

Technology and Innovation

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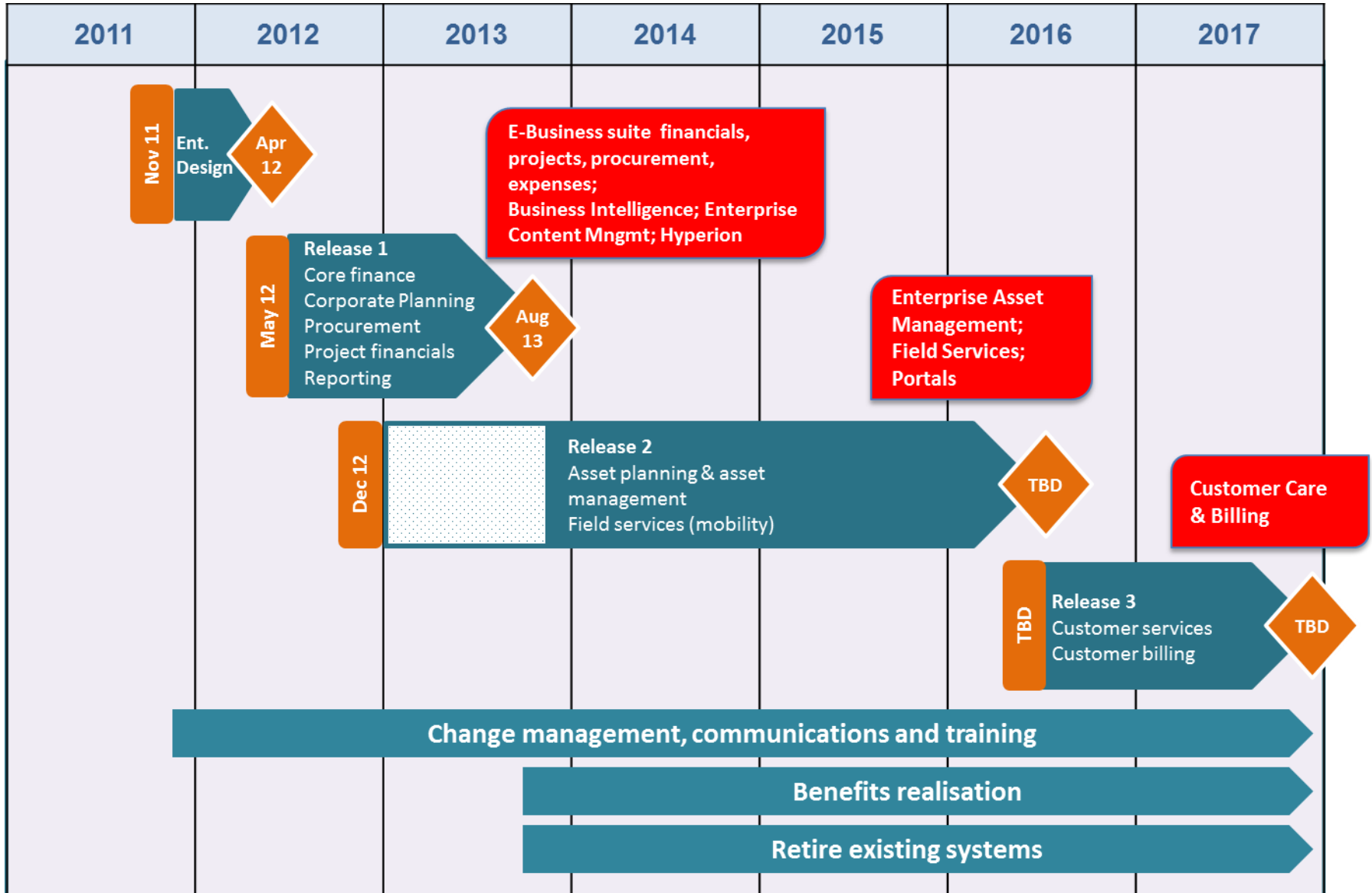
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City West Water

Technology & transformation – The big picture



Why are we doing a business transformation?

The IT environment increasingly complex to maintain

Systems require substantial data entry and maintenance

There are numerous breaks in the flow of information between systems, increasing business risk

There is duplication of data and functionality across source systems

Business processes for bill production and management of customer information are highly manual

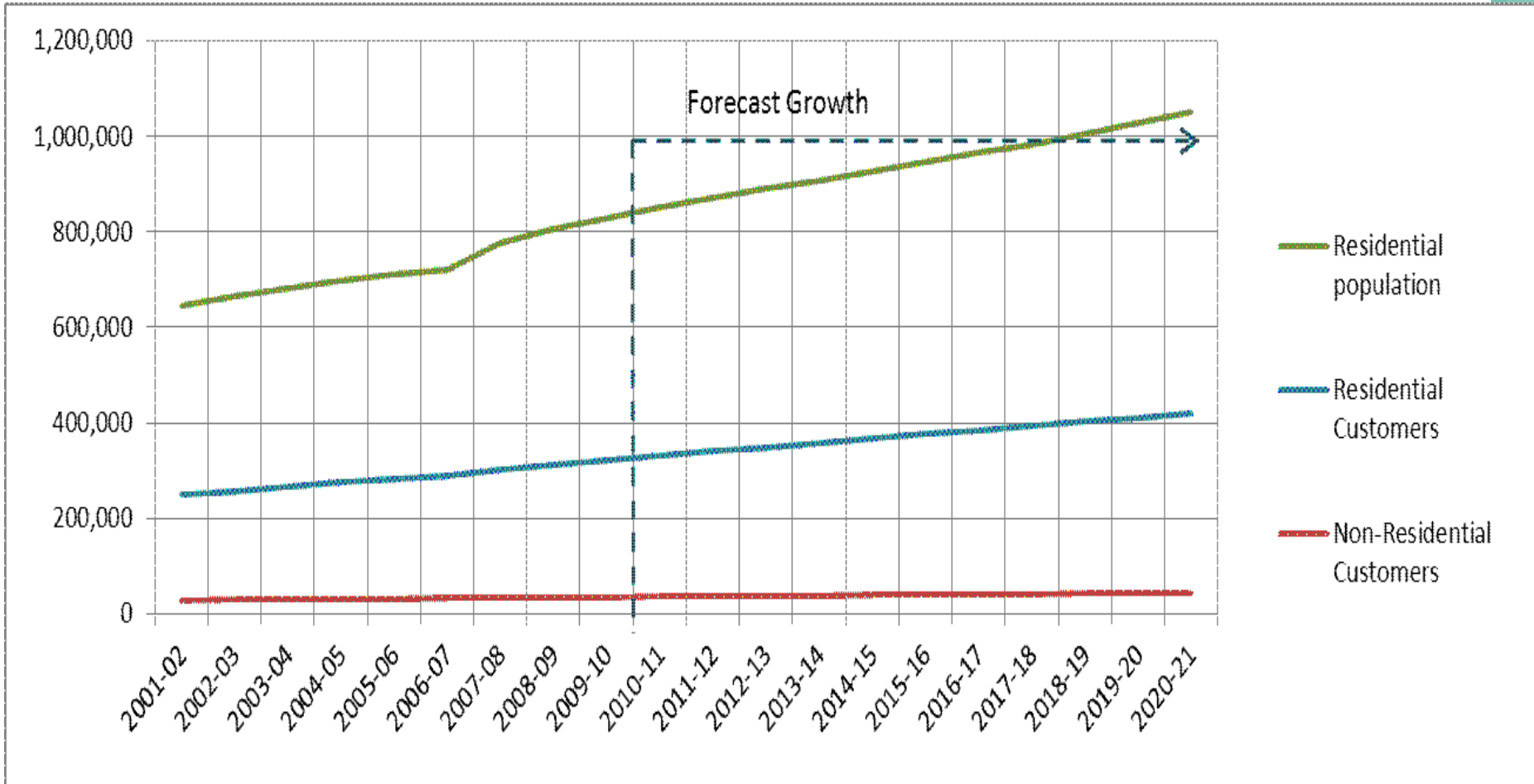
A fragmented set of technologies is used for management reporting

