Government of **Western Australia**
Department of **Water**

Gingin

surface water allocation plan



Looking after all our water needs

Water resource allocation
planning series
Report no 29
April 2011

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Department of Water
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and planning series
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Department of Water
168 St Georges Terrace
Perth Western Australia 6000
Telephone +61 8 6364 7600
Facsimile +61 8 6364 7601
www.water.wa.gov.au

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For more information about this report, contact:

Swan Avon Region office
Department of Water
7 Ellam Street
Victoria Park, Western Australia 6100

Telephone 08 6250 8000
Facsimile 08 6250 8050

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Foreword

For many decades surface water has been an important water source for horticulture and agriculture in the Gingin area. In the last thirty years there has been less rainfall and flows in most of the brooks have declined.

The Department of Water developed this plan in response to reports from the local community about the impact of upstream abstraction on downstream water users and the environment. The plan explains how the department will allocate water and manage abstraction, particularly during summer, when flows are low and demand for water is high.

Surface water abstraction in the plan area is equal to, and in some cases exceeds, the limits set by the department. Our goal is to optimise water use within these limits to maintain the supply to existing horticultural and agricultural users and minimise the risk to the environment.

Your input through the submissions we received on the public comment version of the plan has helped us to improve it for the final release. Our responses to the submissions are provided in the *Statement of response – Gingin surface water allocation plan*.

Maree De Lacey
Acting Director General, Department of Water

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The Department of Water manages how water is taken from surface and groundwater systems through water allocation plans.

We aim to manage surface water systems using a whole of water cycle approach. Our challenge is to meet existing and future demand while maintaining the productive base of the natural resource and its dependent ecosystems, now and into the future.

Need for a plan in this area

We developed the Gingin surface water allocation plan in response to reports received from surface water users about their reduced ability to take their full entitlement during the low flow period. Stream disputes have occurred because of the reduced reliability of streamflow.

In the mid 1990s the department capped abstraction from the Gingin surface water resources at the total of the (then) volume of entitlements. The community and the department agreed that there should be no further abstraction from the surface water resources until scientific work could be completed to understand the impact of upstream abstraction on downstream water users as well as the environment.

This allocation plan and the supporting *Gingin surface water allocation plan methods report* (DoW 2010b) is the first developed for the Gingin surface water resources.

Declining trends in rainfall and streamflow across the plan area indicate that any increase in abstraction will result in unacceptable impacts on existing users and the environment. However water for new developments may be accessible through:

- increased water use efficiency
- trades, transfers or leasing
- alternative water sources, where available.

Status of surface water resources

Some surface water resources in the plan area flow all year because summer flow is maintained by groundwater discharge (Tuffs 2010). However, monthly streamflow and minimum daily flows are decreasing in most resources. The declining trend correlates with a decline in annual rainfall since the 1970s. Streamflow is declining despite the fact that not all licensed entitlements are fully utilised.

We expect that rainfall will continue to decline in the future and that groundwater discharge which maintains summer flow will also decline. This will impact the reliability of supply for current and future water users as well as the ecological and social values associated with the resource.

Water use and availability

To manage the impacts of abstraction and reduced rainfall, the department has divided the plan area into twelve resources and set an allocation limit for each. All of the resources are either fully or over-allocated and there is currently no water available above which is currently licensed.

Allocation and licensing approach

The plan sets out the department's approach for managing surface water resources in the plan area. It provides allocation limits (see *Gingin surface water allocation plan methods report* for further details), and describes how we will:

- recover water by recouping unused entitlements to within the allocation limits
- allocate and license surface water if water becomes available (including through trades)
- manage the effect of upstream abstraction on downstream reliability
- maintain surface water flow to minimise the risk to other users and environmental values
- evaluate the performance of the plan against its objectives

In the Gingin surface water area the critical water allocation issue is managing abstraction during the low flow (generally summer) period when demand for water is greatest. At the time of the release of this plan, water is generally abstracted by pumping directly from a watercourse.

The current demand for surface water during the high flow (generally winter) period is low.

Finalising the plan using the public submissions

The department considered all the public submissions received on the *Gingin surface water allocation plan: draft for public comment* (DoW 2009a) to finalise this plan. We received seven submissions from a variety of respondent groups. Our response to comments received and how we considered them for the final plan are described in *Statement of response – Gingin surface water allocation plan* (DoW 2010a).

Chapter one

Introduction

The department has developed the *Gingin surface water allocation plan* to formalise the decision made in the mid 1990s to cap allocations from the surface water resources in the plan area. The cap was put in place by the department to allow time to investigate and assess the viability of further allocations from the surface water resources. The decision to cap abstraction was made in agreement with the local community, through the Gingin Brook advisory committee as well as past local land conservation and water management committees.

Since the mid 1990s, even with the cap on further allocations, the department has continued to receive complaints and has dealt with stream disputes in the area. The main issue is that downstream surface water users are not able to take their full licence entitlement volume during the summer low flow period.

To develop the *Gingin surface water allocation plan* we considered:

- the number of complaints received and stream disputes in the community
- the volume of current licensed entitlements, estimates of unlicensed abstraction and total abstraction
- that abstraction is by direct pumping from a watercourse in summer
- the reduction in average annual rainfall of 19% (comparison of 1889-1974 and 1997 -2007 periods)[1]
- declining stream flow trend in upper Gingin Brook of 14% and 26% in lower Gingin Brook (comparison of average annual stream flow over 1975 -1996 and 1997-2007 periods)[1]
- increasing stream flow trend in Lennard Brook from 1963 to 2001, however data from 2009-10 indicates that the stream flow may no longer be increasing[1]
- that groundwater discharge, which is declining, is important to maintain summer flow in most watercourses
- that permanent flow is important for the ecological and social water needs for Gingin and Lennard brooks

1.1 Purpose of the plan

The purpose of this plan is to formally set allocation limits to cap the volume of surface water that can be taken annually. Our aim is to maximise the reliability of supply for existing water use while minimising the risk to the riverine environment. Not all licensed entitlements in the plan area are fully utilised, therefore to prevent risk of future overuse we will recoup unused volumes to within the set allocation limits.

[1] *See Appendix C in Gingin surface water allocation plan methods report.*

The plan promotes the efficient use of the limited water available and allows access to water for commercial use through the trade, transfer or leasing of water from existing fully utilised, licensed entitlements. Detail on the method and decisions for setting the allocation limits are presented in the *Gingin surface water allocation plan methods report* (DoW 2010b).

1.2 Scope of the plan

The department has developed this plan and set allocation limits using available information. The allocation limits are the main tool used by the department to manage licensed and unlicensed (riparian right) abstraction and to minimise the risk to the riverine environment.

The plan provides:

- the allocation planning boundaries (section 1.4)
- the allocation limits (Chapter 3)
- our approach to managing surface water including:
  - the objectives for water allocation and the environment (section 2.1)
  - policies for allocating or recouping water licence entitlements (section 4.4)
  - how we will implement, evaluate and review the plan (Chapter 6)
- a monitoring program to measure streamflow and review critical low flow thresholds (Chapter 5).

The planning process has identified that there is a strong interaction between surface water and groundwater in the plan area and that groundwater discharge is important to maintain permanent summer flow. The volume of reliable permanent flow has reduced due to declining rainfall and groundwater levels.

We have considered the importance of maintaining surface and groundwater connectivity as part of developing the Gingin surface and groundwater allocation plans. To manage connectivity we have set allocation limits and capped abstraction from the Gingin surface water resources.

We are currently reviewing the allocation plan for the Gingin groundwater resources (in preparation), which includes:

- review of the existing allocation limits to align with reduced rainfall
- the development of local licensing policy. This will guide assessment of applications for groundwater abstraction where that abstraction may affect groundwater contribution to a surface water resource.

This plan does not:

- address water source protection, flooding, drainage or land planning issues
- address groundwater related issues in the Gingin area. This will be addressed in the forthcoming *Gingin groundwater allocation plan.*

1.3 Plan area

Location

This plan applies to the Gingin surface water allocation area which covers approximately 1430 km^2 and is located 70 km north of Perth. Most of the plan area is within the Shire of Gingin, except for a small portion in the south-east which is within the Shire of Chittering.

Proclamation

Three separately proclaimed areas under the *Rights in Water and Irrigation Act 1914* are within the Gingin surface water planning boundary (Figure 1):

- Gingin Brook catchment area, 1962
- Moore River and certain tributaries, 1950
- Swan River system, 1970.

Part of the Gingin surface water allocation area is not proclaimed under the *Rights in Water and Irrigation Act 1914* (Figure 1). Ideally all surface water abstraction would be managed through licensing, however a licence is not required to take water in unproclaimed areas under the current legislation.

