CRC for Water Sensitive Cities

COMBINED OPPORTUNITIES AND 'IDEAS'

Greater Sydney, NSW	Greater Melbourne, Vic	South East Queensland, Qld	Greater Metro Perth, WA	Greater Adelaide, SA
The Greater Sydney Commission • Making water sensitive cities integral to Commission's policies and standards.	WSC indicators • Understanding WSC indicators for setting & monitoring targets (most efficient way to collect & analyse data – water quality/vegetation cover/liveability for Water Plan/SEPP • Review enable prioritisation and investments	Major growth areas in early stage (50,000 - 100,000) • Greater Flagstone • Yarrabilba • Ripley Valley • Caloundra South • Thagoona	Implementation of Project A4.2 transition plan / Continuation of 'Visioning' Work • Embed vision in key stakeholders' policy & planning, including Department of Health, Water Corporation, Department of Planning, Department of Water, etc. • Provides a clear objective to drive progress towards WSC • Overarching mission & strengthening incentives	ACC Green Streets Program – Adelaide City Council: • Integrating Green infrastructures approaches to public realm improvements
New growth strategies to include WSUD principles Local Government amalgamations • Streamline conversations, policy & efficiencies, consistency	Sunbury Growth Area: • Growth Strategy • Waterway mgt. alternative water options e.g. Stormwater to potable • landscape challenges infrastructure challenges microclimate • community acceptance of alternative water institutional to governance arrangements •	A water sensitive SEQ - Visioning exercise • A "Giant" synthesis project • Not a scare tactic, a study which hopefully identifies new opportunities • Targeted and focused = "world first" study • 5-6 key players, wider input at key stages	Strategic Assessment Perth Peel @ 3.5 million - Structure Planning Stage • Comprehensive linking of planning to water in landscape & water quality. Drives infill and new development for 20-30 years	Re-assessment of alternative water use / role due to changing climate – How does it fit: • Fit for purpose from multiple sources • Looking at all water needs • Now traditional water use (eg. For UHI mitigation)
Department of Planning e-planning process New stormwater harvesting regulations • soon to go out to consultation + WICA Urban growth (previously Landcom) projects	Sunbury development case study stormwater to potable: • Investment framework based on beneficiaries has been undertaken stakeholder • Needs to support to get organisations to invest. CRC to identify the barriers and address • Policy issues -> lack of support for stormwater to potable • MW not investing based on waterway protection • Decisions falling back to financial analysis – western water to fund to deliver • Case study is ready to go. All the back ground analysis (costing, benefits, proportional investment models etc.) has been complete • Outcomes could help inform progress the many IWMS that et stuck at a similar point. • This project/case study could also be used to quantify benefits to UHI – thermal comfort • Portfolios included / active envisioning scenarios etc. Link to climatology models a economics (still to do)	30 Year Water Plan - embed WSC ideas • Influence implementation plans • Independent water utilities- how to manage/ regulate • Opportunity to engage with government again and identify the next Ripley project Develop testing / evaluation protocol for stormwater harvesting / treatment devices. Including costs and maintenance over long term. Testing contextualising alternative technologies Build a sub-tropical knowledge base for export: • Building capacity for SEQ centre delivery through a knowledge economy	River Protection Strategy - Opportunities in water portfolio (drainage governance) • Drains are multiple-owned and lacking clear governance City of Canning – Town Centre Redesign/Development into a WSC & Liveable Community: • City centre redevelopment Western Suburbs Aquifer Recharge Project • Aquifer levels in the area are falling with emerging salinity issues. • MAR has the possibility to protect aquifers, provide water for receiving environments, water for recreation (under threat).	Adelaide Airport UHi Reduction project and Adelaide park lands UHi Project to cool city: • Irrigating open space for cooling using alternative water • Airport Benefits o Less energy in cooling towers o Lower bird risk o Better lift off for planes o Use if under-utilised alternatives H2O o Possible revenue from growing crops. • Parklands o Cooler city o Energy reductions building
