



# MUTUAL LEARNING FOR SOCIAL CHANGE

## FINAL REPORT FOR YARRA VALLEY WATER



2011



# Mutual Learning for Social Change

Using social research to support the introduction of urine diverting toilets in the Kinglake West Sewerage Project

## Final Report

Prepared by the Institute for Sustainable Futures for Yarra Valley Water



## **Disclaimer**

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Appendix 1, 2 and 3

# Executive Summary

## Project objectives

Yarra Valley Water commissioned the Institute for Sustainable Futures to conduct social research to support its introduction of innovative sewerage servicing technologies as a pilot project at Kinglake West.

The social research carried out in parallel with the planning, installation and use of urine diversion toilets, was aimed to:

- Support user engagement with the urine diversion toilets and associated servicing
- Monitor progress in acceptability of urine diversion technology by tracking user perceptions
- Help articulate organisational learning within Yarra Valley Water around implementing innovation, in alignment with the organisation's declared aspiration "to transfer the learning from Kinglake West, and assist others in the selection of the most sustainable sewerage servicing option at any other location in Victoria."

Delivering practical value to YVW has been a central objective of the social research, while ensuring defensible rigor by being informed by qualitative social research methods and theory. The practical contribution of qualitative social research to the project is underpinned by two concepts:

- Innovation in water services infrastructure is necessarily embedded in social systems, making their success or failure critically dependent on the commitments garnered from users. By using direct communication with project participants, qualitative social research allows a deep level of engagement and dialogue with residents.
- Qualitative social research has the potential to uncover issues that project designers/planners had not thought of.  
"Furthermore, particularly at the local level, the discovery is being made, again and again, that people not only care about their environment (natural, social and personal) but also can become ingenious and creative in finding practical, partly technological, ways towards its improvement. Here the quality is not merely in the verification, but also in the creation; local people can imagine solutions and reformulate problems in ways for which the accredited experts, with the best will in the world, are not prepared."<sup>1</sup>

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<sup>1</sup> Jerome Ravetz (1999)

## **Outcomes**

The trajectory of the Kinglake West sewerage project diverged significantly from what was originally envisaged. One lesson was clear: implementing innovation is complex. In the case of Kinglake, the complexity was compounded by the bushfires.

The social research with residents elicited valuable ideas for action from Yarra Valley Water, which could have saved resources and avoided some of the disruptions if acted upon sooner. Perception of urine diversion was integrally tied up with residents' experiences of the project as a whole, which varied widely. Residents also raised fundamental questions on the project design and fit for their context.

The organisational learning element of the project facilitated reflection and sharing amongst the project team at Yarra Valley Water, identifying the most critical issues, and ways to address them for better outcomes from the remainder of the Kinglake project, and for future innovation projects by YVW and the water sector, and specific actions to achieve them.

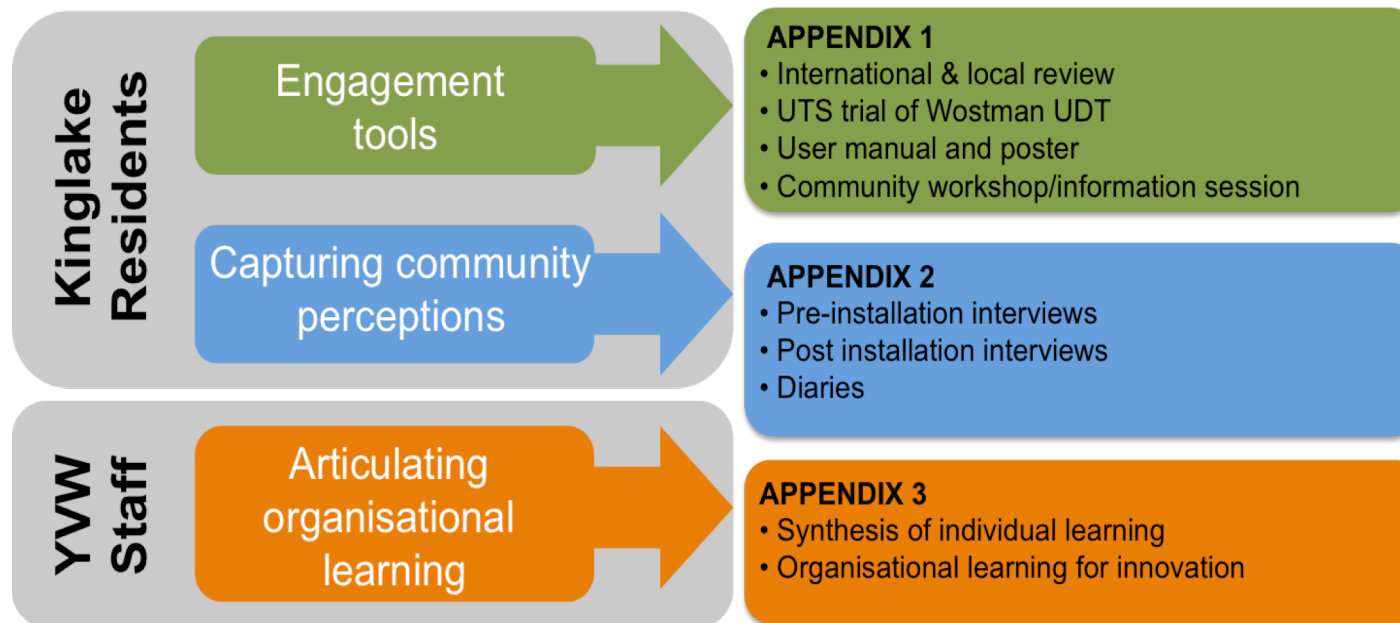
These included:

- A designated 'project owner' to integrate all aspects of the project, with whom 'the buck stops';
- Considered management within the context of existing organisational processes;
- A focus on outcomes for customers, with flexibility to adapt project if necessary;
- Good internal communications between the multi-sectional teams, with regular reviews and reflection;
- Community as partners in trialing innovation, with open honest communications and mutual feedback;
- Clarity of roles, rights and obligations of Yarra Valley Water and residents, with supportive documentation;
- Pre-piloting technologies for understanding in situ practice, as separate elements and in combination.

## **Structure of report**

To maximise reader engagement with the final report, the Institute for Sustainable Futures agreed with Yarra Valley Water that the report should take the form of a rich summary presented in Powerpoint <sup>(TM)</sup> format, with the details of the work and deliverables along the way brought together in Appendices.

There are three Appendices, each focused on one element of the project: Engagement tools, Capturing community perceptions, and Articulating organisational learning. The Appendices draw from and include deliverables and relevant sections of Progress Reports, and show how each project element developed and changed over time. The figure below explains the structure of the Appendices, including which stakeholders were the focus of each project element and the component parts of each project element.



The task map overleaf illustrates the timing of tasks and the reporting period for each progress report. The Appendices include an outline of the aims of each task, excerpts from the relevant progress reports with dates indicated, and the task outputs/deliverables.

Due to the large number of documents they consist of, the Appendices are best navigated in the electronic document. Access the appendices by clicking anywhere in the figure above, and use the bookmarks to navigate within the document (best viewed in Adobe Reader).

## Timeline and coverage in progress reporting

		Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	
Progress report date/period →		11-May-10		12-Jun-10		6-Oct-10			15-Mar-11					23 June 2011						
Task ↓																				
ENGAGEMENT TOOLS (Appendix 1)	A International and Local Review	Completed																		
	C Users' Manual & signage		Modify scope			Draft	Revised and finalised manual & signage													
	UTS trial of Wostman UDT				Proposed UTS trial	Installation, NATA testing, trial report														
	E Workshop									Revised concept plan					Community Info Evening					
CAPTURING COMMUNITY PERCEPTIONS (Appendix 2)	B Pre-installation Interviews		Pilot interviews scoped	Pilot interviews (analysis report)			Pre-inst. interviews (analysis report)													
	F Post-honeymoon Support Interviews									First post-installation interviews (prelim analysis report)			Remaining post-installation interviews							
	D 'The Toilet Papers' Diary		Early diary distribution	distribution & plans to continue						Briefing for YVW staff to distribute				Incentive offered for return of diaries	Task discontinued					
ORGANISATIONAL LEARNING (Appendix 3)	J Evaluation of Learning													new task agreed				Interviews and briefing paper	Workshop and report	



# Delivering better outcomes through social learning

# The Kinglake project represents the cutting edge of innovation by an Australian water utility

- First urine diversion trial with 'regular' residential customers (vs. ecovillage)
- New decentralised wastewater technologies
- YVW infrastructure elements within residential boundaries
- New modes of servicing (eg. nutrient management system)
- Qualitative social research to support introduction of new socio-technical systems

YVW recognised that sustainable *socio*-technical innovation requires an understanding of social perspectives

## YVW approached ISF to draw out social learning

ISF has been actively engaged in the UD space for a number of years now...