While we cannot license abstraction in unproclaimed areas, this plan still applies as guidance. At the time of release of this plan, take from these areas was low and for non commercial purposes. We do not expect this to change in the short term because flow in these resources is unreliable and generally not suitable for commercial activities.

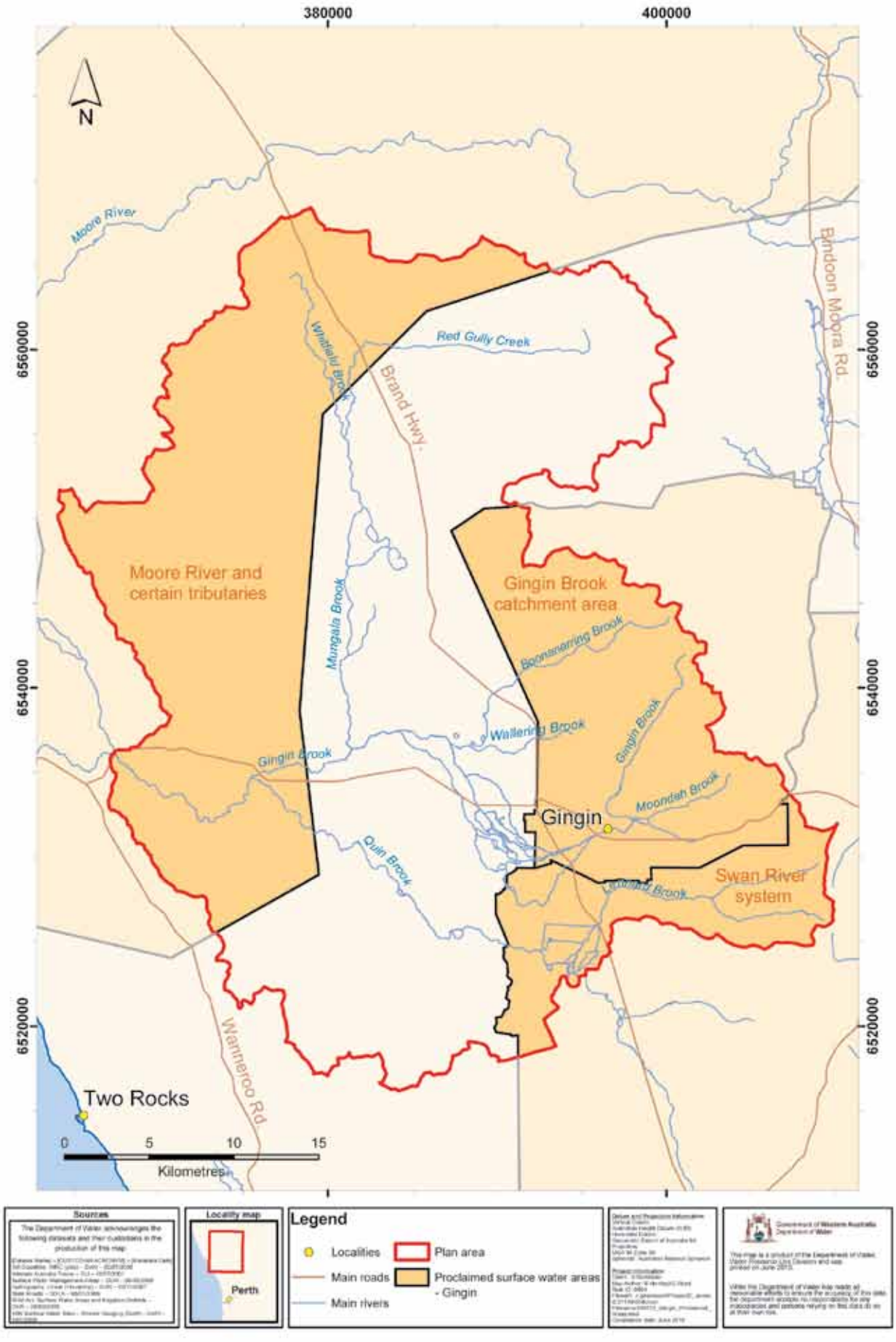


Figure 1
Proclaimed areas within the Gingin surface water allocation plan area

1.4 Water resources covered by this plan

This plan applies to the Gingin surface water allocation area, which includes the Lennard, Moondah, Gingin, Wallering, Mungala and Quin brook surface water allocation subareas (Figure 2). It applies to the water that flows over or is held in the main stream and tributaries of these watercourses.

For allocation planning purposes the Gingin surface water allocation subarea has been further divided into seven resource units (Gingin Brook 1 – 7). As a result there are twelve resource units in the plan area - referred to as resources in this plan (Table 1 and Figure 2).

We have set an allocation limit for each resource (Chapter 3) which is the total volume of surface water available for consumptive use in that resource.

Table 1
Gingin surface water allocation area by subarea and resources

Surface water allocation subarea	Surface water resource
Lennard Brook	Lennard Brook
Moondah Brook	Moondah Brook
Gingin Brook	Gingin Brook 1
	Gingin Brook 2
	Gingin Brook 3
	Gingin Brook 4
	Gingin Brook 5
	Gingin Brook 6
	Gingin Brook 7
Lennard Brook	Wallering Brook
Mungala Brook	Mungala Brook
Quin Brook	Quin Brook

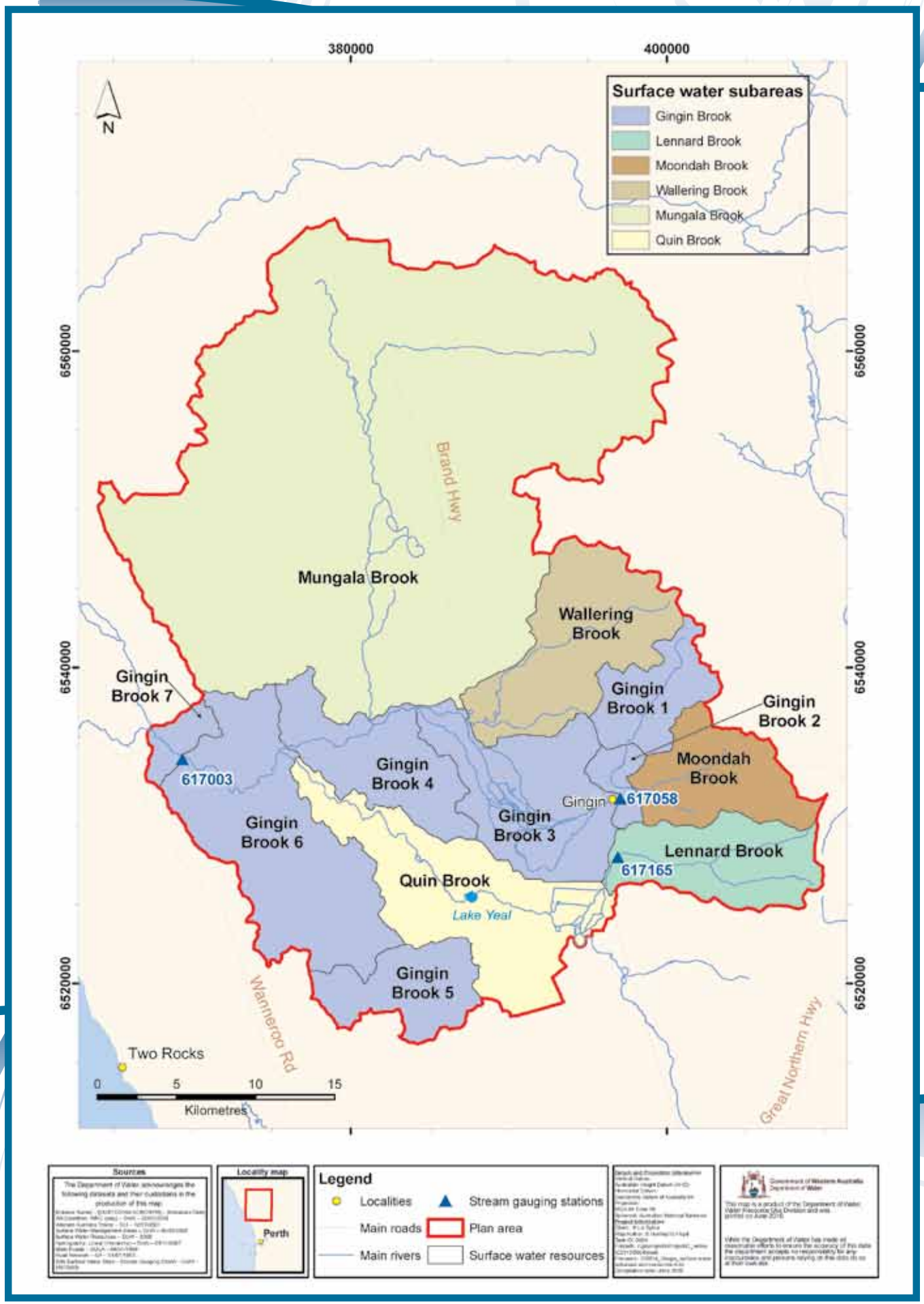


Figure 2
The plan area, surface water allocation subareas and surface water resources

1.5 When and how long this plan will apply

The *Gingin surface water allocation plan* will come into effect from the day it is endorsed by the Minister for Water. The plan will be valid until 2016. We will assess our performance against the objectives of the plan annually and may review the plan if the evaluation process recommends it.