The process for creating and maintaining property information in the customer billing system is highly manual

... and facing upgrades to our core Finance, Assets and Customer Information Systems



Why are we doing a business transformation?



Process (Level 1)	Sub Process (Level 2)							
Property Mgmt.	Property Registration					Property Data Management		
Asset Lifecycle Mgmt.	Asset Planning	Asset Acquisition & Creation - Design - Construct - Commission - Record (Developers, CWW, other authorities)		Asset Utilisation - Network operations - Alternative water operations - Water quality - Asset Performance - Asset Programs		Asset Maintenance - Works Mgt - Review Work Request - Create Work Order - Prioritise, Schedule, Dispatch, Perform, QA		Asset Disposal & Decommissioning
Billing and Collection Mgmt.	Data Collection	Data Processing		Customer Billing			Accounts Receivable Management	
Customer Lifecycle Mgmt.	Customer Management	Customer Contact Management	Key Customer Management	External Relations & Communications Management		Sewage Quality Mgt	Application Mgt	Agreement Mgt
Customer Program Mgmt.	Program Strategy Management		Program Development		Program Delivery		Program Effectiveness	
Support Processes	Manage Governance Processes (incl. Regulation)	Mge Corp. Planning	Mge Finances	Manage procurement (incl. legal support)	Mge IT	Manage Risk	Mge People	Mge Gen. Services (incl. insurance, facilities maintenance etc.)

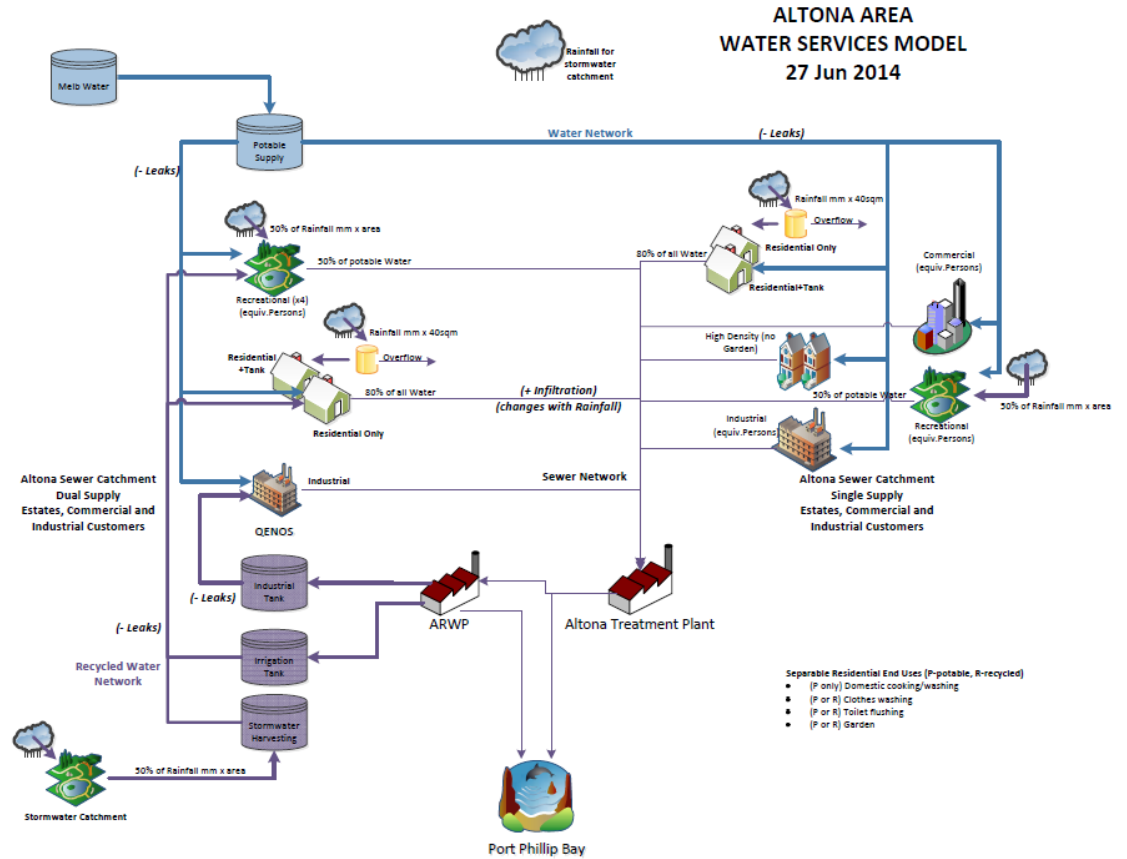
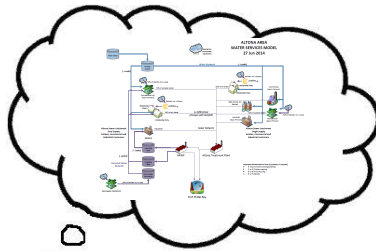
Innovation

Includes continuous business improvement,
and process optimisation,
and, ideally, achieving orders of magnitude improvements,
and don't forget “stocking fillers”.