### International UD experience

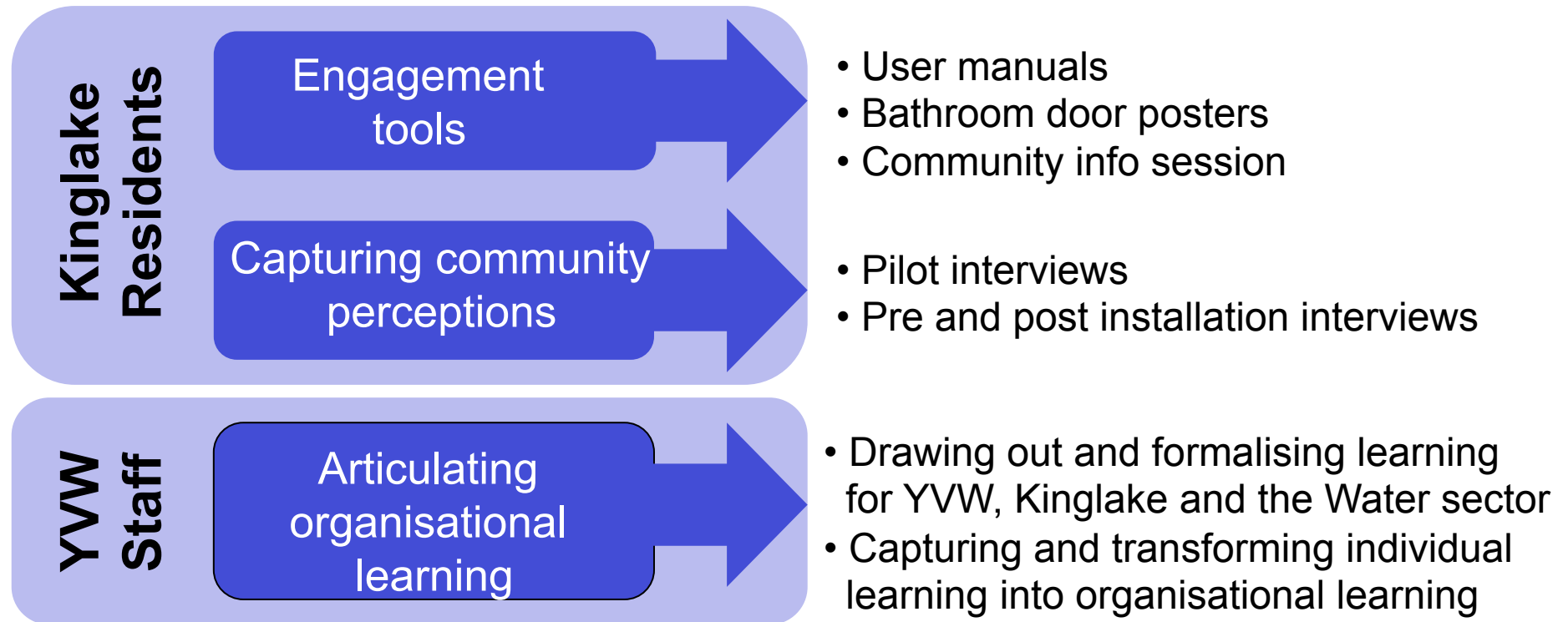
- Sustainability implications of global phosphorus scarcity for food security (Dana Cordell)
- Collating international UD case studies
- Social research on UD case studies – Sweden (Dena Fam)

### Local UD experience

- UTS urine diversion trial**
- Tools to gather user perspectives
  - Evaluate learning by the project team
  - Aust Standards Technology testing
  - Industry engagement

