

Boom or Bust

Australian Water Industry Funding

Bill Steen



Bill Steen –Brief Introduction

- Commenced with the NSW Water Resources Commission in 1979 as a Hydrographic Assistant [Office of Water]
- Became involved in the AHA in 1980
- Moved to the ACT in 1986 – Commonwealth Department of Housing & Construction Hydrology Department – Qualified as a Technical Officer [Hydrographer]. Secretary of the AHA NSW / ACT branch for many years.
- Heavily involved in Quality Assurance – QA Manager as well as field Hydrographer
- 1990 – Department moved to ACT Government – Ecowise Environmental was founded.
- Assistant Manager of Ecowise Environmental – Undertaking work throughout Asia Pacific, Turkey, India, Papua New Guinea etc.
- 1999 – Commenced work for HYDSYS, now General Manager of KISTERS Pty Ltd



Australian Hydrographers Association [AHA]

The AHA

- Services over 400 Hydrographers in Australia
- Holds a biennial workshop and hosts an internet site for the sharing of knowledge and ideas.
- Publishes newsletters and monthly e-news, to keep members informed of current events within the industry.
- Advertises career opportunities around Australia and around the globe.
- Provides training and professional certification.



Australian Hydrographers Association

Main features of Australian Hydrographers Association Membership (for both Individual and Corporate) include:

- Commitment to supporting continuing education of Hydrographers (Diploma Hydrography).
- Travel grant assistance scheme for student/cadet members to attend conferences.
- Educational grants.
- Job advertisement network to industry.
- Investing funds/resources for educational support for the hydrographic/hydrometric industry (Member of Industry Advisory Group) and vocational training development programmes.
- Supporting State based industry workshops.
- Access to and information about activities from other similar scientific and industry groups

Australian Hydrographers Association – Training & Technical Reference Groups

Main features of Australian Hydrographers Association continued...

- The current focus of the AHA is training and technical reference groups for the development of standards in association with the Australian Bureau of Meteorology.
- Training – the AHA runs multiple training courses and to date have trained over 250 trainees in Basic Hydrographic Field Work [5 day course], Rating Table Construction & Hydraulics [Units of the Hydrographic Diploma Course]



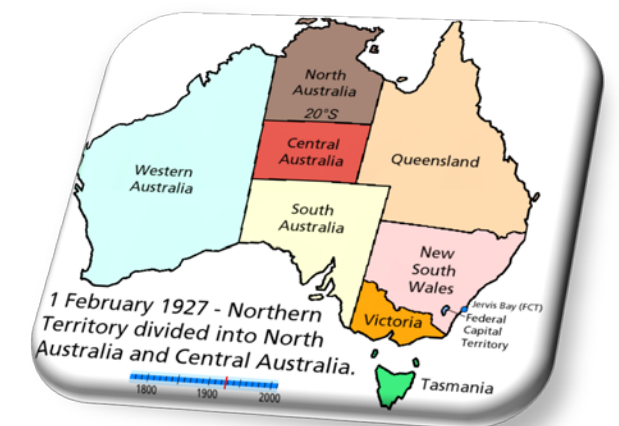
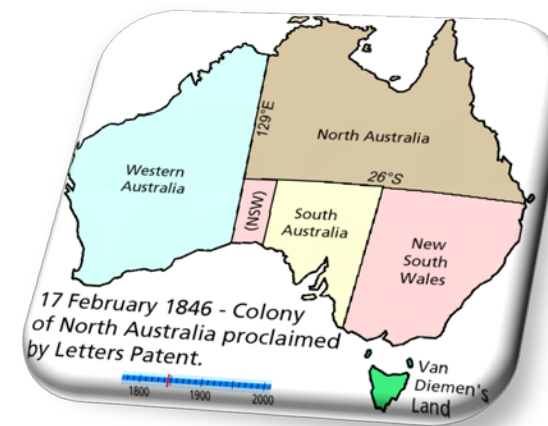
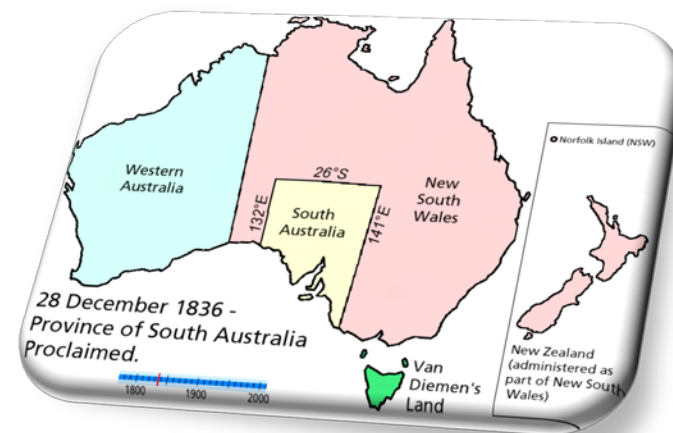
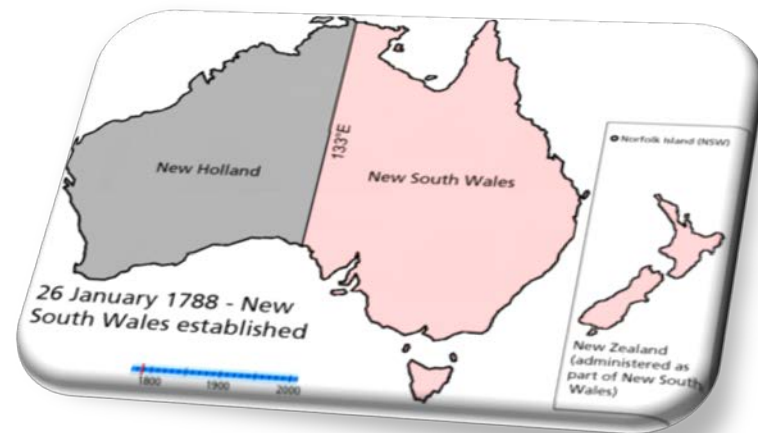
Boom or Bust

- The funding of the Australian Water Industry is about as predictable as the weather.
- This presentation will hopefully shed some light on the spasmodic nature of water industry funding



History

- In 1788 the colony of New South Wales was founded. New South Wales, according to Arthur Phillip's amended Commission dated 25 April 1787, includes "all the islands adjacent in the Pacific Ocean" and running westward to the 135th meridian east. This included the islands of New Zealand.



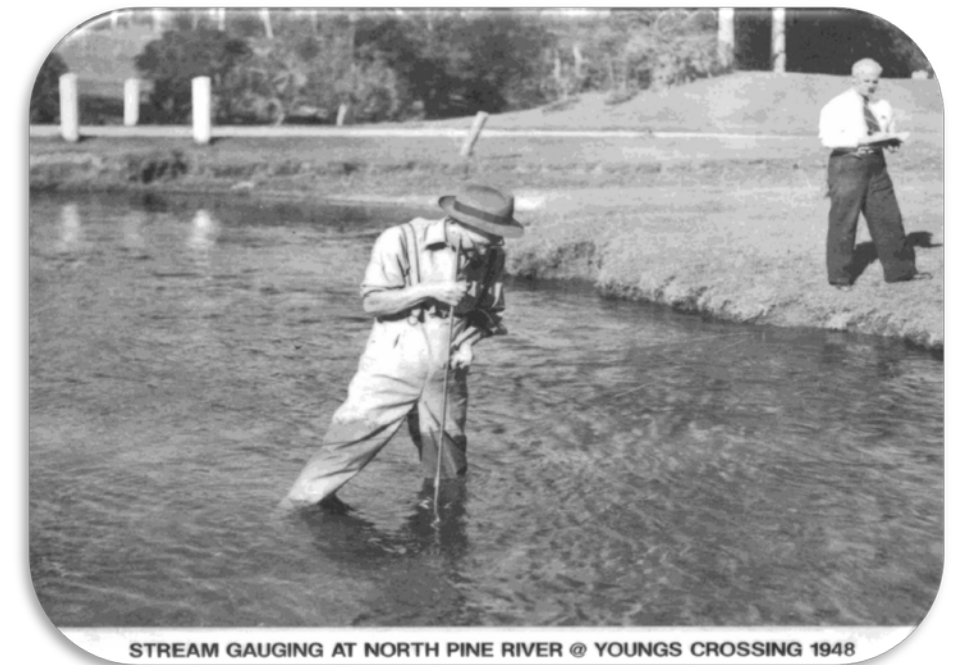
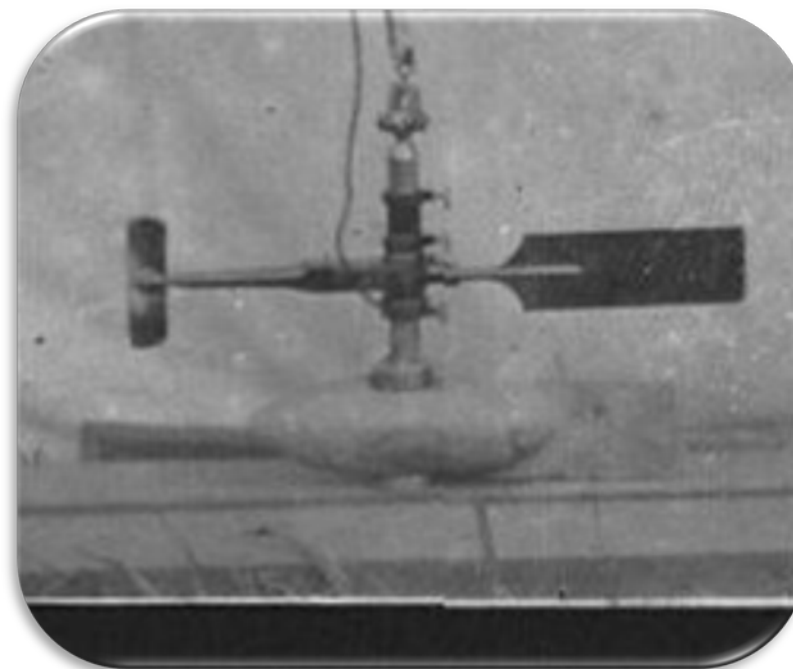
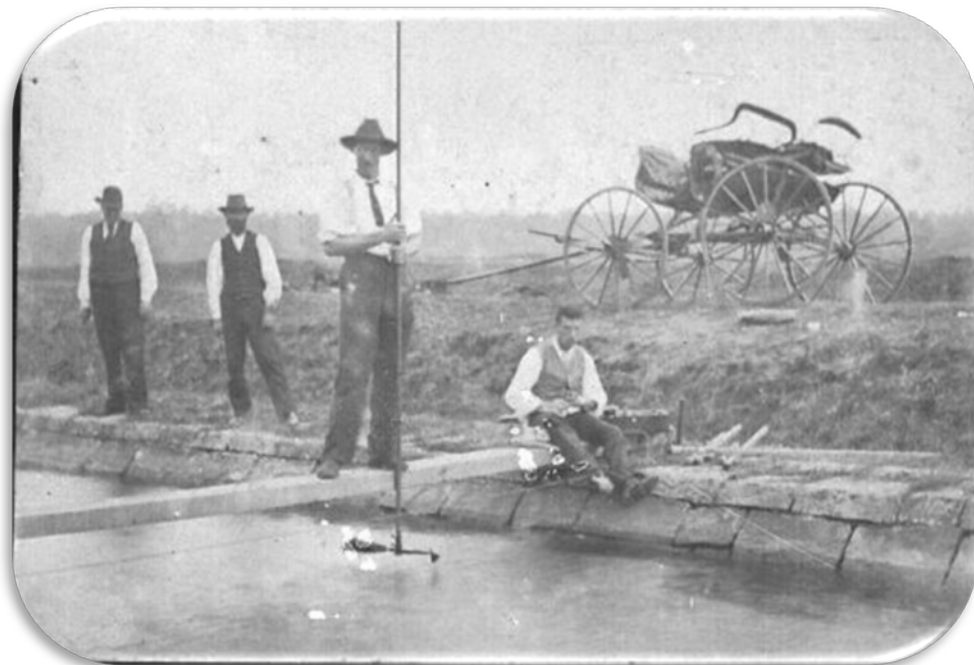
History

