



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

WhicherArea

surface water allocation plan



Looking after all our water needs

Water resource allocation
and planning series
Report no. 19
September 2009

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Department of Water
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Foreword

This plan provides water users and the wider community with the Department of Water's management approach for surface water in the Whicher plan area in the south-west of the state.

Our goal is to manage the surface water resources in the best interest of the community, considering carefully the competing demands from regional development and the need to protect the South West's highly valued natural, social and cultural assets. This goal is becoming even more challenging in the context of a drying climate.

The plan is a major step as it provides the first formal management approach for surface water resources in the Whicher area, responding to water users' demands to actively manage the surface water resources through proclamation and licensing. It aims to make enough surface water available for water users to have secure water entitlements, while protecting the South West's environment that we all value.

While surface water use in many catchments is still relatively low, some catchments are showing signs of stress due to high levels of use. The management approach presented in this plan give us the opportunity to prevent problems of over-allocation in the Whicher area.

A handwritten signature in black ink, appearing to read 'Kim Taylor'. The signature is fluid and cursive, with a large initial 'K'.

Kim Taylor
Director General, Department of Water



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Summary

What is this all about?

The Department of Water is responsible for managing the state's water resources. This water allocation plan sets out the management framework for surface water allocation and licensing in the Whicher area. It considers demand from water users and environmental needs. This plan outlines where water is available for use, and the policies and rules for managing surface water in the Whicher area. This plan focuses on managing self-supply water use rather than larger public water supplies which are mostly from groundwater.

Why are we doing this?

The department began work for this plan in response to increasing pressure on surface water resources from changing land use and a drying climate. We wanted to avoid the situations that have developed in the eastern states where surface water users do not have a secure supply. The plan addresses security of supply for current users and the environment, and sets the amount of surface water available for new commercial and private users.

What is the picture for surface water resources in the Whicher area?

The Whicher plan covers a large number of diverse surface water resources with varying levels of use, from pristine tributaries of the Blackwood River with high environmental values to highly modified systems on the coastal plain.

Surface water is accessed mainly through on-stream farm dams capturing surface water flows, with some direct pumping from streams and some off-stream dams capturing overland flow. As the number of dams increases, there is a greater chance that they will have an impact on downstream users and the waterway ecology.

Land use is changing from large-scale, broadacre developments to intensive horticulture with an increase in viticulture and 'lifestyle' subdivisions.

As well as this increasing demand on the surface water resources, the Whicher area has received lower rainfall since the mid 1970s compared with the long-term average, resulting in less streamflow. Climate predictions also indicate that the south-west of the state will be warmer and drier by 2030, with the potential for further pressure on surface water resources.

Current surface water use has reached the allocation limit for some subareas, although there is some surface water available in most subareas.

Until recently, only a small portion of the Whicher area was proclaimed, which limited active management of surface water resources through licensing in the area. With the proclamation in September 2007 of a further four surface water areas, most of the surface water resources in freehold areas of the Whicher area are now proclaimed and can be licensed.

What is the strategy for surface water in the Whicher area?

This plan defines allocation limits which set how much water is available for use annually from all the surface water resources in the area. The environment is protected as allocation limits have been set to minimise the risk to rivers now and in the future, while sustaining reasonable development in the area.

The management framework developed as part of this plan takes into account the drier climate that the Whicher area has experienced since the mid 1970s and future planning will consider the potential for further climate change.

In the recently proclaimed areas, the department will recognise and license historical (prior to 21 September 2007) water use, which will provide security for these water users and the environment.

Requests for surface water for new developments and/or the expansion of existing developments will not be approved if they result in total use being above the allocation limits set in this plan. New and existing commercial water users will need to consider how they can use water more efficiently, use alternative supplies, find fit-for-purpose water, or trade water.

Work is already underway to increase our understanding of surface water resources in the area, so that surface water management can be continually improved.

How did the Department of Water develop this plan?

The department used the best information and methods available at the time of planning (2007–2008) to develop this plan. This included using hydrological models, considering regional environmental issues, undertaking water use assessments and considering comments from stakeholders. A conscious decision was made to take a precautionary approach where there were gaps in our knowledge, rather than wait for more definitive information, to decrease the risk to surface water resources in the area.

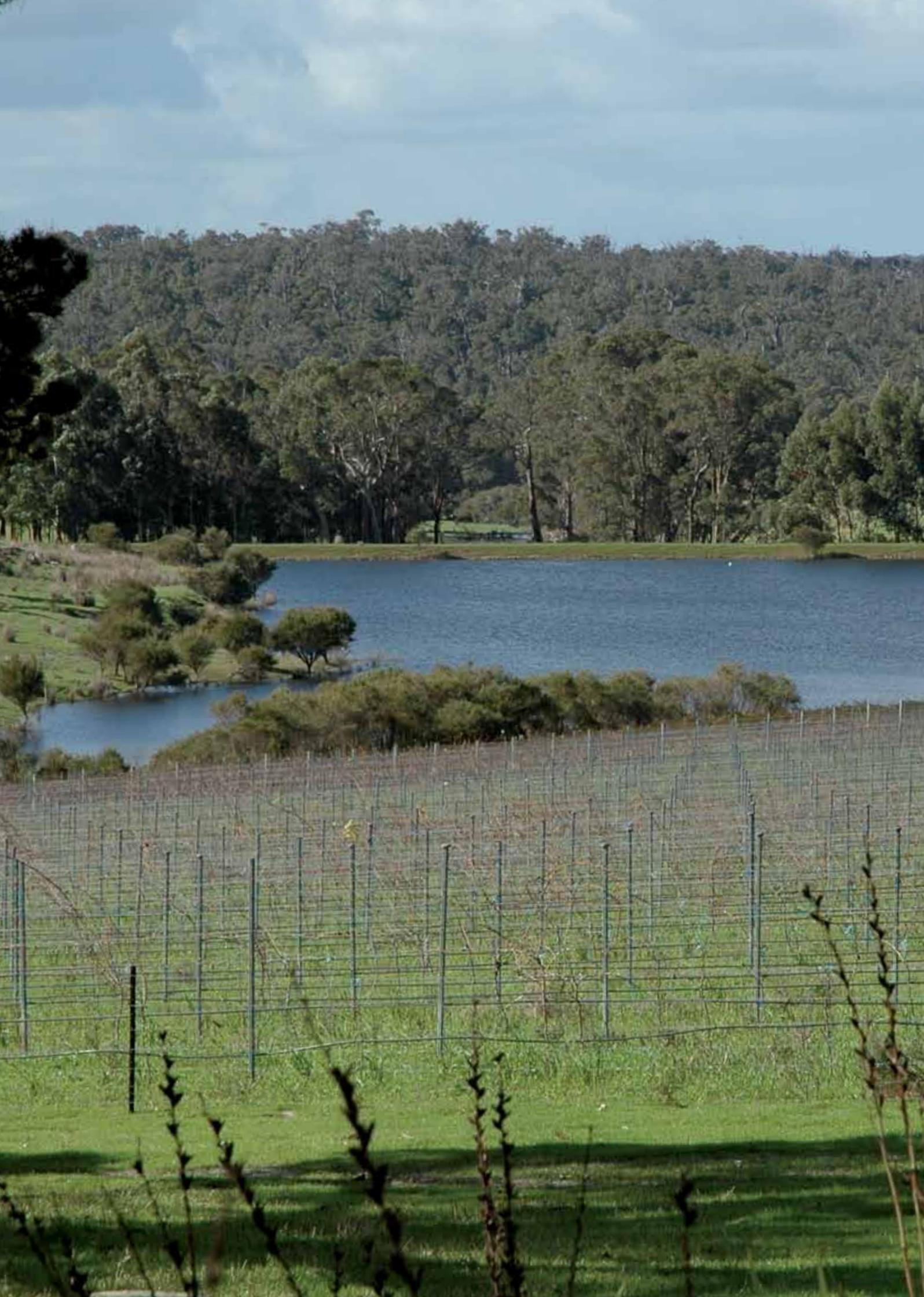
The plan was developed under the *Rights in Water Irrigation Act 1914*.

