DIGITAL METER PILOT EXPERIENCE

QLD WATER AUTOMATED METERING
DIGITAL UTILITIES WORKSHOP
16 FEBRUARY 2017

Unitywater

PRESENTATION AGENDA

Why are we presenting?

1. Contextual overview of the Unitywater business
2. Background on our how our journey started and why
3. Scope and intent of our pilot and understanding the cost drivers
4. Where we are at and decisions to date
5. What we have learned so far
6. What next…

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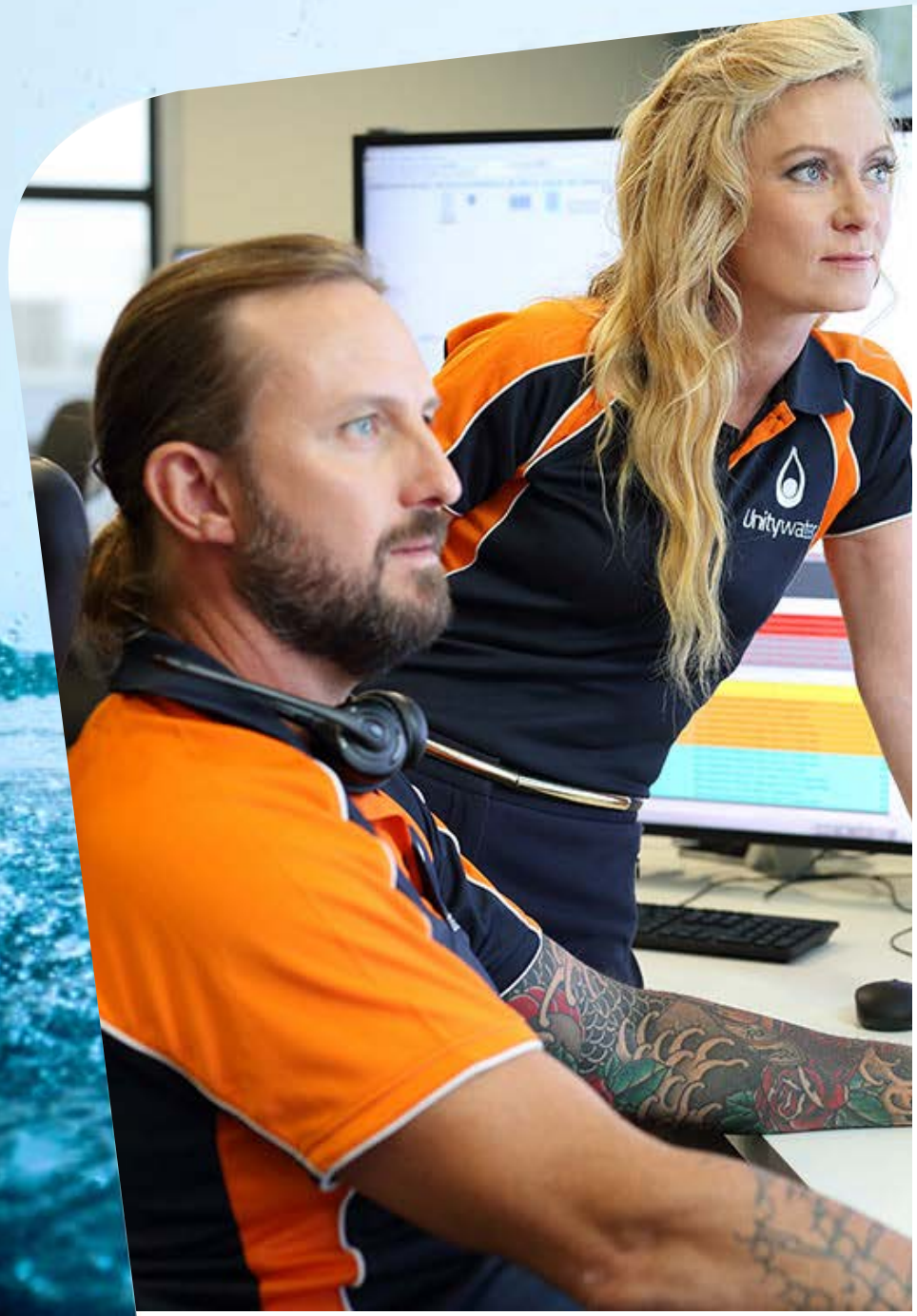
1. Unitywater Overview - WHO WE ARE