Integrated Water Management Planning

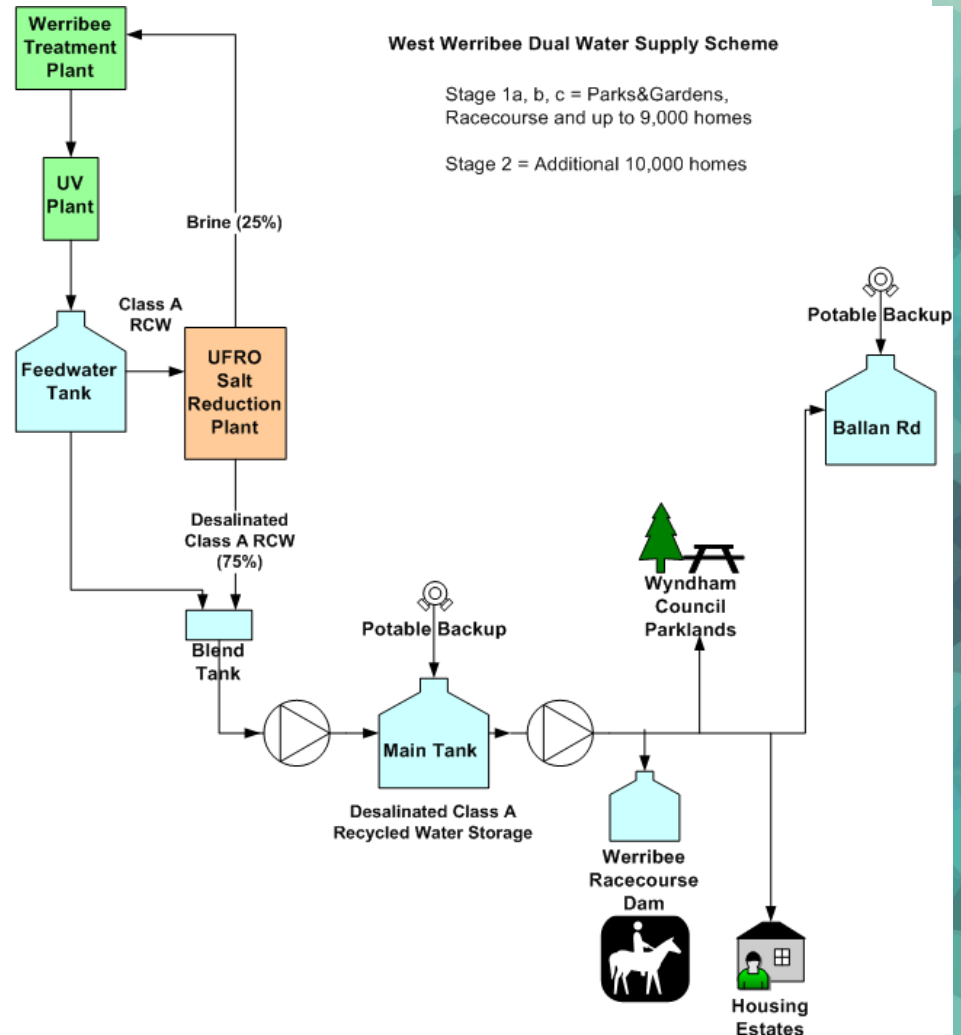
From concept to reality



Integrated Water Management Operational Control

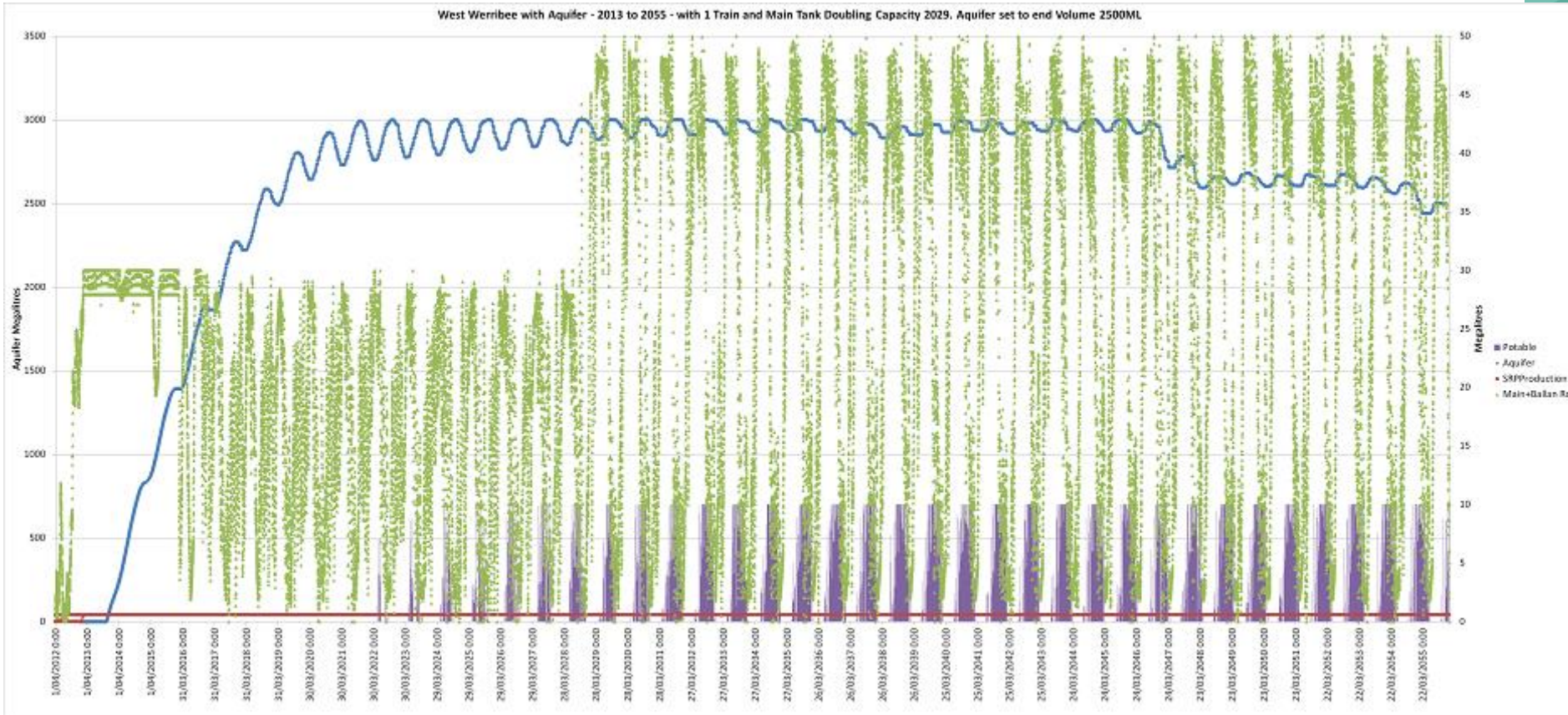
Considerations

- Demand changes over time as estates grow out, and by season, by weather conditions, and as restrictions are imposed and lifted
- Supply varies by configuration of the scheme, and with component availability (scheduled and un-scheduled)
- Avoid unfilled demand or need to use precious backup supplies