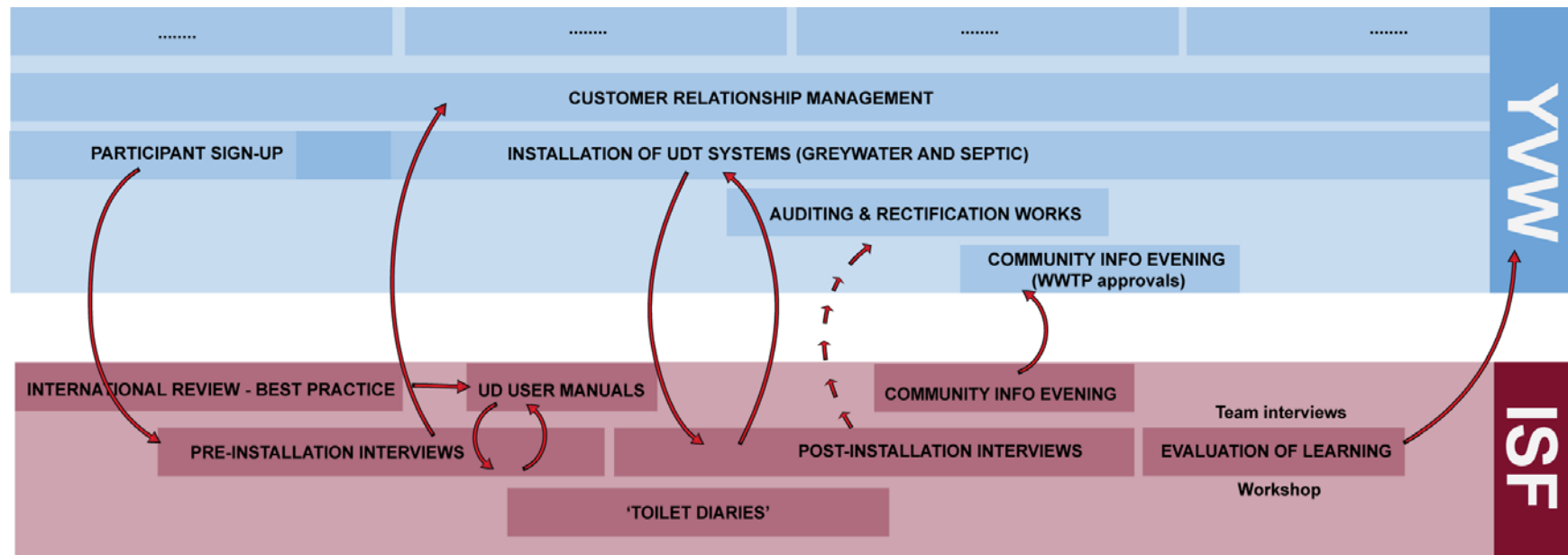
The Kinglake project was an opportunity for *mutual* benefit so ISF co-invested to extend the social research

# Our project on mutual learning engaged both Kinglake residents and YVW staff



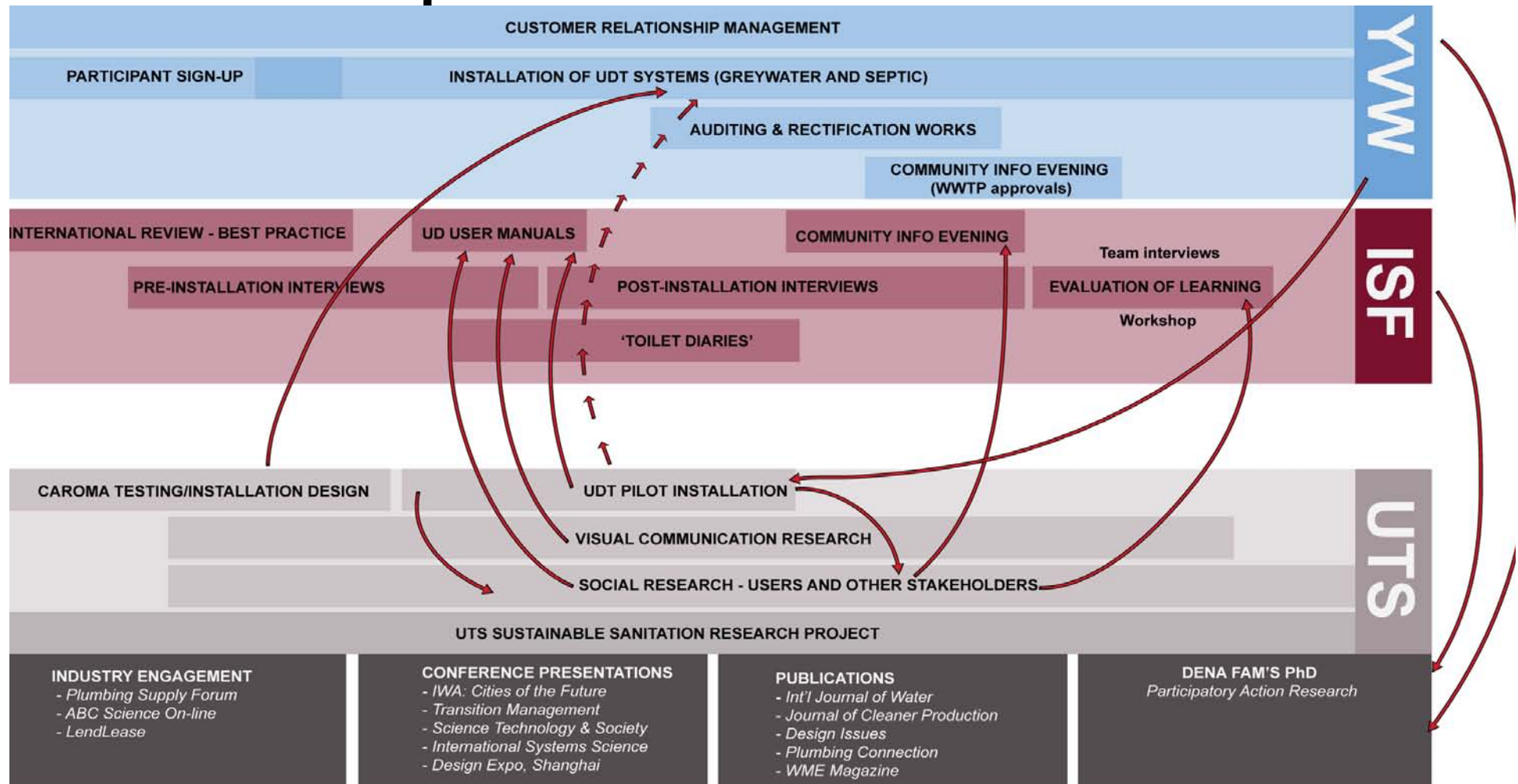
Multiple perspectives on the same issue provides insight into how best to move forward