How has the department considered the public's submissions in finalising this plan?

We have improved this plan by considering the comments in the submissions we received during the public comment period in 2008. Please see the department's Statement of response: *Whicher area surface water allocation plan* (DoW 2009b) for more information on our response to the comments we received and how we have modified this plan to take these responses into account.

Part one

.....
The Whicher area



Chapter one

The Whicher area surface water allocation plan

1.1 Purpose of the plan

The Department of Water is responsible for managing the state’s water resources. The purpose of this water allocation plan is to provide the department’s direction on how the surface water resources in the Whicher area will be allocated and managed. The plan sets up the management framework for the active management of surface water through licensing now that most of the surface water resources in freehold areas of the Whicher area are proclaimed. The aim of licensing is to provide greater security for water users and the environment.

This plan is the first step towards managing surface water resources in the Whicher area (Figure 1). Throughout this plan are actions for the next phase of management and planning (Table 8) which will feed into development of the next plan (Section 6.4).

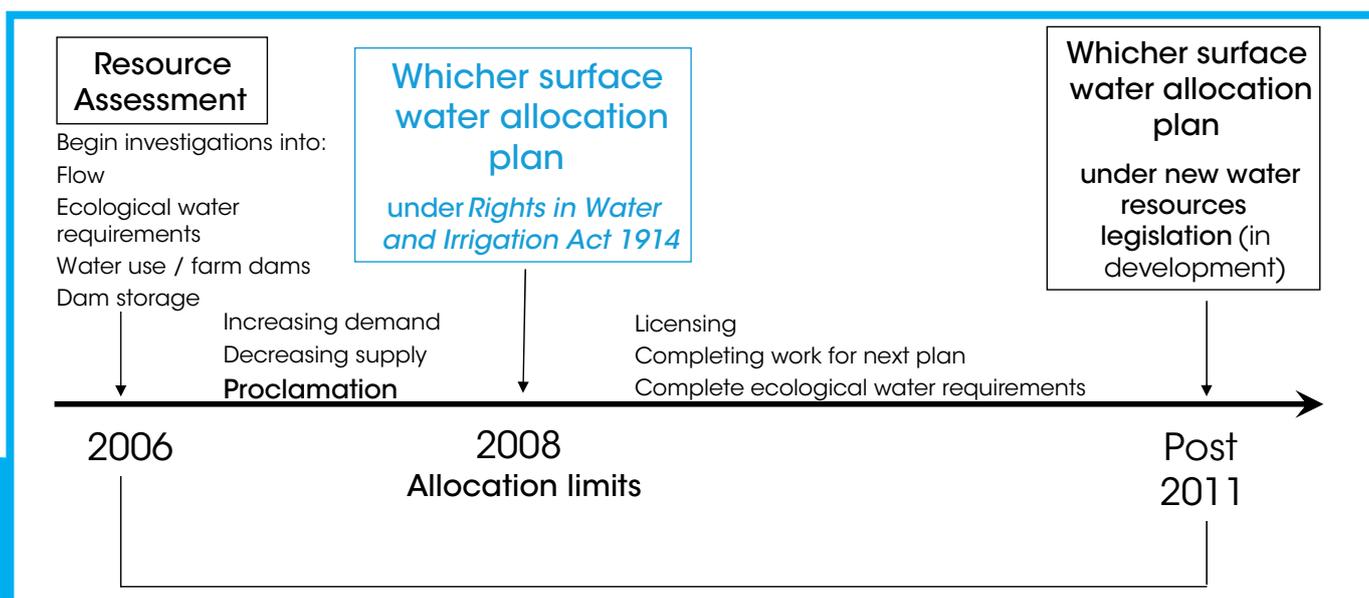


Figure 1
Whicher surface water allocation planning context and timeline

1.1.1 The need for this plan

The need for proper planning of surface water use has become increasingly urgent due to:

- the increasing demand for surface water resulting from the expansion of agriculture, particularly viticulture
- the expansion of population and tourism in the area
- the pressure to retain the high biodiversity value of the area
- the increasing demand for surface water driven by high land values and the aesthetic value associated with farm dams
- declines in rainfall since the mid 1970s and resulting decreases in streamflow, and predicted further declines in rainfall in the future.

The department has responded to these by:

- proclaiming surface water resources to improve water resource security for water users and the environment through licensing
- developing a surface water management framework and supporting policies that are documented in this plan
- setting limits on how much surface water can be taken for use
- considering the impact of a drying climate on water availability.

1.1.2 Department of Water's position

The department's position (Box 1) sets the long-term strategic direction for surface water management in the Whicher area. All allocation decisions will be guided by and will be consistent with the department position.