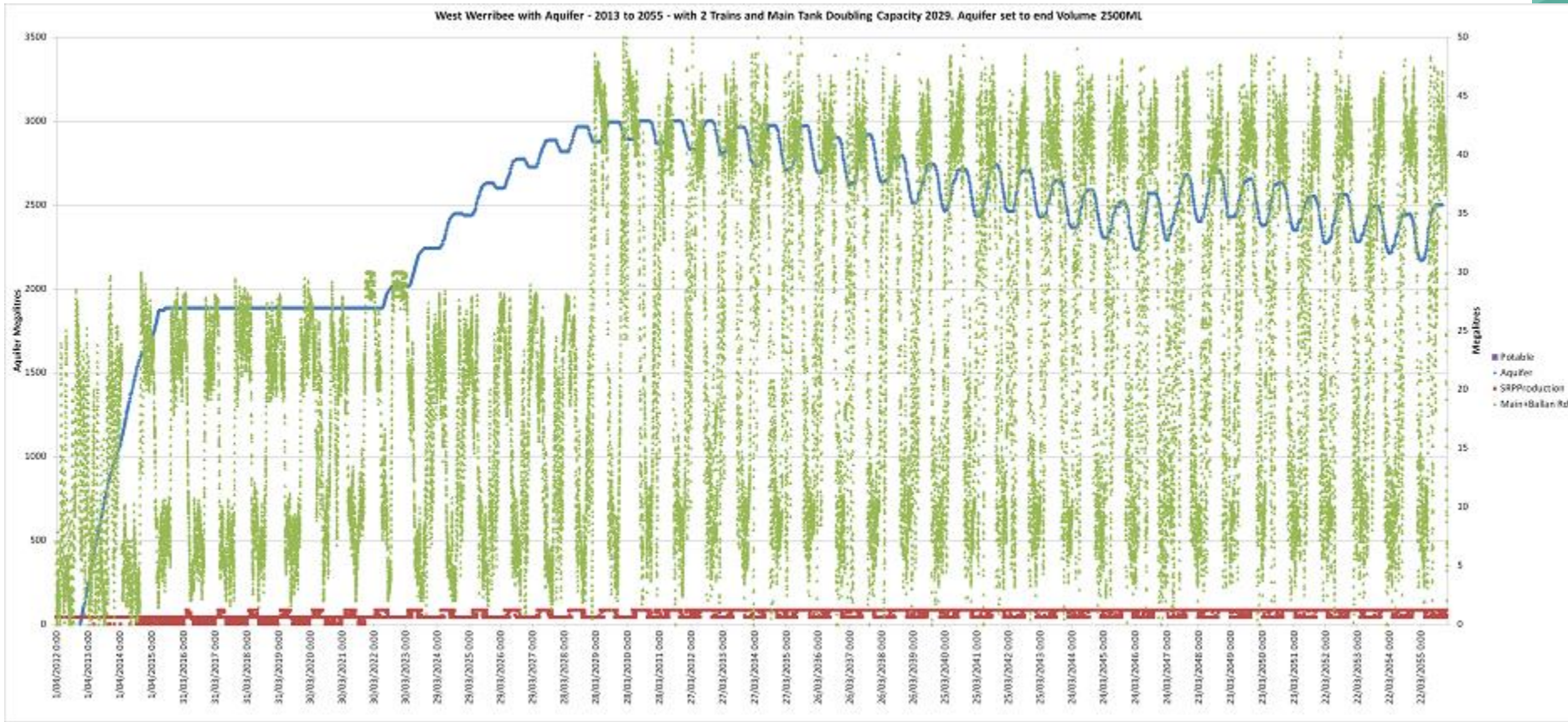
Integrated Water Management Operational Control

How would an aquifer assist size and operation of the plant?

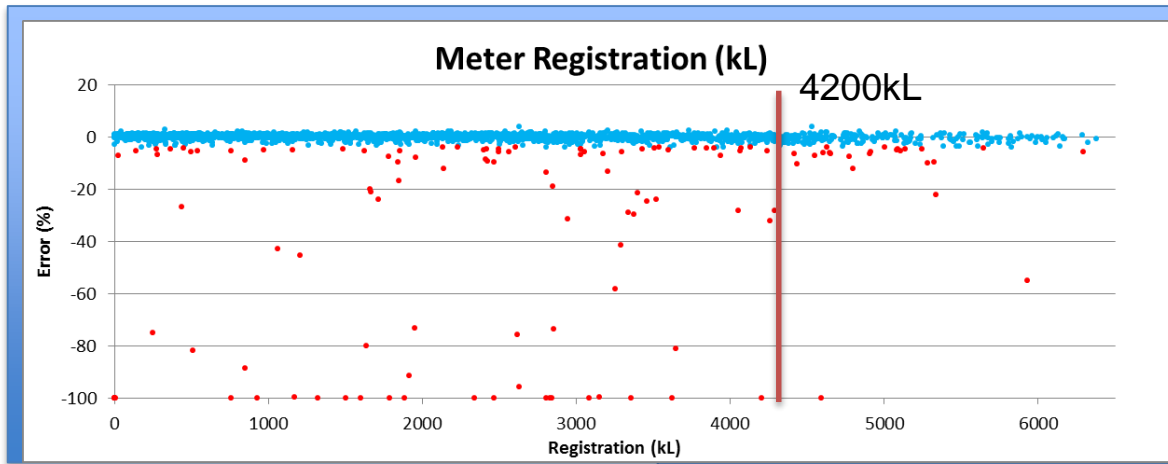


Integrated Water Management Operational Control

Aquifer allows 24x365 operation, a delay to the Stage 2 work and reduced plant.



