners in circumstances where owners of such equipment are unknown – creating issues of unlawful interference. Redundant equipment is a problem where there are multiple carriers on the same infrastructure and overcrowding exists, which can impact on a site owner's use and control of its water infrastructure. It has been known that carriers also intentionally leave redundant equipment in situ in order to reserve the spot (or real estate) and prevent access to other carriers in competition with them.

Site Security

Often when attending sites with Telco equipment, there are additional padlocks on the gates for these companies to access the site independently. In the past, where the asset owner has restricted these by removing any unknown locks, they have attended the

site later only to find that the chain has been cut and additional locks installed without the site owner's consent (Figure 4).



Figure 4. Daisy chain of (whose?) locks.

Site security can be further compromised by having additional Telco fixtures, such as site huts, cable frames and cabinets on site that allow vandals to bypass fences or security ladders (Figure 5). Sites have been compromised when subcontractors for the Telcos have installed scaffolding or left equipment within a locked site allowing local vandals to climb and conduct acts of vandalism.



Figure 5. Telco fixtures allowing unauthorised access to tanks.



Figure 3. Cable cover defect.

Site restrictions can exist where Telco huts and compounds have limited the accessibility of the site for operational and maintenance requirements for site workers. Buildings and other infrastructure can prevent larger equipment, such as cranes or elevated working platforms from setting up on site due to underground electrical cables, site huts or where antenna emission zones interfere with height works and require powering down of the Telco equipment to conduct the maintenance works. All these extra measures end up being a financial burden and a difficulty for the asset owner.

Structural Impacts

Damage to coatings of a steel tank has occurred when antenna supports have been welded to the wall area neglecting the heat impact for the internal coating, resulting in areas of accelerated corrosion. Telecommunications equipment affixed to concrete reservoirs can also contribute to the degradation of reservoir structures.

Factors contributing to reservoir structure due to the added telecommunication fixture/equipment may include:

- Local impacts on reservoir structures due to additional point loads and bending moments, including wind loads (Figure 6).
- Damage to the waterproofing due to poor workmanship of the installation of the fixtures supporting the telecommunications equipment.
- Damage to concrete surfaces, including drill holes remaining unsealed or unrepaired and thus allowing moisture into the concrete surface that, in turn, can potentially lead to concrete degradation and steel reinforcement corrosion within the structure in the future. This is particularly a concern where reservoirs are located in a coastal environment, and the presence of chloride can initiate the corrosion process, resulting in loss of steel sectional area and cracking, delamination and spalling of the cover concrete well before the intended design life of the structure is reached.

In many instances:

- Certification of engineering assessment for carrier installations impacting on water infrastructure has not been obtained and/or maintained by carriers.
- Carriers have not maintained equipment for its full life cycle. Where there are “common areas”, such as cable trays and racks, identifying which Telco owns what equipment can be challenging and therefore, ensuring that adequate maintenance is conducted becomes difficult.
- Redundant antennas remaining on site can become hazards due to degradation and collapse, and even fallen objects blowing off the tank during high wind.
- In some instances, telecommunication equipment has been fixed to the barrier handrails of reservoir rooftops. This has led to damage of handrails and in a known instance, dislodgment of the handrail. Unsafe or poor condition of handrails can mean that the telecommunication equipment attachments are not structurally sound. This can pose a safety risk, both to workers on the roof and those below if objects fall from the roof.

It is good practice to obtain a carrier’s engineer certification/assessment with regards to its installation (pre and post) and to confirm that things have been installed properly, and a site owner’s water infrastructure has not been impacted.

Water Quality Impacts

Birds are attracted to antenna structures for roosting and protection. This increases the risk of faecal material building up on the roof and can increase the risk to water quality (Figure 7).

Holes in roofs from anchor points, or other fixtures (Figure 8), can also allow roof drainage to enter tanks and can lead to contamination of the drinking water supply.

The presence of carrier installations can restrict a site owner’s ability to inspect and maintain its assets, thereby prolonging and extending a site owner’s ability to respond. This can be a problem in the event of an emergency – for example in cyclone-prone areas, high winds may damage reservoir roofs which then need replacement. Site owners have been unable to repair roofs in a timely manner where carriers have failed to cooperate or were rigid in when site owners can undertake works.



Figure 6. Roof aerials poorly “fixed” directly to roofing materials.

Summing Up

Site owners should assess the risks of a Telco installations and the potential impacts on the water infrastructure and site, for both existing and future requirements. The water industry requires more diligent inspections and response times to any likely or possible risks to the stored water quality. There are water industry examples where

communication with, and gaining adequate responses from, the Telco companies has been found to not be as simple or adequate as required. As the assets cyclic maintenance becomes due, there is evidence that telecommunication installations on tanks have now added to the financial and time burden to water utilities, that they may not have initially been aware of.

Site owners should note that the Australian Communications and Media Authority (ACMA) is responsible for ensuring that low-impact facilities are installed according to the Code of Practice. Where a carrier has breached the Code of Practice, ACMA may take enforcement action, which may include formal warnings or directions to comply with the Code. Complaints to ACMA regarding carrier activities or carrier obligations under Schedule 3 to the Act can be made to telephone.service.regulation@acma.gov.au. Asset owners are strongly encouraged to send their concerns and complaints through to ACMA.

Undoubtedly, the preferred lowest risk option is for telecommunications equipment to be mounted on independent towers or poles.

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Figure 7. This structure promotes bird roosting and blocks roof runoff.



Figure 8. "Swiss Cheese" effect from Telco roof penetrations (looking up from inside the tank).



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