The SSWP and beyond – Prioritising support and funding for local water utilities based on risk

6 May 2021

Department of Planning, Industry and Environment

Understanding urban water risk to inform government funding

- **Why?** - Desire to target/prioritise government co-funding for local water utilities in regional NSW based on urban water service risks
- **Benefits!**
  - Ability to prioritise is limited in applicant-led/application-based program
  - Comprehensive understanding of risks in regional NSW
  - Ability to focus on highest priority risks
  - Reduce solution (capital) bias by committing co-funding to risk resolution (instead of pre-determined project)
  - Ability to work with utilities on best solution to risk once co-funding committed

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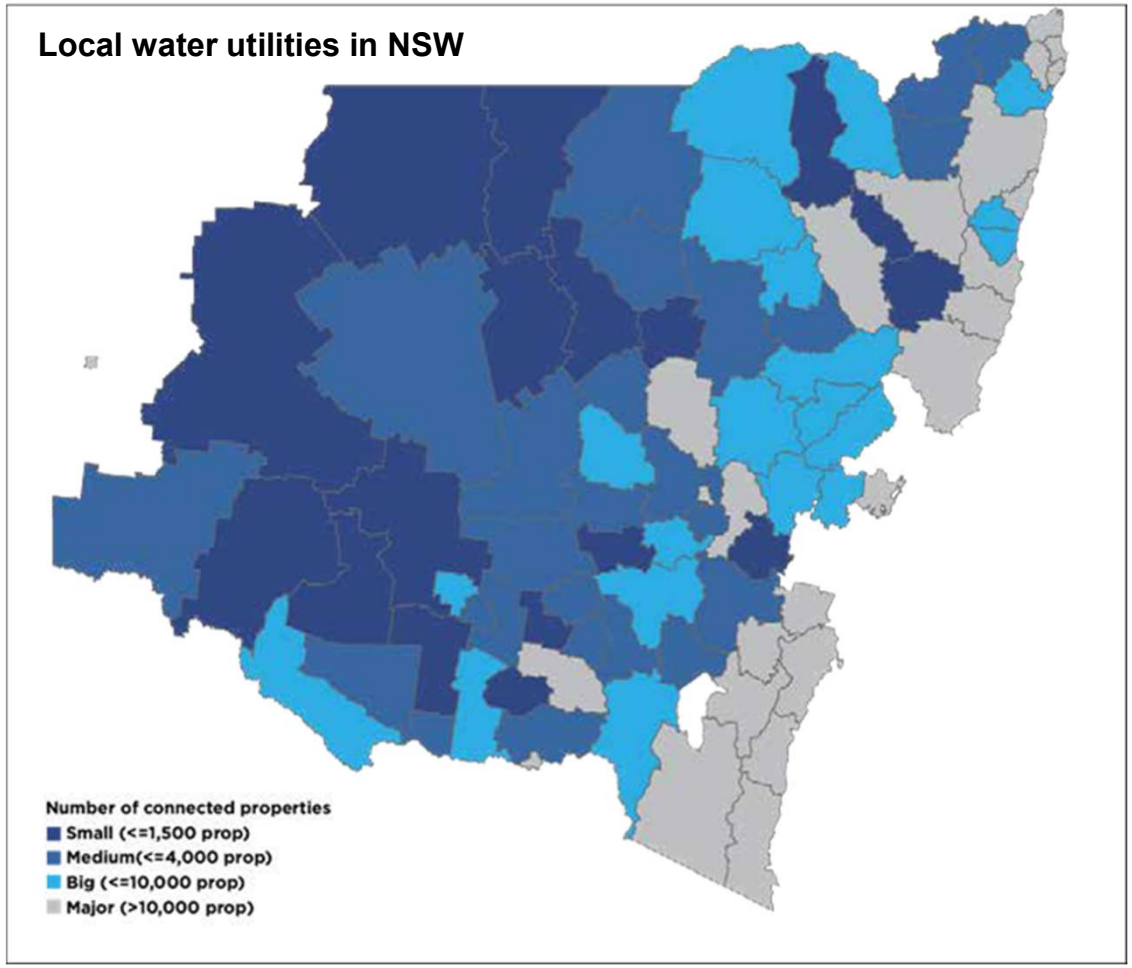
Urban water services in regional NSW

- 92 local water utilities, mainly councils
- How LWUs are regulated and supported
- Government funding history
  - Country Towns Water Supply and Sewerage Program 1994-2017
  - SSWP V1 2017-18
  - SSWP V2 2018 - now



Understanding risk to inform government funding

What did we need to do?

