Your details

Title:	Mr
First name:	[redacted]
Last name:	[redacted]
Email:	[redacted]
Organisation (if relevant):	[redacted]
Position in organisation:	[redacted]
Address:	[redacted]
Suburb:	[redacted]
Postcode:	[redacted]
Type of submission:	I am submitting my organisation's submission
Do you want your name published?:	No
Privacy statement:	I agree to the above statement

Your submission

Enter text below or upload a document:	Submission is attached as a PDF document.
File upload:	WaterGroup-NSW-Metering-Framework-Consultation-Submission_v1a280918.pdf, type application/pdf, 742.8 KB

Form Information

Site Name	NSW Department of Industry
Site Id	47409
Page Standard Name	NSW Government's Water Reform Action Plan
Page Standard Id	134654
Page Custom Form Name	Submissions on draft metering regulation and policies
Page Custom Form Id	171616
Url	https://www.industry.nsw.gov.au/water-reform/make-a-submission
Submission Id	176965
Submission Time	28 Sep 2018 12:13 pm
Submission IP Address	103.97.220.105

[redacted]

[redacted] Submission on NSW Draft Metering Regulation and Policies Consultation

Prepared for NSW Department of Industry

To the Department,

[redacted] have been delivering digital water metering solutions for large water users in Australia for over 12 years. More recently, we have been leaders in the advancement of new globally adopted open communication systems for the Australian water metering industry and achieved a range of Australian firsts in terms of commercialisation, performance, and user outcomes. We are a digital water metering vendor and are currently working on a range of projects with major water suppliers around the country. We are also exploring options for entering the Australian irrigation metering market with new products that have proven highly successful internationally. With this depth of experience we encourage the Department to consider the following.

With all digital metering projects, it is of utmost importance to understand:

1. What outcomes do we intend to reach?
2. What insights and information do we need to drive action to reach these outcomes?
3. What data do we need to get those insights?
4. And what tools and processes will we use to get that data?

It is clear that the intended outcomes include the fair and sustainable use of water and to reach this we require insights into how much water is being used where and when. We see that there are still questions to be answered around what data is needed and how it will be gathered. Relative to data collection, reliability, standardisation, and security must also be considered. These matters relate to the data logging and telemetry components of the regulation.

We appreciate that the Department has acknowledged the challenges in achieving reliable wireless communications in rural areas. To this extent we would like to highlight the recent advances in wireless communication for water metering and some of the challenges that these advances address.

There are many new wireless technologies that have emerged in Australia in the last two years including LoRaWAN, Sigfox, and NB-IoT. Perhaps the most interesting of these for rural irrigation metering is NB-IoT (Narrowband Internet of Things) which is a globally standardised wireless communication technology operated by traditional telcos around the world and in Australia by Telstra, Optus, and Vodafone. The standard was frozen in 2016 and the technology has been rigorously tested and is now rolling out across the country by each telco in the lead up to Telstra's commercial

launch in September 2018 and the fast approaching launches from Optus and Vodafone. This will bring tremendous benefits to the water industry where many assets have no local power supplies therefore must operate on batteries and at low cost. Many Australian water utilities have been involved in digital water metering and other NB-IoT pilot projects for the past two years as they realise the value and rush to adopt innovative solutions to long standing problems of water security and a lack of data on their network operations.

The key benefits of NB-IoT for digital water metering over 3G/4G and other wireless technologies include:

- Existing coverage from major telco infrastructure
- Greater range and signal penetration than 3G/4G
- Lower energy consumption than 3G/4G for 10+ year battery life
- Open standard based wireless and data format protocols
- 'Message received' acknowledgements for high reliability
- Greater data packet sizes to enable additional functionality over other LPWANs
- Integrity of licenced radio spectrum
- Configuration over the air
- High level of security on the air and in the cloud
- Lower connectivity and total operating costs than 3G/4G

One of the greatest advantages of NB-IoT over other LPWAN technologies is that it operates on existing cell towers, usually requiring only a software update to be enabled. With over 20,000 3G/4G basestations (a.k.a cell towers) across Australia, this instantly makes the major telco networks the largest LPWANs in the country and among the largest in the world at around 2.5 million square kilometres. At around $5,000 to $10,000+ each to establish basestations for other LPWAN and radio technologies, NB-IoT is a challenge to match.