- Over the next 114 years the makeup of the 6 Australian States [and later Territories] were formed. Initially the six States were treated as separate British self-governing colonies.
- It wasn't until 1901 that the six states formed one nation. However each State kept it's systems of government, that they had developed as separate colonies, but also would have a federal government that was responsible for matters concerning the whole nation.
- This is when the fun started!



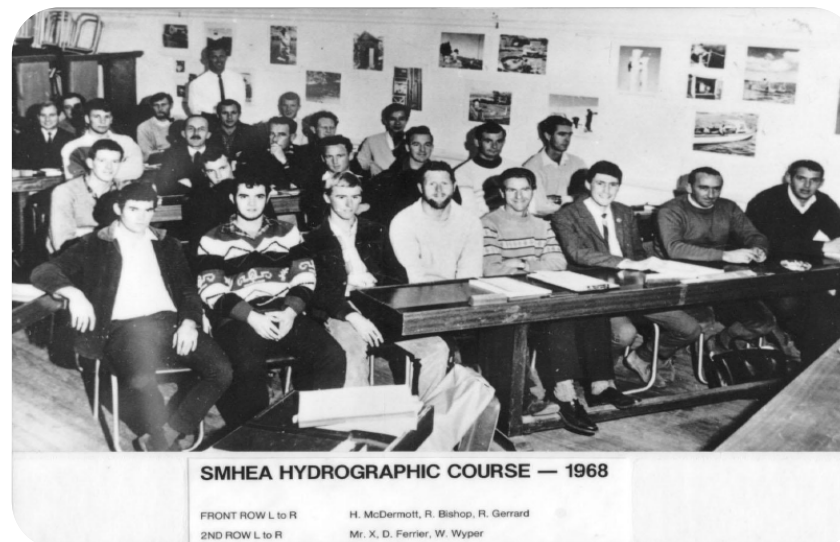
History

- Data collection had commenced in the mid 1800's to assist in the development of infrastructure for the fledgling nation
- Gaugings for practical purposes were undertaken in the 19th century
- Systematic recording of stage in Australia commenced in approximately 1868
- First Australian systematic gaugings were taken in approximately 1860's in New South Wales



Industry Boom

- The Snowy Mountains Hydro-Electric Scheme is by far the largest engineering project ever undertaken in Australia. It is reportable one of the largest and most complex hydro-electric schemes in the world. Work on the system started in **1949** and was finished in **1974**.
- The entire project was completed on time and to budget, costing approximately A\$820 million.
- Some say the Snowy Mountains Hydro-Electric Scheme was the birth place of modern Hydrography as we know it due to demand for good hydrometric data.
- Flow on effect from the scheme included Federal money injected into QLD and 600 new dam sites were selected.
- The Snowy Mountains Hydrographic Course was formulated and used extensively from 1965 to the late 1980's



Funding – Australian Water Resources Council [AWRC]



Australian Government

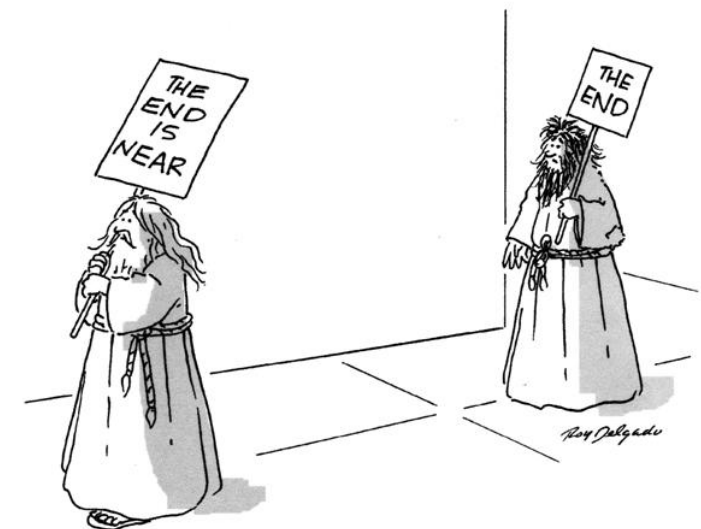
- The Australian Water Resources Council (AWRC) was established in 1962 by the Commonwealth and State Governments as a non-statutory body.
- Its functions were to further co-operation and collaboration on water matters of mutual concern; to provide a forum for exchange of views relating to the development of policies, guidelines and programmes which may be considered appropriate to assist the most beneficial development and orderly assessment, and management of Australia's water resources. It consisted of the Ministers of the Commonwealth, State and Territory government departments responsible for water resources.
- Under the States Grants (Water Resources) Act 1964 and subsequent Acts, the Commonwealth Government granted financial assistance to the States in connection with the measurement and investigation of their water resources. This funding was on a triennial basis. This legislation was replaced in 1981.

Funding – Australian Water Resources Council [AWRC]



Australian Government

- From 1968 the AWRC administered a Water Research Fund from the Commonwealth Government. This research program was aimed at improving the efficiency of water management in Australia by complementing research already being undertaken by other agencies.
- In 1964, in response to a perceived lack of water resources data in all States, the Commonwealth Government instituted, through the AWRC, the National Water Resources Assessment Program. The original aim was to expand the stream gauging network in Australia and increase the level of groundwater knowledge. In 1976, the collection of water quality data was added to the program. The program was reviewed and a new program designed to meet changing and emerging water data needs commenced in 1984-85.
- But “all things good must come to an end”

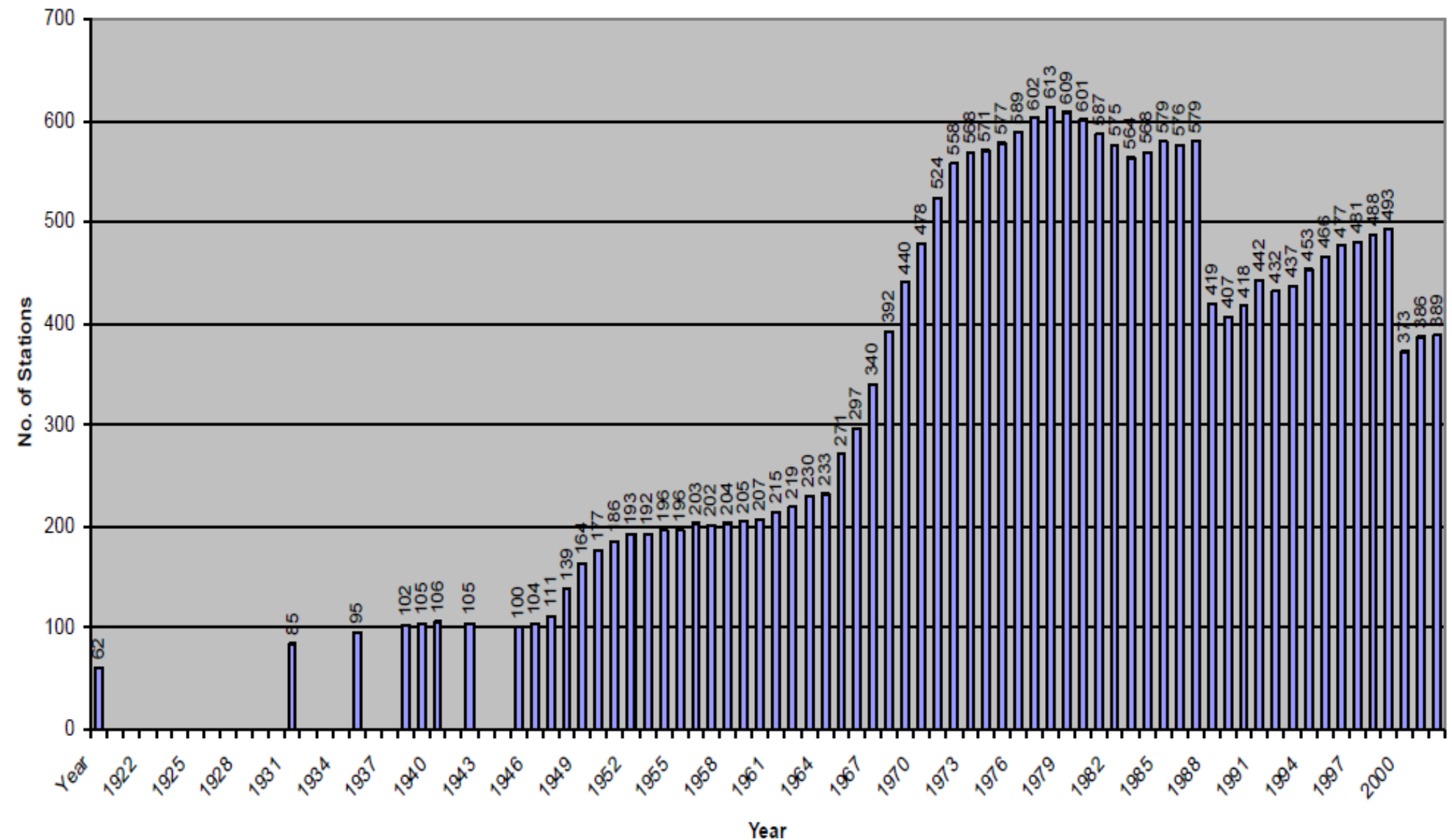


Demise of AWRC – Early 80’