# There were many points of interaction between YVW's work program and ISF's social learning project



Rigorous social research alongside technological trials provides better outcomes

# At the same time ISF was gaining 1<sup>st</sup> hand experience in its own UD trial



The social, technical, communication and regulatory insights were shared with YVW

# Bushfires increased the complexity of an already complex project...

YVW

- Timing - speed and scale of installation
- Number of participants – incentives and motivations changed
- Sensitivity in engagement – apprehension in communication
- Retrofit to greenfield – cost, increasing water tank size

ISF

- Expectations of project timing
- Emotional resources and skills required for social research
- Constantly changing information eg. household numbers, technical challenges of technologies, customer perceptions, timing

Residents

- Motivations for uptake changed, greater influence of financial incentives
- Regulatory requirements for increased tank sizes questioned the validity of the greywater system
- Accepting systems without understanding the implications

...and brought surprises all round!

## The social research revealed that the end-user is often left out of the equation

- International & local literature review showed manuals are rarely tailored to support the user in using new technology
- There was inadequate consideration of end-user habits at Kinglake in the modelling for technology selection eg. frugal water use habits
- Product manufacturers, on whom YVW and users depended for performance/maintenance information, failed to provide realistic, practical information.

End-user acceptance is the make or break issue for the successful adoption of socio-technical innovation



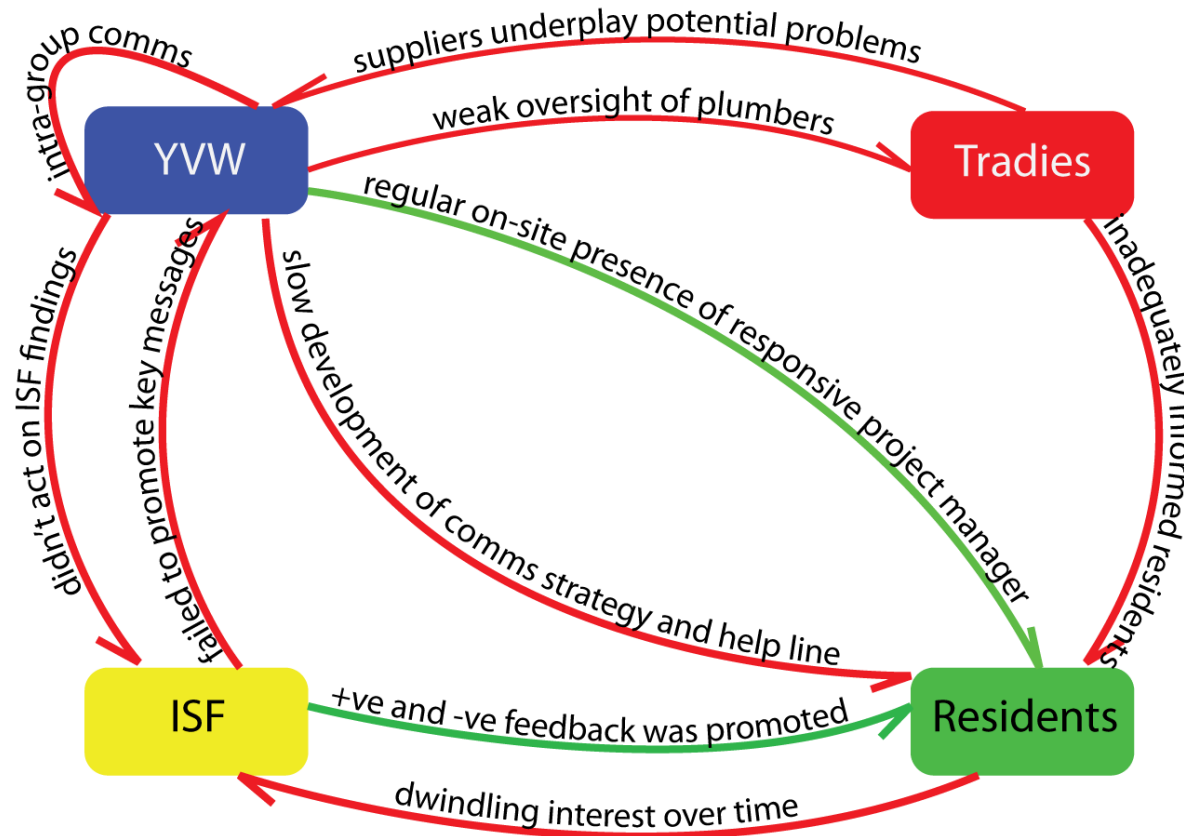
# Pre-installation interviews provided feedback on motivations, concerns and feedback on management