Meter Replacement Strategy



CWW Replacement Policy before CheckMATE

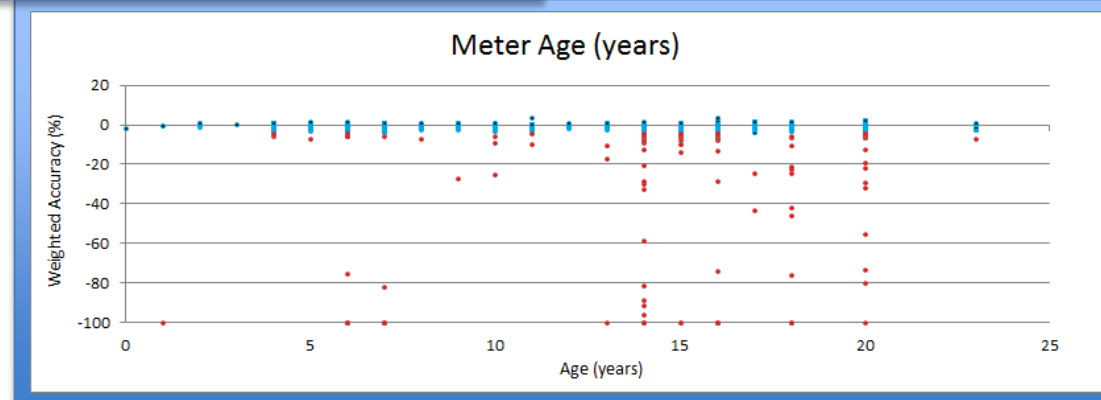
20mm residential meters replaced after 4200kL

Trigger for the study

Of 6824 tested meters only 373 (5%) non-compliant meters (●) detected

Objective

Can we find a way of detecting faulty meters



Non-Mechanical Meter Trial

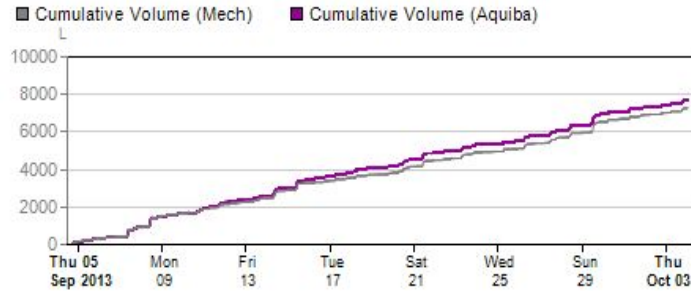
- ^ **20 (20mm) domestic Aquiba Magflow meters purchased – no mechanical parts**
- ^ **Installed in-line with current mechanical meter for comparison consumption analysis going forward on selected CWW employees homes**
- ^ **Hard plastic moulded meter not a target of copper and brass thieves**
- ^ **Assess performance over time and also how the protective material survives in our harsh summers**



Non-Mechanical Meter Trial

Cumulative Volume - Last 30 Days - 19 Ondella Way (click here to expand graph)

Image



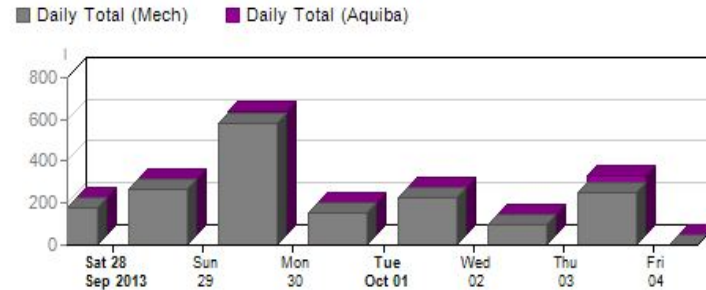
Facts & Figures

Cumulative Volume (Mech):
7,275.00 L
03/10/13 23:15:00

Cumulative Volume (Aquba):
7,713.76
04/10/13 00:20:25

Daily Totals - Last 7 Days - 19 Ondella way (click here to expand graph)

Image



Facts & Figures

7-Day Total (Mech): 1,765.00 l

7-Day Total (Aquba): 1,796.85



Non-Mechanical Meter Trial

- Aquiba meter has ZigBee capability
- Upcoming trial with Powercor
- Readings to come in via electricity smart meter
- Data accessed from Powercor