- The AWRC dismantled during the 1980’s. The impact had a dramatic effect of water resources funding.
- State agencies were forced to close monitoring sites and layoff staff due to the withdrawal of funding.
- By 1987 all AWRC funding had ceased

EXPANSION AND THE NEAR DEATH

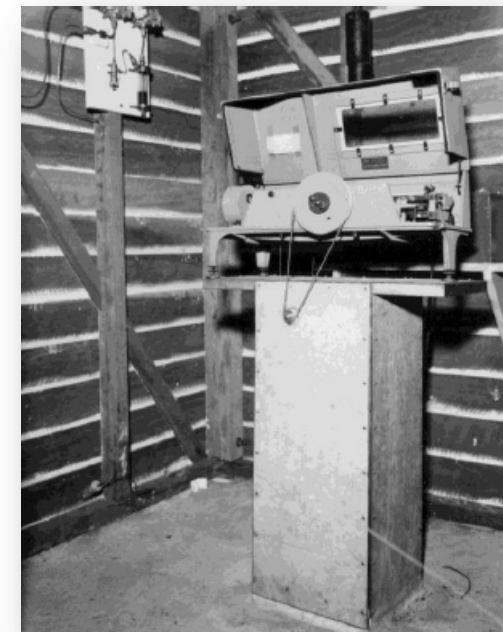
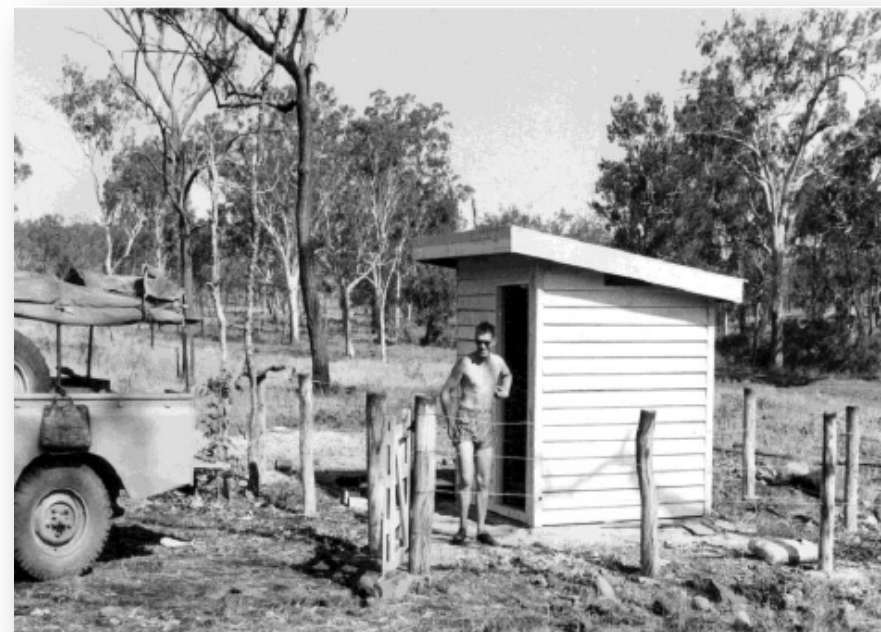
No. of Queensland Gauging Stations Stations over Time



Demise of AWRC – Early 80's

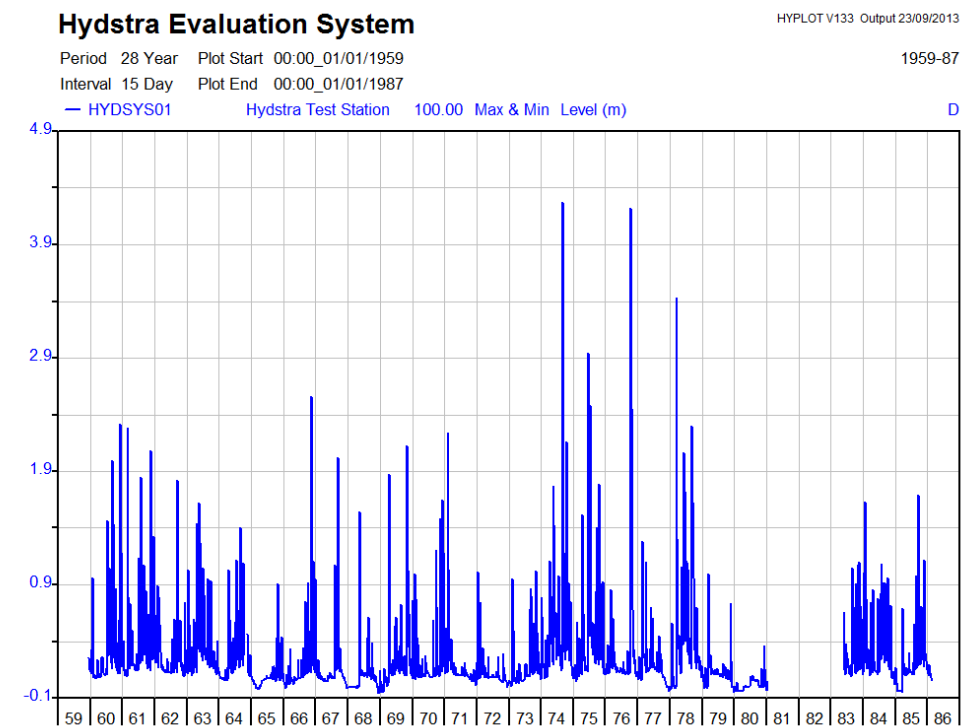


- Examples of the funding withdrawal;
 - Western Australia – The entire Kimberley monitoring region was closed down, the following year the region experienced one of the largest floods on record, no data was collected.
 - Northern Territory - Resulted in immediate closure of over 100 gaugings stations and compulsory reduction in staff numbers.
 - Queensland – Closed around 40% of their monitoring networks



Effects of Funding Cuts

- Hydrographic staffing numbers plummeted, which still has an effect today. Australia has a large gap of Hydrographic experience between the ages of 30 to 55. No employment meant no training schemes.
- Loss of irreplaceable data.
- Hydrographic departments needed to do more with less
- Agencies forced to find paying clients
- Government “business arms” developed to supplement budgets
- Governments sold off “assets” [VRW became Thiess]



Drips and Drabs - 1990's to 2007



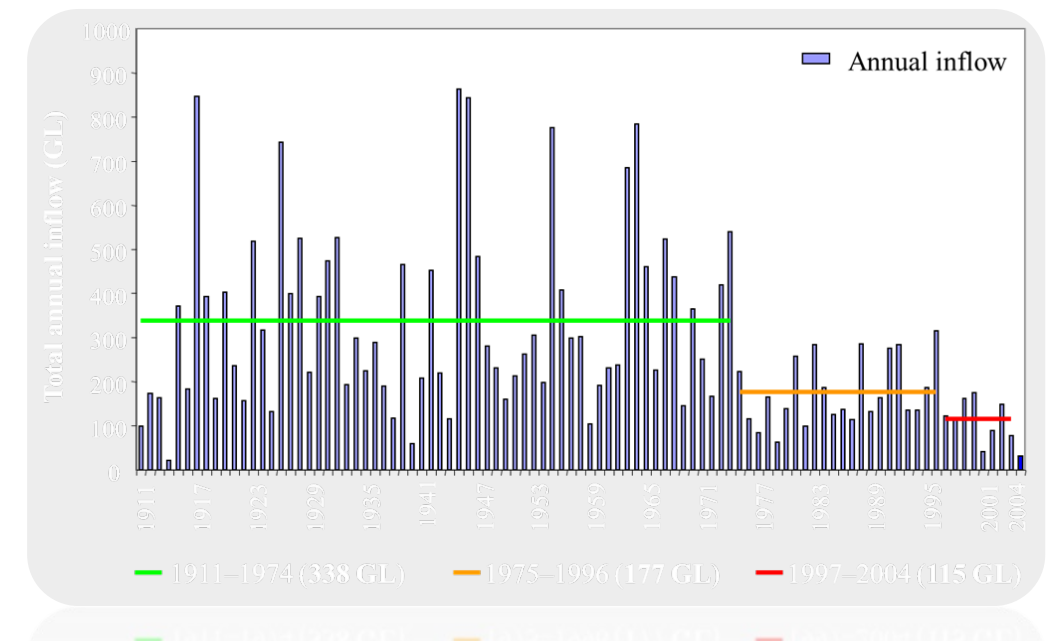
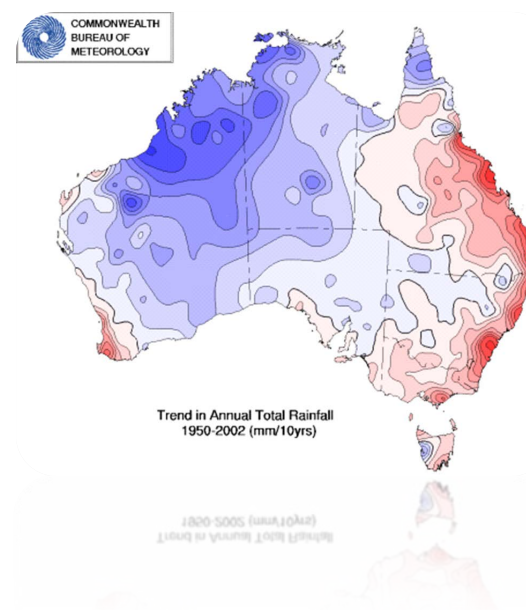
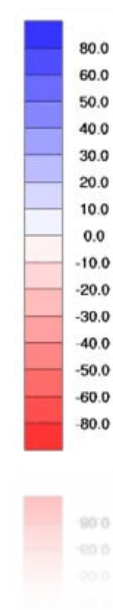
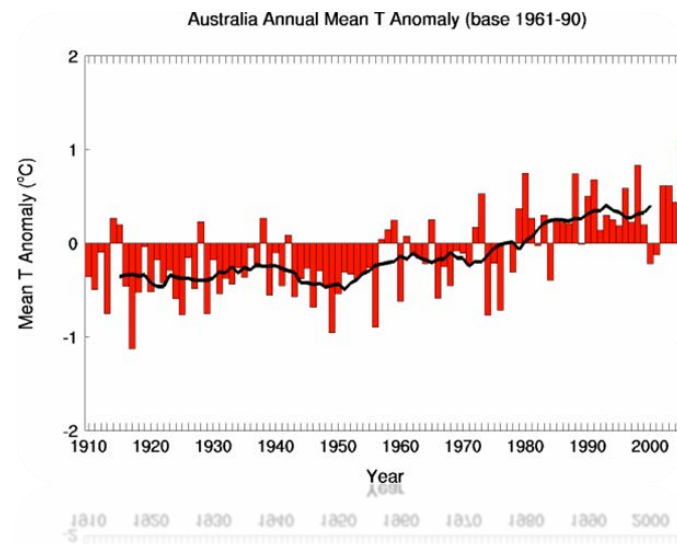
- State agencies were becoming more self sufficient through the identification of data owners and users.
- Various commonwealth funding schemes emerged to provide funding for specific projects and national water resources assessment.
- Funding projects included;
 - Water Allocation Planning (WAP), promoted by the National Water Commission
 - The Commonwealth Watersmart Program
 - Spasmodic Commonwealth grants