Box 1: Department of Water's position

Surface water resources are limited in the Whicher area. The department recognises historical (prior to 21 September 2007) water use and will provide security for these water users and the environment before allocating water to new users or uses. The department will adopt a precautionary approach to protect the existing users and the environment. The department will also consider the risk to the environment against the current or potential economic benefit of water use when making allocation decisions. The management framework developed as part of this plan takes into account the drier climate that the Whicher area has experienced since the mid 1970s and future planning will consider the potential for further climate change.

1.1.3 Plan content

This plan sets out:

- the plan area and surface water allocation boundaries (Sections 1.3 and 4.1)
- local factors and issues that we consider in all our management planning and licensing decisions (Section 2)
- the amount of surface water available for allocation (Section 4.5)
- a water management framework with:
 - the principles and objectives for surface water use and management (Sections 1.2 and 3.1)
 - policies to manage water extraction and use, to help achieve these objectives (Section 5.2)
 - details on how the plan will be implemented to ensure the department is successful in managing the surface water resources and how the plan will be reviewed and evaluated over time (Section 6).

A number of actions have been identified throughout this plan. Some relate to the implementation of this plan (Table 6) and some relate to further work that is required for future planning (Table 8), including a review of this plan. Some of the new concepts that will be considered in future planning for surface water management in the Whicher area are outlined in Section 6.4.

The groundwater resources and their management in this plan area are covered in the *South West groundwater areas allocation plan* (DoW 2009a).

1.2 Principles underlying the plan

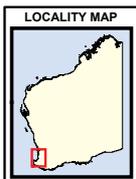
The broader strategic principles for water management in the Whicher area are defined in the *South West Regional Water Plan* (DoW 2008e). The objectives of this plan are listed in Section 3.1.

The principles below provide the basis for our operational policies and licensing decisions for surface water management and allocation in the Whicher area. We will consider these principles for all existing and proposed developments where water is used or where there are potential impacts on the resource. The principles are that:

- water allocation decisions will be transparent, consistent and auditable
- water allocation decisions will determine the acceptable impacts to the surface water resource and how much water is available for use
- the environment is recognised as a legitimate user of water. The allocation of surface water will not result in unacceptable risks to the environment.
- existing users' security of supply should not be unacceptably reduced by making more water available for new users
- water is a valuable resource and to optimise regional and state development, water made available for use should be used as efficiently as possible
- ecological, social and cultural values of the surface water resources will be identified and predicted impacts on them will be considered in water allocation and licensing decisions
- water users and the wider community will be advised about information collected through monitoring, ongoing management and future planning of their water resources, and will have their concerns documented and considered in decision making
- an adaptive management approach will be set up to ensure that the level of management reflects the water resource situation (for example, further evidence of a drying climate).



SOURCES
 Department of Water acknowledges the following datasets and their Custodians in the production of this map:
 Dataset Name - CUSTODIAN ACRONYM - Metadata Date
 Towns - DLI - Current
 Hydrography, linear (hierarchy) - DoW - November 2007
 WA Coastline 1M - GA (poly) - July 2006
 Surface Water Management Areas - DoW - Current



LEGEND

Surface water management area (SWMA)	Major town (>5000)
Capel River	Town (>500)
Busselton Coast	Major river
Lower Blackwood	Whicher plan area

Datum and Projection Information
 Vertical Datum: AHD
 Horizontal Datum: GDA 94
 Projection: MGA 94 Zone 50
Project Information
 Requested: S. Bowman
 Map Author: E. Said
 Task ID: C2101/003
 Filename: J:\pplwa\C2101\003\mxd\090820 Locality and SWM Areas
 Date: 20/08/2009

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While the Department of Water has made all reasonable efforts to ensure the accuracy of this data, the Department of Water accepts no responsibility for any inaccuracies and persons relying on this data do so at their own risk.

Figure 2
 Whicher plan area and surface water management areas

1.3 The plan area

1.3.1 Location

The plan area includes the Capel River, Busselton Coast and Lower Blackwood surface water management areas (Figure 2) which follow hydrological boundaries (also see Section 4.1). For the purpose of this plan, these surface water management areas are grouped together as 'the Whicher area', reflecting the presence of the Whicher Range across this part of the state.

1.3.2 Surface water resources

The surface water resources of the Whicher area include the Margaret, Capel and Lower Blackwood rivers and their tributaries, and a large number of smaller streams that flow to the coast (Figure 3). The Whicher area is divided into 52 surface water management subareas for allocation management (Section 4.1 and Figure 10).

Box 2: Proclamation of Whicher surface water areas and what it means

The Cape to Cape North, Cape to Cape South, Geographe Bay Rivers and Lower Blackwood River surface water areas were proclaimed under the *Rights in Water and Irrigation Act 1914* on 21 September 2007. This means that authorisation is now required from the department to interfere or take and use water from watercourses (this excludes water taken from springs and wetlands wholly within a property or streams arising on a property).

Previously, only surface water resources in the Capel River, Margaret River and Tanjannerup Creek catchments were proclaimed.

Historical (pre-proclamation) surface water use in the newly proclaimed areas will be progressively licensed according to the department's licensing strategy. Licensing historical surface water use in the Wilyabrup catchment was completed in 2008.

This plan applies to all surface water resources in the Whicher area, including areas that are proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act) and unproclaimed areas (Figure 3 and Box 2). Proclaiming areas allows the department to actively manage by licensing commercial water use. Under the RiWI Act surface water can be taken from watercourses in unproclaimed areas as long as streamflow is not sensibly diminished. However, as the department can only license surface water use from proclaimed areas, this plan can only provide general guidance for surface water management in unproclaimed areas.

1.4 Water management planning and water reform

In 2006 the Government of Western Australia signed the Intergovernmental agreement on a National Water Initiative, Australia's national blueprint for water reform, to which all state and territory governments are now committed. The National Water Initiative recognises the importance of increasing the productivity and efficiency of Australia's water use, providing efficient water services to rural and urban communities and protecting the health of surface water and groundwater systems. The department is the lead agency in Western Australia for implementing the significant reform agenda.

The department developed this plan under the *Rights in Water and Irrigation Act 1914* and has considered water reforms that are consistent with this water legislation. One of the recommendations in *A blueprint for water reform in Western Australia* (WRIC 2006) is to introduce new water resources legislation, which the state government is currently developing. We will develop future water allocation plans for surface water resources in the Whicher area under this new legislation (Section 6.4).



