

Integrated Resource Planning

Background

What is integrated resource planning?

Integrated resource planning (IRP) ensures that options that reduce demand on valuable water supplies are compared on an equal basis with options that increase supply.

The Water Corporation seeks to consider demand management and water supply options to assess which options provide customers with appropriate water services at least cost. Water Forever, for example, will compare options that increase the efficiency of scheme water use or reduce demand for scheme water (e.g. leak reduction and retrofitting showerheads) with options that increase supply (e.g. desalination).

The costs and benefits to customers and the broader community need to be considered in this assessment.

Principles of integrated resource planning

Water service provision	A unit of water provided through a new source is equivalent to a unit of water saved through more efficient use (the focus shifts to provision of service rather than a provision of volume of water).
Detailed demand forecasting	Identifying demand as specific end uses of water such as toilets and showers (enables detailed demand forecasting, fit for purpose and water conservation potential with respect to each end use).
Considering a broad range of options	Water efficiency, water recycling and supply options are all considered.
Comparison of options	Compare using a common metric, boundary and assumptions –the implementation costs for all options to all users is considered. This includes State and local government agencies, community groups and individual customers. This is known as total resource cost.
A participatory process	Recognises that water service provision interacts with other facets of natural resource management, urban development and consumer preferences. Involvement of a diverse group of stakeholders helps to identify and respond to multiple needs and objectives and ensure that outcomes are workable.
Adaptive management	Water planning is an on-going learning process which helps to identify initiatives, implements them and evaluates them in cycles. This helps to meet short-term needs and progresses long term strategic outcomes.
Environmental and social impact data	This data needs to be included in the decision making process – parameters and data sets can be monetised where appropriate cost data is available. Alternatively environmental and social criteria can be considered as distinct components in the assessment of the sustainability of options.

Where and how has it been used?

Western Australia	<ul style="list-style-type: none"> ➤ <i>Perth's Water Future</i> (1995) was an early example of applying this approach to the Integrated Water Supply Scheme (IWSS). ➤ Kalgoorlie-Boulder Water Efficiency Program (1994) ➤ Used in studies sponsored by the Water and Rivers Commission on total water resource use for Exmouth, Esperance and Jindong-Broadwater (1999) ➤ Water Forever is adopting an Integrated Resource Planning approach.
Sydney	<i>Metropolitan Water Plan (2004)</i> – builds on Sydney Water's Demand Management Program.
Melbourne	Adopted for the development of supply/demand strategies required from urban water authorities under the Victorian Government's 'Securing Our Water Future' paper.
Canberra	A least cost planning study was completed for Canberra in 2003 by the Institute of Sustainable Futures as part of a 50 year Water Resource Strategy developed by the ACT Government. The study aimed to determine how to achieve a 12% reduction in per capita demand target by 2013 and 25% by 2023.

Current Situation

National perspective on integrated resource planning

In 2007 a working group of the Prime Minister's Science, Engineering and Innovation Council recommended that the Australian Government work with the States and Territories to apply a comprehensive risk based planning and evaluation framework to determine, for each town and city, the optimum portfolio of water demand and supply options.

The Water Services Association of Australia has adapted a decision support tool used by Sydney Water to assist with the development of the options to manage the demand/supply balance. This model is known as the integrated supply and demand planning model (iSDP).

The iSDP model offers the following advantages as a framework to support decision-making for the IWSS:

- flexible demand forecasting that can combine detailed end use demand data with higher level sectoral datasets to produce an overall demand forecast;
- spatial definition to distinguish between sub regions within the IWSS that have different demand components and different demand and supply options available to each region; and
- interactive scenario development capabilities to enable rapid testing of 'what-if' scenarios.

Integrated Resource Planning and the State Water Strategy

The *State Water Strategy* (2003) recommended that integrated resource planning be used to ensure that all water source development (not just water for public drinking water supplies) includes consideration of, and appropriate investment in, conservation measures.

The Water Corporation has worked with CSIRO, the Department of Environment, Water Services Association of Australia and the Institute of Sustainable Futures to develop an IRP model to gather information and assess water efficiency and supply options. The model was used to assess the demand management and water supply options identified in the *2005 Source Development Plan*.

Following application of the IRP model to the *2005 Source Development Plan* a number of improvements are being implemented:

- developing a greater understanding of sectoral based demand (e.g. residential, industrial) as well as potential supply and demand side options to be used in the model to close the gap between baseline supply and demand; and
- looking at refining the sectoral based demand to end uses within each sector (e.g. in the residential sector disaggregating water demand into toilets, showers washing machines etc).

The second stage will build upon the Domestic Water Use Study for Perth due for completion in 2008.

An action under the *State Water Plan 2007* is for the Water Corporation to work with the industrial and commercial sector to publish a study on the nature of its water use, to identify opportunities for sustainable cost effective improvements. This work is due to be completed in 2009 and will contribute towards further refinement of the IRP model for these uses.

The Future

Demand management guide

'A Guide to Demand Management' has been released by Water Services Association of Australia to assist with the evaluation of demand management initiatives.