In dribs and drabs for water buckets of money for war



Water Act 2007

- In 2007 the Prime Minister of Australia announced a National Plan for Water Security, which was later to be known as the Water Act 2007.
- The Water Act 2007 came about due to the extended drought conditions Australia was experiencing at the time. These conditions had prompted the Commonwealth government to look at how to better manage and report Australia's water resource.



Water Act 2007 – What Did It Mean



Australian Government
Bureau of Meteorology

- **\$12.9b** over 10 years to reform water management [Primarily infrastructure in the irrigation regions]
- **\$450m** to the Australian Bureau of Meteorology [BoM] over 10 years to do 3 things.
- Core staffing and operating infrastructure.
- Special data sets, tools and knowledge.
- Improving hydrologic observing systems
- \$450m split two ways;
- \$160m for water resource investigations, tools development and commercial data procurement [Lidar mapping, GIS maps etc.]
- \$210m over 10 years for core BoM staffing and infrastructure
- Plus **\$10m** over next 2 years for the development and implementation of the Australian Water Resources Information System [AWRIS]
- **\$80m** to invest with the States to update hydrologic monitoring networks.



Water Act 2007 – What Did It Mean



Australian Government
Bureau of Meteorology

- **\$80m** - Modernisation and Extension Programme - to invest with the States to update hydrologic monitoring networks!!!
- **Funding preferences:**
- Improving data quality and currency of water data
- Technology to simplify data ingestion
- Filling critical gaps in networks
- **Funding did not provide for:**
- Staff recruitment
- Ongoing operations and maintenance
- Replacement of equipment purchased
- Private industry – such as the AHA for training of Hydrographic staff



“Ah, not too bad. Nothing here that money can’t cure.”

Modernisation and Extension Program [M&E]



Who was eligible?

- The Government introduced a new Water Regulations 2008 which described the eligibility and responsibility of funding and data provision to BoM.
- Approximately 240 organisations across Australia fell under Water Regulations 2008
- However the majority of data provision to BoM fell primarily on each of the State agencies. The breakdown consisted of;
 - Lead Water Agencies [State Agencies NSW, QLD, WA, NT, SA, VIC, TAS] which have a primary water resource planning, management or policy function. These agencies monitor, collect and report water information.
 - State or Commonwealth agencies who collect water information but whose primary function is not water resource planning, management or policy
 - Major hydroelectricity generators
 - Others – Irrigation, water supply, dam operators [Consisted of large to small City and Shire Councils]

Modernisation and Extension Program [M&E]

How did an organisation apply

- BoM set out a funding program to be managed over 5 years [with the possibility of a further 5 years of funding]. Primarily each year the BoM would describe a area of interest and agencies would then submit a business case for funding.

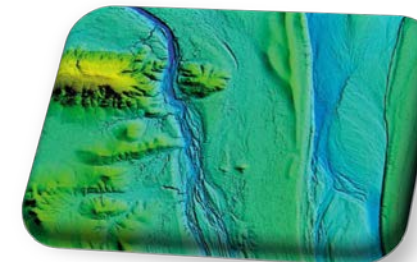
For example;

- Improving coordination of monitoring activities within States and Territories
- Improving accuracy of existing stream flow, groundwater and water storage measurement networks
- Improving procedures for the management of water data within agencies
- Enhancing monitoring network coverage for the purposes of water resources assessment and water accounting



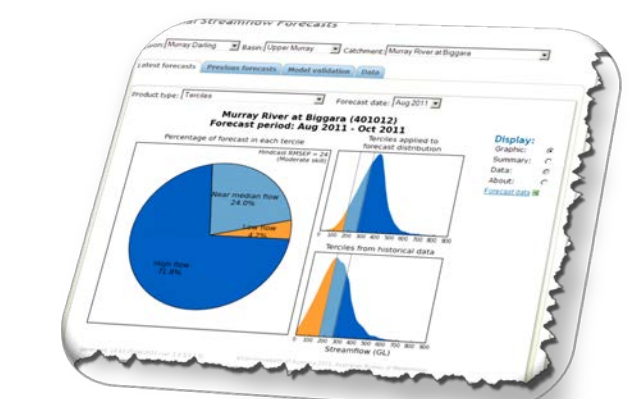
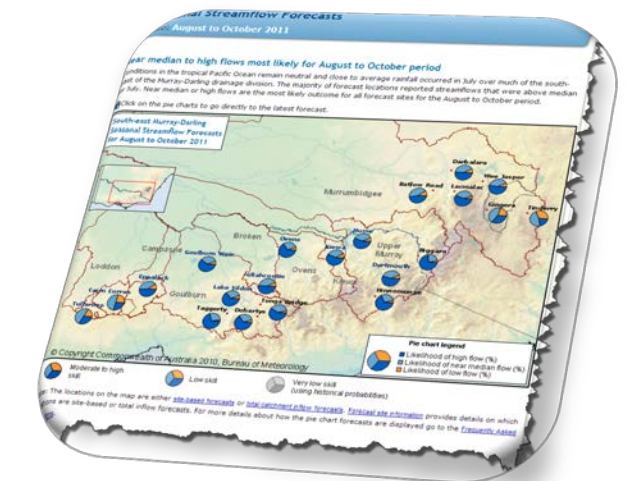
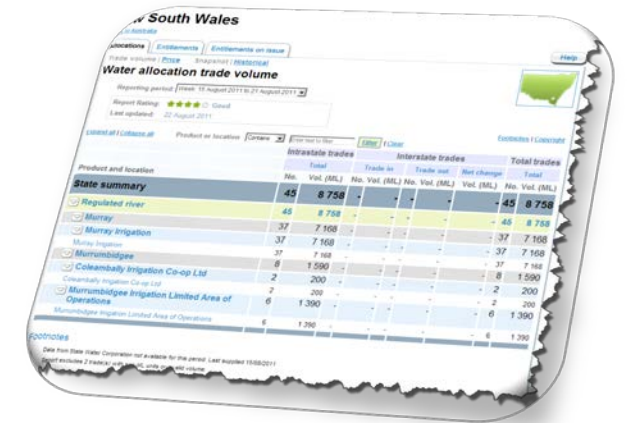
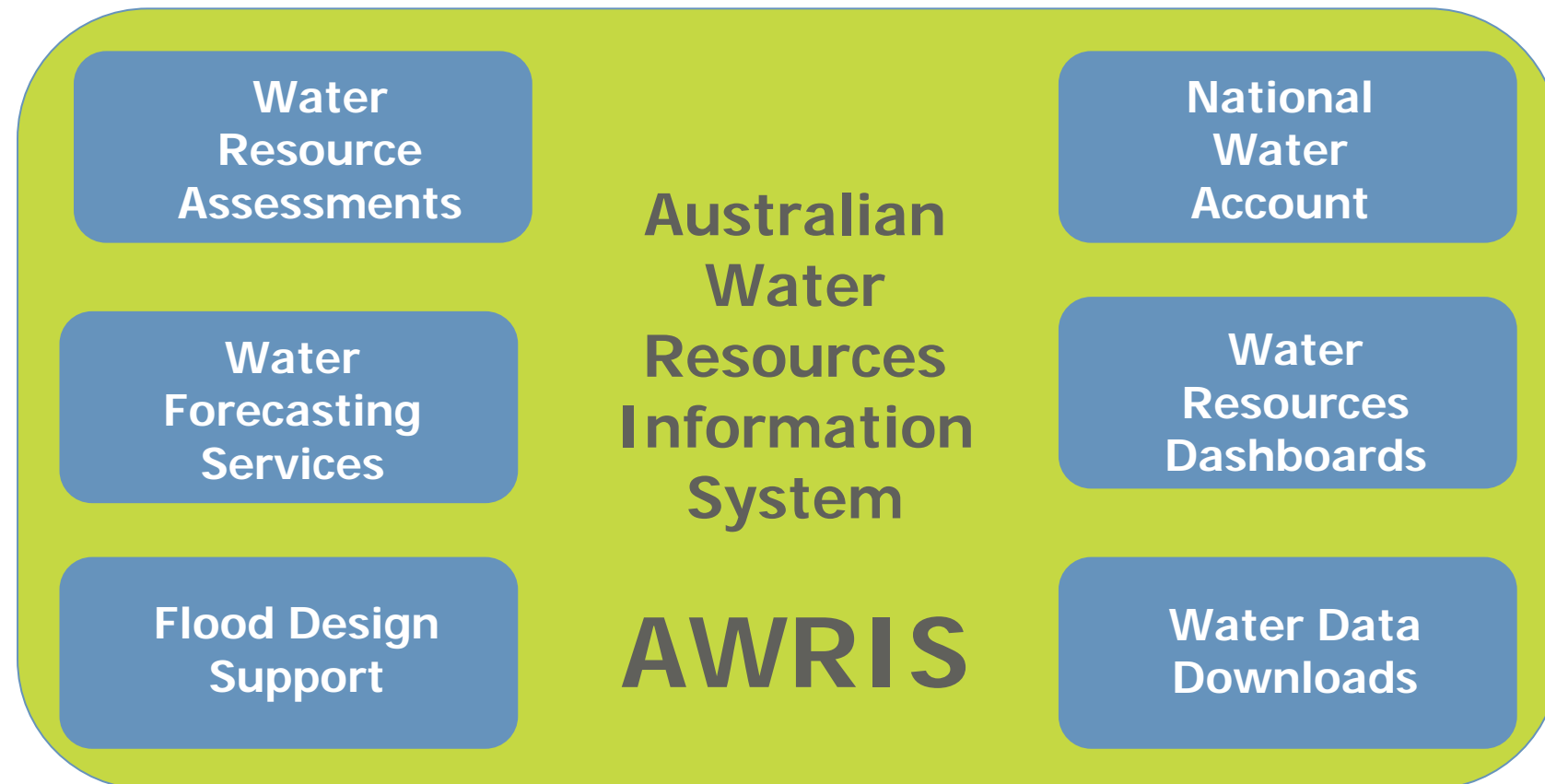
Modernisation and Extension Program [M&E] – Examples of Approved Projects