The allocation limits came into effect the day the plan was released for public comment in September 2009. The new limits will be valid for the life of this plan. They may be reviewed earlier if new information becomes available or the plan evaluation process (Chapter 6) recommends it as necessary.

Chapter two

What we want this plan to achieve and how we will measure it

This section describes our objectives for the allocation of surface water in the Gingin surface water area. Our aim is to maximise reliability of supply for existing water use while minimising the risk to the riverine environment.

2.1 Objectives

The water resource objectives of this plan are to:

a maintain the capacity of the resources to supply water for use

b maintain sufficient flow regimes (summer and winter) in a changing climate to minimise risk to the riverine environment.

The water allocation management objectives of this plan are to:

c recover over-allocated resources to within the allocation limit

d increase efficient use of the limited water available during low flow periods.

2.2 How the plan will achieve its objectives

To meet the objectives of this plan we will:

- apply the department's approach for allocating (section 4.1) and licensing water (section 4.3)
- license water according to the licensing policies (section 4.4)
- implement the plan through the actions (section 6.1)
- annually evaluate the plan's performance against the objectives (section 6.2).

Chapter three

Allocation limits

An allocation limit is the total volume of water that the department sets aside for use annually from a resource. This includes water available for licensing and water for uses exempt from licensing.

In the Gingin surface water area long term streamflow records show a declining trend in most resources. This is linked to reduced rainfall and reduced groundwater discharge which maintains summer flow in most resources. The aim of setting allocation limits in this plan area is to maintain reliability of supply for existing water use while minimising the risk to the riverine environment. The method and process we used to make allocation limit decisions is described in the *Gingin surface water allocation plan methods report* (DoW 2010b).

Table 2 presents the allocation limits. Based on total entitlements at April 2011 all resources in the Gingin surface water allocation area are either fully or over-allocated.

Water availability is subject to change due to licence entitlements being issued or amended. Applicants are encouraged to contact the Swan Avon regional office for up-to-date water availability information and to discuss opportunities for accessing water through trading or alternative sources.

3.1 Components of the allocation limit

To keep account of how water is allocated the allocation limit is split into three components:

- licensable (general licensing, public water supply)[2]
- unlicensable (exempt use, including riparian rights)
- reserves (public water supply)[2]

For the Gingin surface water resources, the total amount of water available for general licensing is the allocation limit minus the volume of water set aside for exempt unlicensed use.

[2] *There are no public water supply licences or reserves in the Gingin surface water allocation area.*

Table 2
Allocation limits for Gingin surface water resources

Resource	Allocation limit kL/yr	Allocation limit components kL/year	
		Unlicensable (exempt use)	Licensable (general licensing)
Lennard Brook	2 434 310	25 000	2 409 310
Moondah Brook	808 651	1 000	807 651
Gingin Brook 1	476 385	15 000	461 385
Gingin Brook 2	130 975	25 000	105 975
Gingin Brook 3	75 414	11 622	63 792
Gingin Brook 4	5 488	5 488	0
Gingin Brook 5	0	0	0
Gingin Brook 6	233 492	10 000	223 492
Gingin Brook 7	328 888	10 000	318 888
Wallering Brook	12 234	12 234	0
Mungala Brook	5 824	5 824	0
Quin Brook	3 963	3 963	0
Total	**4 515 624**	**125 131**	**4 390 493**

Chapter four

Allocation and licensing policies

Water licences are the regulatory instrument the department uses under the *Rights in Water and Irrigation Act 1914* to manage individual take and use of water.

Allocation plans describe how we address water allocation and licensing issues specific to a plan area. They provide direction for the licence assessment process and licence conditions that may be necessary to manage local issues.

4.1 Approach to allocating water

The objectives set out in section 2.1 provide the structure for our approach to allocating water in the Gingin surface water area. The objectives are designed to promote efficient use of the limited water available while minimising risk to the riverine environment.

The department uses the licensing process to manage the available water, up to the allocation limits defined in Chapter 3. Prior to this plan, no formal allocation limits had been set for the Gingin surface water area. We managed abstraction through licences and the cap on allocations that was put in place in the mid 1990s.

The implications for allocating and managing surface water in the plan area to the allocation limits are:

- all resources are either fully-allocated or over-allocated
- a recovery strategy is being implemented in over-allocated resources to bring licence entitlements to within the licensable component of the allocation limit

Water for new entitlements may be accessible through:

- increased water use efficiency by existing licensees
- trades, transfers or leasing

Allocating water in fully-allocated resources

If water becomes available in fully-allocated resources of the Gingin surface water area, the department may consider alternative mechanisms to the first-in first-served approach to allocating water. The department will announce the alternative process and the volume that is available with the aim of optimising use of the available water.

Recovery strategy for over-allocated resources

Not all licensed entitlements in the Gingin surface water area are fully utilised. The department will actively seek to recoup unused entitlements to within the allocation limits. The aim is

to prevent further over-use considering current take has been identified as at or above what is sustainable for most resources in the plan area.

We will recoup unused licence entitlements (or unused portions of them) in accordance with *Statewide policy no. 11 – Management of unused licensed water entitlements* (WRC 2003a). The opportunity to recoup will be identified:

- at licence renewal
- if a licence is amended (trade, transfer or lease)
- during routine compliance surveys.

Recouped volumes in the Gingin surface water area may not be made available for new licences.

If water is recouped to below the allocation limit or the recouped volume is equal to or greater than 150 000 kL in an over-allocated resource the department will review the allocation limit for that resource.

A decision will be made to:

- retain the allocation limit, so the resource is no longer over-allocated and the recouped volume is available for licensing
- reduce the allocation limit so that the resource remains fully allocated and the recouped volume is not available for licensing.

The decision to amend the allocation limit will be based on an assessment of water resource monitoring data. Recouped volumes will not be made available for licensing if streamflow monitoring data indicates:

- the critical low flow thresholds have been reached
- annual, monthly and daily streamflow continues to decline.

Allocating water in low flow (summer) period

Where possible we encourage existing users to reduce their take during periods of low flow by applying water use efficiency measures and/or by seeking alternative water sources. If water storage is an option, we will consider proposals to pump from a water course into off-stream storage during high flow periods.

4.2 Legislative requirements

Rights in Water and Irrigation Act 1914

The *Rights in Water and Irrigation Act 1914* (the Act) establishes the legislative framework for managing and allocating water resources in Western Australia. Where water users in the plan area legally require a licence to take surface water, direction for licensing that take is provided under section 5C of the Act.

A permit is required under Clauses 11, 17 and 21 of the Act to lawfully interfere with the bed and banks of watercourses. This includes the installation of pumps or construction of dams.

The granting of a water licence is at the department's discretion. Along with the *Gingin surface water allocation plan*, we always consider the sections of Clause 7 (2) of Schedule 1 of the Act in exercising this discretion.

Clause 15 of Schedule 1 of the Act enables the department to include terms, conditions and restrictions to licences. Conditions may refer to attachments or other documents that the licence holder must abide by (e.g. an operating strategy).

Clause 24 (1) of Schedule 1 in the Act specifies the department's requirements for altering any licence condition and Clause 26 covers the rights of licensees. Any decision made on a licence application can be appealed through the State Administrative Tribunal.

The department has developed the policies in section 4.4 of this plan to provide further detail and guidance on setting licence conditions.

Riparian rights

Unlicensed abstraction refers to abstraction for stock and domestic use which may be a riparian right under the Act. Riparian rights are detailed in Part III, Division 1B, sections 9 and 20 of the Act. A riparian right grants a landholder the right to take surface water:

- in a proclaimed area, for domestic or non-intensive stock purposes, where a watercourse flows on public or crown land adjoining their property or flows across their private property
- in an unproclaimed area, in addition to the above, for any other purpose to the extent that the flow of water in the watercourse or the volume of water in wetlands is not sensibly diminished.

4.3 Licensing approach

A water licence provides a legal and secure access to water. The department uses water licences to manage water take and use at an individual scale to:

- protect other users
- protect water-dependent ecosystems
- support economic growth.

The department undertakes the licensing process in accordance with this allocation plan and the requirements of:

- the *Rights in Water and Irrigation Act 1914*
- state-wide strategic and operational policies
- local policies that apply to the plan area.

