

Integrated Research Project (IRP5)

Knowledge based water sensitive city solution for groundwater impacted developments

6th April 2017 Workshop synthesis notes

Overarching Principle: *Challenging business-as-usual*

It is critical to challenge *business-as-usual* development in high groundwater environments. This challenge must be evidence-based and take a whole-of-project approach – considering different urban form and planning, alternative development construction types, innovative governance arrangements, catchment-scale environmental outcomes, plus overall social and economic benefits of the solutions being considered.

Exploring and evolving such new directions and paradigms is a key role for the CRCWSC and the activities in IRP5 should further support this objective.

Key Needs:

- **Collection, collation and analysis of information**
 - Access to coherent and high quality monitoring data, including sound design and methodology for field monitoring activities (eg. to be done by developers prior to/during land development); efficient data collation and effective access for ongoing assessment and research purposes.
 - Water balances validated by field data, to reduce uncertainties embedded/implicit in urban water models.
 - Performance of WSUD elements (e.g. wetlands, bioretention basins, living streams) for water quantity and quality management, under different biogeographical and hydrogeological settings. Short term (daily/seasonal) and long term (years/decades) performance to be assessed.
- **Improved understanding of:**
 - How changes in housing density impact groundwater levels, urban water balance and appropriate WSUD solutions (related to IRP4).
 - How climate change will impact urban water balance, specifically groundwater interactions.
 - How to 'do' managed aquifer recharge (MAR), encompassing alternative sources, inputs, optimal location, storage and regulatory frameworks.
 - Valuation of high groundwater, encompassing assessment of both benefits and costs of high groundwater (related to IRP2).
 - Why development in high groundwater areas has failed in the past – 'Learning from failure' of similar or related situations (eg Wungong, Murray Darling Basin, dryland salinity, coal seam gas).

Key Outputs:

- **Database**
 - Developer's monitoring data required to be submitted to Water Information Reporting (WIR) in WA, or similar repository in other states.
 - List of tangible and intangible values related to high groundwater
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- **Decision Support Systems / tools**
 - Decision support tool for urban planning in high groundwater environments. Eg UNDO but much broader than current focus on nutrients.
 - Decision support tool for design of WSUD elements in high groundwater environments.
- **Regulation and Guidelines**
 - Guidelines for setting management objectives in high groundwater environments
 - Best practice design and maintenance guidelines for WSUD elements in groundwater constrained environments.
 - Regulatory frameworks, standards and guidelines for treatment of water for MAR
 - Regimes for water trading of all water types
 - Guidance on Quality Assurance (QA) and Quality control (QC)

DRAFT Summary

Possible/nominated Case studies

State	Project	Contacts
VIC	South East Growth Corridor including the Officer township and Gum Scrub Creek Rehabilitation: Issues include development of a former swamp, high salinity and potential impacts on vegetation and infrastructure.	Ross Allen CRCWSC
	Lower Mornington Peninsular: issues from contamination of groundwater from septic systems and the high cost of management	Andrew Chapman or as assigned by Victorian RAP
SA	LeFevre Peninsular: issues include legacy contamination and high salinity creating challenges for WSUD	Steve Gatti,
	Tonsley: issues include legacy contamination and design of WSUD	Steve Gatti
	Backland Park: – issues from the development of mangroves in an estuarine environment	Steve Gatti
WA	Brabham: development in high groundwater area, MAR, alternative water sources, WSUD element design and performance, water balances	John Savell
	Morley Centre Development: issues related to an infill development	Peter Adkins
	Anvil Way Wetland: high nutrient levels and groundwater interactions in a constructed wetland. Excellent historical dataset, Tranche 1 field site, monitoring should continue.	Peter Adkins
	The Glades, Byford: existing development in high groundwater areas, WSUD element performance assessment. Tranche 1 field site	Peter Adkins
	Redcliffe: potential Landcorp project near Ascott located in the flood plain	Greg Ryan
NSW	Warriewood Wetlands Northern Beaches: issues driven by the fill of coastal lagoons, often with ship ballast, creating contamination issues and challenges with development	Nathan Evans
QLD	Hoyland Street Bio-retention system and other sandy sites in SEQ: issues related to design of infiltration basins	Tony McAlister