

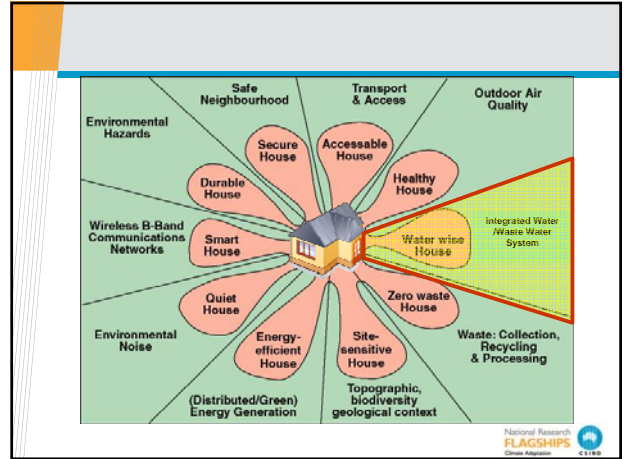
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Water and wastewater


Climate Adaptation National Research Flagship

Grace Tjandraatmadja
19 April 2009

National Research **FLAGSHIPS**
Climate Adaptation **CSIRO**



Background to CSIRO research



Technology

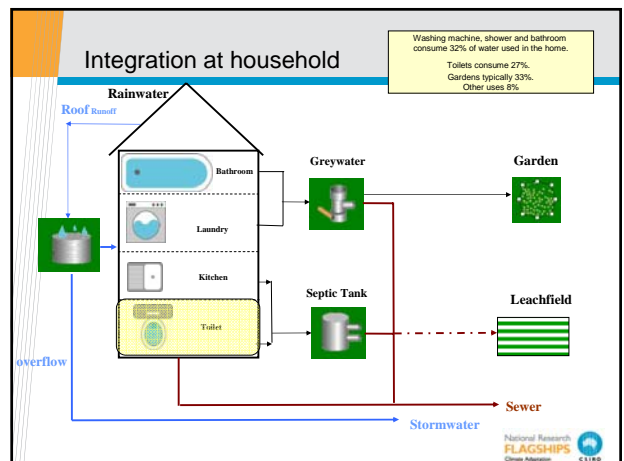
Supply, reuse and treatment

Centralised & decentralised service integration and implications

Infrastructure

Modelling

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Sustainable use

- **Use less water:**
 - Water efficient appliances
 - Low water use fittings
- **Reuse:**
 - Greywater (bathroom and laundry wastewater, not toilet) can be untreated used for irrigation in the garden
 - Only store untreated for maximum of 24h.
 - If treated can be used for toilet flushing/washing machine
 - Reduce impact on environment
 - use low phosphorus and low sodium detergents in laundry. (<http://www.lanfaxlabs.com.au/laundry-detergents-brochure-2009.pdf>)
 - Treat wastewater before disposal

Greywater & Stormwater technologies

• Greywater

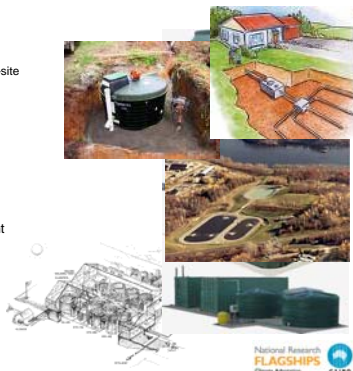


• Stormwater



Wastewater Technologies

- **Wastewater**
- On site management
 - Water use reduction and/or on-site treatment
- Off-site management
 - Small package plants
- Additional challenges
 - Pathogen concentrations
 - Sludge removal or treatment
- Cluster collection and treatment
 - Gravity, vacuum, low pressure
 - Large range of technologies
- Recycling – effluent quality
 - Environment
 - Dispersion
 - Crop

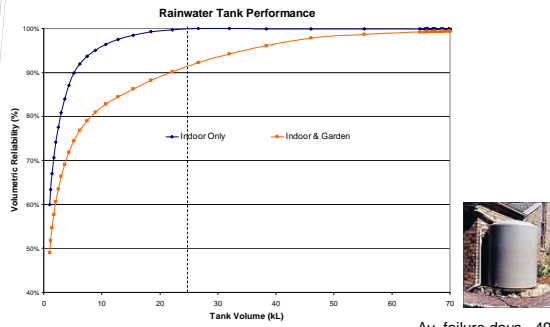


Considerations household level



- Infrastructure
- Climate
- Topography
- Retrofit vs new built (consider current /future retrofit, e.g. if diverting greywater from bathroom)
- Storage
- Site restrictions
(roof area, lot size, occupancy)
- Maintenance: your involvement