Figure 1: Cell-towers

[redacted]

In addition to the quantity of basestations, NB-IoT also offers greater range and penetration than the 3G and 4G networks that we're accustomed to. To give an indication of this, the town of Birdsville Queensland can be used as an example as it is a small regional town, with very few cell towers and is mostly flat which makes it easy to directly compare radio technologies. We can use the publically published Telstra 3G/4G and Cat-M1 coverage maps. NB-IoT offers even greater range than Cat-M1 as we will see clearly once the detailed and navigable coverage maps are officially released by the telcos. By overlaying the maps of the Birdsville 3G/4G coverage with Cat-M1, we can see the significant advantage that Cat-M1 / NB-IoT offers.

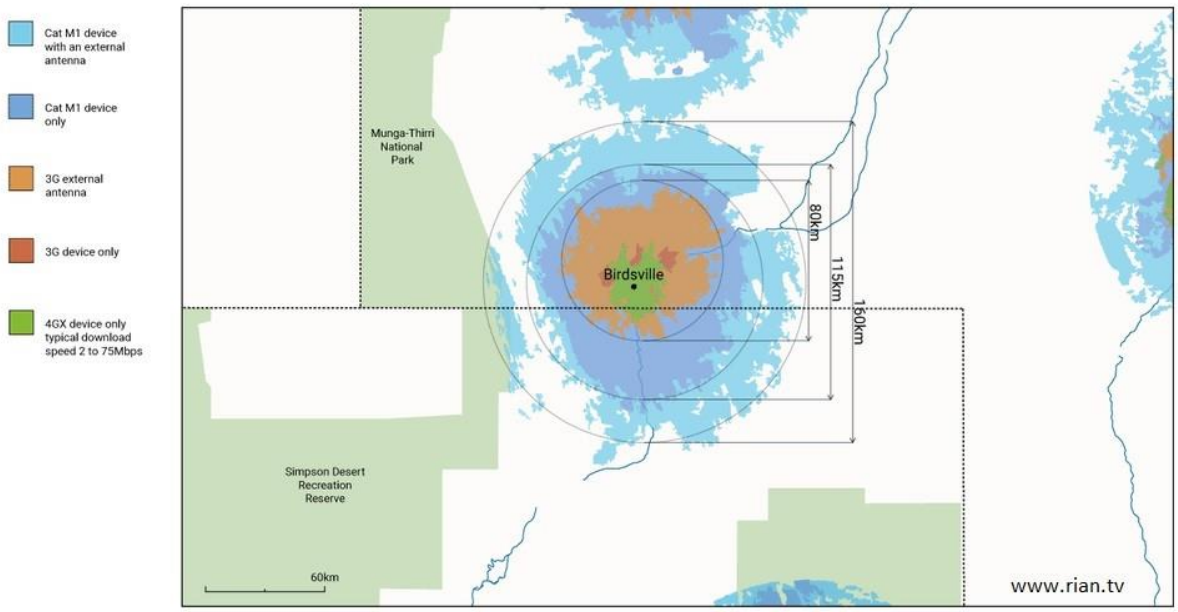

Figure 2: Comparison of 3G, 4G, and Cat-M1 (precursor to NB-IoT)

The overlay above shows that in a largely flat and unobstructed environment, LPWAN networks such as Cat-M1 and NB-IoT offer significantly greater range and areas of coverage than traditional 3G and 4G networks using the same basestations. In this example, we can see that the radius of 4G coverage extends around 20 kms from the basestation, 3G extends 20-40 kms, and Cat-M1 (similar to NB-IoT) extends 60 to 80 kms. This provides additional coverage to rural and outer-urban areas and enables larger deployments of digital water meters. In higher population areas this also means that there is more overlapping coverage from multiple basestations which further enhances quality and reliability of connectivity.

Relative to NSW, the following two figures show the difference between Telstra 3G/4G and NB-IoT coverage across NSW.