- The Northern SEQ Distributor-Retailer Authority, known as Unitywater
- A statutory authority created under the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*
- Services the Moreton Bay, Sunshine Coast and Noosa local authority areas
- **Commenced operations on 1 July 2010**

1. Unitywater Overview - WHAT WE DO



- Operate and maintain more than **$3.2 billion of essential assets**
- Supply **water and sewerage services** to residential and business customers
- Provide trade waste services to businesses
- Issue and manage customer accounts
- Provide 24-hour emergency and faults service

1. Unitywater Overview - WHAT WE DO

- 708 staff (approx.)
- 272,207 sewerage connections
- 5601km of sewerage mains
- 781 sewage pump stations
- 17 sewage treatment plants
- 304,962 water connections
- **5837km of water mains**
- 81 water pump stations
- 111 water reservoirs
- 12 sewage treatment plants that can produce recycled water

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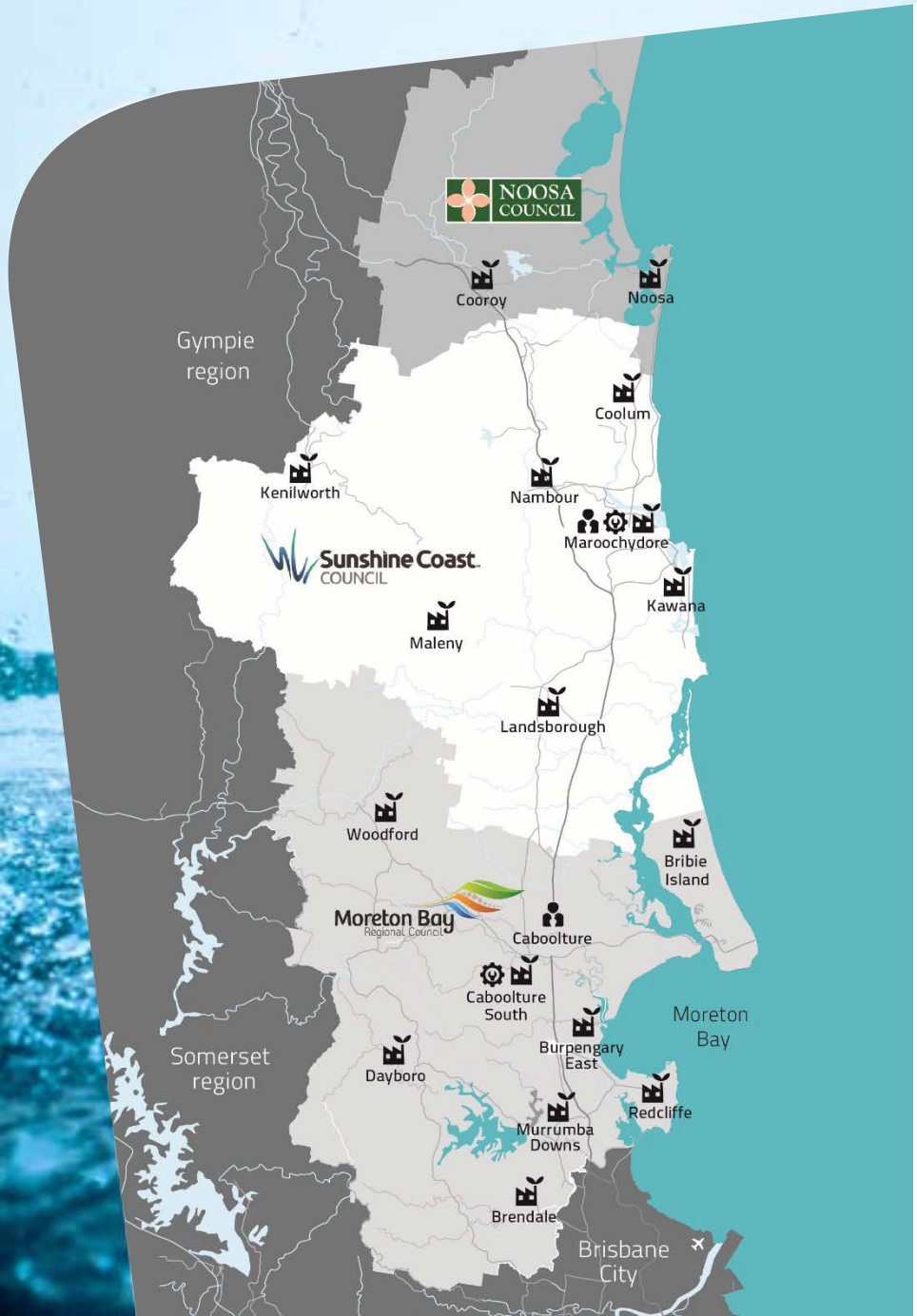
1. Unitywater Overview - WHAT WE DO