SOURCES
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 Dataset Name – CUSTODIAN ACRONYM – Metadata Date
 Towns – DLI – Current
 Hydrography, Linear (Hierarchy) – DoW – November 2007
 RMM Act, Rivers – DoW – July 2006
 RMM Act, Surface Water Areas and Irrigation Districts – DoW – September 2007
 WA Coastline 1M – GA – July 2006



LEGEND

- Major Town (>5000)
- Town (>500)
- Whicher plan area
- Rivers and streams
- Proclaimed river
- Proclaimed surface water area
- Not proclaimed

Datum and Projection Information
 Vertical Datum: AHD
 Horizontal Datum: GDA 94
 Projection: MGA 94 Zone 50
Project Information
 Requester: M. White
 Map Author: E. Said
 Task ID: C2101/003
 Filename: J:\pp\wa\ C2101003\mxd\090624_ proclaimed and unproclaimed Date: 24/08/2009

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Figure 3
 Surface water resources including proclaimed areas and rivers

Chapter two

Considerations for water management

In the past, due to legislative constraints and low water demands, the department did not actively manage the interception and extraction of surface water in the Whicher area and there were very few licensed users.

Land use is changing from larger scale, broadacre developments to intensive horticulture and viticulture developments and 'lifestyle' subdivisions, with an increasing demand for surface water. In the Whicher area, many water users access surface water from small- to medium-sized farm dams, many of which are located on watercourses. There is also some direct pumping from rivers.

As the number of these dams increases with changing land use, there is the increased potential for them to affect downstream users and the waterway environment. This, along with a drying climate, is increasing pressure on the surface water resources and their ability to sustain all users and the environment.

This section includes water management considerations that are addressed through this plan and considerations to be addressed through future planning.

2.1 Community input into planning

The department continually seeks and recognises community input to water management planning, through existing community and representative groups and through targeted consultation activities.

We have identified broad water management comments through the Whicher Water Resource Management Committee for this plan and through planning processes for the *South west groundwater areas allocation plan* (DoW 2009a) and the *South West Regional Water Plan* (DoW 2008e).

More specific and localised comments about surface water planning and management in the Whicher area have been identified through the issue scoping process for the Capel and Margaret rivers, and Wilyabrup, Cowaramup and Chapman brooks (Beckwith 2006, 2007), and through the process of proclaiming the Cape to Cape North, Cape to Cape South, Geographe Bay rivers and Lower Blackwood River surface water areas in 2007 (DoW 2007b).

A draft version of the Whicher plan was open for public comment for the three months to 19 September 2008. The public comment period generated discussion with water users, interested stakeholders and the general community before the plan was finalised. Public information sessions were held in the region during the public comment period. All comments received in formal submissions were considered in finalising this plan. The department has also released a Statement of Response document containing the comments and questions raised, and the department's responses (DoW 2009b).

The main questions raised by the community relating to allocation planning for surface water resources in the Whicher area are listed in Table 1. The table also summarises the department's response, including where further detail can be found in this plan.

Table 1
Summary of community questions

Topic	Community questions	Department's response
Management	Have limits on surface water use been set?	The department has set allocation limits for all surface water management subareas in proclaimed and unproclaimed areas (Section 4).
	How will surface water be allocated to water users?	The department will license all historical (pre-proclamation) water use. Surface water for new developments will be allocated up to the allocation limit on a 'first-in first-served' basis or by an alternative allocation mechanism (Section 5.1).
	How will the impacts of on-stream farm dams on downstream users and the environment be managed?	The department is working to quantify the impact of on-stream farm dams (Section 2.4.1). On-stream dams may be subject to licence conditions for when and how streamflow can be taken (Policy group 3.3). New on-stream dams may be required to have a low-flow bypass system as outlined in Section 5.2, Policy group 6.
	How will plantations be managed?	Local government authorities are responsible for land use planning and management, including plantation forestry. The Department of Water is currently unable to regulate the interception from plantations as plantation water use cannot be regulated or licensed under the existing RiWI Act. The department is currently developing guidelines on the water use and management of plantations (Section 2.4.2).
Economic	How has the plan considered security for surface water users?	The plan will improve security for surface water users by licensing use in proclaimed areas and setting allocation limits (Sections 4 and 5).
	How will existing surface water supplies for agriculture be protected?	Current use has been taken into account when setting allocation limits. The department will recognise and license historical surface water use in the newly proclaimed areas (Section 5.2, Policy 1.1).
Licensing	Do I need a licence to take surface water?	All commercial surface water use in proclaimed areas (Figure 3 and Appendix A) requires licensing under the RiWI Act (Section 5.2, Policy group 3). Dams for non-intensive stock and domestic use will not require a licence (Section 5.2, Policy group 4).

Table 1
Summary of community questions

Topic	Community questions	Department's response
Licensing	I am already taking surface water: when do I need to apply for a licence?	Commercial surface water use in the newly proclaimed areas will be progressively licensed. The department will announce when surface water users in a particular area must apply for a water licence (Section 5.2, Policy 2.1.2).
	How does the department assess licence applications to take surface water?	The department assesses licence applications according to requirements under Schedule 1, Division 2, clause 7(2) of the RiWI Act. The assessment process is summarised in Appendix B.
	What is the process for dam approvals and surface water allocations in proclaimed and unproclaimed areas?	The Shires of Busselton and Augusta-Margaret River require dam approvals. Dam approval is currently not required in other local government authorities in the Whicher area. In proclaimed areas, surface water users must apply to the department for a: <ul style="list-style-type: none"> • permit to interfere with bed and banks • licence to take water. In unproclaimed areas the department will provide advice to the shire on whether water is available in a particular area. The approval process to take surface water is summarised in Appendix C, outlining the responsibilities of surface water users, shires and the department.
	How will the department ensure that licence conditions are followed and surface water is not taken illegally?	This plan documents how the department will manage surface water in the Whicher area and sets out the rules that water users must follow (Section 5). Once water users know the rules, there should be less need for formal compliance and enforcement. The department's formal approach to compliance and enforcement is outlined in Policy group 12.
Surface water resources	What monitoring of surface water flows and quality is being done?	Information on monitoring can be obtained from the department's website (< www.water.wa.gov.au >Tools > Monitoring and data). Information is also provided in technical reports supporting this plan (see the references section in this plan or the department's website for Whicher (< www.water.wa.gov.au/allocationplanning > Whicher surface water). The department will review the surface water monitoring program to ensure that it meets the requirements of surface water planning in the Whicher area (Action 5).
	How have interactions between surface water and groundwater been considered in this plan?	This surface water plan is consistent with the <i>South West groundwater areas allocation plan</i> (DoW 2009a) which covers groundwater resources in the Whicher plan area. Both plans should be considered together. The department is working to increase our understanding of surface water-groundwater interactions. An action for future planning is to consider developing integrated plans (Section 6.4).

