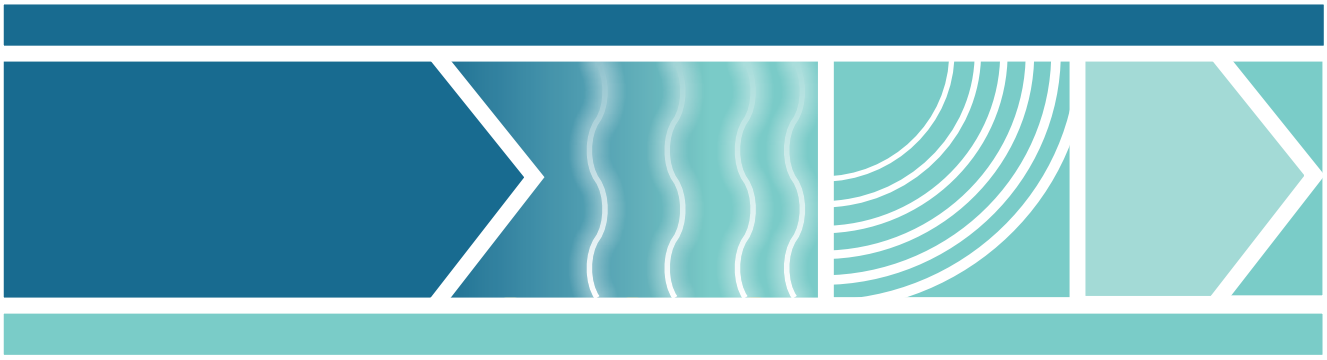
Water sharing in the coastal aquifers

Progress report 2004 to 2008



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Contents

Tables

Introduction

Water sharing plans (WSPs) for the Alstonville, Stuarts Point, Tomago Tomaree Stockton and Kulnura Mangrove Mountain Groundwater Sources commenced on 1 July 2004. Note that combined surface water and groundwater plans were also commenced for the Dorrigo and Wybong Creek Groundwater Sources also commenced at this time but have been reported on within the unregulated plan review. The plans were developed as part of the NSW Government's commitment to achieving the sustainable management of our water resources. To achieve this outcome, they quantify the available water and contain rules for how water is shared between the environment and licensees and between the different categories of licences.

Since the plans commenced, there has been significant progress in implementing their provisions. This report provides a summary of some of the key implementation activities.

Water for the environment

All plans reserve a proportion of the recharge for the environment.

The plans provide for a review, within five years of commencement, of the amount of water set aside as planned environmental water (excluding Stuarts Point) and the portion of the recharge reserved for the environment can be adjusted (excluding Stuarts Point and Alstonville).

The proportion of recharge water that can be extracted without compromising the integrity of the water source and the ecosystems that depend on it is known as the extraction limit or sustainable yield.

Water for extraction under access licences

The plans provide for domestic and stock access licences, local water utility access licences, major utility access licences and aquifer access licences.

On commencement of the plans, the Department of Water and Energy converted existing licences issued under the *Water Act 1912* to some 436 new licences and approvals under the *Water Management Act 2000*.

Managing to extraction limits

The plans set the long-term average extraction limit (LTAEL) at the sustainable yield.

Monitoring compliance with the LTAEL is undertaken on a three year rolling average. That is, metered extraction for the previous three years is averaged and compared to the LTAEL. If the average extraction exceeds the LTAEL by five per cent or greater, then subsequent allocations of water will be reduced to return extractions to the LTAEL. To allow this to happen, water accounts have been established for all licence holders and when water use information is available from metering it will be entered into these accounts. Monitoring of use is yet to commence in coastal plans with the focus currently on high risk and high priority inland alluvial plans, where metering is currently undertaken.

Reviewing recharge and environmental water

In keeping with the principle of adaptive management, the Tomago Tomaree Stockton and Kulnura Mangrove Mountain plans allow the recharge and the proportion of the recharge reserved as planned

environmental water to be varied during the life of the Plan. In most cases any variation is to be based on further assessments of recharge, and/or groundwater dependent ecosystems. (Note, the Alstonville plan allows amendment to the environmental water component but not the recharge)

Table 1 provides an update on the progress of studies on recharge and environmental water in the priority groundwater plan areas.

Table 1 Studies on recharge and environmental water in priority coastal groundwater sources

