	<b>MINUTES</b>
Project	Distributed Systems Workshop
Venue	Hilton Brisbane
Date	27 August 2009

### ATTENDEES:

Surname	First Name	Representing
Begbie	Don	UWSRA
Bowman	Jan	Dept of Human Services (Vic)
Bristow	John	Consultant
Burrell	Paul	Brisbane City Council
Carsen	Michelle	South East Water Limited
Cadee	Keith	Water Corporation
Chapman	Heather	Smart Water
Crozier	Sue	Qld Dept Infrastructure Planning
Davis	Chris	UTS/NWC
Escher	Beatte	Entox
Flapper	Therese	Water Futures
Gardner	Ted	Urban Water Cycle Science
Gernjak	Wolfgang	University of Qld, Advanced Water Management Centre
Halliwell	David	WQRA
Hammond	Bruce	Goulburn Valley Regional Water Corporation
Howard	John	Australian Water Quality Centre
Jackson	Gregory	Department of Health, Qld
Keegan	Alex	AWQC
Khan	Stuart	University of NSW
Kranostein	Phil	Nubian Water
Jennison	Ian	GHD
Lim	Cheryl	National Measurement Institute
McLaughlan	Robert	University of Technology, Sydney

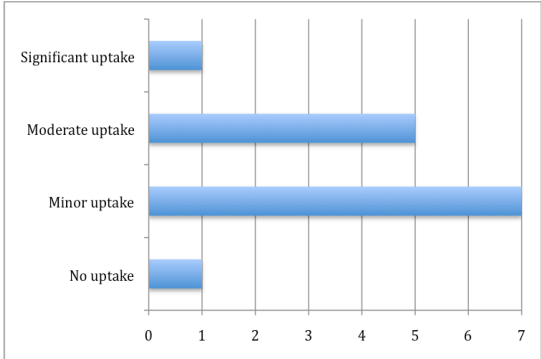
<b>Surname</b>	<b>First Name</b>	<b>Representing</b>
Mekken	Ms Jacqueline	City West Water Ltd
Roiko	Anne	University of the Sunshine Coast
Pipe-Martin	Christopher	Ecowise Environmental
Rutledge	Frances	Hunter Water Corporation
Sarkis	Suzie	Department of Health, Vic
Sanciolo	Peter	Victoria University
Sharma	Ashok	CSIRO
Sinclair	Martha	Monash University
Stevens	Melita	Melbourne Water Corporation
Stoker	Darrin	Liquitek
Smith	Paul	NWC

## Agenda:

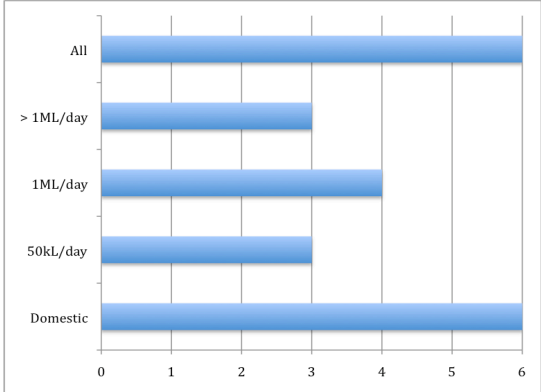
No.	Time	Topic	Who
1	9.30 - 10.00	Arrival and coffee	
2	10:00 – 10:10	Welcome and WQRA overview	Jodieann Dawe (WQRA)
3	10.10 - 10.20	WQRA Wastewater / Recycled Water Programs - Background	David Halliwell (WQRA)
4	10.20 - 10.30	Setting the scene of research challenges for distributed systems, following the AGWR Elements	Therese Flapper (Water Futures)
5	10.30 - 10.45	Validation guidelines and challenges	Suzie Sarkis (Vic, DHS)
6	10.45 – 11.00	Public utility perspective of concerns	Michelle Carsen (SE Water)
7	11.00 - 11.10	Getting them approved and installed - issues	Phil Krasnostein (Nubian)
8	11.10 - 12.30	Table level workshop of issues: Reviewing research challenges associated with water quality and distributed systems	Therese Flapper (Water Futures)
9	12.30 - 1.30	Lunch	
10	1.30 - 2.00	Report back on table level workshop	Therese Flapper (facilitator)
11	2.00 - 3.30	Group discussion - addressing the identified research needs: Research priorities, interested parties, timeframes, (why, what, who, when)	Therese Flapper (facilitator)
12	3.30 - 3.40	Wrap up: Top 5 ideas for consideration as research proposals	David Halliwell
13	3.40 – 4.00	Afternoon Tea	

# Survey results

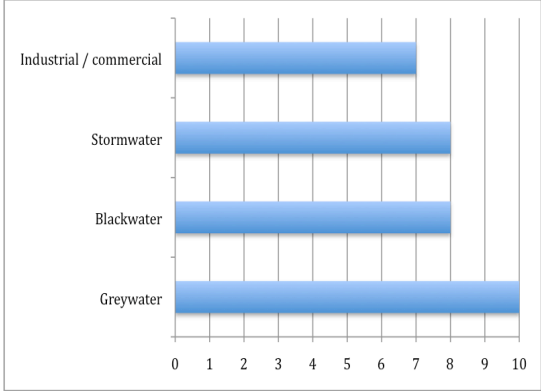
## Uptake in your entity?