- We supply water and sewerage services to a population of approximately 724,626 residents and about **324,000 customer accounts**.
- Our service region covers a 5,223 square km geographical area from Cooroy in the north to Samford in the south and from Bribie Island in the east to Kenilworth in the west.

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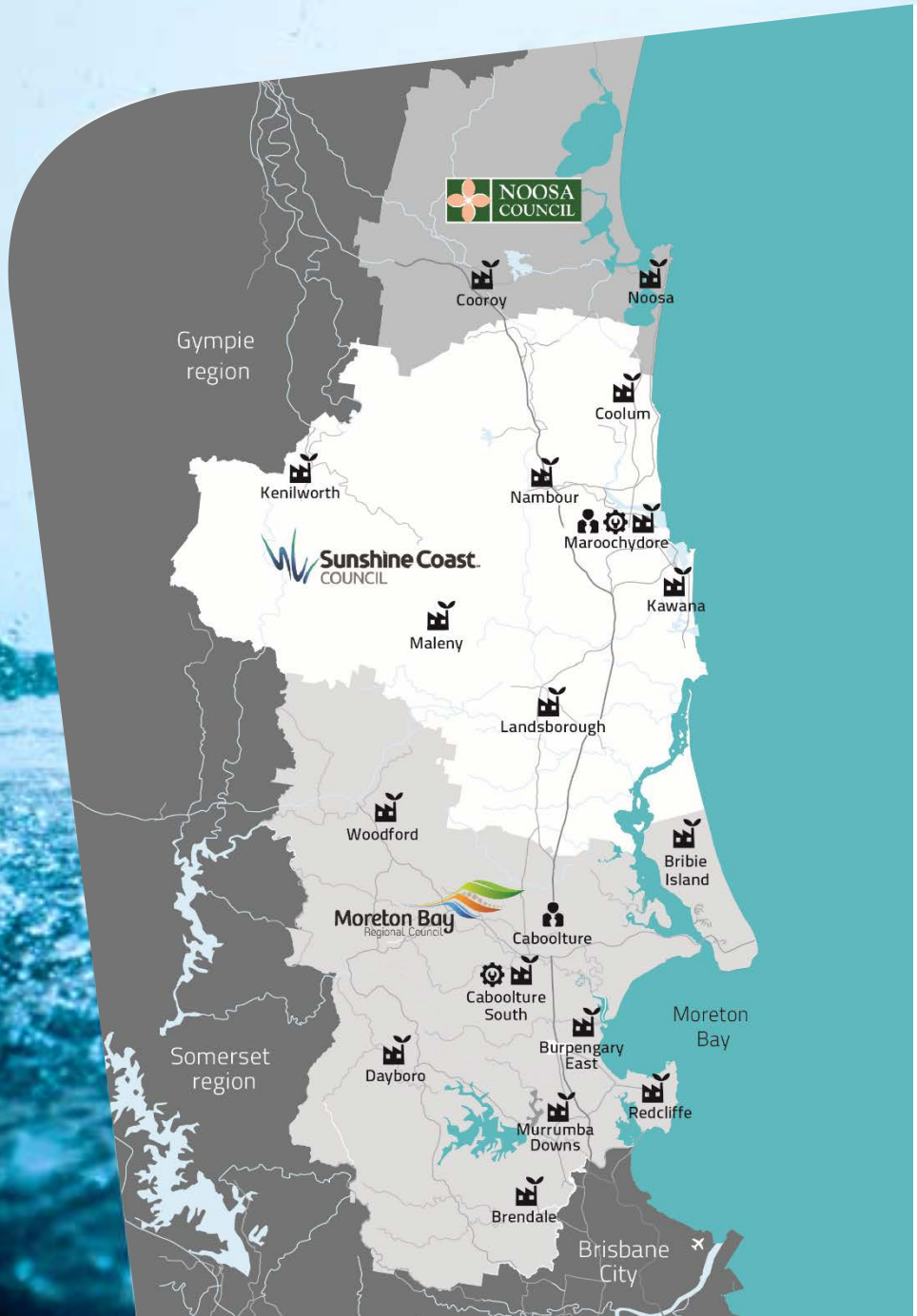
1. Unitywater Overview - WHAT WE DO