- Rollout of improved measurement technology
- Acoustic Doppler Current Profiler (ADCP) Technology
- Installation of telemetry for major storage inflow
- Telemetry upgrades at critical stream gauging sites and on groundwater
- Monitoring bores in heavily utilised aquifers
- Refurbishment of high priority monitoring stations
- Installation of processes for transferring data in Water Data Transfer Format (WDTF)
- Enhancement of data management systems
- Improving surface water and groundwater spatial data sets
- Engagement of Strategic Water Information Coordinators
- Promoting the public accessibility of water information



AWRIS – Australia’s National Water Resources Database [National Asset]

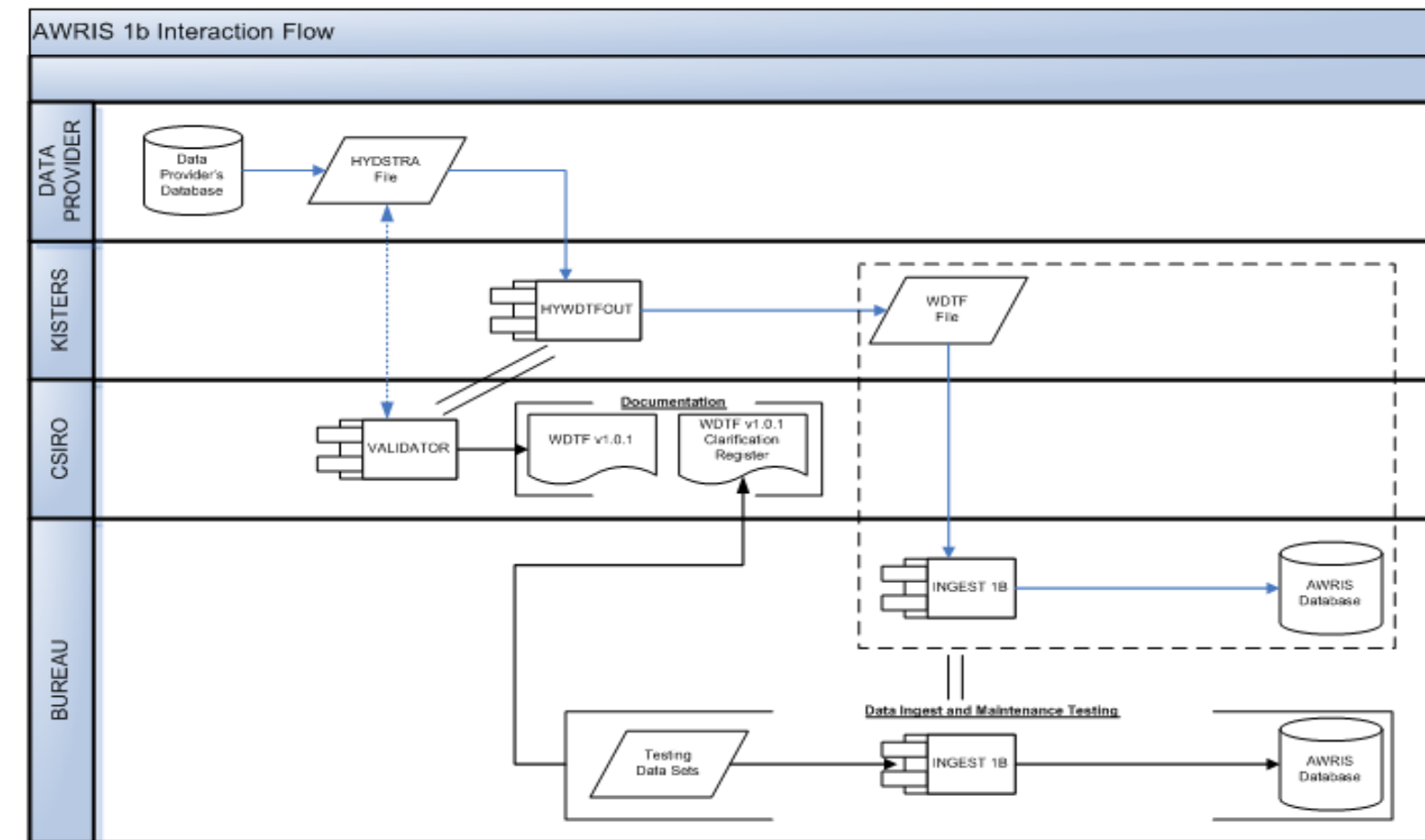
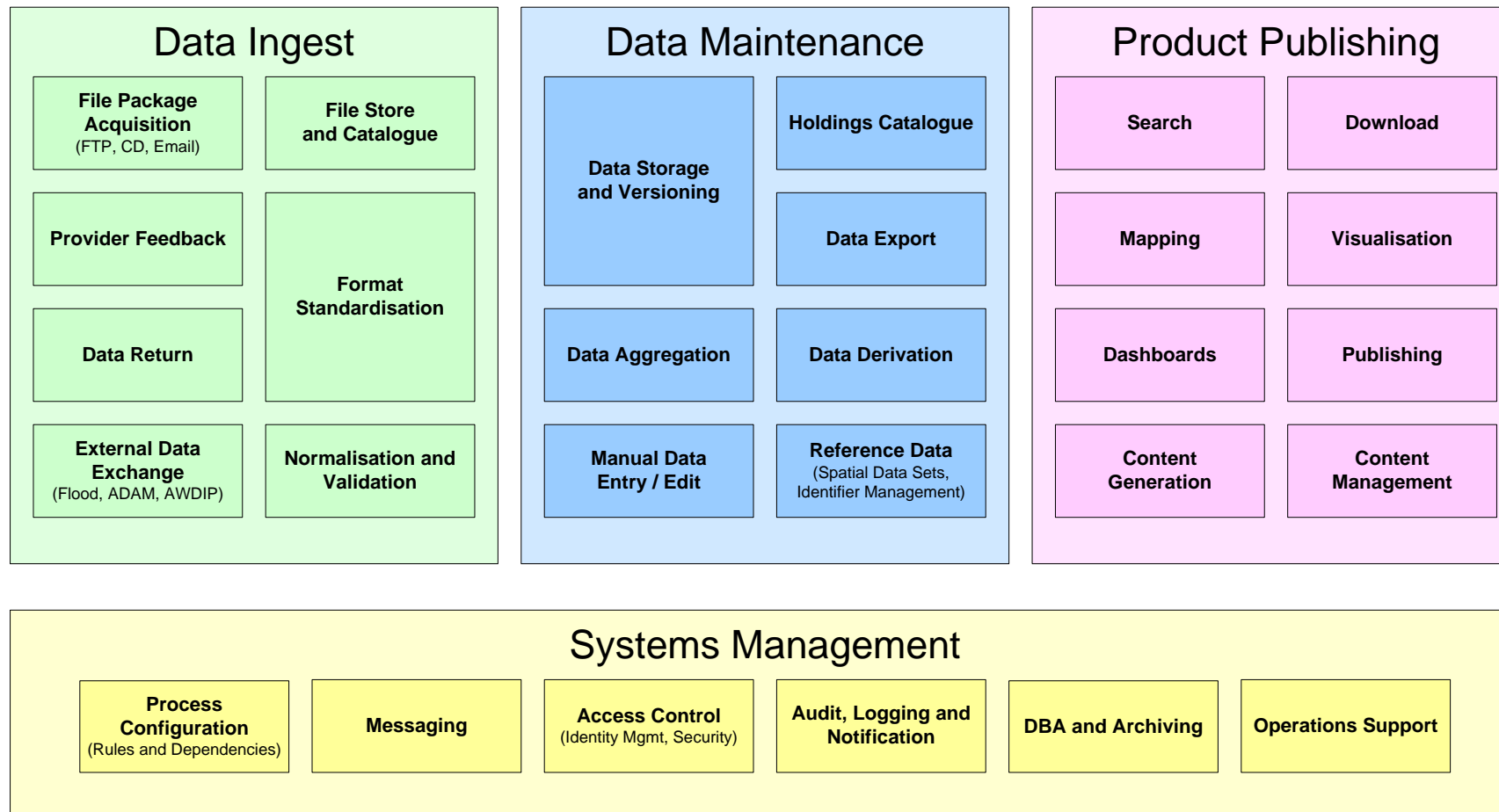
- 210m over 10 years for core BoM staffing and infrastructure
- Plus \$10m over next 2 years for the development and implementation of the Australian Water Resources Information System [AWRIS]
- **Objectives;**