Auditing licensed take

Licensing officers from the Swan Avon region carry out licence compliance audits in the plan area to check licensees take and use of water is in accordance with the entitlement and conditions on their licence. As part of auditing we review monitoring and metering data and assess whether there are any local impacts associated with the surface water abstraction.

Trading (water entitlement transactions)

New surface water entitlements in Gingin may be accessible through water entitlement transactions (trading, transfer or leasing) from existing licensees in accordance with *Operational policy no. 5.13 – Water entitlement transactions for Western Australia* (DoW 2009c).

A licensee can only undertake a water entitlement transaction if they can successfully demonstrate that they have taken the licensed volume of water in accordance with their licence conditions (measured by meter readings or another approved method).

Trading in over-allocated resources will only be approved where the trade will result in the movement of an entitlement to a location where there is a reduced impact on other users and/or the environment.

Water-use efficiency

To meet the objectives of the plan we encourage surface water users to implement water use efficiency measures. This will be achieved through the licensing policies outlined in Table 4 particularly water entitlement transactions like trading.

Because the surface water resources in Gingin are fully or over-allocated, water savings achieved through water use efficiency measures will not be recouped. It is expected, however, that the water saved is used either through trading or expansion of the existing operation. If this does not occur the department may recoup and redistribute the saved volume in accordance with *Statewide policy no. 11 – Management of unused licensed water entitlements*.

Land planning changes and subdivisions

Where land planning changes are implemented and larger blocks that have a water licence are subdivided, the department cannot guarantee that the water licence will be transferred or split between the new properties.

4.4 Licensing policies

Policies that apply state-wide

The department develops strategic and operational policies that apply across the state. Table 3 outlines the main strategic and operational policies that apply in the Gingin surface water allocation area.

Table 3
Main strategic and operation policies that apply in the Gingin surface water area

Policy	Description
Statewide policy no. 5 - Environmental water provisions policy (WRC 2000)	Guidance on how the department provides water for environmental flows and the passage of aquatic life in surface and groundwater resources in the state.
Statewide policy no. 11 – Management of unused licensed water entitlements (WRC 2003a)	The circumstances when whole or portions of licensed entitlements may be recouped by the department to maximise development opportunities, including: • if it is proved that the entitlements are consistently unused • extenuating circumstances cannot be provided.
Statewide policy no. 12 – Management of complaints and disputes on watercourses in Western Australia (WRC 2004)	How the department deals with complaints and disputes between neighbours along the same stream or watercourse.
Operational policy no. 5.13 – Water entitlement transactions for Western Australia (DoW 2009c)	The rules for a trade, transfer or lease of all, or part of a licensed water entitlement.
Strategic policy 5.03 – Metering the taking of water (DoW 2009d) *Guidelines for water meter installation* (DoW 2009e) *Rights in Water and Irrigation (Approved Meters) Order 2009*	The department's position on metering the take of water and the circumstances where metering conditions may be imposed on individual licences.
Operational policy no. 5.11 – Timely submission of required further information (DoW 2009g)	The departments approach to managing timelines when a licensee is requested to submit additional information as part of their licence application.
Operational policy no. 5.8 – Use of operating strategies in the water licensing process (DoW 2010c)	Guidance on when an operating strategy is required and what it should contain, including: • the water licence applicants that are likely to require an operating strategy • how operating strategies form part of the conditions of a water licence • how licence applicants should develop an operating strategy • the licensee's responsibilities in complying with an operating strategy.
Statewide policy no. 8 – Giving an undertaking to grant a licence or a permit under the Rights In Water and Irrigation Act 1914 (WRC 2006)	The circumstances under which the department will give undertakings for: • granting a licence to take water • approval of agreements with respect to water entitlements • permits to interfere with a watercourse.
Operational policy no 1.2 – Policy on water conservation/efficiency plans: achieving water-use efficiency gains through water licensing (DoW 2009f)	Direction on preparing water conservation and efficiency plans required by water users as part of the water licensing process.
Enforcement and prosecutions policy (DoW 2008)	The departments approach if a licensee fails to comply with a licence entitlement or a licence condition.

Local licensing policies for the Gingin plan area

Local policies developed for the Gingin surface water area are outlined in Table 4. Where local licensing policies apply they take precendence over statewide strategic or operational policies.

Table 4
Local policies specific to licensing in the Gingin surface water area

Policy group	Policy detail
1 Water licensing and use	
1.1 Licence conditions	Licence conditions may state that flow must be maintained beyond the licensee's downstream property boundary during summer low flow periods.
1.2 Metering and monitoring	In the Gingin surface water area meters may be required where: • An existing licensed entitlement is equal to or greater than 50 000kL. • The licence assessment process identifies special cases where metering is necessary.
1.3 Water level and flow criteria	Where an abstraction is likely to have an effect during the low flow period, the department may specify the following as licence conditions: • A maximum daily abstraction rate. • Period when pumping is permitted. • A minimum water level above which abstraction is permitted. • Additional monitoring or measurement. • Installation of a staff gauge to monitor water levels.
1.4 Aquaculture	Aquaculture is considered as stock raised under intensive conditions and is not exempt from licensing.
2 Trading (water entitlement transactions)	
2.1 Trading across resource boundaries	The department will permit trading across the resource boundaries of Gingin Brook 1, 2, 3, 4, 6 and 7, subject to the licence assessment process.

Chapter five

Monitoring program for the plan area

The department monitors streamflow at gauging stations in the plan area as part of our state reference network (Figure 2). To assess the response of the resources to abstraction and reduced rainfall we monitor water levels and flows at:

- Gingin Brook gauging station 617058 (upper Gingin Brook)
- Bookine Bookine gauging station 617003 (lower Gingin Brook)
- Molecap Hill gauging station 617165 (Lennard Brook)

Water level and flow for the three gauging stations are available on the department's website.

For this plan, the department used streamflow data from the gauging stations to:

- inform our allocation limit decisions
- set critical low flow thresholds
- compare proposed ecological water requirements to observed streamflow.

We will continue to monitor the gauging stations and annually review the data collected to help us to evaluate whether we are meeting the objectives of the plan. We will use the monitoring information to:

- assess the flow at each gauging station and identify changes in annual, monthly and daily streamflow
- determine when flow drops below the critical low flow thresholds at the Gingin Brook gauging station and Molecap Hill gauging station (Table 7 and Table 8)
- review and amend the allocation limits as required.

We will review the current monitoring program if the annual evaluation identifies that it is not adequate to assess whether the objectives of the plan are being met.

Chapter six

Implementing and evaluating the plan

This chapter sets out how the department will implement, evaluate and review the *Gingin surface water allocation plan*.

6.1 Implementing the plan

We have committed to a set of actions to implement this plan (Table 5) and improve planning in the future (Table 6).

Table 5
Actions for implementing this plan

No.	Action	Responsibility*	Timeframe
Resource assessment			
1.	Assess streamflow monitoring data to identify the number of times per year that flows fall below the critical low flow thresholds for a minimum of two consecutive days (Gingin Brook and Molecap Hill gauging station).	Water Resource Assessment and Water Allocation Planning	May annually
2	Analyse streamflow monitoring data to identify changes in annual, monthly and daily streamflow at Gingin Brook, Bookine Bookine and Molecap Hill gauging stations.	Water Resource Assessment and Water Allocation Planning	May annually
	Licensing		
3.	Collate water use information from licensees including: • metered data • recouped volumes • actual water use (see 5 below).	Swan Avon Region	Annually
	Licensing		
4.	Conduct compliance surveys: • at licence renewal • for entitlement transaction applications (in areas where water has become available) • annually of at least 3 randomly selected licensees with entitlements over 50 000 kL.	Swan Avon Region	On going

Table 5 Continued
Actions for implementing this plan

	Recovery strategy – over-allocated resources		
5.	Review an allocation limit when: • a volume of ≥150 000 kL is recouped in a resource • water is recouped so that total entitlements are below the licensable component of an allocation limit • the department receives evidence based complaints regarding low flow events (see Table 8) • relevant new scientific or water-use information becomes available (see actions 1-4).	Swan Avon Region and Water Allocation Planning	As required
	Evaluation statement		
6.	Produce and publish an annual evaluation statement.	Swan Avon Region	Annually

Table 6
Actions for future planning

No.	Action	Responsibility*	Timeframe
Monitoring			
7.	Improve the critical low flow thresholds to inform management of summer flows. As part of this define: • the key ecological objectives • the water level and equivalent flow regime required to meet the key ecological objectives • which gauging stations will be used to assess compliance with the required flow regime • the appropriate management response if the flow and ecological objectives are not met.	Water Allocation Planning and Water Science	2015
Licensing			
8.	Investigate options for licensing take of water during the high flow (winter) period.	Water Allocation Planning and Swan Avon Region	2017

*Departmental branch responsible for the action.