Emerging themes	Sample of illustrative quotes
<p><b>Motivations</b> for uptake ranged from:</p> <ul style="list-style-type: none"> <li>• Economic</li> <li>• Environmental</li> <li>• Felt they had no choice</li> <li>• Peer influence</li> </ul>	<p><i>“Cost wise, it’s good you guys are doing it ’cos that does take that burden off us. ... in the long term we are going to have a system that we’re not going to have too many problems with.”</i></p>
<p>Pride in pioneering innovation</p>	<p><i>“I think, all in all it’s a great idea and I’m very proud that we can be part of something.”</i></p> <p><i>“I think it will be a bloody... “come have a look at our loo!”</i></p>
<p><b>Additional costs</b> concerns:</p> <ul style="list-style-type: none"> <li>• energy</li> <li>• sewerage fees</li> <li>• maintenance &amp; operation</li> </ul>	<p><i>“The systems not energy friendly, we have 3-4 pumps and we don’t want that, its a lot of power. How much is it going to cost us?”</i></p>
<p>Viability of <b>Greywater system</b></p>	<p><i>“...I’ve put in a 106,000 litre water tank so I’m not worried about grey water in a sense”</i></p>

# Post-installation interviews captured challenges residents faced throughout the trial

Emerging themes	Sample of illustrative quotes
<b>Dealing with tradesmen</b> <ul style="list-style-type: none"> <li>• Communicating with plumbers</li> <li>• Coordinating tradesmen</li> </ul>	<p><i>“Unfortunately we had a lot of problems between the builders and...Schultz because there was lack of communication between them”.</i></p>
<b>Blockages</b>	<p><i>“We have small blockages, and a big blockage when we first moved in, we only get small ones”</i></p>
<b>Functionality of UD toilets</b> <ul style="list-style-type: none"> <li>• odour</li> <li>• cleaning</li> <li>• faecal separation</li> <li>• toilet flushing</li> </ul>	<p><i>“We have had odour issues because it’s (urine tank) been emptied. we’ll see how it goes this time...it only started when it emptied (the urine tank)”.</i></p>
<b>•Adapting to using new systems</b>	<p><i>“Look, I mean we can’t say anything bad about the system. I don’t have any issues. The initial teething problems with the alarms going off, they all got sorted...”</i></p>

# Clear paths are needed for social learning outcomes to land so they are acted upon



## EARLY SUGGESTIONS MADE BY RESIDENTS

- Process for auditing contractors work
- Project manager mediation with tradies
- Establishing clear complaints process eg. fault line