- Work in partnership with co-regulators – NSW Health, EPA, OLG
- Understand and define risk types – Guided by SSWP objective of safe and secure urban water services
- Understand availability of data on risk
- Design risk assessment framework
- Design prioritisation framework
- Undertake and test initial risk assessment
- Prioritise and start committing to co-funding

Hay STP

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Understanding risk to inform government funding

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Drinking Water Quality

Score	Water quality hazard	Examples of risks for each risk score
5	Chlorine sensitive pathogens.	New or additional treatment barrier needed to control pathogens effectively.
5	Chlorine resistant pathogens, such as *cryptosporidium*.	High risk from *cryptosporidium* as assessed by NSW Health.
5	Health related chemical and radiological parameters.	Health related chemical and/or radiological characteristics consistently measured in drinking water above Australian Drinking Water Guidelines value, with no effective barrier available.
5	Cyanobacteria.	Evidence of raw water source experiencing potentially toxic cyanobacteria blooms, with no effective barrier available.
4	Chlorine sensitive pathogens.	Upgrade, repair or replacement of existing treatment barrier needed for effective primary disinfection. Improved process monitoring and control required to effectively manage barriers to pathogen contamination
4	Chlorine resistant pathogens, such as *cryptosporidium*.	Medium-high risk from *cryptosporidium* as assessed by NSW Health.
4	Health related chemical and radiological parameters.	Health related chemical and/or radiological characteristics measured in drinking water above ADWG value due to ineffective operation of a treatment barrier.
4	Cyanobacteria.	Evidence of raw water conditions known to encourage cyanobacteria blooms, with no effective barrier available.

Score	Water quality hazard	Examples of risks for each risk score
3	Chlorine sensitive pathogens.	Poor operation and maintenance of reticulation infrastructure which fails to control risk from chlorine sensitive pathogens. Critical control points and procedures not documented appropriately.
3	Chlorine resistant pathogens, such as *cryptosporidium*.	Medium risk from *cryptosporidium* as assessed by NSW Health.
3	Health related chemical and radiological parameters.	Improvement required for treatment barrier to ensure known chemical and/or radiological characteristics are managed effectively. No evidence of exceeding Australian Drinking Water Guidelines in drinking water.
3	Cyanobacteria.	Improvement required to existing barrier to manage potentially toxic cyanobacteria blooms.
2		No assessed scores of 2 at this time.
1	Chlorine resistant pathogens, such as *cryptosporidium*.	Low risk from *cryptosporidium* as assessed by NSW Health.

Assessment considers the degree of control applied to contamination risks from specific water quality hazards.

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Water Security

- Based on water security deficiency index; i.e. ratio between:
  - Shortfall in a system's secure yield compared to the demand placed on the system, and
  - Demand placed on the system
- Secure yield is the highest annual drinking water demand that can be supplied whilst meeting the "5/10/10" design rule.
  - **5** - Duration of restrictions should not exceed 5% of the time;
  - **10** - Frequency of restrictions should not exceed 10% of years; and
  - **10** - Severity of restrictions should not exceed 10%; i.e., ability to meet 90% of unrestricted water demand during a much worse drought than on record.