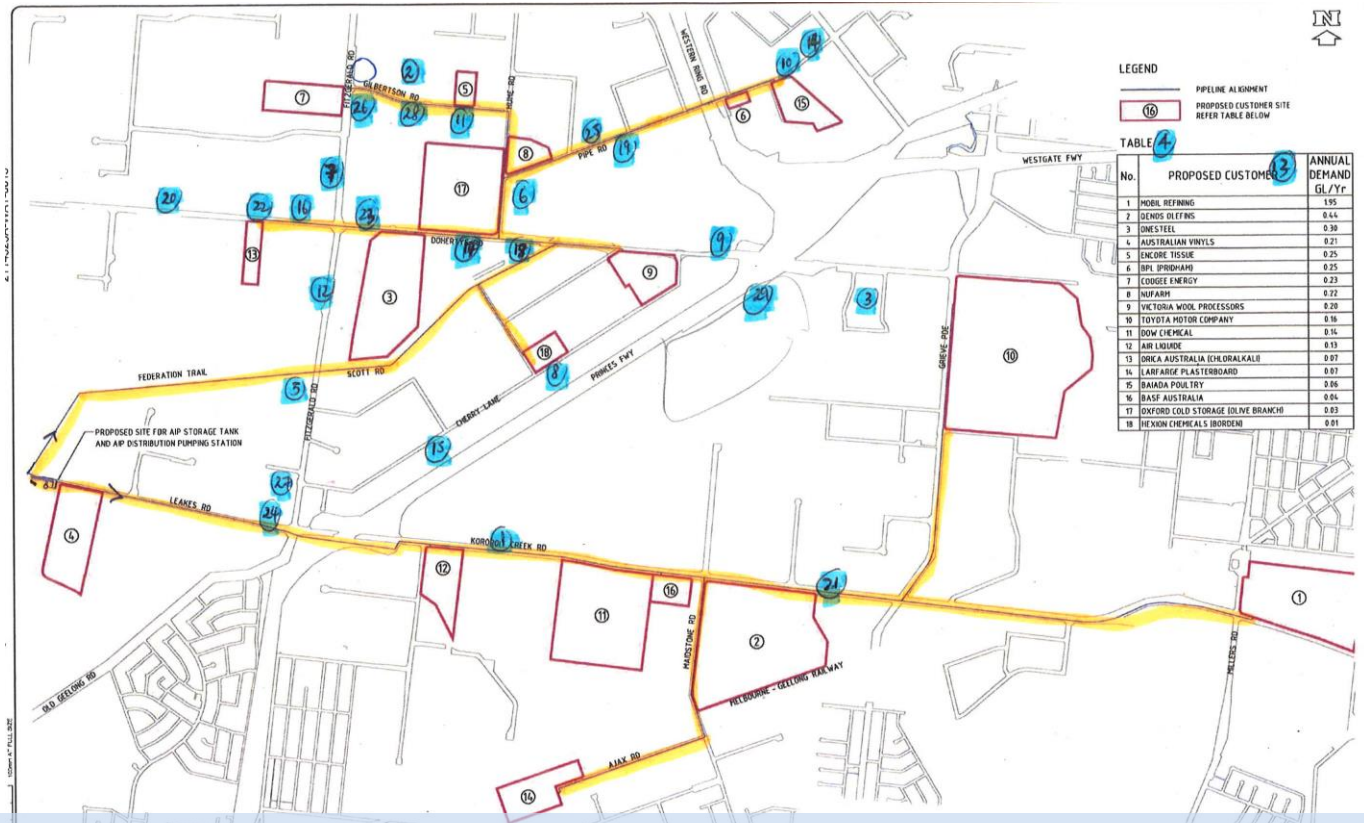
Office and Depot Relocation

Nominate maximum no. of depots to be considered

Map MidPointLocn	Melways	Existing	New	Travel Time between Maps Minutes	Distance between Maps Km						
					3	4	5	13	14	15	16
Robertsons Rd, Taylors Lakes	3	0		X	10.2	16.6	4.7	6.8	11	19.9	
McNabs Rd, Keilor	4	0		15	X	13.1	9.6	4.5	4.5	10	
Western Ave, Westmeadows	5	0		16	14	X	17.8	12.1	7.3	7.8	
Coleridge Dr, Delahey	13	0		8	14	19	X	6.3	12.6	21.4	
Patterson Ave, Keilor	14	0		12	7	12	11	X	5.4	14.3	
Keilor Park Drive, Tullamarine	15	0		11	8	9	14	6	X	7.1	
Mascoma St, Strathmore	16	0		20	17	12	22	15	12	X	
125 Station Rd, Deer Park	25	0		15	16	16	9	13	12	19	
247 St Albans Rd, Sunshine North	26	1	1	16	14	14	13	11	10	17	
Macey Ave, Avondale Heights	27	0		17	14	15	19	12	10	18	
Sussex St, Moonee Ponds	28	0		19	17	14	25	14	13	13	
Fulton Dr, Derrimut	39	0		21	18	18	16	16	14	21	
599 Somerville Rd Sunshine West	40	0		23	20	20	19	17	16	23	
Waratah St West Footscray	41	0		27	25	24	23	22	21	19	
Parker St Footscray	42	0	Truck	24	22	20	27	19	18	15	
Milton St West Melbourne	43	0	1 Truck	24	22	20	27	19	18	14	
Lithgow St Abbotsford	44	0	Truck	31	28	26	33	25	24	21	
Hillman St Laverton	53	0		27	25	24	22	22	20	25	
Salta Dr Altona North	54	0		26	24	23	22	21	20	23	

Existing depot Best location of new depot

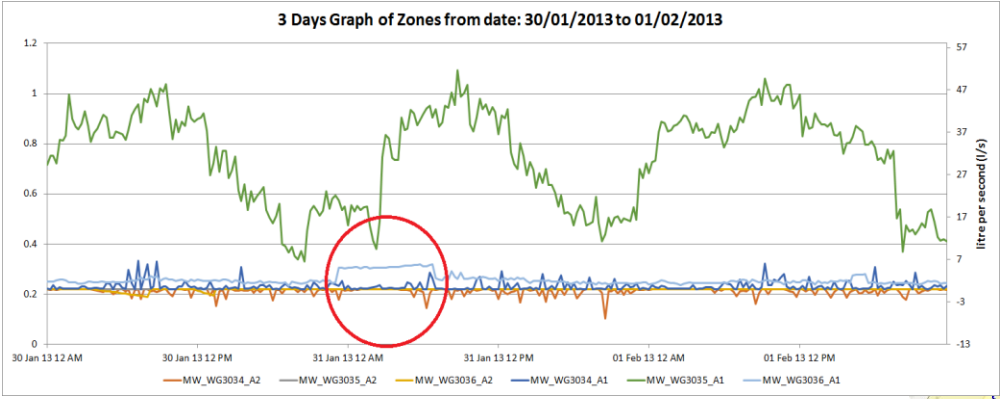
Least Cost Route for Alternate Water Supply



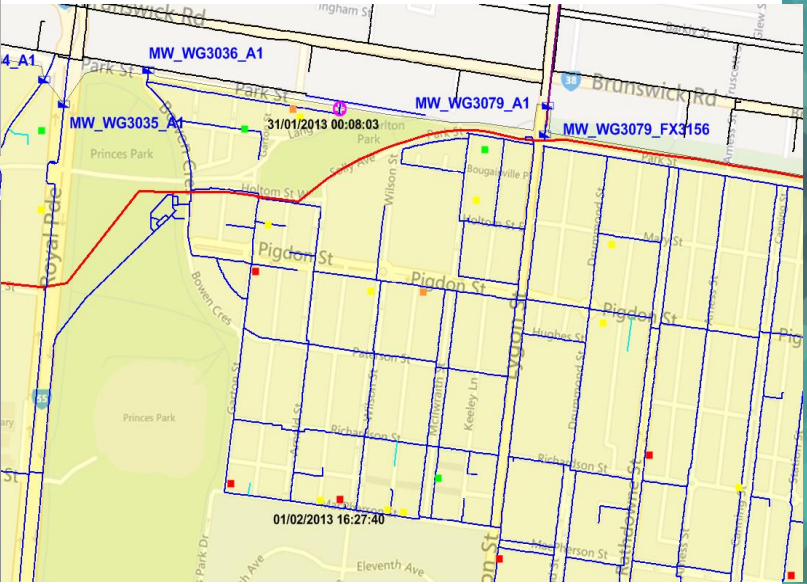
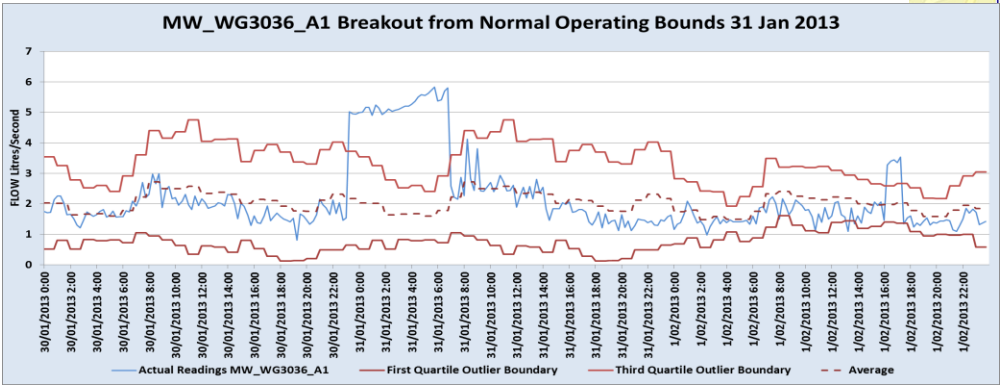
NEW

Issue: To identify the least cost route for a network of recycled water mains to deliver water from processing source to industrial and commercial customers where the route potentially crosses freeways, railway tracks, creeks, open space and suburban roads.