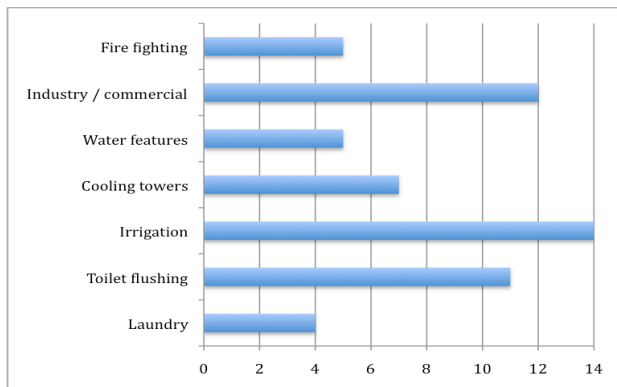
## What size?



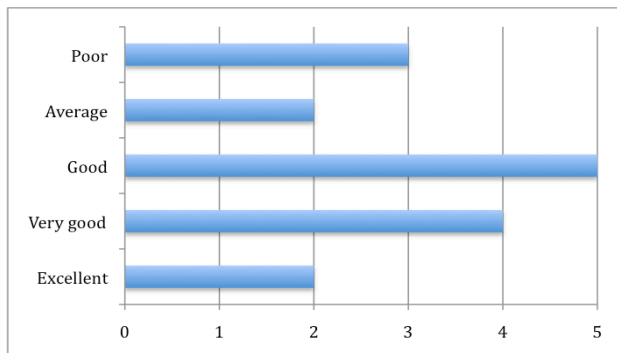
## What source water?



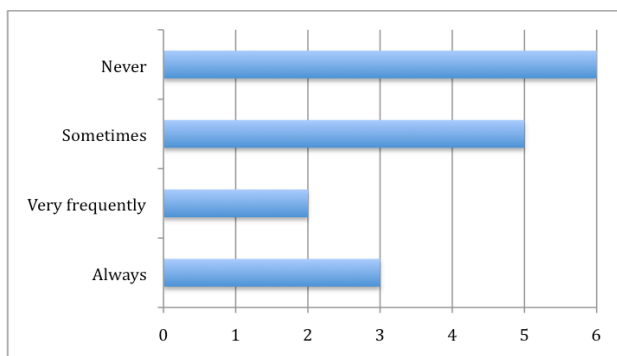
### What end use?



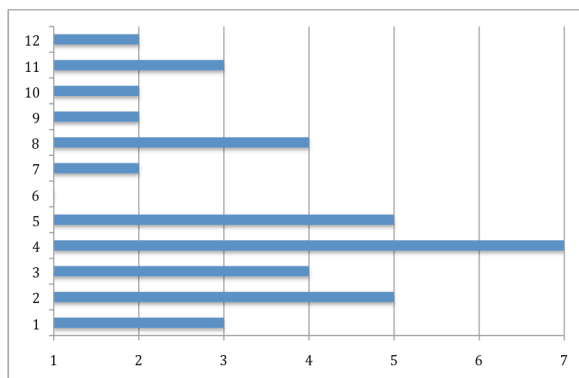
### AGWR understanding



### Using AGWR for distributed systems?



### What Elements of AGWR difficult?



### Barriers to uptake

- Risk, Risk, Risk – perceived and or real and how this is to be managed
- Uncertainty surrounding health regulations (validation in particular)
- TBL considerations of the available options
- Cost of retrofitting into existing systems
- Reliability of operation
- Lack of validated systems
- Health Department requirements for approval of new systems
- Organisational culture due to preferences by planning officers and senior management for centralised systems exacerbated by poor understanding of distributed systems
- No independent assessment readily available on the most appropriate technologies
- Lack of standardised approval between states and local council approval
- Limited independent performance data

### Research needs

- Pathogen monitoring
- Governance models in business to business alternative supply
- Salt and nutrient balances
- Storage water quality
- Sustainability assessment tools
- Effect on centralised system eg: low flow
- Quantification of water quality benefits
- Determination of design criteria to improve disinfection process in waste stabilisation ponds
- Reliable data in order to conduct a risk analysis
- Contaminant research – types and concentrations
- Security systems such as back flow, contaminant sentinels
- Metering and monitoring
- Regulatory frameworks
- Regulatory control and ongoing management
- Characterisation of catchment

## MINUTES / NOTES:

### Comment / Note

### Who

#### Start Therese Flapper presentation

(during presentation of the survey data) Comment about what 'controlled' means in the survey. Does it mean they operate the system or oversee it (i.e. as a regulator)?

Greg Jackson

Motivation seems to be missing. Why should people go to the trouble of doing something different?