[redacted]

[redacted]

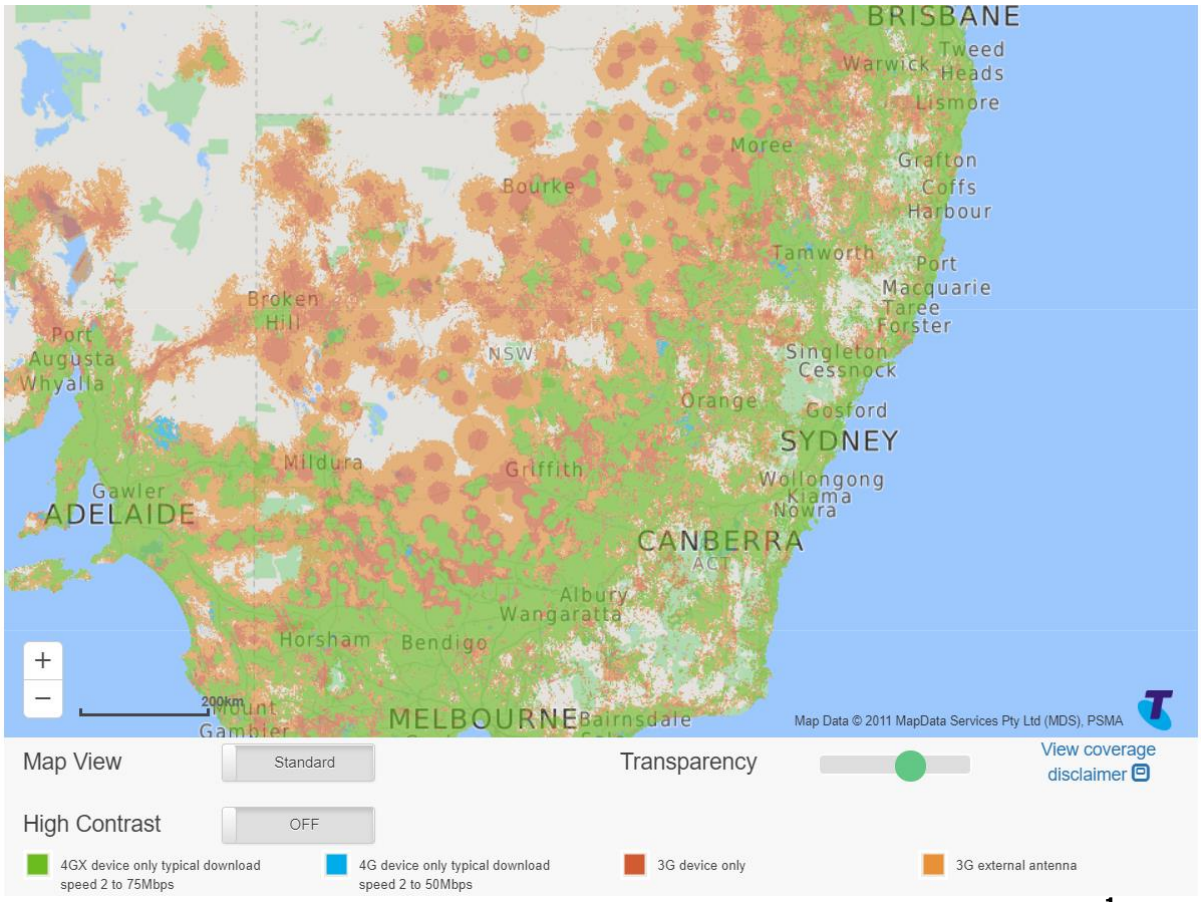

Figure 3 – Telstra 3G and 4G Coverage Map as of 26/09/2018[1]