- With the population of the Sunshine Coast, Moreton Bay and Noosa regions projected to grow from approximately 779,299 in 2016 to more than 1.046 million by 2031, Unitywater is planning to meet the future needs of the region in an economically and environmentally sustainable way.
- In 2015-2016, we invested $98.2 million in water supply and sewerage infrastructure.

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1. Unitywater Overview - PART OF SEQ WATER GRID

South East Queensland Bulk Water Company Limited

seqwater
WATER FOR LIFE

- Catchment management
- Water treatment
- Bulk water transport

Distribution Retailers

Unitywater
QUEENSLAND Urban Utilities
LOGAN CITY COUNCIL
Redland WATER
Gold Coast City Council

- Local water distribution
- Sewage collection and treatment
- Billing

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2. How our Journey Started - *Initiation*

Top down support matters!

The Board – 2014;

- Supportive of digital meters conceptually;
- Endorsed further investigation into digital meters; and
- Future business case to **focus on cost benefits.**

The Executive Direction – 2015;

- **Talk to other utilities** already on this path;
- Scope a Pilot sufficient to validate future investment decision;
- Integration potential of data management functionality with existing systems, such as billing, website, and network leak detection;
- Direction on an appropriate commercial and technical model.

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2. How our Journey Started – *identification and definition*

What did we know already?

There were “dabbles” in the field of digital metering…

- Various industry briefings, webinars etc
- Retail Division already use a form of digital metering (Footprint)
- Technologies Group had done a trial on ultrasonic digital meters on a drive-by system

To scope our pilot, we needed to know more….

- More briefings and webinars,
- **Reviewed other utilities**
- Explored options and costings with vendors

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2. How our Journey Started – *identification and definition*

What did we learn reviewing others?

- Separate meter, comms, and data
- Don’t take the path of least resistance - learn about the difficult stuff
- Do your business case!!
- Define what it means to your business (benefit pillars):
    - i. Billing and Tariff
    - ii. O&M
    - iii. NRW
    - iv. Customer Service
    - v. Capital Management

Standouts – utilities that had a specific problem resolved by digital metering

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2. How our Journey Started – *identification and definition*

What did we learn reviewing others?

	Unitywater	Utility A	Utility B	Utility C	Utility D	Utility E
Service area Population	724,000	925,000	1,650,000	1,760,000	75,000	93,000
Customers (excl trade)	305,587	403,221	695,741	737,437	45,000	40,000
Residential percentage		70% (365k)	92% (637k)	97% (685k)	86% (37k)	91%
Cost per manual read ($)	0.94	0.64	-	-	n/a	-
Operational smart meters	50+	20,000	267**	31,500	37,000	32,000
Duration	-	3 years (sub-metering)	3 years	2 years	4 years	7 years
Smart meters % of customers	0%	5%	0%	4%	82%	80%
Smart meter tech	-AMI	AMR – Itron (subm) AMR – zigbee / aquiba	AMI - Various	AMR - Cybels (30k) AMI - Taggle (1.5k)	AMI - Taggle	AMR - Firefly(31k) AMI - Taggle (1k)
Business Case with NPV	Not Started	No	Yes / In Progress	In Progress	Yes	No
capex % of revenue	20%	20%	10%	20%	69%	87%

Context of their experience – merit of a business case

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2. How our Journey Started – *identification and definition*