Table 1
Summary of community questions

Topic	Community questions	Department's response
Climate	How has climate change been taken into account?	Allocation decisions for this plan are based on data from 1975 to 2005 where available, representing a drier period compared to the long-term average (Sections 2.2 and 2.3). Data from gauging stations with at least 10 years of data was used to calculate sustainable diversion limit volumes (Section 2.3.1). The department has committed to look at the impact of different climate scenarios on surface water availability during the next phase of planning (Action 3).
	How has the environment been protected?	The department has set allocation limits on surface water use, so water is left in the system for the environment. Low allocation limits have been set for areas with high environmental value (DoW 2009c). Ecological water requirements studies are currently underway for key surface water systems (Section 2.6). The studies will identify the important values that need to be protected and the flow regimes that need to be maintained.
Environment	How will the ecology of river pools in summer be protected?	The department will in general not support take (including direct pumping) from watercourses during periods of low flow (Section 5.2, Policy 6.1.4).
	How has community input been considered in this plan?	This plan has focused on the important themes of surface water management that were identified through community input, including security of supply, climate change, water availability and protection of the environment. As licensing is new to most surface water users in the Whicher area, the department has also responded to community input by explaining what water users are required to do through policies (Section 5) and supporting information.
Community input	How will the community be involved in future planning?	The community can provide input through the Whicher Water Resource Management Committee or industry groups. We will be consulting and engaging these and the community in the next phase of planning (Section 2.1.1). This plan recommends the development of a program of stakeholder consultation for the next phase of planning (Action 2).

Action 1 –Provide regular statements via the department's website on the plan implementation (Section 6).

Action 2 –Develop a program of stakeholder consultation for the next phase of planning.

2.1.1 Future community involvement

Some of the work for the next phase of planning is already underway. The department plans to update the Whicher planning website to provide an outline of upcoming consultation activities and opportunities for community and industry engagement. To see the Whicher planning website go to <www.water.wa.gov.au/allocationplanning> Whicher surface water>.

2.2 Climate

Rainfall in the south-west of Western Australia has decreased since the mid 1970s. There is evidence of a step change with an altered rainfall regime where there has been a pronounced decrease in autumn and early winter rains (Indian Ocean Climate Initiative Panel 2002). This decrease in rainfall led the department to use data from 1975 onwards for surface water allocation decisions in this plan. At the time we did the scientific work for this plan, data was available up to 2005.

Rainfall in the Whicher area has decreased by up to 10 per cent for 1975–2003 compared to long-term records (DoW 2007c). There has also been a slight shift in the rainfall distribution during the year with less rain as a percentage of the mean in March and April and more rain in August and September (DoW 2007c).

Through climate modelling the CSIRO (Hennessy, Whetton & Macadam 2006) has predicted that from 1990–2030 the south west may experience a further 5 to 11 per cent decline in average rainfall based on low (0.54 °C by 2030) and high (1.24 °C by 2030) global warming scenarios, respectively.

The department is currently revising the policy on appropriate data periods to be used for allocation decisions. It will consider historical variability in rainfall and future predictions, not just historical data sets.

Action 3 – Investigate the impact of different climate scenarios on surface water availability, for the next phase of planning.