Peter Sanciolo

There has been a lot published in the last few years. Were survey respondents aware of this published information? A. It was not asked in the survey. Did not get a sense that it was well known by respondents.

Ted Gardiner

Did anyone mention the people aspects of decentralised systems? A. One respondent mentioned training of people to run the systems.

Frances Rutledge

Understanding hazardous events. The sorts of things that can go wrong with power events, toxic shock etc.

Stuart Khan

Who are the certifier of these systems...was not mentioned in the survey.

Therese Flapper

The area of CCP monitoring does not seem to be too well advanced in decentralised systems.

Keith Cadee

#### Start Suzie Sarkis presentation

Do the guidelines address chemicals or just pathogens? A. Just pathogens at the moment.

Stuart Khan

Fred Leusch has written a paper to say that exposure to chemicals from RW is very insignificant compared with other sources. Has DOH looked at comparison with other exposure sources to put into perspective?

Ted Gardner

When the guidelines are being developed to assess the risk, are the social and environmental impacts considered? A. Guidelines have focused more on public health; however, as the policy is developed it should consider these points (but not currently captured in the guidelines).

Bruce Hammond

The guidelines are purely technical. Thus, it is not appropriate to consider social/environmental issues.

Jan Bowman

Is the DALY the right number and are the calculations that are used to translate this number appropriate?

Melita Stevens / Martha Sinclair

#### Start Michelle Carsen presentation

Pricing regulator is against decentralised issues.

Frances Rutledge/  
Jacqueline Meken

'Price is always an issue'?

**Comment / Note**

**Who**

**Start Phil Krasnostein presentation**

'Human nature is frail and people don't want to maintain their systems'

John  
Bristow

David Halliwell 11/9/09 2:54 PM

**Comment:** frail?

In a different market segment to Phil. Darrin believes that the regulations are good in his area. At the municipal level the costs are relatively small. However, it is a real concern at the small scale.

Darrin  
Stoker

How do you balance health risk with cost effectiveness?

Suzie Sarkis

Chris agrees that we need to develop cost effective validation, but we can't go to the other extreme. A. Phil agrees with this comment.

Christopher  
Pipe-Martin

Comment on Australian regulators. The only way to change this system is for the National process to come up with an overarching regulatory approach. For example, bodies like the TGA. Thus, industry needs to lobby at the National level for this type of framework. Not with standing this, there is more of a role for the regulators to provide guidance manuals on how to deal with the systems etc.

Jan Bowman

We need to consider where the boundaries are between deregulation and regulation. Also, we may need to consider different levels of risk for different scales.

Keith Cadee

## Research priorities:

Concept #	Concept Title	Description
<b>High Priority</b>		
1	Distributed systems information toolbox	<p>Assessing current systems and placing learning's into collective 'database'. Anonymous inclusion can be accommodated. All water sector people can contribute.</p> <p>All information from below concepts also included.</p> <p>Web based – open to all. Readily accessible. Routinely update.</p>
2	Monitoring and data gaps	<p><u>Source quality characterisation</u> – stormwater, greywater, rainwater, etc. Desktop literature based review. Existing systems data.</p> <p><u>Central repository of available information statistically managed</u> - such as pathogen data, validation data, monitoring data, costs, operator behaviour, unpublished studies, datasets, materials, manufacturers. All info in one spot. Data received subject to similar and comparative analysis with same statistical technique.</p> <p><u>Hazardous event</u> understanding and impact which can be higher for these systems.</p> <p><u>Storage of recycled water</u> - assess the characteristics and their spatial and temporal change when RW is stored. Storage impacts to minimise health risk considering re-growth of pathogens, time, T, N, P, C, blending waters, materials, geometry, odour. Breeding ground for 'mozzies'. RW may be rainwater, stormwater, treated greywater, treated blackwater, etc.</p>
3	Online monitoring	Cheap reliable online monitoring focused on most common CCP and CL needed to satisfy regulators and highest risk (i.e.: MBR, membrane integrity). Technology development, what surrogates, what delivery model, best practice response to data.
4	Model RWQMP based on AGWR	'Model RWQMP' for distributed systems following the AGWR 12 elements. Different types and scales. Toolbox style. Develop model approaches and templates for RWQMP and place in concept # 1 centre.
5	Epidemiological based LRV developed considering risk profile	<p>Revise LRV required to be met in AGWR considering:</p> <p>Epidemiology – what are the actual health impacts of current practices to better understand the risk profile. Dose response changes that might occur.</p> <p>What is the risk profile? Is it greywater for irrigation compared to sewage for dual pipe supply.</p>

Concept #	Concept Title	Description
<b>Medium Priority</b>		
6	Governance of distributed systems	Appropriate governance model. Who owns it and who maintains it – short term and long term. Centralised management approach to be developed as concept of governance.
7	Cost benefit analysis	Cost benefit analysis – are they a good idea – how can they be designed to be cost beneficial.
8	HWS review	Directing rainwater through Hot Water Systems (HWS) – are HWS a CCP for pathogens – consider RA, how made reliable. Do we need water characteristics done.
9	Training tools	Education and training tools for operators and regulators.