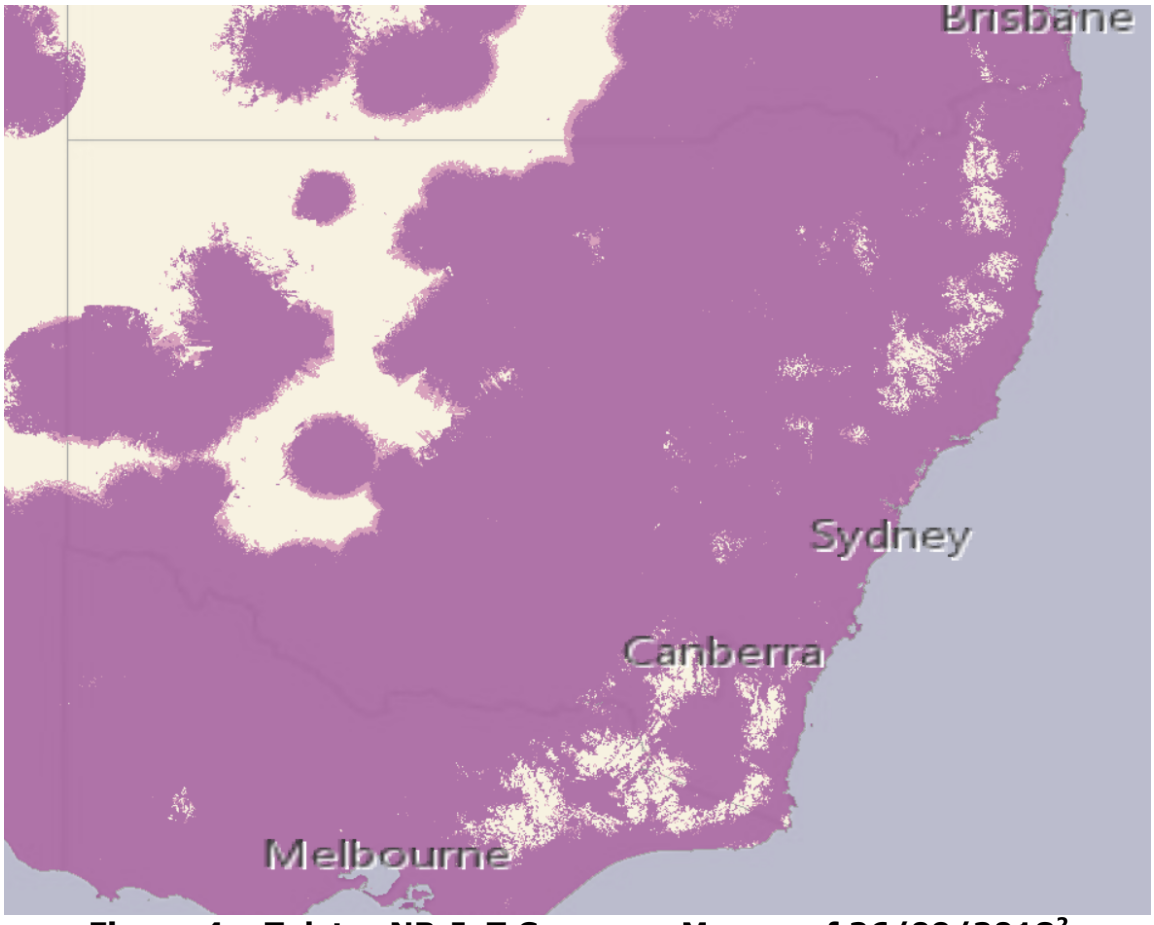

Figure 4 – Telstra NB-IoT Coverage Map as of 26/09/2018[2]

[redacted]

[redacted]

We suggest that the Department consider that with reliable delivery of metering data over the air, the need to store data locally will be reduced. Rather than storing 100 days' worth of data locally on the meter, modern technologies allow devices to send data over the air, receive a confirmation back over the air that the data has been safely delivered, then clear local memory of data which has been delivered safely. This reduces the need for on-board memory and energy consumption which subsequently leads to lower cost solutions.

We implore the Department to take into consideration the recent advances in low power, long range wireless communications which have rapidly matured in Australia throughout recent years. These technologies can lead to greater abilities in data collection and delivery while keeping capex and opex costs to a minimum.

Kind regards,

[redacted]

References:

[1]Telstra.com.au (2018). *Telstra – Our Coverage*. [online] Available at: https://www.telstra.com.au/coverage-networks/our-coverage [Accessed 28 Sep. 2018].

[2]Telstra.com.au (2018). *Telstra Business & Enterprise – Internet of Things – IoT Coverage*. [online] Available at: https://www.telstra.com.au/business-enterprise/solutions/internet-of-things/iot-coverage [Accessed 28 Sep. 2018].

[redacted]