6 Implementing and evaluating the plan

We have developed a management trigger and response for when complaints are received from local community members about low flow events (Table 7)

Table 7
Management trigger and response

Event	Trigger	Response
Low flow event	Evidence based complaint received from water user in the plan area that they are not able to abstract their full entitlement.	• Review flow monitoring data and identify low flow events. Low flows are flows which fall below the critical low flow thresholds for 2 consecutive days. • Identify cease to flow events where possible, keeping in mind that some may not be detectable because of the location of the gauging stations. • Investigate surrounding licensees and issue a direction to restrict pumping where appropriate.

6.2 Evaluating the plan's success

Table 8 summarises the performance indicators that we will use to measure the performance of this plan against its objectives.

Table 8
Performance indicators against the plan objective

Performance indicator	Objective	How we will evaluate it
Flow does not drop below critical low flow thresholds	a and b	The flow does not drop below: • 10 ML/day at Gingin Brook gauging station • 5 ML/day at Molecap Hill gauging station for more than two consecutive days in a year.
There is sufficient flow for licensees to take their whole licence entitlement	a and d	• Assess the number and cause of evidence based complaints or disputes about insufficient streamflow.
The volume of water abstracted does not exceed the volume of water allocated	a–d	• Review water use information (from compliance surveys and metering reports).
Licensees comply with their licence conditions	a-c	• Annual review of monitoring data submitted as a licence condition. • For existing licence entitlements undertake on-site surveys to check that water take and use complies with licence conditions and operating strategies.
All unused water entitlements are recouped in over-allocated resources	c	• There are no unused entitlements in over allocated resources • Licence entitlements reflect actual water use.

We will release an annual evaluation statement that will identify whether the plan is achieving its objectives and meeting the performance indicators. The evaluation statement will be available on the department's website or by contacting the Swan Avon regional office.

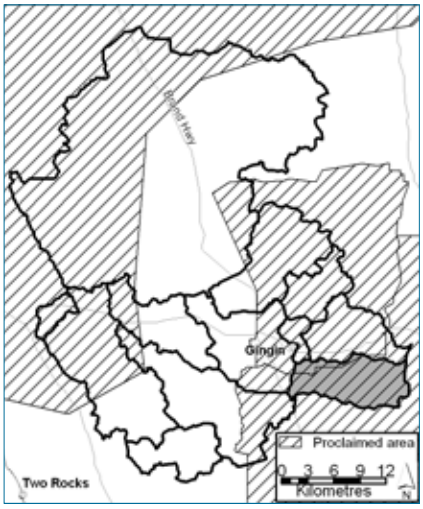
Appendices

Gingin surface water allocation plan

A

Appendix A
Resource reference sheets

Lennard Brook

Description		
Area	62 km²	
Proclamation	Swan River system, 1970	
Shires	Shires of Gingin and Chittering	
Land and water use	• Mostly freehold land used for agricultural and horticultural purposes including cropping, irrigated pasture and perennial horticulture. • Surface water is used for stock and domestic, irrigated horticulture, cattle production and orchards. • Current land use is moving from rural to rural–residential.	

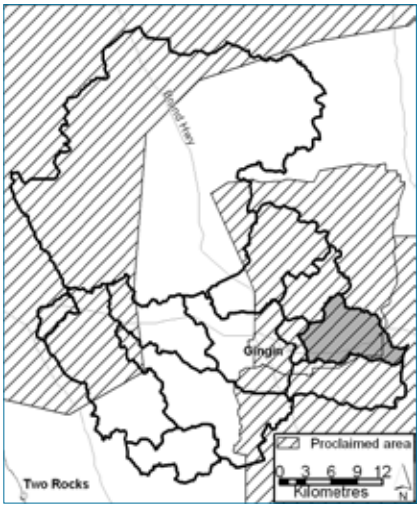
Issues
• High nutrient levels have been recorded in the brook as a result of surrounding horticultural and agricultural land use. • Most summer flow is maintained by groundwater discharge. • Surface water flow during the high flow (winter) period provides valuable inputs into Bambun Lake. • 59% of land is cleared in this resource

Surface water monitoring		
Stream gauging station	Flow behaviour	Period of record
Molecap Hill (617165)	Permanent flow all year round with lower flow in summer and higher flow in winter. Groundwater discharge is from the Mirrabooka aquifer and possibly the Leederville aquifer General increasing trend in annual streamflow since early 1970's. Annual flow for 2009 was 6.2 GL, similar to the average annual flow over the 1975 – 2001 period of 6.5 GL	1963 to 2001 (gauging station was closed from 2002 - 2008) Reopened end 2008
Mean annual flow	6.5 GL	1975 to 2001
Annual flow range	3.4 to 8.5 GL	1963 to 2001

Alterations to flow	
Major structures	Two private weirs in upper reaches of brook (constructed pre-licensing with minimal current impact)
Major abstractions	Fifteen licences totalling 2 409 310 kL/year
Drainage	No significant drainage

Considerations for water management include, but are not limited to:	
Ecological	Wetlands and waterways: Lennard Brook flows into wetlands within Bampanup Nature Reserve including lakes Bambun and Yeal.
Cultural	Native Title registered application: Yued Registered Aboriginal sites: Aboriginal mythological and burial sites of significance exist in the resource area associated with Lennard Brook.
Social	No significant social sites that depend on flow have been identified.

Moondah Brook

Description		
Area	57 km^2	
Proclamation	Gingin Brook catchment area, 1962	
Shires	Shires of Gingin and Chittering	
Land and water use	• Mainly freehold land for agricultural and horticultural purposes. Some Crown reserve vested with Shire of Gingin and DoE. • Surface water is used for pasture, wine grapes, marron production and stock and domestic. • The current rural land use is stable.	

Issues

- Most summer flow is maintained by groundwater discharge.
- Current abstraction is at or possibly exceeding ecologically sustainable limits during low flow periods.
- Summer flow is expected to continue to decline. This will further reduce the reliability of supply for surface water users and increase the risk to the environment.
- 58% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Not gauged. The closest gauging station is the Gingin Brook gauging station (617058).	Permanent flow all year round with summer low flow and winter high flow. Groundwater discharge is from the Mirrabooka aquifer. Decreasing trend in annual streamflow observed at the Gingin Brook gauging station since 1975.	N/A

Alterations to flow

Major structures	No major on-stream structures
Major abstractions	Three licences totalling 897 390 kL/year
Drainage	No significant drainage

Considerations for water management include, but are not limited to:

Ecological	*Wetlands and waterway:* A portion of the brook is classified as a conservation category wetland.
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* Moondah Brook is registered as a mythological site.
Social	*Towns and localities:* Locality of Ginginup, Moondah and Mooliabeenee *Social value sites:* The social values of Moondah Brook are maintained with flow permanence.

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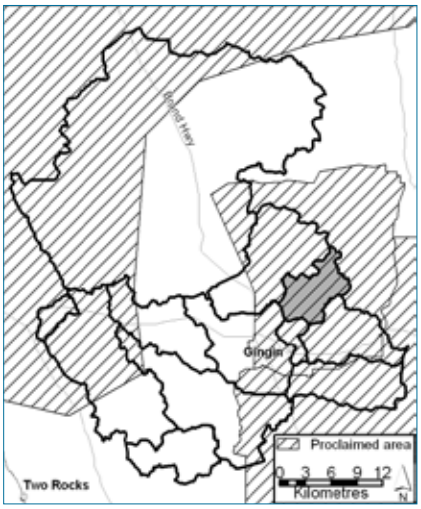
Appendix A
Resource reference sheets

Gingin Brook 1

Description		
Area	38 km²	
Proclamation	Gingin Brook catchment area, 1962	
Shire	Shire of Gingin	
Land and water use	• The land is freehold and used mainly for horticulture. • Surface water is used mainly for pasture. • The current rural and rural-residential land use is stable.	

Issues

- Most summer flow is maintained by groundwater discharge.
- Current abstraction is at or potentially exceeding ecologically sustainable limits during low flow periods.
- Summer flow is expected to continue to decline. This will further reduce the reliability of supply for surface water users and increase the risk to the environment.
- Managing conjunctive surface water and groundwater use.
- High nutrient levels have been recorded in the brook as a result of surrounding horticultural and agricultural land use.
- 65% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Not gauged. The closest gauging station is the Gingin Brook gauging station (617058).	Permanent flow all year round with summer low flow and winter high flow. Groundwater discharge is from the Mirrabooka aquifer and possibly the Leederville aquifer. Decreasing trend in annual streamflow observed at the Gingin Brook gauging station since 1975.	N/A

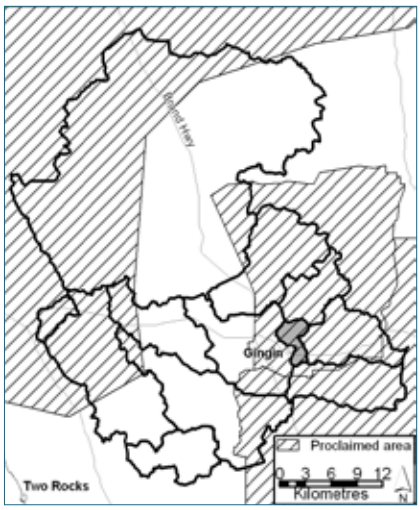
Alterations to flow

Major structures	No major on-stream structures
Major abstractions	One licence for 512 650 kL/year
Drainage	No significant drainage

Considerations for water management include, but are not limited to:

Ecological	*Wetlands and waterway:* The Gingin Brook is classified as conservation significant in this resource.
Cultural	*Native Title registered application:* Yued
Social	Towns and localities: localities of Cullalla, Ginginup and Boonarring Registered sites: Gingin Brook from the headwaters to the start of the 'horseshoe' near Gingin Town is registered with the National Estate.