IMPLEMENTED UNDER DIFFERENT DRIVERS, MANY MONTHS LATER

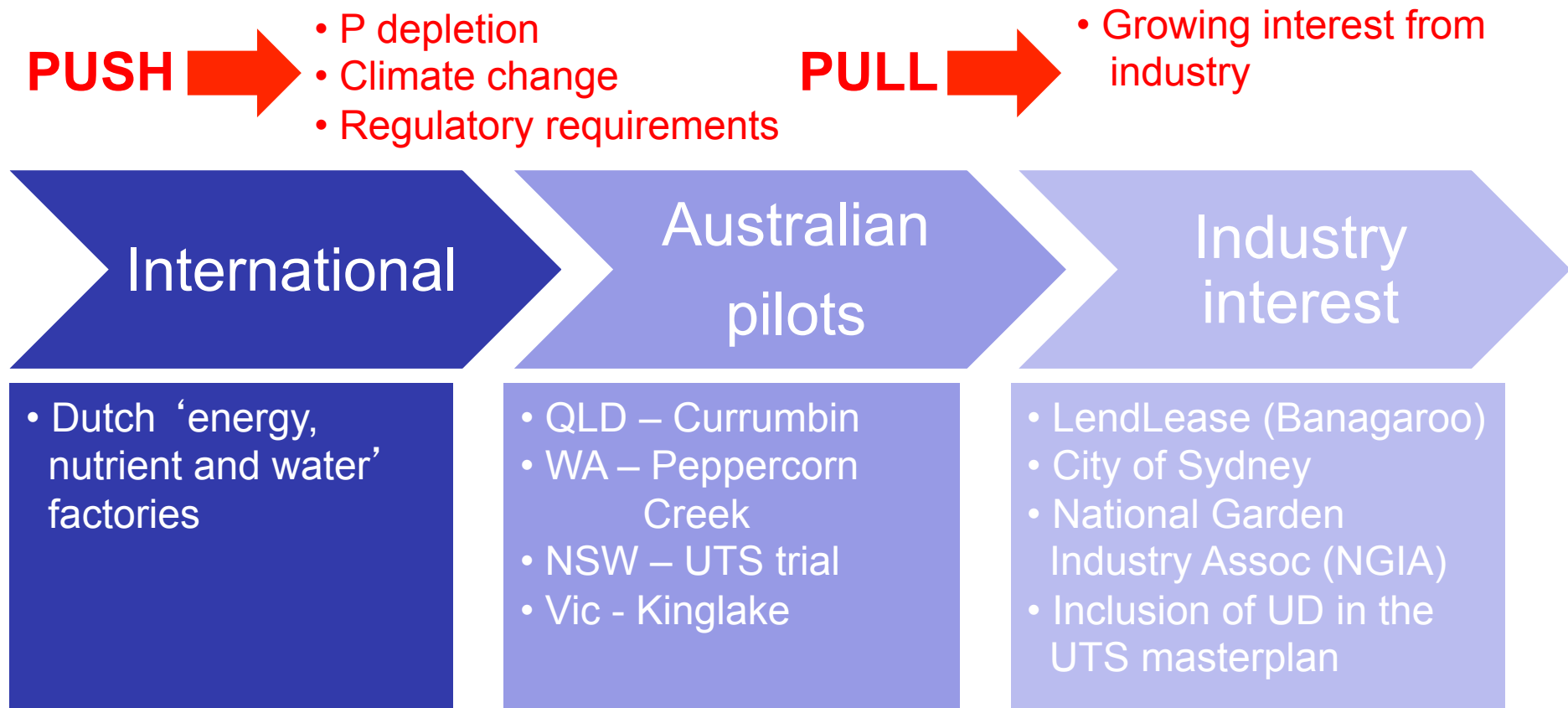
Reflecting on weaknesses as well as strengths leads to improved practice

# YVW's commitment to inspiring innovation meant openness to organisational learning

	MOST SIGNIFICANT THEMES & SAMPLE RESPONSES OF EVALUATION WORKSHOP	KINGLAKE	YVW	SECTOR
CUSTOMER ENGAGEMENT	<b>Clarifying legal rights of YVW staff and residents:</b> • signed agreements and documentation; clear rights and obligations	✓	✓	
	<b>Informing residents on the challenges of trialing innovation</b> • Use relevant expertise within YVW; Honest transparent communication		✓	✓
	<b>Adopting appropriate communication tool</b> • Regular review of communications strategy; listen & timely response			✓
PROJECT IMPLEMENTATION	<b>Proactive Community Engagement</b> • On-site contact; discuss both positive & negative implication; prioritise consulting, Work in partnership with community & provide feedback	✓		
	<b>Processes to support YVW staff working on properties</b> • Processes and communication strategy to support on-site interaction	✓		
	<b>Coordinating Plumbers, Builders and Home owners</b> • develop detailed property plan, management/supervision of on-site personnel, match needs with skills	✓		
PROJECT MANAGEMENT	<b>Processes for reflective feedback</b> • external project evaluation/peer review, input from senior management, regular team meetings, identifying key decision points and 'back out' clauses	✓		
	<b>Taking ownership of the project, whose responsibility is it?</b> • Committed project team with clear roles, engage operational team early on, establish Project Owner as well as Project Manager	✓	✓	
	<b>Understanding pros and cons of new technology</b> • clear supply contracts, staff training, performance monitoring, illicit community feedback, be flexible to change, identify problems before upscale, integrate innovation with existing organizational structures/processes		✓	✓
	<b>Pre-piloting technologies to iron out the kinks</b>			✓