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Customers (excl trade)	305,587	403,221	695,741	737,437	45,000	40,000
Service area (km^2)	5,713	714	3,640	4,000	0	0
Water mains length (km)	5,700	4,644	10,000	9,000	1,565	?
Customers per km pipe	53.6	86.8	69.6	81.9	28.8	?
Forecast annual growth	3%	1.5%	?	2%	9%	4.5%
Revenue (2014) '000s	$ 550,493	$ 610,377	$ 968,217	$ 988,859	$ 66,000	$ 73,097
Total Assets (2014) '000s	$ 3,268,130	$ 2,081,947	$ 3,509,353	$ 4,323,563	$ 1,209,456	$ 752,768
Capex (2014) '000s	$ 110,000	$ 120,590	$ 93,062	$ 197,000	$ 45,300	$ 63,368
Capex % of revenue	20%	20%	10%	20%	69%	87%
Total Consumption (ML)	53,187	94,213	130,489	132,987	15,012	9,711
Consumption per capita (ML)	0.071	0.102	0.079	0.076	0.200	0.104

Context of the cost drivers for utilities.

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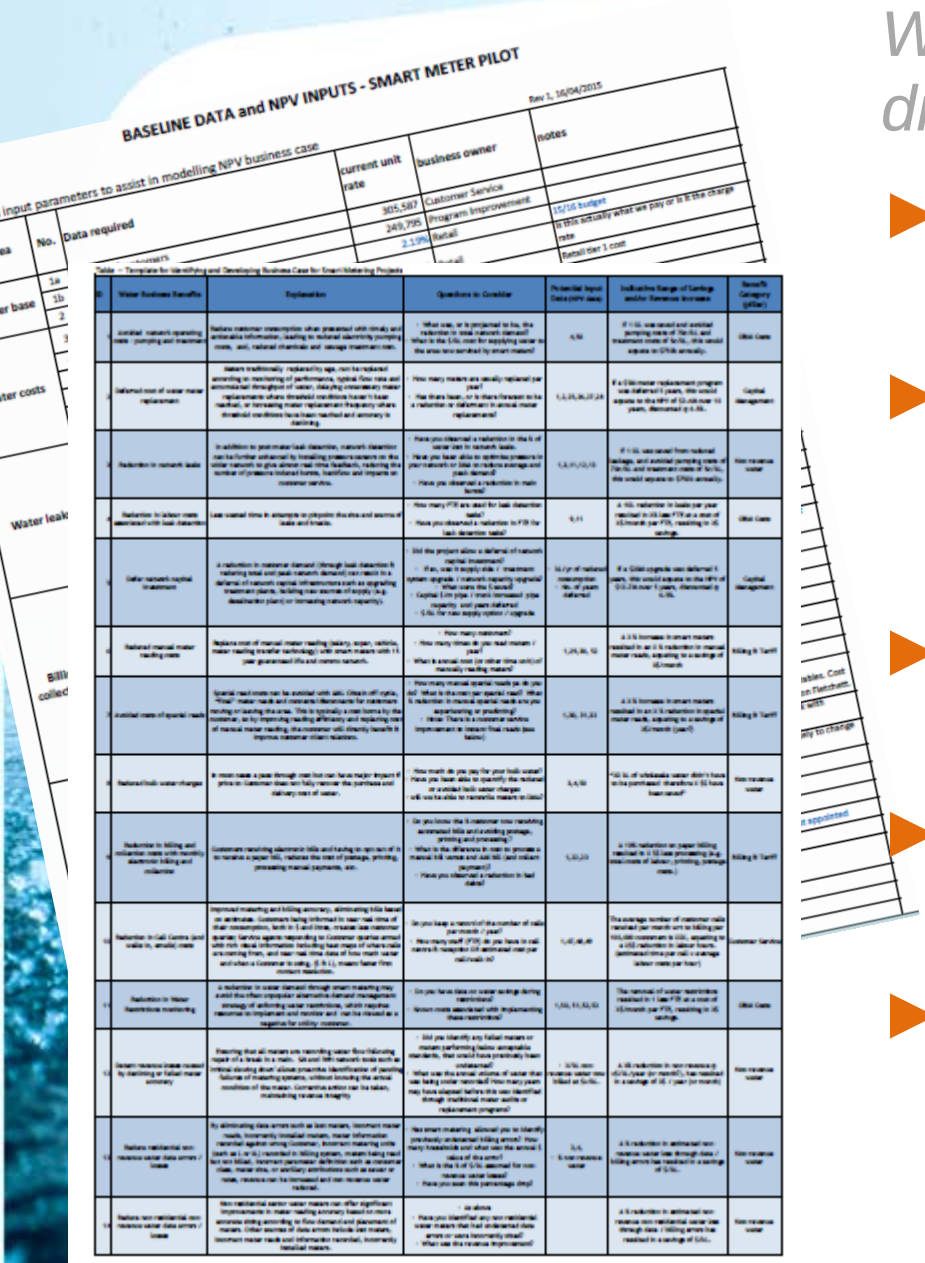
3. What we're trying to achieve – *understanding cost drivers*