AWRIS

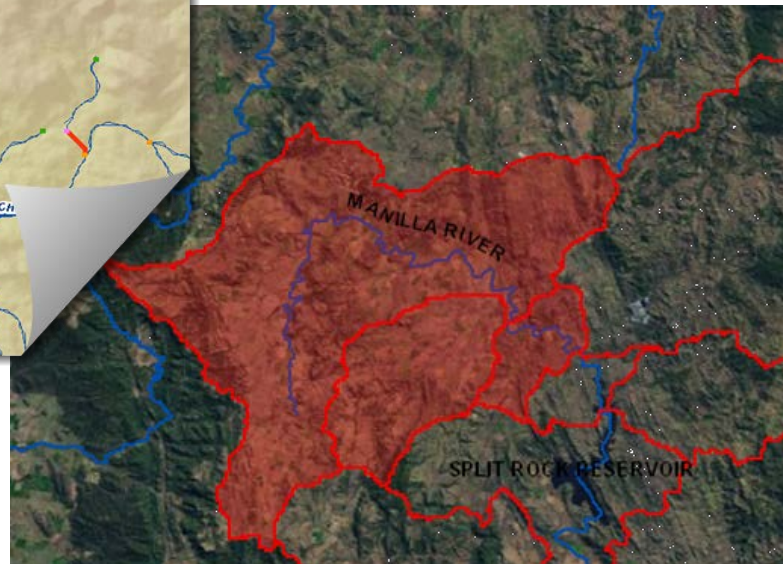
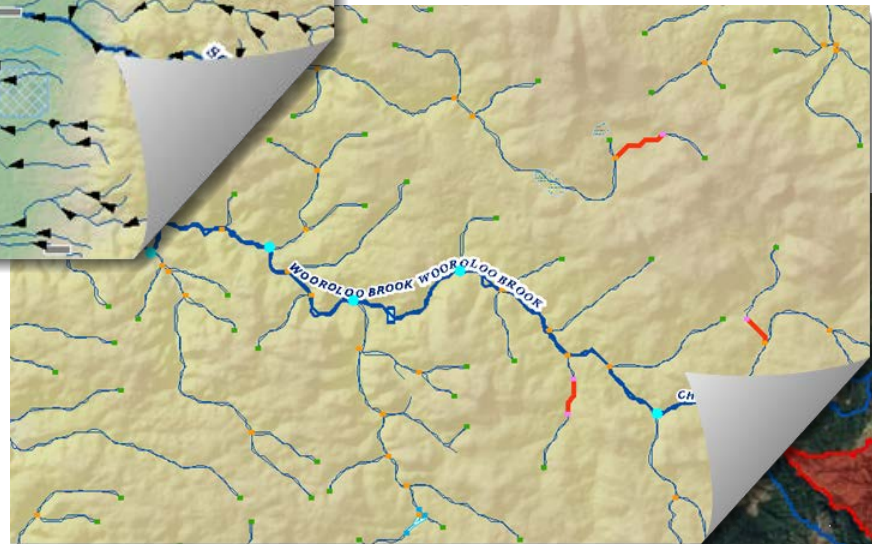
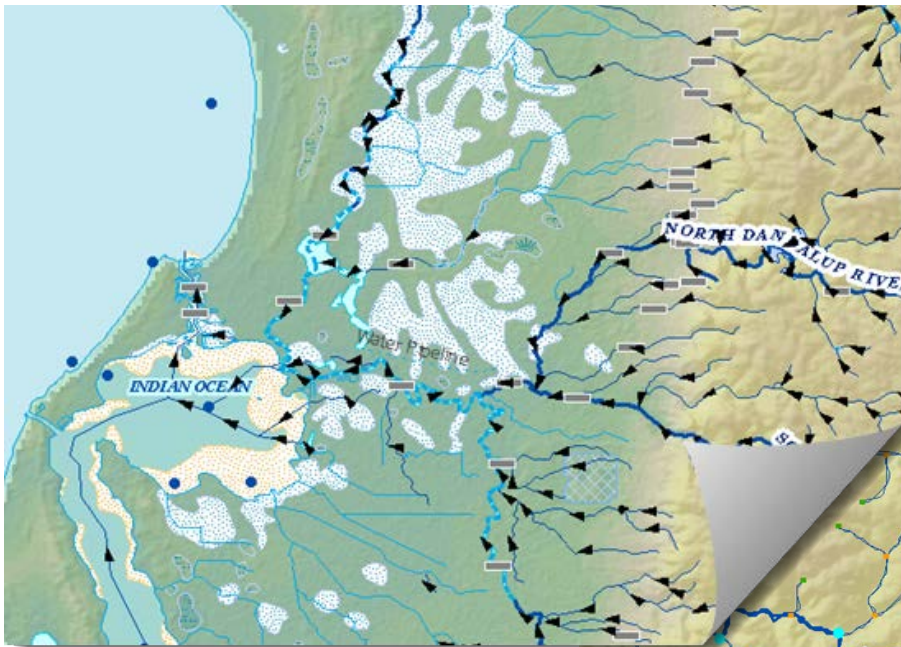


- AWRIS Overview



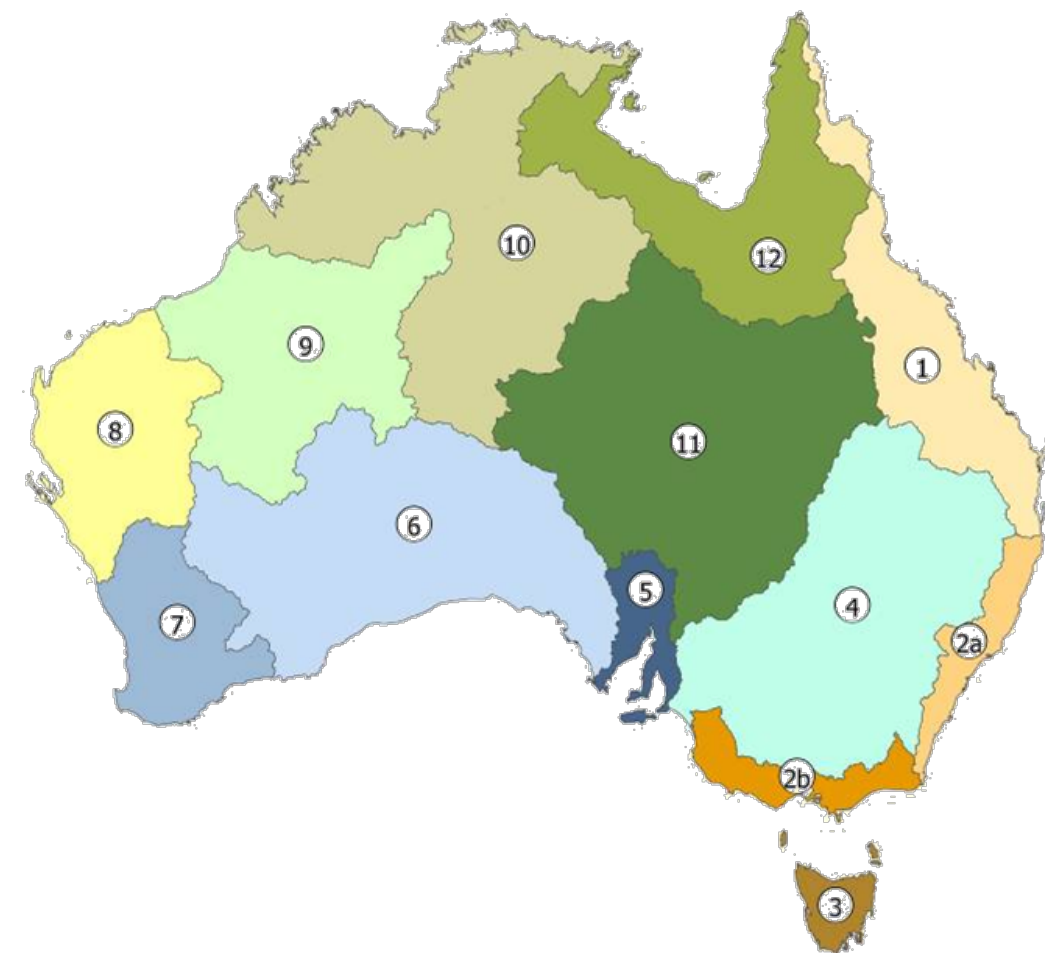
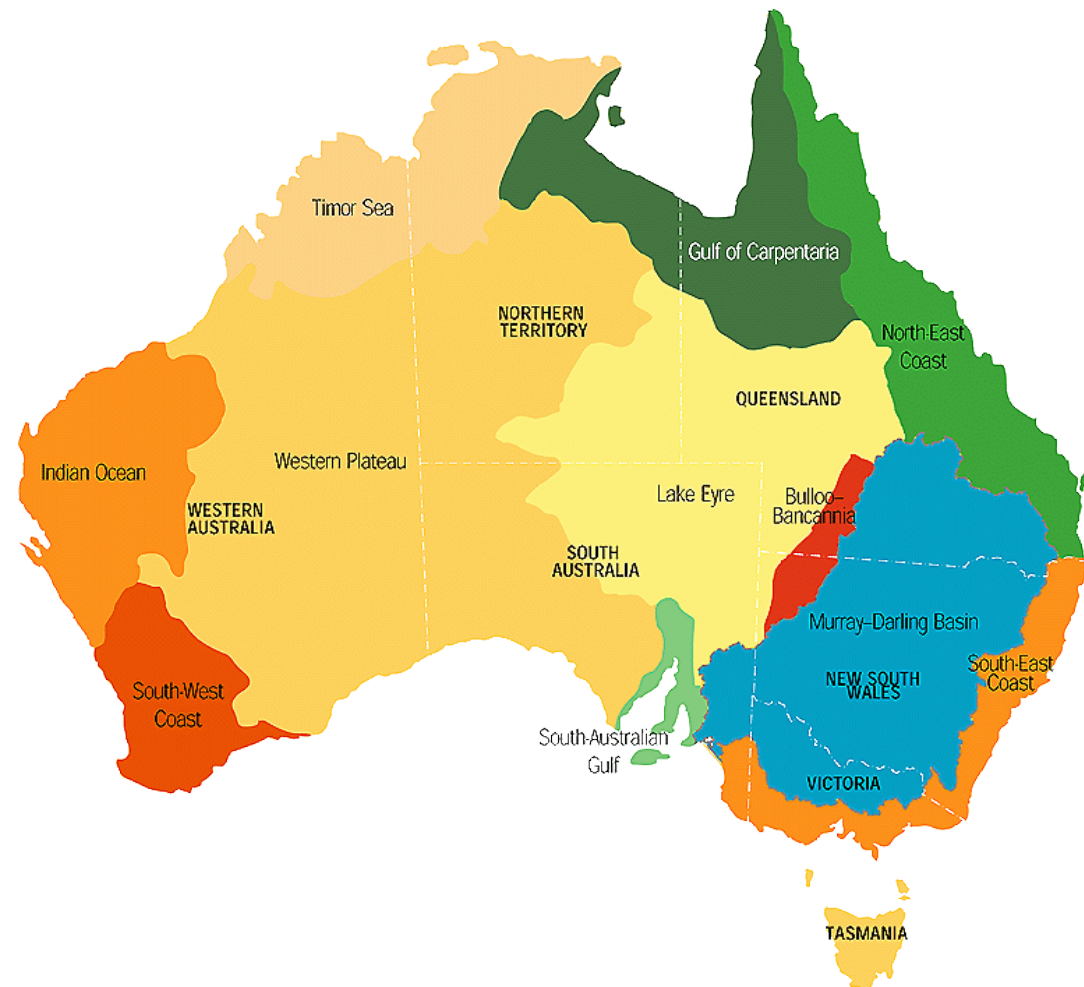
GeoFabric - \$160m for water resource investigations, tools development and commercial data procurement [Lidar mapping, GIS maps etc.]