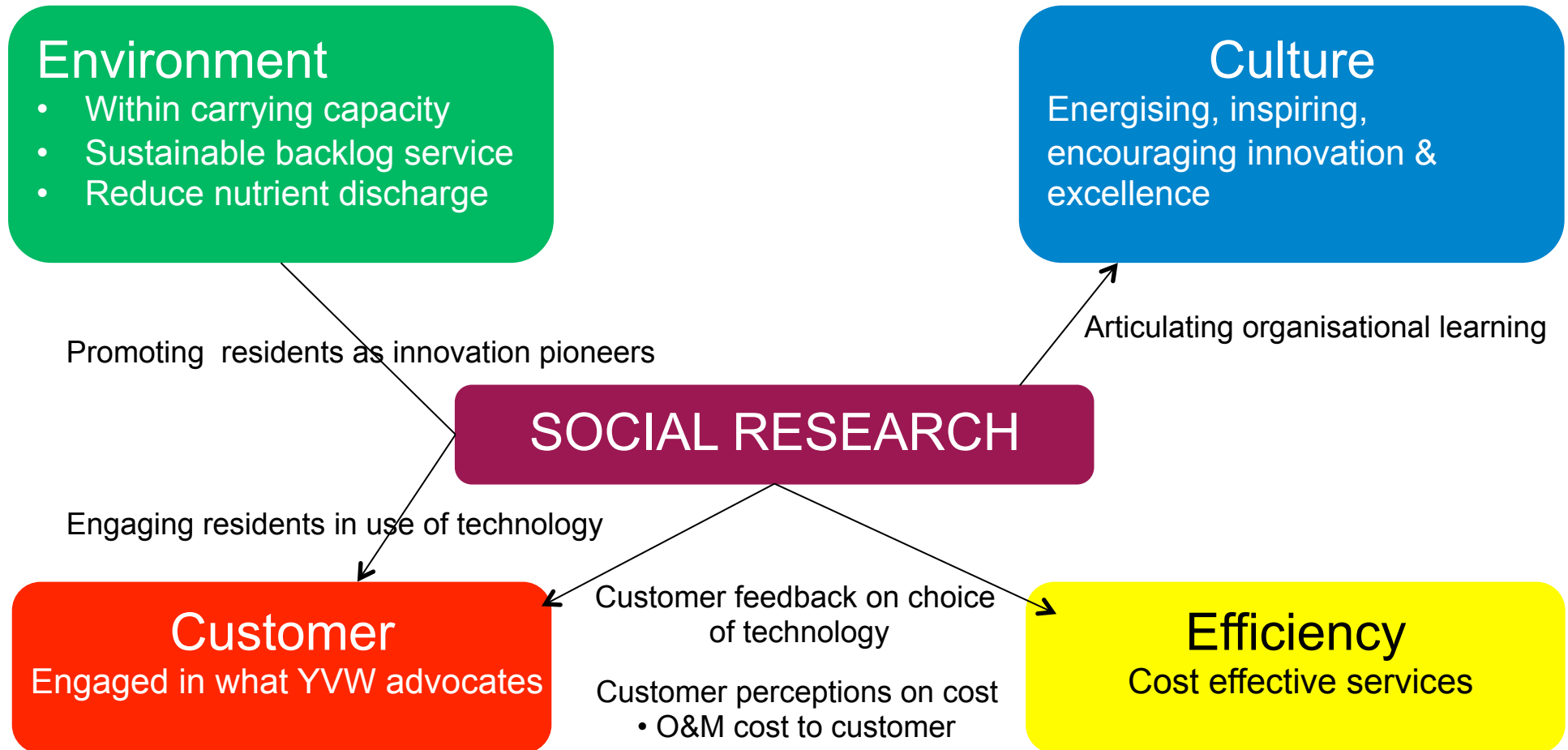
**CLEAR PROJECT OWNERSHIP, RESPONSIBILITY & ACCOUNTABILITY WAS AN OVERARCHING THEME**

# There are increasing drivers in sustainable innovation in nutrient recovery



It is therefore not *whether* technological change should occur, but *how* to strategically manage a transition toward P sustainability...<sup>13</sup>

# Social research contributes and adds value to all four elements of YVW's organisational strategy



Social research is needed to draw together the different elements of the YVW strategy

## Summing up and moving forward...

- The project enabled reflective social learning by YVW, which improves capacity for innovation
- Leading innovation is more complicated than we expected:
  - Including end-user's experiential knowledge would have smoothed the trial and improved outcomes for YVW and residents
  - From a sustainability perspective, UD is the best way to recover P, but UDTs are not quite there yet...
  - Integrating the innovation program with existing systems needs attention
  - Installing systems on resident properties requires a whole different set of skills

**Rigorous, qualitative research supports technological trials by unveiling the social implications of innovation**