BASELINE DATA and NPV INPUTS - SMART METER PILOT

Rev 1, 16/04/2015

input parameters to assist in modelling NPV business case

No.	Data required	current unit rate	business owner	notes
1a		305,587	Customer Service	
1b		249,795	Program Improvement	
2		2.19%	Retail	15/16 budget
3				If this actually what we pay or is it the charge rate
				Retail tier 1 cost

What does the learning mean to us and how did we go about applying it?

- We had no hairy, obvious problems, our NPR status confirms (NRW & cost per km)
- Starting with guidance material (courtesy Smart Water Research Centre) reviewed potential benefits
- Facilitated workshops internally to identify baseline NPV input data
- Reviewed and added to proposed benefits list
- Tied together baseline NPV input data with proposed benefits, assessed and ranked to identify primary benefits

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3. What we're trying to achieve – *understanding cost drivers*

Now had primary target benefits…

- Realistically achievable (return / likelihood)

    1) Reduction NRW (identification cost and timeliness)

    2) Cost of meter reading (standard and special)

    3) Leak rebate

Collective worth …potential for saving **$3M+ per annum**

…But added **$3-4M per annum** (depending on approach to capital)

- primary benefit = significant value, if they didn't stack up then little hope for the rest
- secondary benefits = smaller tangible return but still likely to achieve, would sweeten the deal but NOT support a positive NPV alone

Early signs that this is less about meters, more about data

Leads us to scoping the pilot…

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3. What we're trying to achieve – *scope basis*

Now had primary target benefits…

- Knowing the primary benefit areas made some scoping choices easier for e.g.
  - Drive by reading won't significantly reduce meter read costs, wasn't timely enough to support our NRW (network leak detection aspirations)
  - Two way communications no obvious viable benefit

- Discussions with vendors helped understand items to consider for procurement and gave some high level cost estimates and considerations
  - This created clarity around how far the investment in the pilot could take us

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3. What we're trying to achieve – *scope basis*

Type	Mechanics	Data Collection	Communication
Conventional (with moving parts)	mechanical meter	manual	no communication
	mechanical meter with data logger	drive / walk by	local communication
	mechanical meter with telemetry and data logger	remote access	wide area network coverage
Static Meter (with no moving parts)	electromagnetic meter	manual	no communication
	electromagnetic meter with data logger	drive / walk by	local communication
	electromagnetic meter with telemetry and data logger	remote access	wide area network coverage (possible 2 way communication)

Minimum start point for tech

TABLE 1: Smart Meter Classification

Opens up scope considerations to transmitter and not just integrated water meters

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3. What we're trying to achieve – *scope basis*

Expectation:

- relevant no. of monitoring points
- in a production environment pilot
- including the expected data management and customer experience

All suffice to scale and extrapolate

Deliverables:

- estimated 800-1000 point trial connections (both transmitter only & integrated meters)
- Fixed communications network solution (1 way primarily & 2 way curiously)
- inclusion of additional monitoring points (pressure, sewer, WQ)
- Trial billing, customer, and engineering applications