Gingin Brook 2

Description		
Area	12 km^2	
Proclamation	Gingin Brook catchment area, 1962	
Shire	Shire of Gingin	
Land and water use	• Land is freehold and used mainly for horticulture. • Surface water is used mainly for wine grapes and stock watering. • The current rural and residential land use is stable.	

Issues

- Most summer flow is maintained by groundwater discharge.
- Current abstraction is at or potentially exceeding ecologically sustainable limits during low flow periods.
- Summer flow is expected to continue to decline. This will further reduce the reliability of supply for surface water users and increase the risk to the environment.
- Limited metering is in place to measure surface water usage.
- Managing conjunctive surface and groundwater use.
- High nutrient levels have been recorded in the brook, resulting from horticultural and agricultural land use.
- 96% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Gingin Brook (617058)	Permanent flow all year round with summer low flow and winter high flow. Groundwater discharge is from the Mirrabooka and Leederville aquifers. Decreasing trend in streamflow observed at the Gingin Brook gauging station since 1975.	1958 to 2007
Mean annual flow	11.0 GL	1997 to 2007
Annual flow range	9.0 GL to 21.0 GL	1958 to 2007

Alterations to flow

Major structures	Private weir
Major abstractions	Three licences totalling 117 750 kL/year
Drainage	No significant drainage

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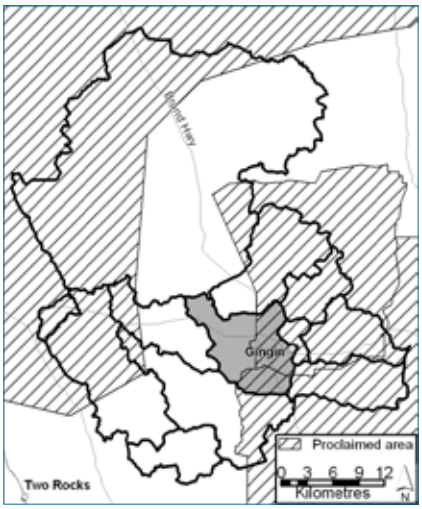
Appendix A
Resource reference sheets

Gingin Brook 2

Considerations for water management include, but are not limited to:	
Ecological	Wetlands and waterway: The Gingin Brook is classified as conservation significant in this resource. Threatened fauna: A threatened native fish species has been recorded in the resource.
Cultural	Native Title registered application: Yued Registered Aboriginal sites: Stored data exists on an Aboriginal site of significance that is associated with Gingin Brook in the resource.
Social	*Towns and localities:* Town of Gingin. Localities of Gingin and Ginginup *Registered sites:* Gingin Brook from the headwaters to the start of the 'horseshoe' near Gingin Town is registered with National Estate.

Gingin Brook 3

Description		
Area	86 km²	
Proclamation	Mostly unproclaimed. East portion under the Gingin Brook catchment area, 1962 and Swan River system, 1970.	
Shire	Shire of Gingin	
Land and water use	• The land is mainly freehold and used for horticulture and residential. • Surface water is used mainly for pasture and stock watering. • Current land use is moving from rural to urban–commercial and rural–residential.	

Issues

- Summer flow, if present, is due to groundwater discharge from the upper reaches of Gingin and Moondah Brook (outside the boundary of this resource unit).
- Downstream of Gingin town site (within the boundary of this resource unit) groundwater levels are below the base of the Brook. This resource is not maintained by direct groundwater discharge and has dried up over the summer months.
- Drying of the watercourse over summer is expected to continue. This will further reduce the reliability of supply to surface water users and increase the risk to the environment.
- Current abstraction is at or potentially exceeding ecologically sustainable limits during low flow periods.
- Some local landholders are operating outside their riparian right and over-abstracting from this resource for commercial and domestic purposes. Some do not practice good water management.
- Limited metering is in place to measure surface water usage
- High nutrient levels have been recorded in the brook, as a result of horticultural and agricultural land use.
- 85% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Not gauged. The closest gauging station is the Gingin Brook gauging station (617058).	Winter flow only. In the past this resource flowed all year round but now can dry up over summer. No groundwater discharge. Groundwater level is below base of the Brook. Decreasing trend in streamflow observed at the Gingin Brook gauging station since 1975.	N/A

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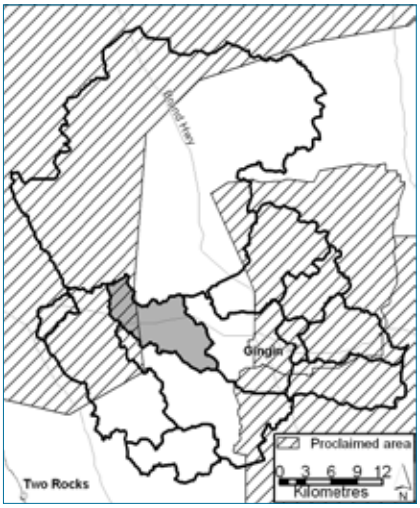
Appendix A
Resource reference sheetsn

Gingin Brook 3

Alterations to flow	
Major structures	Gingin town site weir
Major abstractions	Seven licences totalling 70 880 kL/year
Drainage	In the 1960s drains were cut into the landscape to drain the land and channel water directly to users.
Considerations for water management includes, but is not limited to	
Ecological	*Wetlands and waterway:* A portion of the brook is classified as conservation category wetland with other portions as multiple use. *Threatened ecological communities, threatened fauna and declared rare flora sites:* There have been sightings of threatened bird and mammal species near the brook in this resource. They may depend on the brook as drought habitat.
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* Numerous mythological and historical Aboriginal sites of significance exist in the resource and are associated with the Gingin Brook, particularly the Gingin Brook Waugal site which covers most of the brook and its tributaries.
Social	*Towns and localities:* Town of Gingin. Localities of Gingin, Granville, Coonabidgee and Muckenburra. *Recreational sites:* Granville Park which consists of the town weir, town pool and water wheel and Three Bridges associated with the three branches of the Gingin Brook. The social values are maintained by flow permanence.

Gingin Brook 4

Description		
Area	63 km^2	
Proclamation	Mostly unproclaimed. West portion under the Moore River and certain tributaries, 1950.	
Shire	Shire of Gingin	
Land and water use	• The land is freehold and mainly used for horticulture • Groundwater is the main water source and there is no licensed surface water use. • The current rural land use is stable.	

Issues
• Most summer flow is maintained by groundwater discharge. • Summer flow is expected to continue to decline which will increase the risk to the environment. • There is demand for surface water in this resource as there is no additional groundwater available • High nutrient levels have been recorded in the brook, as a result of horticultural and agricultural land use. • 58% of land is cleared in this resource

Surface water monitoring		
Stream gauging station	Flow behaviour	Period of record
Not gauged. The closest gauging station is the Bookine Bookine gauging station (617003).	Permanent flow year round with summer low flow and winter high flow. Groundwater discharge is from the superficial and Leederville aquifers. Decreasing trend in streamflow observed at the Bookine Bookine gauging station since 1975	N/A

Alterations to flow	
Major structures	None
Major abstractions	No licensed entitlements
Drainage	None

Considerations for water management include, but are not limited to:	
Ecology	*Wetlands and waterway:* The Gingin Brook is classified as conservation significant in this resource.
Culture	*Native Title registered application:* Yued *Registered Aboriginal sites:* Numerous mythological and historical Aboriginal sites of significance exist in the resource that are associated with the Gingin Brook, particularly the Gingin Brook Waugal Site which covers most of the brook and its tributaries.
Social	*Towns and localities:* Localities of Muckenburra and Beermullah

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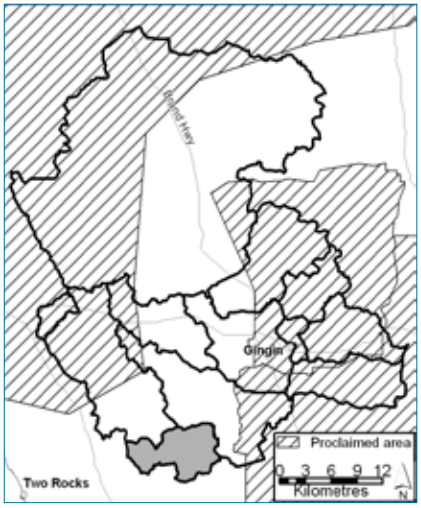
Appendix A
Resource reference sheets

Gingin Brook 5

Description		
Area	44 km²	
Proclamation	Unproclaimed	
Shire	Shire of Gingin	
Land and water use	• The land use in this resource is nature reserve and state forest. These land uses are stable. • Surface water is not used in this resource.	