Cooks River Alliance • "RiverwiseHomes" (+ businesses) The river starts on your roof…all the ways to slow stormwater and clean it up before it goes to the river or the sea Green Square	Integrated Water Management Planning (IWMP) within growth area • Sunbury IWMP -> Op and maintenance responsibility -> invest / funding / incentives -> policy formulation -> regulator guidance -> community engagement -> system optimisation • Melton IWMP -> Toolen Stormwater Harvesting-> water health -> investment frameworks & funding • Commitment from project control groups	Joining the dots: – SEQ water for life – Flood study Brisbane River – SEQ regional plan – IWCM – Resilient rivers – Drought planning • translate to sub catchments (URBAN) • Local waterways / overland flow • urban resilience "water in the landscape" • different IWCM outcomes • multiple infrastructure outcomes	Groundwater Restoration Campaign (Western Suburbs) - Future Proofing non-potable water supply • Multi-part project • Local groundwater model o Data collection, Levels, Quality • Replenishment options o Potable MAR o Non-potable MAR (pre-feasibility) o Direct pipe, store, irrigate o Stormwater infiltration o Water optimisation • CBA • Water allocation policy	City of Unley Leeder Street upgrade: • State Plan / policy • Links to new Bill • Giving storwater WM authority a stronger role in implementation • Takes a whole of water cycle view

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Water Industry Competition Act (WICA) • protect and enhance	Stoney Creek - Greening the West Strategy / transformation project • Stream naturalization / natural channel design • Business case for greening	Queens Wharf Redevelopment and/or South Bank Precinct: • Major inner city redevelopment (> 12 football fields or redevelopment and enhanced public realm) • Promote economic development, increase tourism • Bridge to South Bank (potential opportunity here too)	Traditional drainage design vs. living streams - cost benefit analysis • Living Stream Guidelines • Role of submerged aquatic plants in constructed wetlands o Dissolved oxygen o WQ o Habitat	Developing a framework to evaluate WSUD proposals (to be strategic) NRM Boards: • Scoping the questions at this stage so NRM board can double its investment in WSUD need a process to clearly & transparently and strategically allocate projects for delivery ie. Selections criteria on why and where? • Include raingardens 500 program
Badgery's Creek and new airport	Water sensitive cities & housing affordability: • Don't want to compromise affordability by imposing high cost WSUD requirements • Want to develop least cost models for providing good outcomes • Expert review group to assist planning authorities with WSC decisions that are tricky • Developer engagement • Guidance on standards, outcomes based • WSUD trade-offs – brownie point system?	Norman Creek Masterplan: An adopted masterplan at concept design stage SEQ Regional plan and linkage to SEQ natural resource management plan Kurilpa Precinct – Redevelopment opportunities & constraints: • "Micro"-scale social and planning assessments • social and planning evaluation	Wanju District Structure Plan: • Major greenfield expansion, 1,400 ha; 70,000 people by 2050 • Local/regional • Department of Planning/Water & Local Government support for full WSUD inclusion Muchea Employment Node • Floodplain information • Long-term sub-urban development	Tree net program: • City of Mitchem • Evaluate benefit of tree net - Harvest SW from local catchment for trees • Opportunity for peer: Peer Learning
Farra upgrade	SEPP Review (WOFU)	Create a vision for a water sensitive SEQ as a brand to support 2028 Olympic bid - A vision or 'brand' for SEQ	Batavia Coast Marina (ongoing) – Railway land Redevelopment	Leader Street: • Conversion to a tree lined boulevard • Evidence based (how to be more….) • Links to O&M lessons
Waverley precinct Accreditation - Engineers Australia / AWA Minister for planning (Stokes) – new District Plans	Environmental benefits of reducing sewer overflows vs overall catchment IWQ improvements (also backlog areas risk based approach) • Catchment based approach • YUW – Merri Creek Study (waterway invest prioritisation project WIP) • Backlog park orchards • Sewers overflow infrequently mainly during heaving rain • Sewer upgrades very costly. (1m+) • Need to look at better ways to spend (Compare: stormwater; agriculture; diffuse points) • Community resources to improve stream quality • Assessing all pollution sources -> best $ for environment	Caloundra South (Aura) • A town of 50,000 people south of Caloundra, to be created by Stockland. Stockland are committed to best practice (6 star rated) including water cycle management and community development Off-setting stormwater quality • Monitoring + assessment of existing + ongoing schemes • Understanding legal Industrial development: • Demonstrate alternative stormwater harvesting/treatment system (in tropics)	Better understand interaction of groundwater and surface water (current project). Opportunity to extend this project to include interaction with water/soil/air/transportation of nutrients. • Input to the strategic assessment to Perth/Peel • Royalties for Region • Perth & Peel @ 3.5 million	Greater Edinborough parks: • Brain field development • Tens of ha. • Needs a better water Solution • State and local government interest