- **Geofabric Surface Cartography**
 - Geofabric Surface Hydrology Cartography 1:250,000
- **Geofabric Surface Network**
 - Geofabric Surface Hydrology Network 1:250,000
- **Geofabric Surface Catchments**
 - Geofabric Surface Hydrology Catchments 1:250,000



Australia's National Water Resources Database

- Basin Review



Pros & Cons of Bulk Funding



Australian Government
Bureau of Meteorology

The Pros

- Agencies were able to obtain equipment to aid in the collection of water resources information such as; ADCP, Survey Equipment / GPS, cableway construction, data logging and telemetry etc.
- Agencies were able to apply such technologies as LiDAR to digitally survey the land surface at high resolution, capturing data on river features such as channels, banks, rock bars, gorges, floodplains, roads and bridges. This information is used for better flood forecasts, operational water management decisions and water resource planning.
- Improved dam sediment surveys, improved groundwater monitoring, improved snow depth monitoring, enhanced reporting etc.
- AHA training courses
- Overall improvement in communication between the states.



Pros & Cons of Bulk Funding



Australian Government
Bureau of Meteorology

The Cons

- Some agencies were not inclined to take funding for instrumentation as it had a direct impact of future budgets in respect to the carrying of instrumentation depreciation
- The process was too long. The funding was spread over 5 years, each year X\$ were allocated. Agencies would apply, funding approval could take 6 to 8 months, Agencies were required to go to tender, review submissions and award the winning bidder. The successful bidder, on average, had less than 3 months to complete the work. This is difficult if you need to manufacture 1,000 data loggers.
- The money could not be spent on staff, hence new stations installations etc. needed to be added to the existing workload.
- The funding was not sustainable as funding did not cover ongoing operation and maintenance.

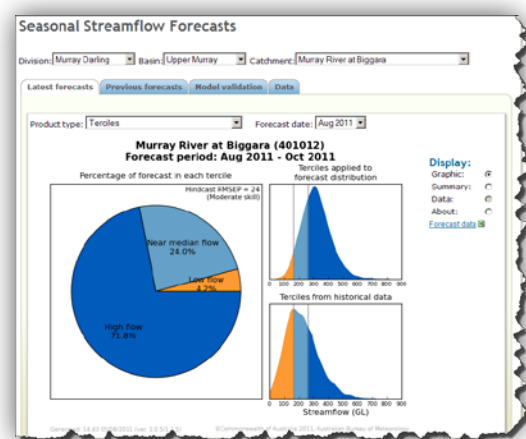


Overall Summary



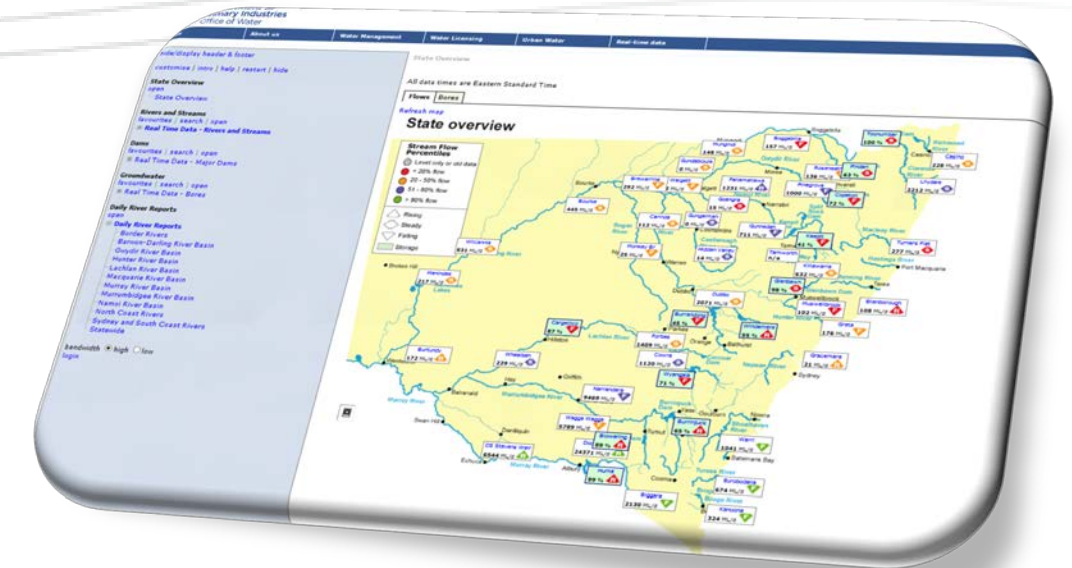
Australian Government
Bureau of Meteorology

- It was good whilst it lasted
- Promised ongoing funding by the Commonwealth Government was withdrawn
- The success could have been greater had the Commonwealth maintained the funding
- There is definitely value adding to the nations water resources management
- Overall Australian Water Resources Information System [AWRIS] is making steady progress



The Present – How do they survive

State Funding Examples – New South Wales Office of Water [NOW]



- **Directly by paying clients** by way of Contracts (commonly called Service Level Agreements, SLA). NOW Hydrometric usually monitors sites where there is a benefit to other areas of NOW in terms of the data collected. Hydrometric have long standing SLAs with State and Local Government agencies.
- **By the State Government** through a recurrent allocation. Water Users pay licence fees which include a component for water management activities. These water management charges contribute a proportion (75% for gauging stations) of the operation cost of maintaining the monitoring sites. The remainder is the community obligation provided by the State government.
- **Opportunistic Funding sources.** For example in the last decade NOW Hydrometric have been fortunate to have been successful in obtaining Commonwealth funds through a number of projects that has permitted the upgrade of much of the monitoring equipment at sites. This was timely as the allocations from the State only permit a more modest infrastructure and equipment replacement. The Commonwealth also funds a number of State agencies for shorter term monitoring activities.

The Present – How do they survive

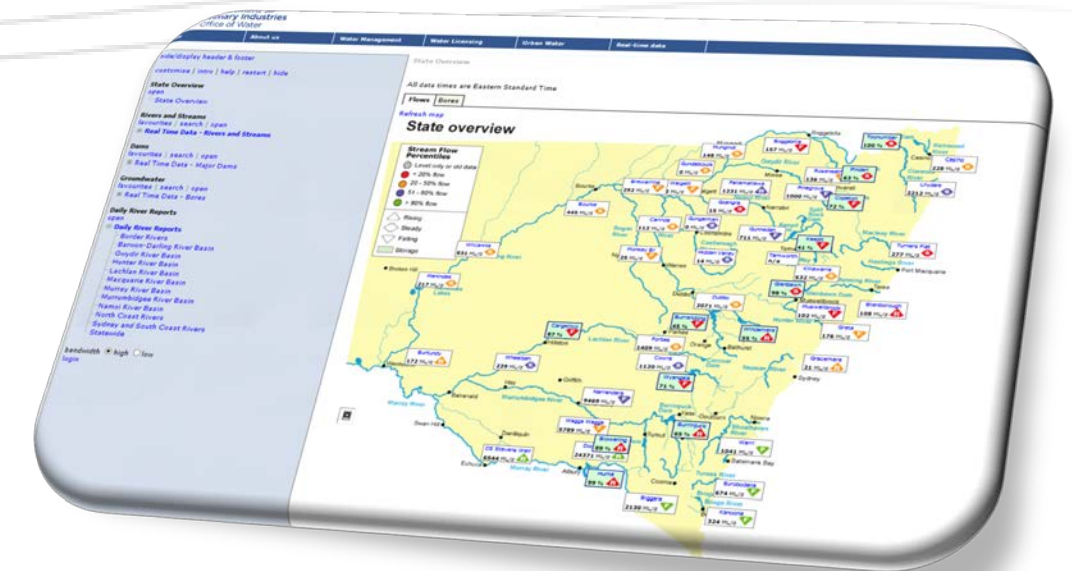
State Funding Examples – New South Wales Office of Water [NOW]

- **In 2011**

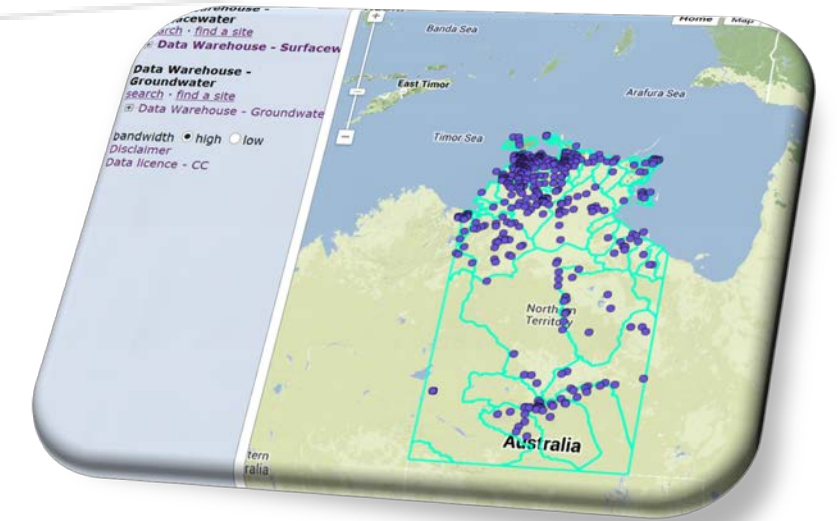
- Hydrometric Staff State-wide ~90 (These are under the operational management of a decentralized structure, reporting through the State Hydrometric Coordinator)
- Data Management & Spatial Staff: 14
- Water Monitoring Stations Statewide: 880 surface water and 400 groundwater (time series stations)
- Water Information Budget: ~\$17 million

- **In 2013**

- Since then Hydrometric has been reduced to 80 and the budget is in the order of \$12 million depending on external revenue.
- **Note:** Other agencies operate on as little as \$3 million for similar sized networks!