2.3 Surface water resources

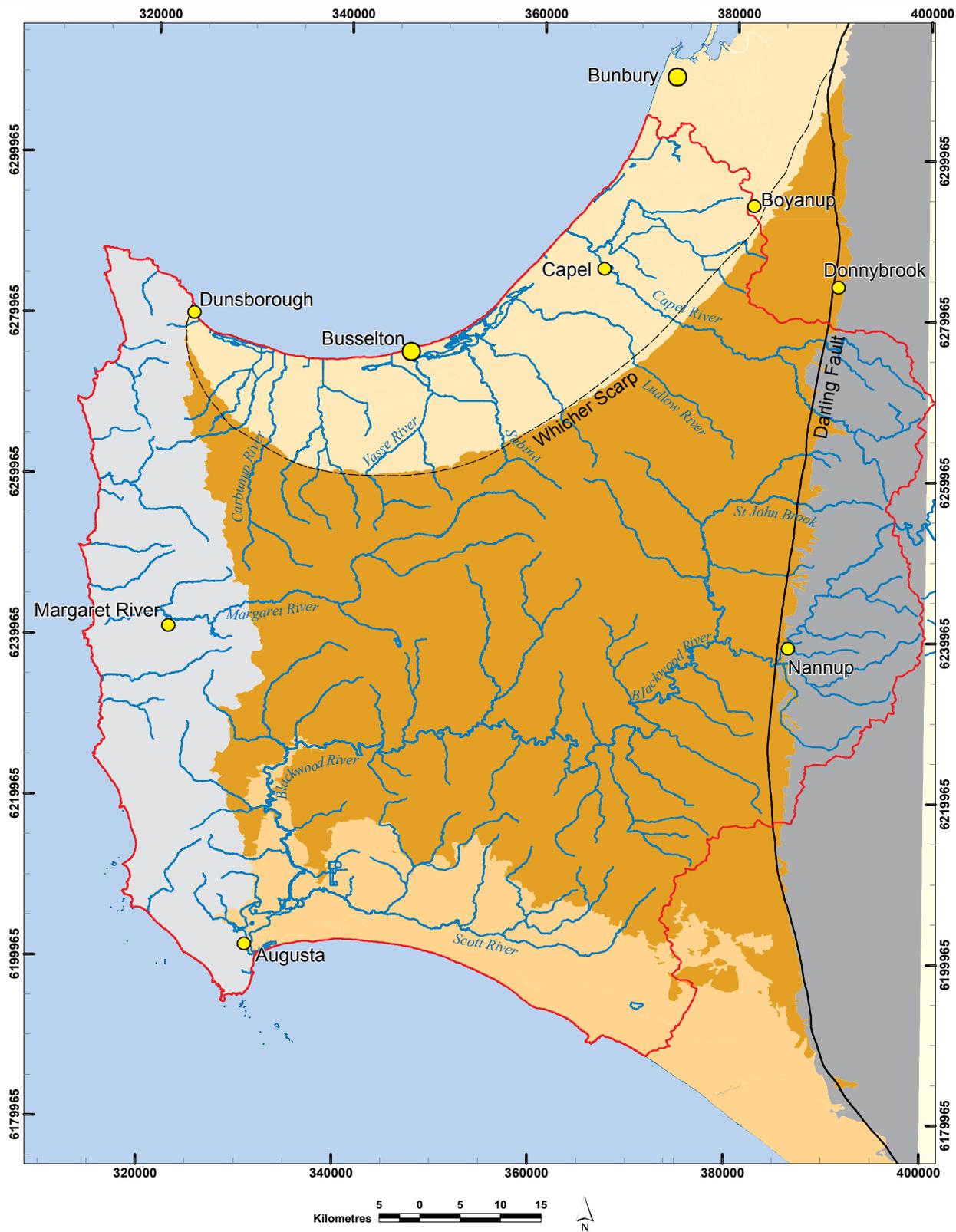
2.3.1 Current status of assessment

Surface water resources in the Whicher area are diverse, ranging from large river systems including the Blackwood, Margaret and Capel, to numerous small creeks and brooks. Catchments range from fully forested tributaries of the Lower Blackwood River to highly modified catchments on the coastal plain. Most surface water sources in the plan area depend on rainfall runoff to maintain streamflow. However, groundwater discharge maintains river pools and summer baseflow in some systems.

Most surface water resources in the Whicher area are fresh and are suitable for water supply. The exception is the mainstream of the Blackwood River, which ranges from brackish to moderately saline. Access to surface water systems for water supply is concentrated on freehold land on the coastal plain and the Leeuwin–Naturaliste Ridge (Figure 4). Many tributaries of the lower Blackwood River are located in state forest and national parks (Figure 8).

As part of the decision to determine how much surface water from a resource can be set aside for use (allocation limit), the department assesses streamflow volumes and potential divertible yields. For this plan, the department has used sustainable diversion limit volumes determined at a low level of environmental risk (SKM 2008a and SKM 2008b).

Detailed assessment of the hydrologic and hydraulic behaviour of key river systems in the Whicher area has been carried out. These systems include the Capel and Margaret rivers, and Wilyabrup, Cowaramup and Chapman brooks (see References – DoW).



SOURCES
Department of Water acknowledges the following datasets and their Custodians in the production of this map: Towns - DLI - Current Hydrography, Linear (Hierarchy) - DoW - November 2007 Hydrogeology - Bunbury Basalt - DoW - 02/2006 Atlas of Mineral Deposits and Petroleum Fields 1999 (1:2500 000) - Geology line work structures (geoline99) - DME - 1999 Geology 500K linear - DoIR - February 2002 WA Coastline TM - GA - July 2006



LEGEND	
● Major Town (>5000)	■ Darling Scarp
● Town (>500)	■ Blackwood Plateau
□ Whicher plan area	■ Leeuwin-Naturaliste Ridge
— Darling Scarp	■ Scott Coastal Plain
— Whicher Scarp	■ Swan Coastal Plain
— Rivers and streams	

Datum and Projection Information
Vertical Datum: AHD Horizontal Datum: GDA 94 Projection: MGA 94 Zone 50 Project Information Requester: S. Bowman Map Author: E. Said Task ID: C2101.003 Filename: J:\pp\w\IC2101\003\mxd\090824 Surface Geomorphology Date: 24/08/2009

Government of Western Australia
Department of Water

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While the Department of Water has made all reasonable efforts to ensure the accuracy of this data, the Department of Water accepts no responsibility for any inaccuracies and persons relying on this data do so at their own risk.

Figure 4
Surface geomorphology of the Whicher area

Implications for water management and use

- The department calculated streamflow yields for this plan using available data from the period 1975–2005, which represents a drier period than the long-term average and reflects the corresponding observed decrease in streamflow.
- For this plan, we used a precautionary (conservative) approach to determine streamflow yields.
- We made allocation decisions in this plan based on rainfall and streamflow data from the period 1975–2005. If the drying climate trend continues, the amount of surface water available for allocation and the reliability of supply may decrease in the future.

2.3.2 Managing annual and seasonal streamflow variations

Streamflow varies from year to year, with high variability in many streams in the Whicher area. The variability in annual flow could mean that water users may not always receive the amount of water that is allocated to them in any given year. This was a major consideration in setting allocation limits to minimise the risk of this occurring to existing water users.

Streamflow in the Whicher area is also highly seasonal with up to 90 per cent of the annual flow occurring between June and October. During summer, many rivers and streams naturally stop flowing, especially in the upper reaches of catchments. Rivers that flow all year round are generally recharged by groundwater, which maintains a low level of flow in the summer months (Section 2.5).

Implications for water management and use

- Licences may contain conditions specifying when and how flow can be taken.
- During drought periods, restrictions may be applied so that the available water is shared to spread impacts across all water users, including the environment.

2.3.3 Future work

Rules-based approach to taking water

The department is investigating the feasibility of a rules-based approach to managing surface water interception and extraction in the future. This may incorporate or further develop elements such as:

- defined periods of take
- minimum flow rates below which the taking of water should cease
- maximum daily rate of take
- flow bypass requirements for on-stream dams.

Action 4 – Investigate the feasibility of applying a rules-based approach to surface water management in the Whicher area, as part of licensing and the next phase of planning.

Action 5 – Review the existing surface water monitoring program and modify where feasible to meet surface water planning objectives in the Whicher area, as part of the next phase of planning.

2

Considerations for water management

Resource sharing

Due to the variability in streamflow in the Whicher area and the potential for further declines in streamflow due to climate change, the department intends to move towards the concept of 'resource sharing' to manage surface water. This means that a water user would receive a share or proportion of the total amount of surface water that could be taken each year, rather than a fixed volume entitlement. For example, in a drought period, the total amount of surface water available would be less and water users would receive a smaller volume for that period, relative to the share that they hold. Specifying a reliability with an entitlement to take water will provide water users with an estimate of how often they are likely to receive their full entitlement.