Research Synthesis Project • Central to everon • Bays precinct • Leverage CRC knowledge to change • To show case the practise in live project, create driver and scope and planning controls to make it happen.	A water plan guided by WSC index tool: • Know where our organization sit on the index and use CRCWSC research to guide approach in moving forward • Clear vision case studies of applying research	Investigate benefits and cost of mandatory rainwater tank requirements in SEQ (and subsequent removal) • Use as e.g. to strengthen business case UQ – Living Laboratory - Master plan of UQ growth Flood study in SEQ would benefit greatly from the implementation/ synthesis work of the CRC. Unless there is another flood soon, it will become another shelf document	White Gum Valley (WGV) – Demonstration of water sensitive infill housing • 2 ha infill residential development • Mixed dwelling typology • Community bore • Smart metering • Rainwater tanks • Currently under construction • Identified by Water Corp as a Waterwise Exemplar • Sustainability goals (various; strong water sensitive elements)	Paynharn Street Peter -> Mixed use -> furniture showroom -> Residential | Green Walk: • Green Wall -> Trees planted in ground growth over lattice (atlantics growth walls) Q – What is the cooling benefits to building? Q – What is the microclimate benefits
100 Resilient Cities (Rockefeller) • Platform for city resiliency changes • Global 3rd party • Opportunity to set vision • CRCWSC get involved on resilience strategy	Case studies for achieving WSC in private realm (brown fill various developers): • Work with UDIA, PIA, developers local government, state agencies to work out how we can get good outcome in private realm. • Encouraging developers to think beyond their own building site - Arden Macauly	Brisbane City Council's water strategy, consider March 2016 elections Ripley Valley – demonstration of ideas – technologies, planning and governance	Swan Valley Development Area • Groundwater as resource • Irrigation technology to minimise groundwater extraction • Prevent acidification • Pollution & acidification mitigation • Remediation part of development • Stage: plan out for public consultation	Leverage exists heat island projects to demonstrate impact of infill scenario on – urban heat: • Build on CRCWSC hear vulnerability study -> baseline
	Flood Management Prioritisation framework & tools:	Local Government Infrastructure planning act	New WAter Ways - capacity building across all stakeholders	

• Committee for Sydney (Lucy Turnbull)	• A series of decision making tools to prioritise / support better decision making / investment / risk management		& National network: • Ensuring that there are champions of Water Sensitive Design in all organisations	
	Urban consolidation and flooding mitigation: • Increasing impermanence of surface	Healthy Waterways Partnership: • Link the WSC index to the living waterways HWP framework	Participate in design policy review (R codes & urban design State Planning Policy (SPP)) • R codes review planned • Urban design SPP currently happening	
	Utility distributed sterays to achieve flood mitigation outcomes and IWM outcomes: • Influence the way we address flood management from an IWM outcome – Urban • Regional patterns to place based outcomes • Stakeholder and local government capacity building What are the multiple benefits of distributed sterays fan an IWM perspective?	Third party providers: operation and management models, reduced perceived risk Leap frog opportunity as population increases and becomes more dense in regional cities – opportunity to demonstrate decentralised systems	Resources to monitor Urban Waterways Renewal Program • 11 WSUD sites in Canning River System built in 2013 • opportunity to observe recovery from degradation, aka drain → living stream • Living stream, biofilter and other WSUD elements	