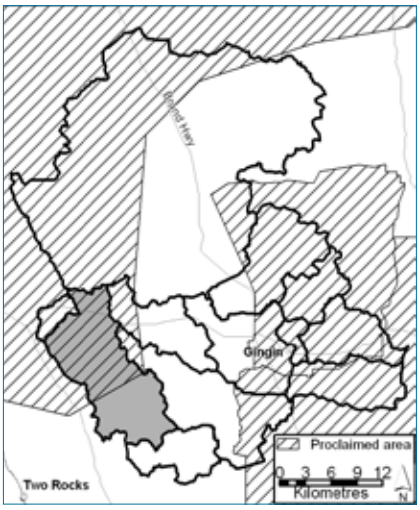
Issues
• This resource does not contain a defined stream channel – it is a catchment area for the Gingin Brook. • Surface water is not able to be abstracted from this resource. • There is no groundwater discharge in this resource. • 27% of land is cleared in this resource

Surface water monitoring		
Stream gauging station	Flow behaviour	Period of record
Not gauged.	N/A	N/A

Alterations to flow	
Major structures	None
Major abstractions	None
Drainage	None

Considerations for water management include, but are not limited to:	
Ecology	*Wetlands and waterway:* There are swamps located in the resource that are classified as conservation wetlands.
Culture	*Native Title registered application:* Yued
Social	*Towns and localities:* Locality of Yeal *National parks, reserves and state forest:* Yeal Nature Reserve and Gnangara–Moore River State Forest cover 100% of this resource.

Gingin Brook 6

Description		
Area	133 km²	
Proclamation	The northern portion under the Moore River and certain tributaries, 1950 South portion is unproclaimed.	
Shire	Shire of Gingin	
Land and water use	• The land is mainly freehold and used for horticulture. • Surface water is used for turf production. • The current rural land use is stable.	

Issues

- Most summer flow is maintained by groundwater discharge.
- Current abstraction is at or potentially exceeding ecologically sustainable limits during low flow periods.
- Summer flow is expected to continue to decline. This will further reduce the reliability of supply for surface water users and increase the risk to the environment.
- High nutrient levels have been recorded in the brook, as a result of horticultural and agricultural land use.
- 61% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Bookine Bookine (617003)	Permanent flow all year round with summer low flow (0.26 GL/month) and winter high flow (10 GL/month). Groundwater discharge is from the superficial aquifer. Decreasing trend in streamflow observed at the Bookine Bookine gauging station since 1975.	1973 to 2007
Mean annual flow	27.7 GL	1997 to 2007
Annual flow range	13.5 to 74.0 GL	1973 to 2007

Alterations to flow

Major structures	No major structure identified
Major abstractions	One licence for 248 325 kL/year
Drainage	No significant drainage

Considerations for water management include, but are not limited to:

Ecological	*Wetlands and waterway:* Gingin Brook is classified as conservation significant in this resource.
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* Numerous mythological and historical Aboriginal sites of significance exist in this resource that are associated with the Gingin Brook, particularly the Gingin Brook Waugal Site which covers most of the brook and its tributaries.
Social	*Towns and localities:* Locality of Neergabby and Yeal *National parks, reserves and state forest:* Yeal Nature Reserve and Gnangara–Moore River State Forest cover approximately 30% of this resource.

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Appendix A
Resource reference sheets

Gingin Brook 7

Description		
Area	13 km²	
Proclamation	Moore River and certain tributaries, 1950.	
Shire	Shire of Gingin	
Land and water use	• The land use is mainly freehold for horticulture. • Surface water is used for pasture. • The current rural land use is stable.	

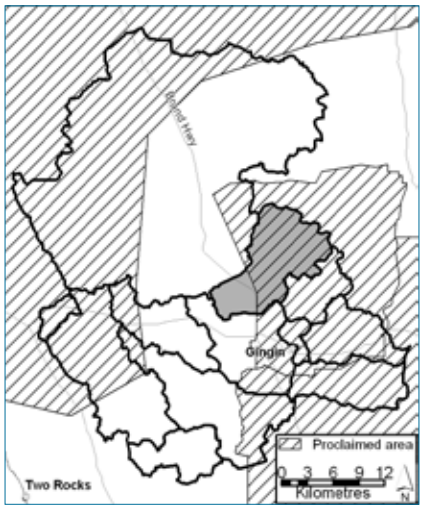
Issues
• Most summer flow is maintained by groundwater discharge. • Current abstraction is at or potentially exceeding ecologically sustainable limits during low flow periods. • Summer flow is expected to continue to decline. This will further reduce the reliability of supply for surface water users and increase the risk to the environment. • High nutrient levels have been recorded in the brook, resulting from horticultural and agricultural land use. • 73% of land is cleared in this resource

Surface water monitoring		
Stream gauging station	Flow behaviour	Period of record
Not gauged. The closest gauging station is the Bookine Bookine gauging station (617003).	Decreasing trend in streamflow observed at the Bookine Bookine gauging station since 1975. Groundwater discharge is from the superficial aquifer.	N/A

Alterations to flow	
Major structures	No major structure identified
Major abstractions	One licence for 354 320 kL/year
Drainage	No significant drainage

Considerations for water management include, but are not limited to:	
Ecology	*Wetlands and waterway:* Gingin Brook is classified as conservation significant in this resource.
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* Numerous mythological and historical Aboriginal sites of significance exist in the resource that are associated with the Gingin Brook, particularly the Gingin Brook Waugal Site which covers most of the brook and its tributaries.
Social	*Towns and localities:* Locality of Neergabby *Recreational sites:* Old Junction Bridge. *Registered sites:* A section of the North West Stock Route (Yanchep to Neergabby) passes through this resource. This social value is dependent on permanent water in Gingin Brook near the confluence with Moore River at Neergabby.

Wallering Brook

Description		
Area	93 km^2	
Proclamation	West portion under Gingin Brook catchment area, 1962 West portion is unproclaimed.	
Shire	Shire of Gingin	
Land and water use	• Approximately 40% of the resource is covered by nature reserve. The remaining land is freehold. • Surface water is used for stock and domestic use. There are no surface water licences in the resource. • Land use is stable as rural.	

Issues
• Understanding of the hydrology of Wallering Brook is limited • 40% of land is cleared in this resource

Surface water monitoring		
Stream gauging station	Flow behaviour	Period of record
Not gauged.	Possible discharge from Mirrabooka aquifer in headwaters. No groundwater discharge in lower reaches.	N/A

Considerations for water management include, but are not limited to:	
Ecological	*Wetlands and waterways:* Yeerealup and Boonalarup lakes are in the resource but we are not aware if they receive flow from Wallering Brook.
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* Boonanarring and Wallering brooks are mythological sites associated with wetlands and watercourses.
Social	*Towns and localities:* Grandville, Ginginup and Boonanarring *National parks: Reserves and state forest:* Boonanarring nature reserve

A

Appendix A
Resource reference sheets

Mungala Brook

Description		
Area	710 km²	
Proclamation	Half proclaimed under Moore River and certain tributaries, 1950. Small east portion under Gingin Brook catchment area, 1962. Half is unproclaimed.	
Shire	Shire of Gingin	
Land and water use	• Mostly freehold land used for agricultural and horticultural purposes. One third is nature reserve • Surface water is used for stock and domestic. There are no surface water licenses in the resource • Land use is stable as rural and nature reserve.	