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Inherent water security risk score	Water security deficiency index
5	Equal to or greater than 11% (Generally, includes systems with no or small storage compared to consumptive needs and communities that depend on harvesting roof water in rain water tanks)
4	Equal to or greater than 6% and less than 11%
3	Equal to or greater than 1% and less than 6%
2	(Not scored)
1	Less than 1%
0	No data available

Environmental Impacts

Risk Score	Criterion one, regulatory action	Criterion two, performance	Criterion three, load/capacity	Criterion four, condition/age
5	•Pollution reduction program (PRP), effluent quality driven •PRP, asset design, condition or effluent quality driven	•Mismatch of sewage treatment plant (STP) technology and effluent management and wastewater quality deficiency index is greater than or equal to 20%	•Population exceeds capacity by greater than 10% and with high imminent growth prospect •Dry weather overflows	•Pre-1950-built facility or facility with condition rating of 5
4	•PRP, reuse driven •PRP, overflows and by-pass driven (I/I) •PRP, mass and volume limits driven •PRP, biosolids driven	•Opportunistic reuse with possible public contact but not to appropriate standards (AGWR and EPA) •Mismatch of STP technology and effluent management and wastewater quality deficiency index is less than 20%	•Population exceeds capacity by less than 10% and with high medium-term growth prospect •Wet weather overflows with high downstream user risk •Daily flow volume exceeds licence limits with high impact to receiving environment	•1951–1970built facility or facility with condition rating of 4
3	•PRP, odour or noise issues	•Appropriate plant for effluent management (discharge and/or maximised reuse) **but** wastewater quality deficiency index greater than or equal to 20% •Dry or wet load bypasses or overflow in excess of state median	•Population equals capacity and with low medium-term growth prospect •Wet weather overflows with medium downstream user risk •Daily flow volume exceeds licence limits with medium impact to receiving environment	•1971–1990built facility or facility with condition rating of 3
2	•PRP, administrative •PRP, trade waste policy or implementation	•Appropriate plant for effluent management **but** wastewater quality deficiency index less than 20% •Opportunistic reuse with **no** public contact but not to appropriate standards (AGWR and EPA)	•Capacity exceeds population by greater than 10% and with low medium-term growth prospect •Wet weather overflows with low impact to receiving environment •Daily flow volume exceeds licence limits with low downstream user risk	•1991–2010built facility or facility with condition rating of 2
1		•wastewater quality deficiency index of 0% •No known issues with reuse	•No known capacity Issue •No known volume limit exceedance	•Post-2011built facility or facility with condition rating of 1
0	•Insufficient Information	•Insufficient Information	•Insufficient Information	•Insufficient Information

Assessment criteria focus on existing treatment technology and barriers to manage risks

