The contribution of improved water information to the management of water resources in Queensland

Water Information Industry Seminar
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Greg Claydon
Executive Director
Strategic Water Initiatives
Presentation

1. Provide an overview of water resources management framework and activities in Queensland (needs for and use of data/information)

2. Provide an overview of current and future water related monitoring, data/information collection/collation and reporting activities

3. Introduce some challenges
Queensland’s surface water distribution
- GAB is the largest known artesian basin in the world
- covers an area of more than 1.7 million sq km
- stores an estimated 8.7 billion ML of water
- has a maximum depth of 3 km
- underlies more than 1.1 million sq km in Queensland or 65% of the State
- It is the sole source of water for stock and domestic use in many western areas.
Recent rainfall & trends.

Rainfall relative to Historical Records
March 2002 to February 2007
Queensland’s Water Account Summary (2004-05)

- 7,964 GL was extracted from the environment
- 4,361 GL was actually consumed
  - agriculture industry - 67%
  - households - 11%
  - water supply and sewerage services industry - 10%
  - manufacturing, mining, electricity/gas and other industries - 12%
- 76% of use was from surface water, with the remaining being groundwater
- 45 GL of reuse water
  - parks/sporting fields - 15 GL
  - agriculture industry - 10 GL
- 168 permanent trades – 20 GL
- 1,874 temporary trades – 194 GL
Queensland Water Act 2000 – Chapter 2, Part 3, Division 1 s35(b)

“the chief executive must provide information for planning purposes by –

(i) regularly measuring and keeping publicly available records of the volume and quality of water in Queensland; and

(ii) collecting information on the water requirements of, and impacts of water management on, natural ecosystems, including, for example, from the department responsible for administering the *Environmental Protection Act 1994*; and

(iii) collecting information about future water requirements;”
Queensland Water Plan 2005-2010

An integrated package of 7 strategies:
- Securing water for the environment and for users
- Planning for future water needs
- Smarter use of existing supplies
- Pricing water for sustainability
- Protecting water quality
- Compliance to protect users and the environment
- Investing in science and technology
A resources operations plan is not required for Cooper Creek.
Technical reports

- Hydrology (IQQM)
- Social and Economic
- Groundwater
- Overland Flow
- Environmental Condition Assessment
- Traditional Owners
- Annual WRP Reports
Regional water supply planning
South East Queensland Water Grid (Regional)
Regional NRM Arrangements
– Regional NRM Bodies

- To improve the state-wide delivery of regional outcomes in partnership with all stakeholders including industry, community, research and development organisations and government, and
- To act as a leadership body through the promotion of a long-term holistic approach to natural resource management.
- 421 bores were established under NAPSWQ to monitor ground water and salinity levels
Aquatic Ecosystem Framework

- Healthy Waterways
- SEQ Report Card
- Landscape Monitoring System
- Reef Plan
  - Marine Monitoring I4
- Reef Plan
  - Loads Monitoring I5
- Reef Plan
  - Catchment Monitoring I6 (NRM)
- SRA
  - MDBC Reporting
- WRP/ROP
  - Monitoring
- State
  - Stream & Estuary Assessment Program
Flood and Climate Forecasting (BOM)

Rain and River Data and Conditions

Queensland Flood Warning Centre

Warnings current:
- Coastal Wind Warning
- Fire Weather Warning
- Severe Thunderstorm Warning - Southeast Queensland
- Severe Thunderstorm Warning - Queensland

Display on Map:
- River Conditions
- 24 Hour Rainfall
- Since Rain Rainfalls
- Last 1 Hour Rainfalls

Zoom in to:
- Cairns to Townsville
- Townsville to Mackay
- Mackay to Maryborough
- Maryborough to Gold Coast
- South West Border Rivers
- Gulf and Peninsula

Zoom out to:
- Australia

Latest Products:
- Flood Warning Summary
- Flood Warnings
- Rain and River Data
- Radar
- Forecast Rainfall

Flood Information:
- About Qld Flood Warning
- River Brochures, Maps
- River Photos
- Flood Gauge Information
- Old Flood History
- Other Links
- Give feedback
Water Infrastructure Operation
Real Time Water Resource Management
Dam Operations & Maintenance

On 30 June 2011, SeqWater completed a five-year contract for the operation and maintenance of the three dams following a competitive tendering process. SeqWater was successful in its bid for a new contract for an eight-year period, commencing on 1 July 2011. The philosophy of the contractual arrangement is one of partnering – working together to achieve desired outcomes – whilst providing SeqWater with a system that allows for ‘hands-on’ management of our dam assets.