Issues

- At the confluence with Gingin Brook, Mungala Brook flows all year, base flow is maintained by groundwater discharge.
- There are numerous drains in the resource which may direct flow away from the brooks.
- The brook supplements a number of perennial and ephemeral lakes such as Beermullah and White lakes.
- 48% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Not gauged.	Groundwater discharges from the superficial and Leederville aquifer in lower reaches.	N/A

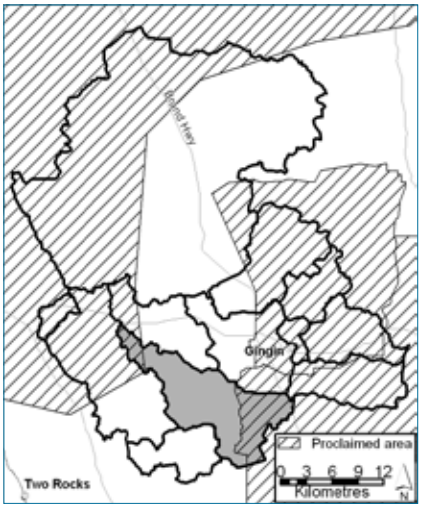
Alterations to flow

Major structures	No major on-stream structures
Major abstractions	There are no surface water licences in the Mungala Brook resource.
Drainage	Beermullah overflow is an artificial channel that diverts low quality water away from the lake, allowing higher quality water to flow in.

Considerations for water management include, but are not limited to:

Ecological	*Wetlands and waterways:* Beermullah Lake, White Lake and associated unnamed wetlands receive flow from Mungala Brook..
Cultural	*Native Title registered application:* Yued *Registered Aboriginal sites:* A large portion of the Red Gully Creek and numerous wetlands associated with this resource are mythological sites that are associated with wetlands and watercourses.
Social	*Towns and localities:* Localities of Beermullah, Wanerie, Boonanarring, Red Gully and Mindarra *National parks, reserves and state forest:* The combined area of Moore River National Park, Moore River Nature Reserve and Sand Spring Well Nature Reserve cover approximately a third of the resource area. Bartletts Well, Yurine Swamp, Bootine and Boonanarring nature reserves are also within the resource.

Quin Brook

Description		
Area	117 km²	
Proclamation	Mostly unproclaimed. A small portion in the west under Moore River and certain tributaries, 1950. Small portion in the east under Gingin Brook catchment area, 1962.	
Shire	Shire of Gingin	
Land and water use	• Approximately 50% of the resource is covered by nature reserve and state forest. The remaining land is freehold. • Surface water is used for stock and domestic purposes. There are no surface water licences in the resource • Land use is stable as rural and nature reserve.	

Issues

- The hydrology of Quin Brook is not well understood. There are both gaining and losing reaches along this watercourse.
- Near the confluence with Gingin Brook, Quinn Brook flows all year, base flow is maintained by groundwater discharge
- Winter flows are important to fill Lake Yeal
- Downstream of Lake Yeal high winter flows may recharge the underlying aquifer
- 29% of land is cleared in this resource

Surface water monitoring

Stream gauging station	Flow behaviour	Period of record
Not gauged.	Groundwater discharge from superficial and Leederville aquifer in lower reaches, at the confluence with Gingin Brook.	N/A

Alterations to flow

Major structures	No major on-stream structures
Major abstractions	There is no surface water licences in this resource.
Drainage	No significant drainage

Considerations for water management include, but are not limited to:

Ecological	*Wetlands and waterways:* Yeal Lake and other unnamed lakes receive flow from Quin Brook.
Cultural	*Native Title registered application:* Yued
Social	*Towns and localities:* Localities of Muckenburra, Yeal, Bambun and Coonabidgee. *National parks, reserves and state forest:* Gnangara–Moore River State Forest, Yeal Nature Reserve and Bambanup Nature Reserve are located within the resource area.

Glossary

Abstraction	Permanent or temporary withdrawal of water from any source of supply, so that it is no longer part of the resources of the locality.
Allocation limit	Annual volume of water set aside for use from a water resource.
Allocation limit component	A portion of the allocation limit, defined by the department for administrative and water accounting purposes
Annual water entitlement	Volume of surface water that can be taken (abstracted) from a watercourse during a specified water year.
Baseflow	The component of streamflow supplied by groundwater discharge
Commercial use	Water taken from a resource that is directly or indirectly used for commercial purposes. This includes water taken for public and private purposes and water stored in a dam.
Ecological objective	Goal to maintain, protect, restore or enhance an identified ecological asset, process or function.
Ecological values	Natural ecological processes occurring within water-dependent ecosystems and the biodiversity of these systems.
Ecosystem	A community or assemblage of communities of organisms, interacting with one another, and the specific environment in which they live and with which they also interact, e.g. a lake. Includes all the biological, chemical and physical resources and the interrelationships and dependencies that occur between those resources.
Environment	Living things, their physical, biological and social surroundings, and the interactions between them.
Exempt use	Water use that is not required to be licensed under the *Rights in Water and Irrigation Act 1914*. This is sometimes referred to as stock and domestic use or a riparian right.
Flow	Streamflow – may be measured as m3/yr, m3/d or ML/yr. May also be referred to as discharge.
Flow regime	A description of the variation of flow rate or water level over time.
Groundwater	Water which occupies the pores and crevices of rock or soil beneath the land surface.
Licence	A formal permit that entitles the licence holder to take water from a watercourse, wetland or underground source.
Off-stream storage	Storages (such as farm dams, turkey's nest dams) that are not on defined waterways or watercourses and primarily store water extracted from rivers or aquifers, or from flood water emanating from rivers or from local catchment runoff.
Over-allocated	The total volume of water able to be abstracted by entitlement holders at a given time exceeds the environmentally sustainable level of extraction for that system.
Proclaimed resource	An area proclaimed under the *Rights in Water and Irrigation Act 1914* to enable water licensing, that is used for water allocation planning and management. Surface water is proclaimed as a surface water area, irrigation district or proclaimed river under Part III Division 1B s.6 of the *Rights in Water and Irrigation Act 1914*.
Recharge	Water that infiltrates into the soil and replenishes an aquifer.
Reliability	The frequency with which water allocated under a water access entitlement can be supplied in full. Referred to in somes states as 'high security' and 'general security'.

Resource	See surface water resource.
Riparian right	Right of a riparian landowner to take water from a watercourse that flows through or is contiguous to their property unlicensed and free of charge for the purpose of non-intensive stock and ordinary domestic use, without sensibly diminishing the flow of the water downstream.
Riverine	Associated with the river and the area adjacent to it; includes all wetlands and deep water habitats contained within a stream channel.
Stock and domestic water use	Water that is used for ordinary domestic purposes associated with a dwelling, such as water for cattle or stock other than those being raised under intensive conditions; water for up to 0.2 ha (if groundwater) or 2 ha (if surface water) of garden from which no produce is sold. This take is generally considered a basic right.
Subarea	A subdivision within a surface water or groundwater area, defined for the purpose of managing the allocation of water resources. Subareas are not proclaimed and can therefore be changed internally without being gazetted.
Surface water	Water flowing or held in streams, rivers and other wetlands on the surface of the landscape.
Surface water allocation area	An area defined by the Department of Water, used for water allocation planning and management that is generally a hydrologic basin or part of a basin.
Surface water allocation subarea	An area within a surface water management area defined by the Department of Water, used for water allocation planning and management that is generally a hydrologic catchment.
Surface water resource	Defined area for allocation and licensing decisions for a particular plan area. For this plan, surface water resource boundaries are the same as surface water allocation subareas.
Take	Take, in relation to water, means to remove water from, or reduce the flow of water in, a watercourse, wetland or underground water source, including by: *a.* pumping or siphoning water *b.* stopping, impeding or diverting the flow of water *c.* releasing water from a wetland *d.* permitting water to flow under natural pressure from a well or *e.* permitting stock to drink from a watercourse or wetland and includes storing water during, or ancillary to, any of those processes or activities. (Definition from the *Rights in Water and Irrigation Act 1914*)
Unlicenced use	Water use that is currently exempt from licensing under the *Rights in Water and Irrigation Act 1914*. For surface water this includes water taken: • for small scale household purposes and non-intensive stock watering • from springs and wetlands wholly within a property • in areas not proclaimed • by plantations

Watercourse	A watercourse means: *a.* any river, creek, stream or brook in which water flows *b.* any collection of water (including a reservoir) into, through or out of which anything coming within paragraph (a) flows *c.* any place where water flows that is prescribed by local by-laws to be a watercourse and includes the bed and banks of anything referred to in paragraph a, b or c. (Definition from the *Rights in Water and Irrigation Act 1914*)
Water-dependent ecosystems	Those parts of the environment which are sustained by the permanent or temporary presence of water.
Water entitlement	Quantity of water that a person is entitled to take annually in accordance with the *Rights in Water and Irrigation Act 1914* or a licence.

Volumes of water			
One litre	1 litre	1 litre	(L)
One thousand litres	1000 litres	1 kilolitre	(kL)
One million litres	1 000 000 litres	1 Megalitre	(ML)
One thousand million litres	1 000 000 000 litres	1 Gigalitre	(GL)

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Department of **Water**
168 St Georges Terrace, Perth, Western Australia
PO Box K822 Perth Western Australia 6842
Phone: 08 6364 7600
Fax: 08 6364 7601
www.water.wa.gov.au

620-02 100 0411