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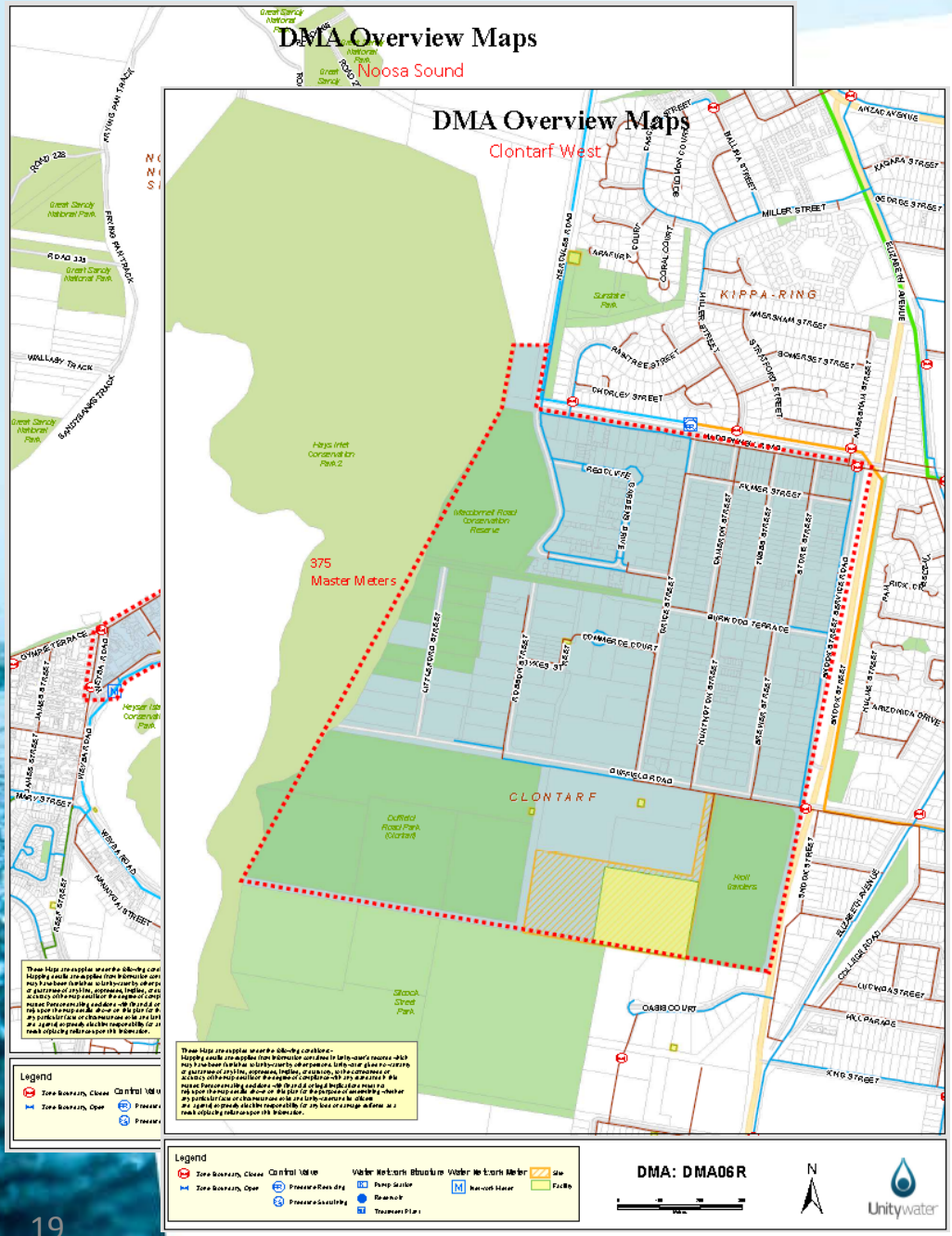
3. What we're trying to achieve – *scope basis*



Location selection:

- Locations with cross sections of industrial, commercial, residential and single and multi-unit dwelling
- High leak rebates
- Zones with hard to explain network loss – complete DMAs
- Covered council areas

Duration – 12 months:

- Seasonal consumption
- 4 quarters of data against manual read validations
- Enough time and sample data to extrapolate on results

4. Where are we at? – *5 key things to know*

This is a 1-year pilot only. No full scale rollout is planned

Billing will not change. Customers will be still billed on their manual read

It's a relatively small pilot. 1,000 customers over 2 main pilot areas

It has two distinct parts. Hardware installation (A) and data management (B)