The contract comprises five main activities:
- Routine operation and maintenance
- Planned maintenance
- Unplanned maintenance
- Flood planning
- Flood operations

### Water Storage Status Table as at 12/10/07

<table>
<thead>
<tr>
<th>Item</th>
<th>Wivenhoe</th>
<th>Somerset</th>
<th>North Pine</th>
<th>SEQWater Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Supply Level (m)</td>
<td>87.00</td>
<td>99.08</td>
<td>39.63</td>
<td></td>
</tr>
<tr>
<td>Storage Volume (FSL) (ML)</td>
<td>1,265,240</td>
<td>379,850</td>
<td>216,960</td>
<td>1,760,050</td>
</tr>
<tr>
<td>Lake Level (m)</td>
<td>81.60</td>
<td>93.78</td>
<td>26.30</td>
<td></td>
</tr>
<tr>
<td>Volume Stored (ML)</td>
<td>182,867</td>
<td>195,671</td>
<td>31,676</td>
<td>370,214</td>
</tr>
<tr>
<td>Percentage in Storage</td>
<td>15.65%</td>
<td>40.98%</td>
<td>14.74%</td>
<td>21.03%</td>
</tr>
<tr>
<td>Change since yesterday</td>
<td>0.043%</td>
<td>-0.116%</td>
<td>0.000%</td>
<td>0.000%</td>
</tr>
<tr>
<td>Rainfall at dam site 24 hours to 9am (mm)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 average</td>
</tr>
</tbody>
</table>

Last Updated: 12th October 2007 8:10am

### Dam Levels:

[Graph showing dam levels]
Other Needs for data/information

- Compliance to protect water users and the environment (NRW)
- Regulation of water service providers and infrastructure operators to ensure they meet their service and safety obligations (NRW, QWC)
- Water audits and publishing of water accounts
- Climate and crop outlook information including seasonal climate forecasting (e.g. DPIF, BOM)
- R&D to improve management and use of water and understanding of systems and processes (e.g. NRSc, eWater CRC, QCCCE, UWRA)
**Surface Water Monitoring**

Surface Water Ambient Network (SWAN) – 400 Gauging Stations up to 100 years of data

Water Quality 215 sites

Surface Water Data Base (~ 50 years)
Groundwater Monitoring

Groundwater Ambient Network 6000 bores (Quarterly monitoring of depth generally)

Artesian monitoring 280 bores

Levels, pressure head, trends

Water Quality 370 bores (annual sampling)

Groundwater Data Base
‘Smart State’ Initiative

Smart State Initiative
- 25 new gauging stations
- 60 new observation bores
- Enhance water quality network & loads
- Upgrade existing equipment
- Enhance data management
WRP/ROP Monitoring for Ecological Outcomes

Ecological monitoring
Environmental flow management strategies
Asset selection
Annual reporting
AQEIS data base

Hydrology
Critically required physical conditions
Morphology
Ecological Response
Limiting Factors
Other Water Monitoring and Reporting Activities

- Ambient Biological Monitoring Program (AMBAP)
- Riverine Habitat Assessment (formerly known as the State of the Rivers)
- Sustainable Rivers Audit (SRA) in the Murray Darling Basin
- Lake Eyre Basin River Health Assessment
- Loads based programs for Great Barrier Reef Catchments and SEQ
- Ecosystem Health Monitoring Program (EHMP) in SEQ
- Statewide Toxic Blue Green Algae Monitoring
Water Metering

- Cornerstone of water reform and National Water Initiative (NWI)
- Water Act 2000 & Water Regulation 2002
- Metering Water Extractions Policy 2005
- Accurate, up to date information
- Trialling of new techniques & technologies
- Consistent statewide meter standards
State-wide meter roll-out program

Project Status (Oct '07)
Total meter numbers installed to date since the program commencement in 2005 = 709

Estimated installations in 2007/08 = 400 – 760

Estimated Total by end of 2007/08 = 1014 - 1374
Annual Water Statistics

• Water entitlement activities
  – Over 44,000 water entitlements
    • Total volumetric entitlements over 4 million ML
    • Total area entitlements around 140,000 ha
  – Over 70,000 water authorisations in force
  – Over 13,000 water entitlements/permits/certificates issued in 2006-07

• Water availability and use
  – Climate, stream flows, dams
  – Rural, urban

• Water trading, water charges and water pricing

• Departmental and external data (WRP, BOM, Water service providers)

• Mandatory and voluntary data (ROL holders, local bodies)
Emerging National Picture...

Hydrometric data

Usage and entitlement data

Geospatial data

Expanding BOM role

National standards water accounting, reporting and metering

Queensland the Smart State

Models
Some Challenges

• Timely availability of high quality ‘fit for purpose’ data and information for decision making
• Continuing water reform agenda – NWI, Water Accounting, Systems and Standards, Responsibilities and Accountabilities
• Need for enhanced monitoring such as surface and ground water interactions and ecosystems response to better understand complete systems and processes
• Meeting community and political expectations in the face of increasing water demand, extended drought, climate change and new technology (e.g. web, telemetry etc)
• Availability of skilled staff now and in the future
• More information on Queensland NRW activities from our Website
  –www.nrw.qld.gov.au

Thank You!