River basin health and water quality – an adaptive management approach

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MEMBERS









THE UNIVERSITY OF WESTERN AUSTRALIA

Acknowledgements

- Associate Professor Eva Abal, Healthy Waterways and IWC
- Ms Fiona Chandler, IWC
- Mr Mark Pascoe, IWC



Outline



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Key drivers for change

- Fast growing population
- Security of water supply (quantity and quality)
- Concerns about industry viability - tourism, fishing and agriculture.
- Increasing community expectations about improving water quality and ecosystem health

Recognition - cheaper to protect than to restore ...



Need to balance activities in the river basin with uses/values





aquaculture



fishing



boating



grazing





drinking water



People value their rivers & waterways

Environmental Values

- Are qualities of water that support aquatic ecosystems and human water uses
- Protected from the effects of pollution by setting water quality objectives





- 1. ecosystem
- 2. human consumers
- 3. primary recreation (e.g. swimming)
- 4. secondary recreation (e.g. boating)
- 5. visual recreation
- 6. cultural heritage
- 7. industrial use
- 8. aquaculture
- 9. drinking water supply
- 10. irrigation
- 11. stock watering







Underlying Principle: Integrated Catchment and Whole-of-Water Cycle Approach





Challenges for South East Queensland

increase in population to 1 million by 2026



Challenges for our waterways

Nutrients resulting in increasing incidence of coastal algal blooms

 E.g. Blooms of Lyngbya majuscula (cyanobacteria) causing human and ecosystem health problems
Smothering of seagrass



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Investments in point source management have led to ecosystem benefits ...



Manifesting improvements in some parts of Moreton Bay Significant decrease in sewage derived nitrogen in Moreton Bay





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Linking water supply to ecosystem health of waterways



Manifesting improvements in some parts of Moreton Bay, but...





Significant decrease in sewage derived nitrogen in Moreton Bay



Manifesting improvements in some parts of Moreton Bay, but...a wake up call in 2009



Challenges for South East Queensland increasing diffuse urban loads



Challenges for South East Queensland increasing diffuse urban loads



Reducing diffuse urban loads through Water Sensitive Design



Proposed future supply
Partial supply
Crinking water supply
Wastewater/stormwater
Recycled water

Challenges for South East Queensland: - Diffuse Rural loads (legacy issues)



Challenges for our waterways

Fine-grained Sediments

enter our waterways,

are deposited

& resuspended,

killing seagrass



Suspended sediment concentration (mg/L) Red > 100 mg/L

Sediment mud content (%) , Red > 90%

Secchi depth (m) Pink/red < 1 m

Seagrass area (green) and loss (red)

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What happens in a "do-nothing" scenario?



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Turbidity in Moreton Bay (annual median concentrations)

Where do the sediments come from?

Modelling suggests 70% sediment in Bay comes from <30% catchment area



Tracer study confirms that most sediment comes from soils on Marburg formation rocks



50% of the 48,000 km streams in SEQ has poor riparian condition





Reducing non-urban diffuse loads:





A Partnership Approach: The Healthy Waterways Partnership

- Special collaboration between government, industry, researchers and community
- Working towards understanding, planning for and managing the use of waterways and catchments in South East Queensland (SEQ)
- Includes 5 Queensland (State) government agencies, all 11 local governments in the region, 4 universities, 30 major industries and 38 catchment, landcare, environment and community groups



A common vision: HWW vision Our waterways and catchments will, by 2026, be a healthy ecosystem supporting the livelihoods and lifestyles of residents and visitors and will be managed through collaboration between community, government and industry.

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Science plays a critical role in the Partnership



Local Government and State Agency Technical Support

All SEQ local governments and State agencies, including EPA, DNR&M, DPI&F, DSD, Qld Transport, Maritime Safety Qld, QPWS and Sport & Recreation Qld, provide policy direction and technical support on the following areas:

- Water Quality / Ecological Health
- Catchments and Flows
- Water Supply Planning
- Extractive Industry
- Natural Resource Management
- Environmental Planning
- Marine and River Transport
- Waterways Recreation
- Cultural Heritage and Noise
- Moreton Bay



A framework for Action:



 <u>500</u> Physical & Enabling Actions

Physical Actions

- Wastewater reuse
- Water Sensitive Urban Design
- Riparian Restoration
- Protection of High
 - Ecological Value areas
- Enabling Actions
 - Research
 - Monitoring
 - Communication,

Education & Motivation



Tracking the achievement of targets: **Ecosystem Health Monitoring Program**



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Communicating annual monitoring results to the people who make a difference: Report Cards (A-F)

Grades - what do they mean?

Ecosystem Health Report Card Grades ('A' to 'F') are generated for 19 catchments and 18 estuaries in South East Queensland and Moreton Bay. Parameters for freshwater, estuarine and marine ecosystems are assessed against guidelines resulting in the determination of a single grade for each system.

A

Excellent: Conditions meet all set ecosystem health values; all key processes are functional and all critical habitats are in near pristine condition.

B

Good: Conditions meet all set ecosystem health values in most of the reporting region; most key processes are functional and most critical habitats are intact.



Fair: Conditions meet some of the set ecosystem health values in most of the reporting region; some key processes are functional and some critical habitats are impacted.



Poor: Conditions are unlikely to meet set ecosystem health values in most of the reporting region; many key processes are not functional and many critical habitats are impacted.

Fail: Conditions do not meet set ecosystem health values; most key processes are not functional and most critical habitats are severely impacted.





Report Card 2008

Why produce a report card?

- Enable large and often complex amounts of information to be communicated to a broad audience
- Provide a framework for monitoring and communication activities
- Can provide accountability; measuring the success of a particular effort
- Identify regions or issues of concern
- And others...





Presented to the public by politicians & scientists...

Lord Mayor of Brisbane and Chair of the Scientific Expert Panel



Environmental condition linked to achieving the environmental values



Summary



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Thank you

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Water Leadership for the Future