Modelling the Entire CWW Network

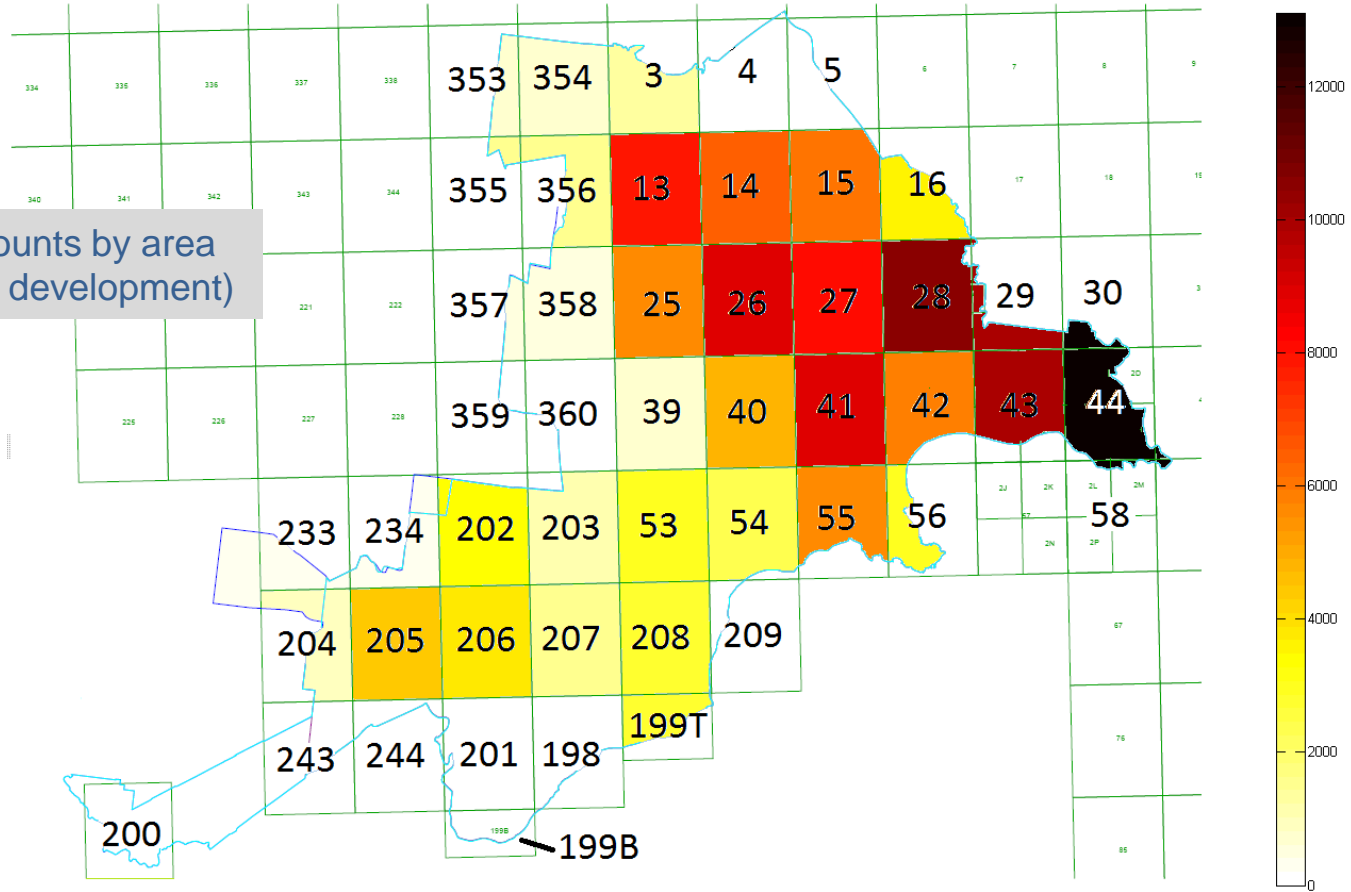


Modelling the entire network and identifying normal operating bounds allows issues to be identified earlier.



Current Field Work – Heat Map

Display of job counts by area
(currently under development)



Innovations that directly help customers

WATER AND ENERGY EFFICIENCY THROUGH STEAM SYSTEMS

Angela Ganley¹
1. City West Water, Melbourne, VIC

ABSTRACT

The Steam System Efficiency Program is being undertaken by City West Water (CWW) to improve the water and energy efficiency of its business customer's steam systems. The program involves providing free steam system audits and training to manufacturing, industrial and hospital customers in CWW's service area. This paper outlines the outcomes of the program and the key ways to improve water and energy efficiency in steam systems.

INTRODUCTION

Energy and water use are embedded throughout the water cycle, but particularly in the end use. CWW, through its Business Resource Efficiency Program, is well placed to assist customers to reduce the energy intensity of their water use. While improving the energy efficiency of its own operations continues to be a priority, CWW has identified that there is significant potential to assist business customers to reduce energy usage associated with the end use of water, particularly in steam systems.

Steam system operation can account for a large proportion of a business' total operating cost. Through the Business Resource Efficiency Program, CWW has identified over 100 businesses that use steam within their processes. It was also noted that there was a general lack of steam system knowledge among businesses, particularly on how they can make steam systems more efficient, and how they can quantify the savings and costs of the opportunities identified. Steam systems were targeted because of the integrated water and energy use, meaning efficiency improvements are typically cost-effective with a high likelihood of implementation. This is also a cost-effective way for CWW to achieve water efficiency that will benefit the whole of its customer base.

of drinking water and the provision of sewerage, trade waste, alternative water and resource efficiency services to approximately 332,263 residential and 35,998 business customers (City West Water, 2011).