The rules-based approach that the department is investigating will specify when and how water can be taken so that the available water is shared and impacts are spread across all water users, including the environment.

Action 6 - Investigate the feasibility of applying a resource sharing approach for managing surface water in the Whicher area, as part of the next phase of planning.

Action 7 - Determine appropriate reliabilities for surface water entitlements, as part of the next phase of planning.

2.4 Impact of water intercepting activities

Water intercepting activities are those activities that can cause a reduction in streamflow yields or recharge to aquifers (see 'interception' in the glossary). The two main intercepting activities that have the potential to affect streamflow yields in the Whicher area are on-stream and off-stream farm dams and plantation forestry.

2.4.1 Farm dams

The Whicher area is characterised by numerous self-supply dams on many of the watercourses (Figure 5). While the impact of an individual farm dam may be small, the cumulative impact of a large number of dams can have a significant effect on streamflows. Farm dams often have the greatest impact on early winter flows, as this is when dams fill after the irrigation season and extended dry periods.

Consultants undertook investigations on behalf of the department to assess the impact of farm dams on key surface water systems in the South West, including the Capel and Margaret rivers and Wilyabrup, Cowaramup and Chapman brooks. A change to the regime and volume of flow has the potential to alter the ecology and natural values of the river (SKM 2007).

Some of the main findings were:

- total annual flows are reduced
- the magnitude of flow in summer is reduced and the duration of summer flows generally increases
- the magnitude and duration of winter high flows is unaffected
- the seasonality of flows is affected as dams are filling. In the most severely affected catchments, the onset of early winter flows, which are important for relieving stress at the end of summer, are delayed
- there is a greater impact in drier years.

Many small farm dams are also used to supply properties with water for non-intensive stock and domestic use. Analysis of farm dam mapping has indicated that the largest dam volumes associated with stock and domestic purposes within the Whicher area are between 5000 kL and 8000 kL.

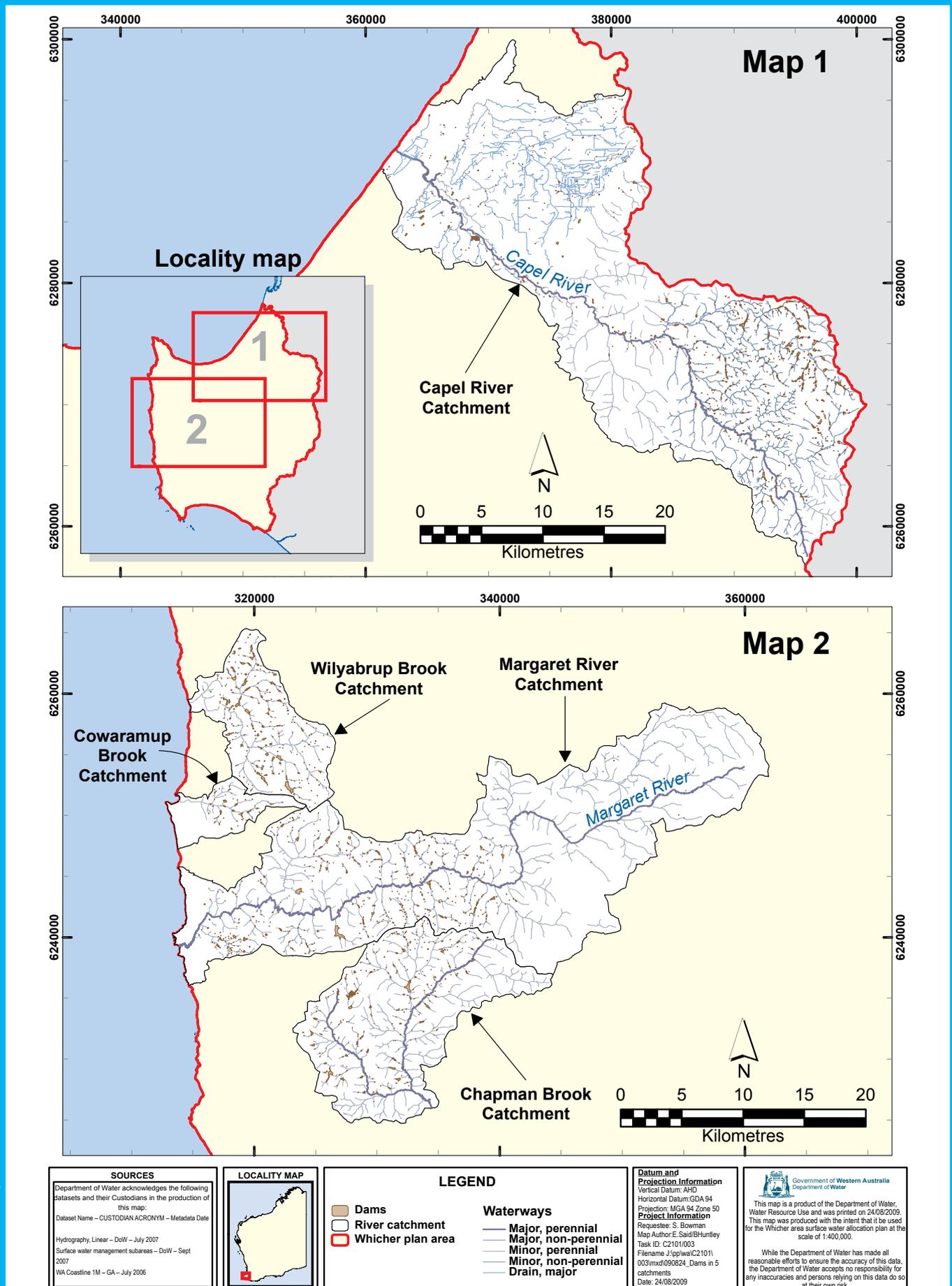


Figure 5
Farm dams in the Capel, Margaret, Wilyabrup, Cowaramup and Chapman catchments

2

Considerations for water management

Implications for water management and use

- The department will license all commercial use of water from a watercourse. Licence conditions will depend on the potential impact of the dam.
- Where we cannot license farm dams, we will account for them in the water balance and consider them when allocating water. To better control farm dams off watercourses, the department is considering the creation of local by-law provisions. The department will also provide advice to local councils on development approvals.
- Some local government authorities require development approval from landholders for construction associated with the capture and storage of water. When assessing licence applications, department licensing officers will liaise with local government and applicants to check for the required approvals.