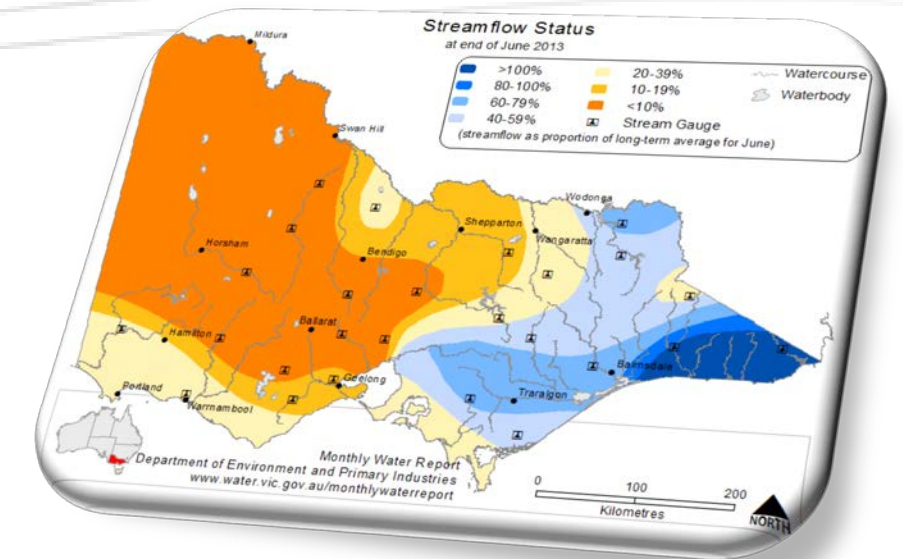
The Present – How do they survive



State Funding Examples – Northern Territory Department of Land Resource Management

- The NT is heavily dependent on GST revenue returns from the Commonwealth. Whilst it receives considerably more GST revenue on a per capita basis than other States and Territories it is extremely vulnerable to reductions in this revenue stream as has been experienced in recent years. Challenging funding conditions for water monitoring and assessment are expected to continue into the future despite strong interest in Nth Australian Agricultural development by both the Commonwealth and Territory Government. The need for more intensive water management in the North as development rapidly brings water supply to sustainable allocation caps, will eventually become major drivers for expansion of monitoring networks. As will significant flood events as a result of increased cyclone activity.
- A number of other NT Govt agencies and external stakeholders now contribute to the cost of maintaining the surface water network. Specialist products like text alerting of rising river conditions are proving popular with clients responsible for controlling essential infrastructure such as roads, bridges and railways.

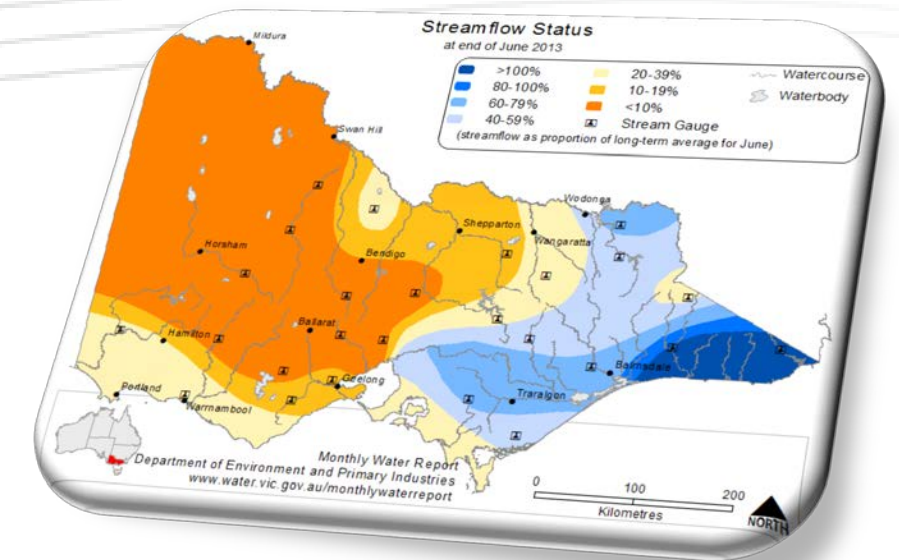
The Present – How do they survive



State Funding Examples – Victoria Department of Environment and Primary Industry

- Victoria acts in a slightly different manor to the rest of Australia.
- Victoria has in place the Regional Water Monitoring Partnerships (RWMPs), which consist of 44 public and private organisations that have joined together to collectively contract surface water monitoring services, reducing the disparate and often inefficient cost of monitoring by individual organisations.
- The Partnerships commenced in 2001 with the formation of the Gippsland Regional Water Monitoring Partnership. The model was extended in 2004 with the formation of the remaining Partnerships across Victoria to cover the North East, North West and South West regions.
- The Department of Environment and Primary Industry acts as both a partner and contract manager for the Partnerships, and procures the surface water monitoring services on behalf of the Partners.
- The members of each Partnership have entered into legal agreements to share data, monitoring costs and management of the monitoring contracts.

The Victorian Model



The benefits of Regional Water Monitoring Partnerships (RWMPs) are numerous and a lot can be learnt from the way in which the Victorian government goes about funding water resource within the state.

Benefits:

- ✓ Consistent and reliable data
- ✓ Reduced data uncertainty
- ✓ A coordinated data collection approach
- ✓ Sharing of knowledge and data between Partners
- ✓ Single consolidated data submission to the Bureau of Meteorology for Victoria
- ✓ Audited methodologies and service standards
- ✓ Cost sharing opportunities at monitoring sites
- ✓ Centralised contract management and procurement
- ✓ Reduced administrative expenses
- ✓ Clear quarterly invoicing
- ✓ Operation and maintenance assistance
- ✓ Management and OH&S support
- ✓ Knowledge and assistance available from a Regional Coordinator

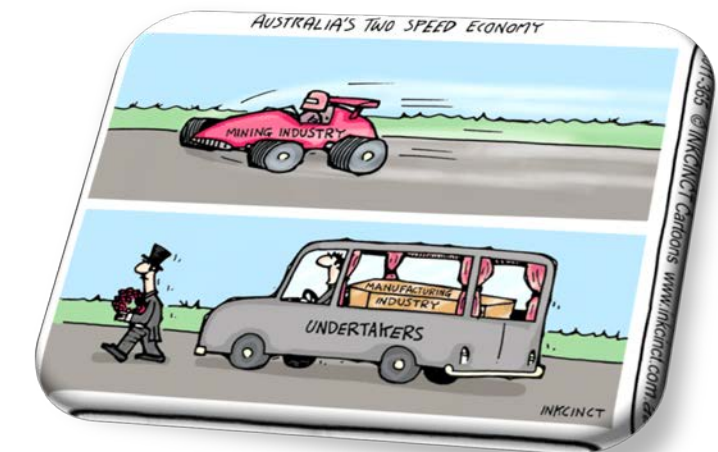
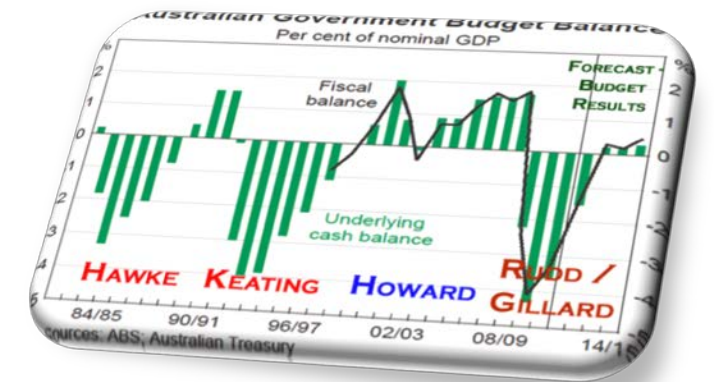
The Current Environment



- The Australian State agencies are facing a downhill slide in relationship to funding
- Western Australia going through it's second round of voluntary redundancies, current round offering 72 weeks payout. Currently have a ZERO budget, only paying salaries, one field trip per year! In short, there is no discreet operational funding for hydrography, **operation funds become available through non replacement of staff** that leave the department and use of capital maintenance funds.
- New South Wales have gone through one round of “voluntary” redundancies
- Queensland have gone through one round of voluntary redundancies, and reported a ZERO budget, basically not capital purchases.
- Northern Territory, heavily hit on their budgets and now looking at voluntary redundancies packages.
- Victorian Department of Environment and Primary Industry as a whole had their budget reduced by approximately 49%, the water area only faced approximately 19% cut.

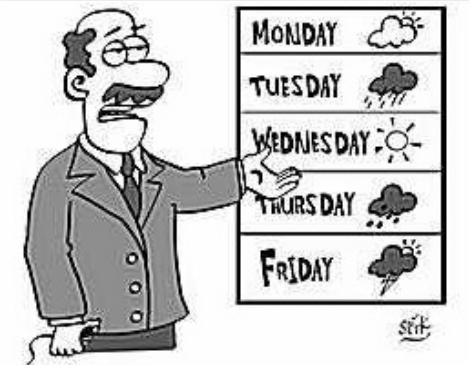
What is causing the downturn

- Poor management by government [Bill Steen's option, not that of the AHA]
- Australia's high labour costs
- For many years Australia has had a two speed economy. Which masked what was really happening. The mining boom overshadowed reality
- Commonwealth government clawing back funds from the states in an effort to balance the books
- No drought means governments believe they don't need to manage the resource!
- Government budgets tend to take two years to react to such issues as the "global financial crisis"

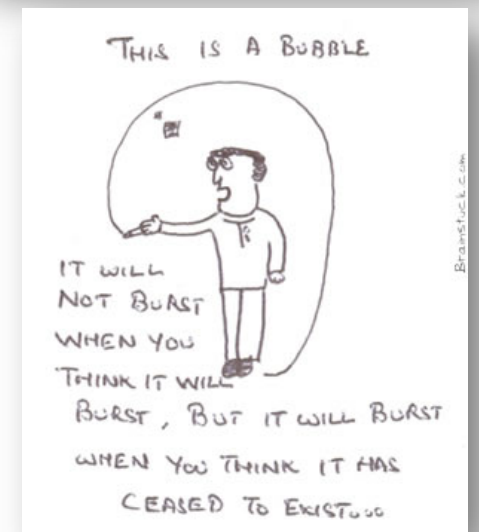


The Future

- I wish I knew!
- If we look at the history of the hydrographic industry we can see a cycle
- There was the “boom” in the 60’s & 70’s followed by a “bust” in the 80’s
- The 2000’s saw a “boom” through government funding
- We are now witnessing a “bust” but people are optimistic that things will pickup
- One can only hope



Here's the 5 day forecast. To be honest, after tomorrow, your guess is as good as mine!



The factory of the future will have only two employees, a man and a dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment.



The End – Well at least the end of the presentation

Thanks you for your attention

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