	Catchment based approach to water and likeability : • Strategic view of sub-catchment water issues • Retrofits and range of solutions possible • Governance / institutional structures -> facilitating • Use a growth area as a case study for introducing all water in the portable system • Use Donnybrook Woodstock or another grown area IWM case study (difference IWM) options to come up with economic value water contributes to UHI mitigations Assessment of how "relevant" to UHI in outer – is there still bang for buck	Brisbane uniqueness – key messaging • value of water • river system • strong awareness by the community in water use Great Barrier Reef	Partnerships with developers: • Visuals, examples of WSUD • Opportunity to develop demonstration sites or lessons from existing development site (e.g. North Forrestdale), greenfield & infill examples Broome Non-potable supply for Public Open Space (POS): • Shortage of non-potable water for POS irrigation • Needs analysis of various options, e.g. rainwater, groundwater, recycled water	
	On-ground testing of distributed storages (eg. Tanks) as flood mitigation structures (WQ by-product) (water conservation by PROD): • Use a catchment that has been shown (by modelling) to respond to storages/tanks • Melbourne Water + DELWP project using tanks retrofit to solve for flood mitigation within private land areas. • WQ + conservation by products, test the 'talking tanks' tech /info for customers Will tease out the implementation issues associated with IWM measure such as tanks , and can test different governance options, ie. for management over longer term	•	Community Behaviour change for WSC Communities – "Switch Your Community" • Build on existing Switch Your Thinking Program • Identify barriers (e.g. terminology) & benefits (e.g. increase value of properties) to change to a WSC on a small demonstration project • Develop & implement project to decrease barriers & increase benefits incentives • Expand & continuously improve project over time, e.g. Bennett Springs project (Department of Parks and Wildlife) • Community based social marketing	
	Support to update 'STORM' tool: • A tool that is already influencing dollars spent on infrastructure • A simplified version of MUSIC for planning development • It is existing tool that hasn't been updated for years • Councils are currently using it to evaluate water component of development as part of sustainable design		Water efficiency improvement on the Gnangara Mound • peri-urban horticulture, Local Government, POS • Modelling of alternative water management practices fro peri-urban horticulture in the northern regions of Perth	
	Arden Macaulay – Flood & climate change • Policy for funding drainage costs in urban renewal areas		Building understanding and matrix around how water moves in urban landscape and the risks it poses for the aquifer. • Assess the various technologies to reduce the risk of contamination.	

	Sewer energy recovery: • Explore business models that could be used to recover energy from sewers in an industrial setting		East Perth Development (Powerhouse) • An example of riverside infill development project – mixed use • Integration of river environment & built environment: • Developer has had EOI accepted based on biophilic design & sustainable initiatives • Now at tender stage & looking for a partner • Situated on the river & incorporates old powerhouse building • Mixed used • A precedent/case study of major infill project on river	
	Clayton Business Park: • Business park (early planning stage) • 14,000 people, 32HA, 7000 dwellings • Environmental contribution levy review • Clayton Business Park -> goodman developers 40.000 dwellings Kingston council is involved! 2nd largest Green spine – multi-party -> governance -> buy into vision		Busselton Drainage Reform - Trial drainage upgrade via Busselton Water	
	Troups Pilot Plant: • Test and trial treatment technology and wetland improvements and validation		Stormwater harvesting with salinity management • Location: Merriden • Reverse osmosis	
	Troups Creek Stormwater harvesting (Narree Warren): • Improved treatment (Low cost) Legislation /		Kwinana Rural Drain Upgrade - Vesting change from Water Corporation to Kwinana	
	Fishermans Bend: • Implementation at operational level			
	Casey Clyde : • Dual pipes • Planning stage • Legislation and regulation			
	Brooklyn industrials precinct: • Quantify benefits of IWCM (dust suppression GI etc.) in Brooklyn industrial prescient			
	Smart Tank Control Algorithm: • To optimize storage use for flood detention and water supply • Weather feed to know when to purge for and storm or not			
	Modelling practitioners panel: • Trial assess and prove value of models knowledge transfer			