Groundwater Source	Update on progress
Alstonville	Some work on groundwater dependent ecosystems has commenced and a preliminary model developed.
Kulnura Mangrove Mountain	A draft report on recharge assessment has been completed. Report completed for base flow as a major groundwater dependent ecosystem but not vegetation. The report provides a revised figure for environmental health water
Tomago Tomaree Stockton	Model completed by University of Newcastle, providing storage and recharge estimates. Results not extrapolated to Tomaree and Stockton. Granting of new access licences is limited in line with plan provisions in Tomaree / Stockton aquifers and Stockton is not being used. The major user, Hunter Water Corporation (HWC), is addressing potential impacts of its extraction via the development of a Sustainable Groundwater Extraction Strategy (SGES) for Tomago and Tomaree. The development of the SGES will address issues such as salt water intrusion, groundwater dependent ecosystem (GDE) protection, and oxidation of pyritic layers. Draft Sustainable Groundwater Extraction Strategy completed by HWC (April 2008) and provided to DWE for comment in June 2008. The draft strategy addresses issues such as cease to pump levels in relation to exposure of pyretic layers, saline intrusion, and protection of GDEs, as well as minimizing the risk of mine-affected groundwater intruding to non-mined areas. The report does not include North Stockton aquifer as HWC has no short term plans to extract water from this area. Should this change, HWC will be required to undertake a detailed assessment of GDE requirements, and develop a SGES following the same structure as that undertaken for Tomago and Tomaree. Report on location of GDEs and dependence on groundwater yet to be completed to inform any change to environmental water provisions.

Local Impact Management

The plans set rules to ensure that each groundwater source is also managed sustainably at a local scale. They do this by allowing for the establishment of Local Impact Management Areas (LIMA). Each plan varies in terms of the triggers to identify when a LIMA should be established. Once established, a LIMA can have specific rules designed to:

- Minimize extraction interference between neighbouring bores
- Protect water levels, by restricting pumping when water levels have reduced
- Protect water quality by restricting pumping when water quality has declined
- Protecting priority groundwater dependent ecosystems (GDE) by pumping or other restrictions.

Other more specific local impact rules, can be applied, and vary from plan to plan.

The plans also specify buffer conditions or distance restrictions for the construction of new and in some cases, replacement bores. These protect existing users, local water quality and quantity and priority GDEs.

Adaptive environmental water

The plans allow for licence holders to have an Adaptive Environmental Water (AEW) condition attached to their licence. Additionally, an AEW licence can also be attached to a licence created through water savings or by buy back of entitlement. Once an AEW condition has been attached to a licence it must be managed for the benefit of the environment in accordance with the condition and any Adaptive Environmental Water Use Plan nominated in the condition. To date no AEW conditions have been attached to licences in these groundwater sources.

Clear water rights and trading

The Plan establishes rules for how water is shared between extractive users. Information on access licences, including conditions, entitlements, available water announcements and trading is available on public registers established by the Department in 2004 (web site reference at www.dwe.nsw.gov.au).

Basic rights

The plans provide water to satisfy basic landholder rights. An approval is required for a bore to extract basic landholder rights but no licence is required for the water extracted for this purpose.

Reasonable Use Guidelines for the extraction of basic rights water are currently being developed. The guidelines will prescribe limits on the taking and use of water for domestic and stock rights.

Available Water Determinations

An Available Water Determination (AWD) is the volume of water that is made available to licences within each category of access licence in a water source. It is the main tool that is used to ensure that average water use does not exceed the LTAEL. AWD announcements are made at the start of each water year (1 July). All categories of licence have received an AWD of 100 per cent or 1 ML per share unit each year since the plans commenced.

Water markets

Temporary trading of groundwater allocations was permitted in most water sources prior to the commencement of the plans. Permanent trading of entitlements independently of the land was generally not permitted.

On commencement of the plans the water licences were separated from land and a range of dealing (trading) options introduced. These include the assignment of shares (permanent trading) assignment of allocation (temporary trading), and the leasing of licences.

The implementation of the plans also removed other barriers to the efficient operation of water markets, facilitating more efficient and better informed trades. Key mechanisms include clear rules for trading (as outlined in each Plan, the Access Licence Dealing Principles Order and the Water

Management Act), and the establishment by the Department of public registers in showing the volume and price paid for access licence share assignments and allocation assignments. While permitted under the plans, records indicate that no water allocation or share component trades have occurred in the coastal groundwater plans since they commenced.

Monitoring

Each plan includes performance indicators for assessing the effectiveness of the Plan in achieving its objectives. The effectiveness of plans will be assessed by the Natural Resource Commission in the second half of the plan's ten year term. The Department is developing methods for long term monitoring of the water sources to support this assessment.

Monitoring bores have been established in all four of the coastal groundwater sources. The bores will be used to assess trends in groundwater levels and quality over the term of the plan and beyond. Such information forms an important component of plan review. Additionally, the studies outlined in Table 1 will assist in the review of the Plans. Table 2 shows the number of monitoring bores in each plan area

Table 2 Number of monitoring bores in each WSP area

Water Source	Number of monitoring bores	
	Water Level	Water Quality
Alstonville	25 monitoring bores at 12 sites	0
Stuarts Point	22 monitoring bores at 19 sites	7
Tomago Tomaree Stockton	6 monitoring bores with additional access to Hunter Water Corporation monitoring bores	0 Access to Hunter Water Corporation monitoring bores
Kulnura Mangrove Mountain	28 monitoring bores at 13 sites	0 Access to Central Coast Health monitoring information

Plan amendments

The Plans allow for a number of changes to be made over their term. These include changes to recharge estimates, environmental water provisions, and extraction limits based on further studies. Additional high priority groundwater dependent ecosystems can also be added to the Plans over their term.