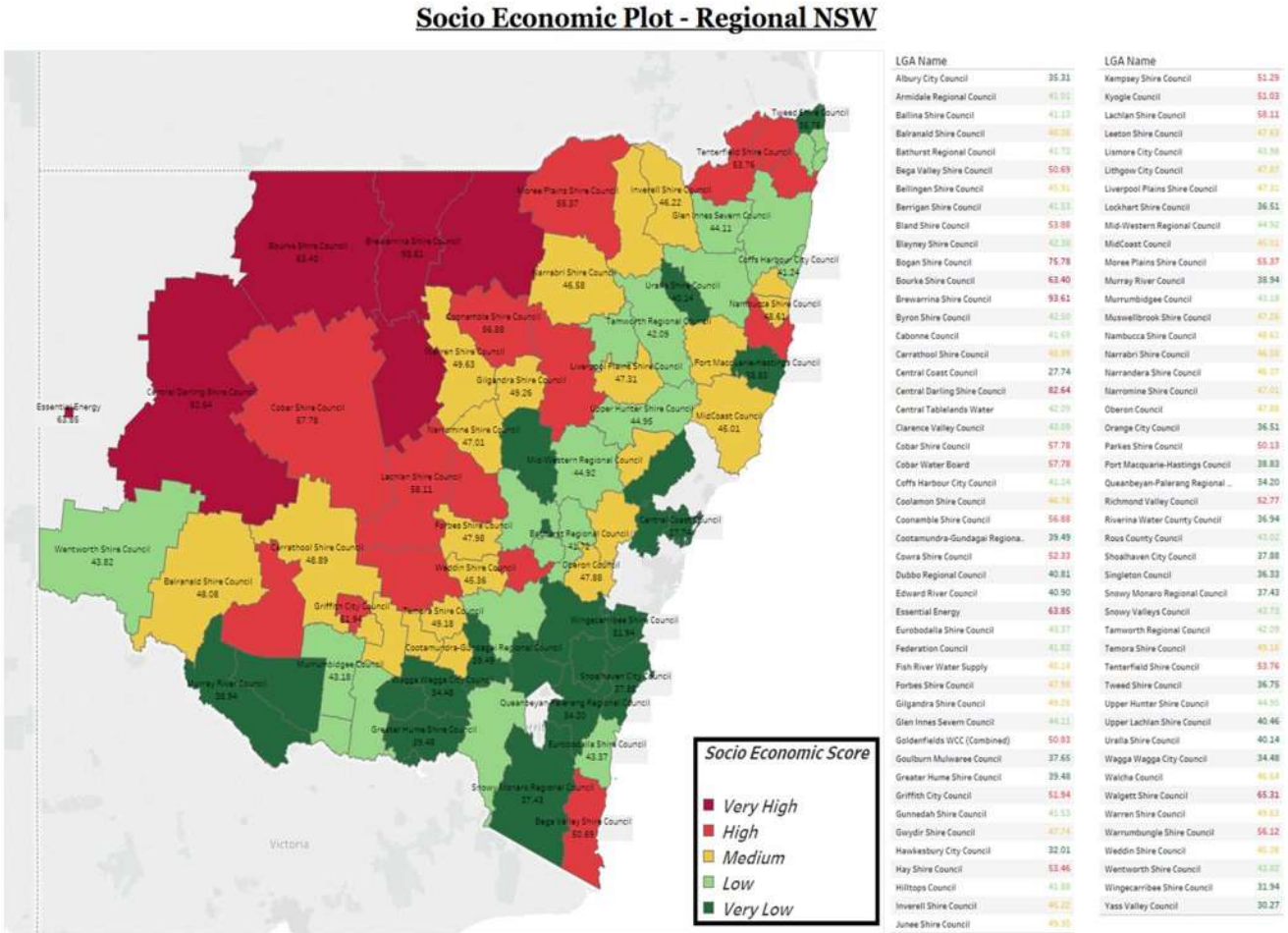
From inherent to overall risk (impact) score

- Including risk consequence (population affected)
- Inherent risk for water security and environmental impact moderated by population to arrive at overall risk impact score
- Not for drinking water quality risk (ADWG do not accommodate a lower level of service for smaller populations)

Water security		Inherent risk score				
		5	4	3	1	
Population	>1000	5	4	3	1	Overall risk impact score
	>500-1000	4	4	3	1	
	>200-500	3	3	2	1	
	>100-200	2	2	2	1	
	≤100	1	1	1	1	