Business Resource Efficiency Program

CWW's Business Resource Efficiency Program began in 2003 when it created programs to address the needs of its business customers by providing assistance in both water efficiency and trade waste improvements. Businesses participate in the Business Resource Efficiency Program by completing a water management action plan (waterMAP) which outlines how water is used and documents potential, underway and completed water efficiency and trade waste improvements. The success of this program is a direct result of CWW's strong relationships with its business customers. CWW aims to capitalise on these strong relationships to deliver messages of holistic resource efficiency and influence our customers to share our vision of being a truly sustainable water business. The program works in partnership with government and industry stakeholders to deliver a co-ordinated approach to resource efficiency. Through such a partnership with EPA Victoria, CWW received \$50,000 contribution to the Steam System Efficiency program.

APPROACH

CWW engaged a consultant to provide free steam system audits to selected customers with the following deliverables:

- Identify steam system equipment at each site
- Describe inefficiencies
- Provide recommendations on improving
 - Water and energy losses
 - Steam generation and distribution



Steam System Efficiency Program.

Free steam system audits and training to manufacturing, industrial and hospital customers.

(end 2011) 140 actions identified. If all implemented

- 228 megalitres water saved per year
- 153 terajoules gas
- 144 kW electricity
- 7,021 tonnes CO₂-e greenhouse gas reductions

Ozwater'12 Paper



City West Water

Data Enabled Innovation

Build a big database

Let people get “uncontrolled” access to it

Data analytics is more than BI (business intelligence)

Applying mathematical analytics to discover "stuff"

New Technology/ technology building blocks / looking outside the industry



Getting Started on Innovation

Have Courage

Provide Freedom (within the constraints of corporate life)

Expect the unexpected

Dare to dream big

Keep it simple/ get the experts in

Google it

Harness / Release Energy

Prepare for failures (fail early)



Staffing for Innovation



"We are(should be) all into innovation"

Dedicated teams : corporate vs departmental

Cross discipline teams/ mix of personalities

Team development - focus, ongoing training, professional memberships industry and subject area, "everyone should write SQL queries"

Inhibitors vs controllers

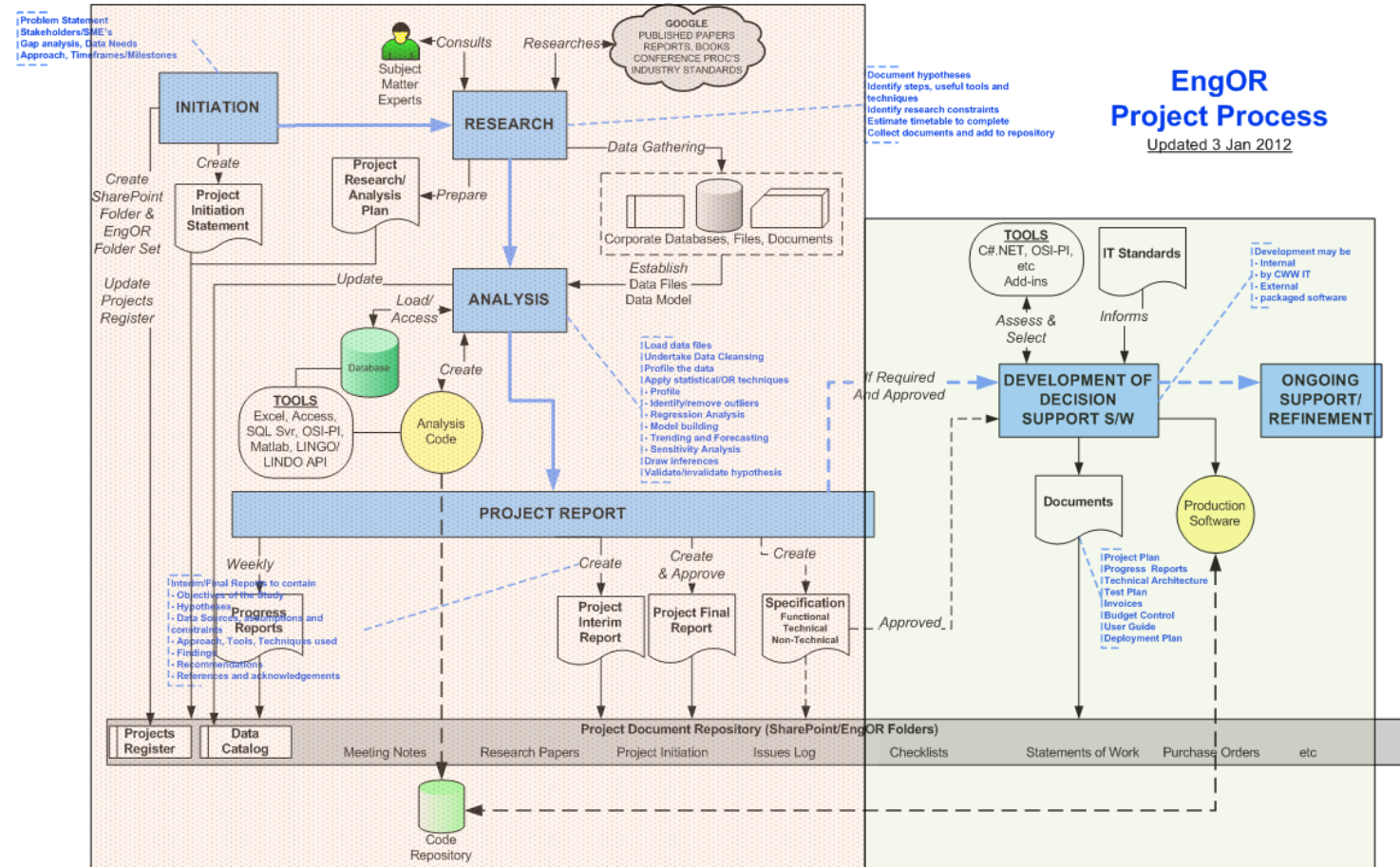
Nay-sayers

Building networks

Mutual support skill and tool sharing



Operations Research Project Process



EOR – research solution concept, deliver proof of concept, produce requirements (BRS and Functional), Gate 2, 3, 4, 5 business cases.

IT – Project manage, develop tech spec, source soln, manage quality, implement, support and enhance.



“Stocking Fillers”

- OH&S incident register
- ATP Lab Result Collation
- iPads and Tablets
- Auditors Monthly Report
- The cloud
- Renewable Energy
- Contract Price scoring
- Efficient Hand Dryers
- Label templates
- Bulk water invoice reconciliation
- A new depot
- Boyland curve
- Clean data
- Now-casting rainfall
- Renewable Energy
- Grate
- Safety
- Lone-worker app



Thank You



City West Water