Includes a variety of hardware. Transmitters and fully integrated digital meters

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4. Where are we at? – *progress to date*

Executed a procurement plan and approach

- RFP open market approach, view to take multiple products/vendors to delivery, no commitment on scope of work packages
- Evaluated with demos from shortlisted participants
- Negotiated final scope based on schedule of rates provided in market approach – selected two vendors (one per area, multiple products)
- Didn’t want to over specify the technical component but tried to ensure requirements aligned product delivery with benefits

Implementation underway

- Customer communications launched
- Mobilising on-ground now

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4. Where are we at? – *pilot timings*

February 2017 –
Initial communication with customers in the trial area (via mail)

Mid-February 2017 –
Installation begins

From May 2017 –
Collection and sharing of data begins

Mid-late 2017 –
Customer feedback sought

Early 2018 –
Trial close and evaluation

5. Lessons to date – *initiation*

- ✓ Reinforcement of approach - of course we're not there yet and not even sure we got it right but received a lot of validation about the approach so far. Feels good. Makes sense.
- ✓ Pilot is a good concept, not take on too much. Learn. Put in production, but its not forever.
- ✓ Appreciated the advice of learn hard - don't take easiest path. Customer engagement.
- ✗ …..

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5. Lessons to date – *procurement*

- ✓ Open market, low tech spec good – requirement and benefit focussed. Open to insight.
- ✗ Withholding work package definition until seen what's there added complexity to evaluation - defining work packages would've been better
- ✓ Prepared for large response and variability in vendor speciality and product offerings
- ✗ Didn't anticipate combination and alternate offers
- ✗ Difficulty assessing so many various proposals – in hindsight would EOI, shortlist RFP, then negotiate. Evaluation took longer than expected.
- ✓ Vendor demonstrations valuable

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5. Lessons to date – *implementation planning*

✓ Ensure right cross section of Project team capability – IT and IOT and capital works elements

✗ Knowing customer base - has expanded our simple understanding of customer to consumer – impact on communications campaign and future CRM requirements (“prepare for change”)

✓ Sensor and interface type - requires detailed understanding of your meter fleet - potential impacts if desktop data inaccuracy. If not reliable, do some site inspection and audit or get meter reader to gather data.

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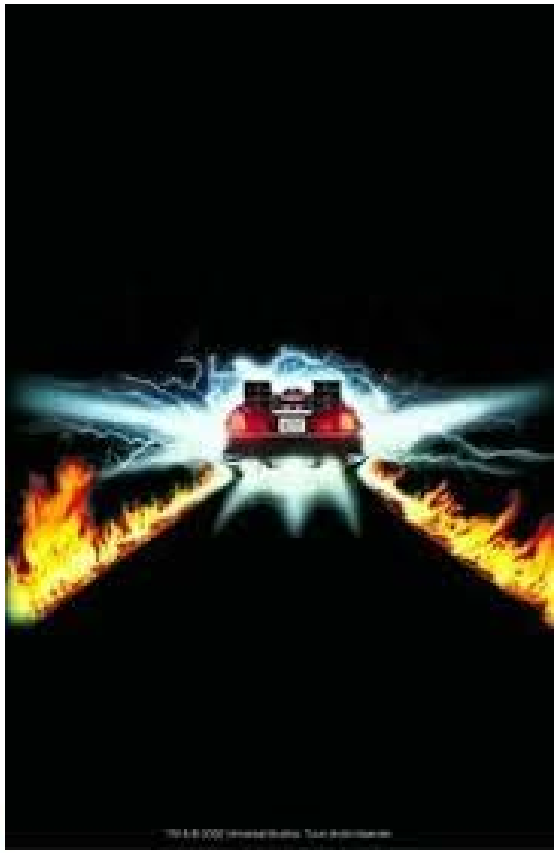
6. What next – *where to now?*



- Deliver core component of pilot….assess and evaluate
- Stand up the “sandpit” to assess:
  - Shared data platforms
  - Open, interoperable “eco-systems”
  - Additional generic monitoring points
- Strategically - see a clearer line of sight towards intelligent water network (key piece of puzzle) …already powered by:
  - ClearSCADA
  - Takadu
  - Innovyse

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THANK YOU!

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