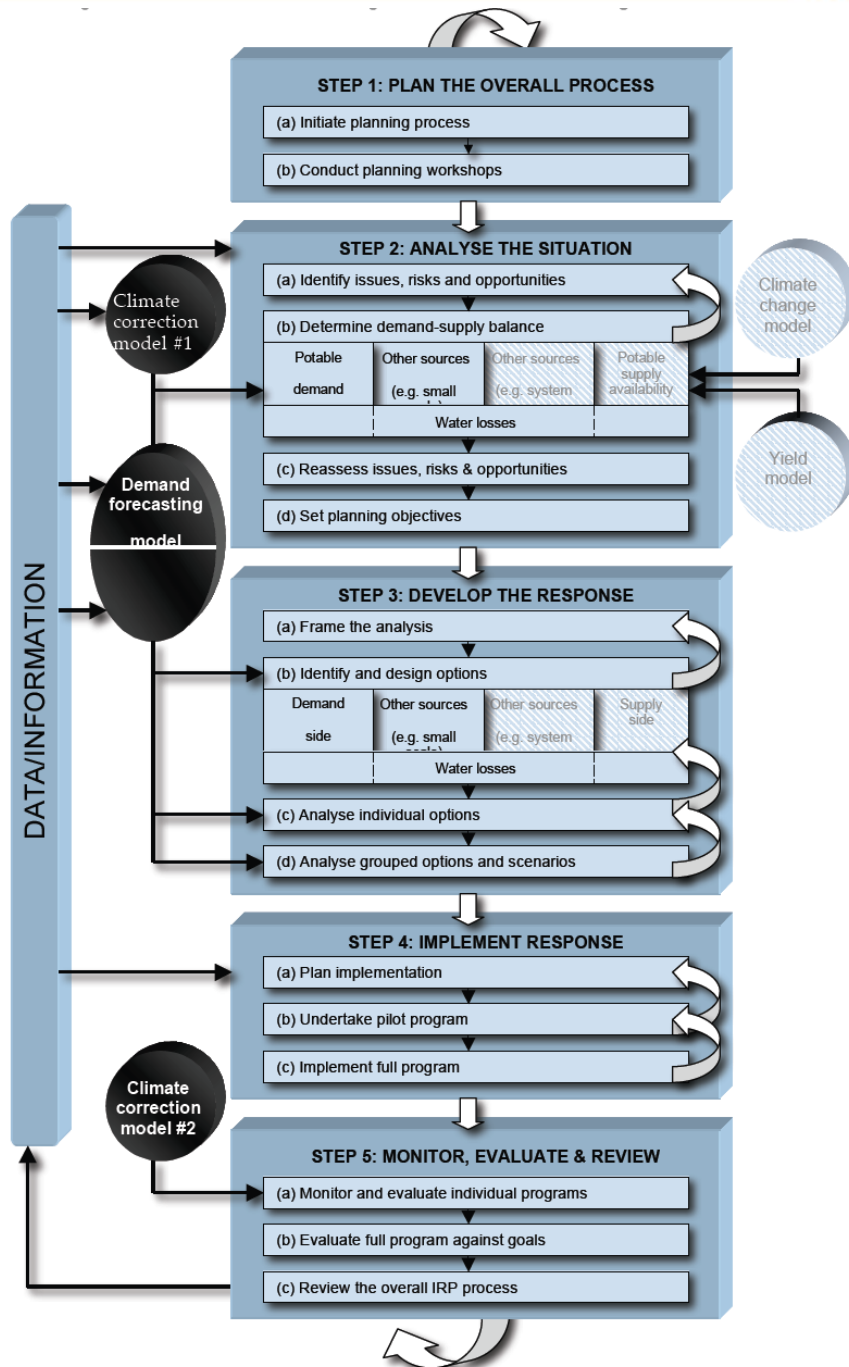
National Water Initiative – The Australian Integrated Resource Planning Framework and Manual

In October 2007 the National Water Commission launched a project to develop a framework and manual for best practice in IRP. The project will build capacity in the Australian water industry through a series of interactive workshops to familiarise the industry with IRP and to share lessons learned. The project will deliver:

- a comprehensive step-by-step guide to implementing IRP in Australia;
- user friendly integrated supply demand planning model (iSDP) with up-to-date data that can be used in the absence of region specific data and
- national end use database to hold key literature on various aspects of IRP.

Application of IRP to regional schemes

The Water Corporation is building water efficiency into its planning processes for consideration with new source development when potential drinking water scheme expansion is required. IRP is being trialled on five regional schemes to support decision making.



Source: *Planning Our Future Urban Water Resources – A Guide to Demand Management in the Context of Integrated Resource Planning* (Working paper prepared by Institute of Sustainable Futures for WSAA, July 2007)

More Information

- ‘State Water Strategy’ at <http://portal.water.wa.gov.au/portal/page/portal/PlanningWaterFuture/StateWaterStrategy>
- ‘State Water Plan 2007’ at <http://portal.water.wa.gov.au/portal/page/portal/PlanningWaterFuture/StateWaterPlan>
- ‘Water for Our Cities’ at http://www.dest.gov.au/sectors/science_innovation/science_agencies_committees/prime_ministers_science_engineering_innovation_council/meetings/seventeenth_meeting.htm
- National Water Initiative funding for IRP at http://www.nwc.gov.au/publications/project_info_integrated_resource_planning.cfm
- ‘Domestic Water Use Study’ at <http://www.energyrating.gov.au/library/detailswa-wateruse.html>

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