Reliability of Existing Water Supply System



Occupancy: 2.5 people

Av. failure days= 49



Township Scale Considerations

- Climate
- Topography
- Site restrictions (lot size, occupancy, density)
- Maintenance
- Legislation
- Environmental impact/benefits (protection, reuse)
- Security of supply
- Upgrade potential
- Storage
- Public Health



The Currumbin Ecovillage

Summary

- 110 ha, 144 residential allotments and Village Centre
- Wastewater - A combination of centralised and on-site systems
- Rainwater - household tank: 22.5 to 44-45kL tanks (incl. 5kL firefighting).
- Other features : body corporate, rainwater tanks, solar water system, 3A or 4A rated appliances and the use of recycled water

Other tools

- Performance monitoring systems for each household mandated by the body corporate
- An education centre has been built to provide continuing education in sustainable practices
- Landscaping: 80% of the site as open-space
- List of potential suppliers of technologies and services supplied to all householders

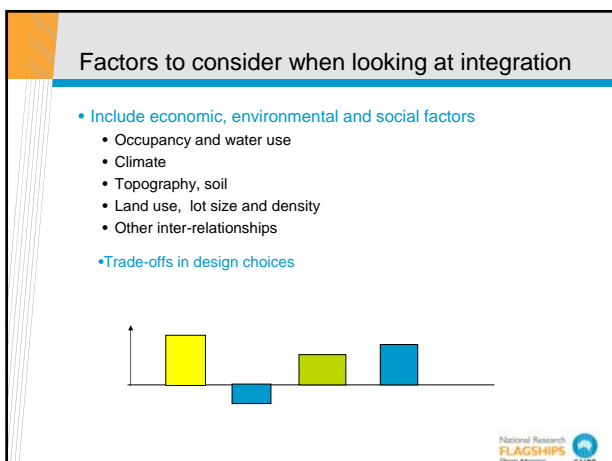
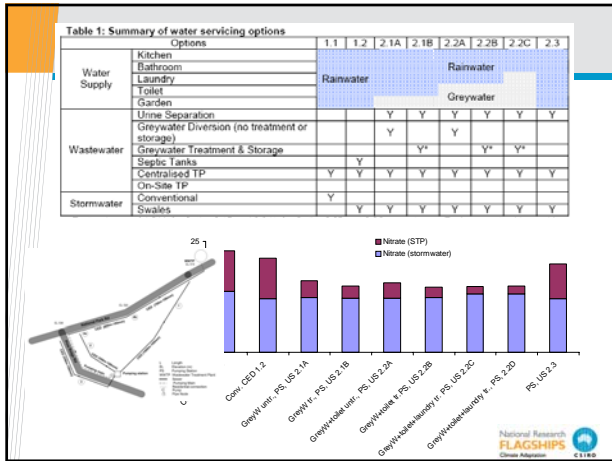


Kinglake



- 54 ha
- 66 properties
- 189 people
- 159 litres per capita per day





Many options, solution unique for each community

Table 3 Sustainability ranking of options for case study towns

Town	Ranking with stakeholder weighting for all criteria
Elmegarra	1. Full reticulation MCS 2. Full reticulation STEP 3. On-site upgrade
Great Western	1. Septic tank effluent collection all lots 2. Cluster scale and on-site upgrade 3. Full reticulation MCS
Lake Bolac	1. Full reticulation MCS 2. Septic tank effluent collection all lots 3. Cluster scale and on-site upgrade
Mitawa	1. Full reticulation MCS 2. Cluster scale and on-site upgrade 3. Full reticulation STEP
Mumbit	1. Full reticulation MCS 2. Full reticulation LPS 3. Full reticulation with CED
Waubra	1. Full reticulation MCS 2. Cluster scale and on-site upgrade 3. Full reticulation with CED

MCS, modified conventional sewerage; LPS, low pressure sewer; CED, common effluent drainage; STEP, septic tank effluent pumping.

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Green Migration C1180

Thank you

Phone: +61 3 9252 6564
Email: grace.tjandra@csiro.au
Web: www.csiro.au/org/ClimateAdaptationFlagship

www.csiro.au

Contact Us

Phone: 1300 363 400 or +61 3 9545 2176
Email: Enquiries@csiro.au **Web:** www.csiro.au

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