Prioritisation

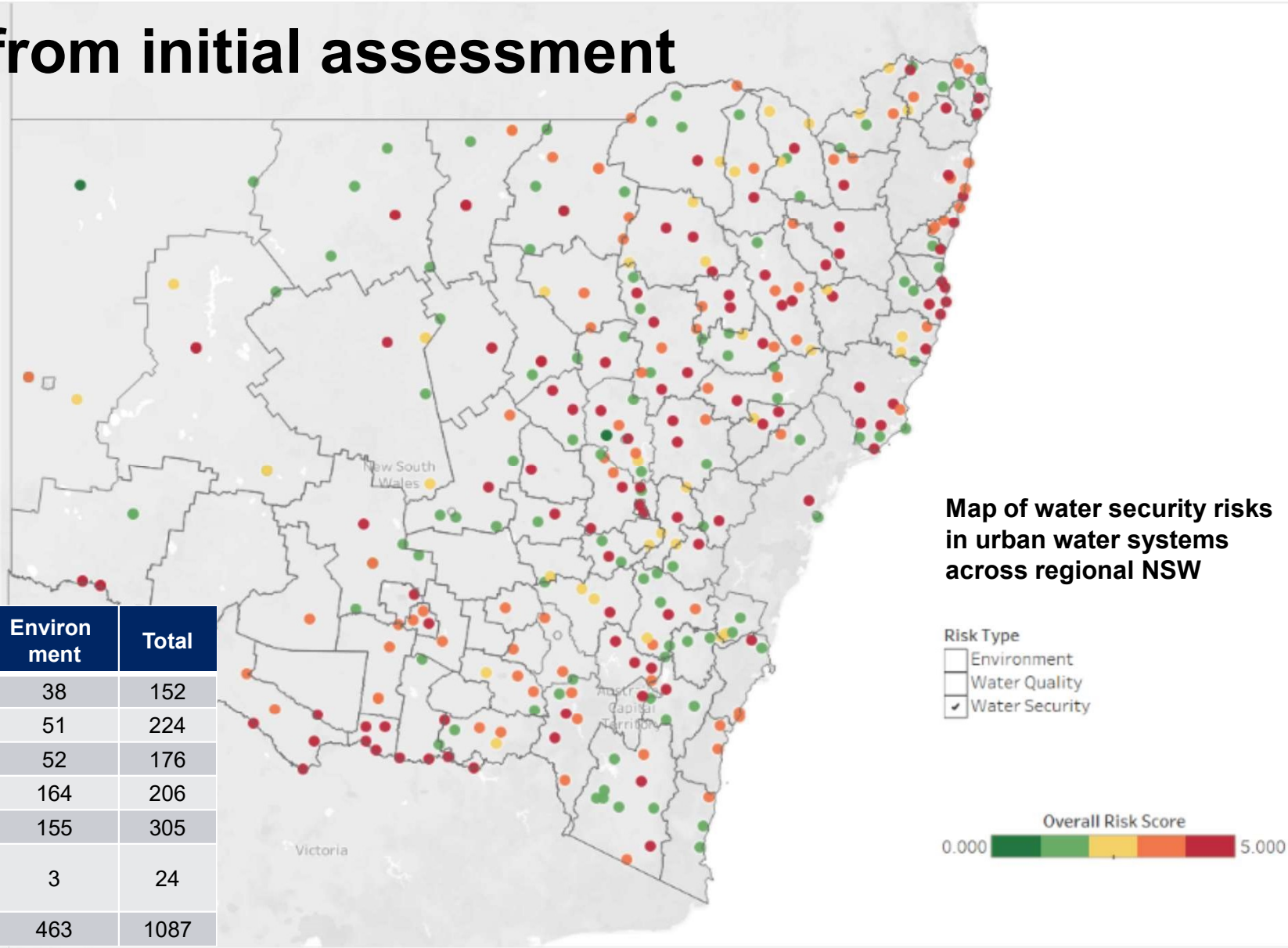
- Prioritisation is based on the overall risk (impact) score
- Additional prioritisation is based on socio economic considerations
  - a community's capacity to pay
  - LWU's service cost disadvantages



Outcomes from initial assessment

- Tested with LWUs
- Widespread risks to drinking water quality, water security and from environ-mental impact of wastewater service

Risk score	Water security	Water quality	Environ ment	Total
5	59	55	38	152
4	48	125	51	224
3	86	38	52	176
2	42		164	206
1	107	43	155	305
No data	5	16	3	24
Total	347	277	463	1087



Map of water security risks in urban water systems across regional NSW

Issues raised

- Water security – Including water reliability risk associated with raw water quality event?
- Population moderation – What about small communities?
- Risk prioritisation does not necessarily line up with LWU priorities
- Need to address underlying, contributing causes of service risks

Funding under SSWP V2

Nyngan offstream storage

- Tranche 1 co-funding committed - In discussions with LWUs on projects and funding details.

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Beyond prioritising funding – Next steps

- Strengthen risk-based and proportionate approach to regulatory oversight and support
- State-wide management of risks during dry and wet weather periods
- Enhance collaboration - connecting LWUs that are faced with, or have controlled, similar risks
- Town Water Risk Reduction Program to address fundamental barriers to effective risk management in sector

Parkes WTP

Acknowledgement

The success of the redesigned SSWP is due to the collaborative efforts of DPIE Water, NSW Health, EPA and OLG, their technical experts, as well as the dedicated staff of the SSWP Project Management Office.

Tamworth Calala Storage

Questions

Parkes WTP

Sascha Moege

Nicholas Sutton

sascha.moege@dpie.nsw.gov.au

nicholas.sutton@dpie.nsw.gov.au

Department of Planning, Industry and Environment