Action 8 - Investigate the impact of dam size and density on streamflow, for the next phase of planning.

Action 9 - Investigate the use of local by-laws and provide advice to local government authorities to better control farm dams off watercourses.

2.4.2 Plantations

Plantation forestry is increasing as a land use activity in the Whicher area (Figure 6), particularly in cleared areas previously used for agriculture and pasture. Plantations can have a significant positive or negative impact on catchment yields as they intercept more water due to their higher transpiration rates than pasture and annual crops. Plantations may also limit groundwater recharge and/or directly extract groundwater from the shallow root zone. The National Water Initiative has identified large-scale plantation forestry as potentially intercepting significant amounts of water.

The department is currently unable to regulate the interception from plantations because plantation activities cannot be regulated or licensed under the existing RiWI Act legislation. Water reform recommendations recognise that we need to account for and manage plantation water use.

The department is carrying out work to better understand the effects of plantations on water resources. The department is developing guidelines for managing interactions between plantation forestry and water resources, due for release in 2009. These guidelines will set out the following:

- the locations of plantation forests in Western Australia
- some basic science on the interactions between plantation forestry and water resources
- a summary of work being undertaken by the Department of Water and other organisations in this area
- management arrangements under *the Rights in Irrigation and Water Act 1914* including water planning and plantation development applications
- management arrangements under new legislation
- definitions of terms associated with plantation forestry and water management.

Under the new water legislation currently being drafted (Section 1.4) new plantations that have a significant negative impact on water resources and/or existing water users will be regulated and licensed. The department is developing new policy for this, which will be incorporated in future water planning for the Whicher area.

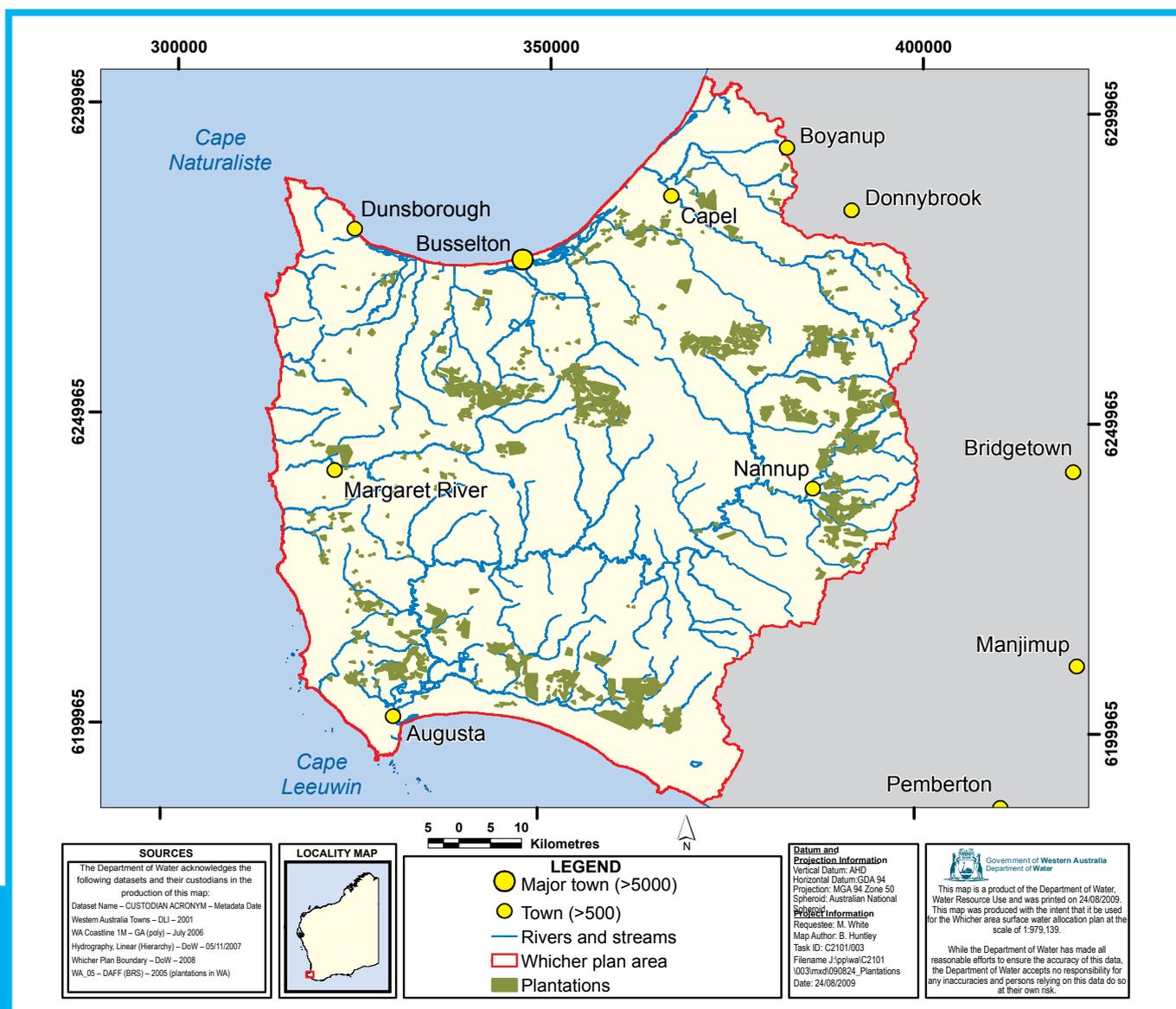


Figure 6
Commercial plantations in the Whicher area

2

Considerations for water management

Implications for water management and use

- Local government authorities are the decision-makers on plantation proposals and are responsible for planning associated with plantations, including location, size, aesthetic considerations and social considerations.
- The department cannot regulate use of water by plantations under existing legislation. However, under the new legislation the department will be able to regulate significant impacts from plantations.

Action 10 – Investigate and account for plantation water use as part of the water balance for the Whicher area, for the next phase of planning.

Action 11 – Incorporate the impacts of plantation water use into surface water allocation decisions in the Whicher area, as part of the next phase of planning.

2.5 Surface water–groundwater interaction

Hydrological analysis shows that there are strong surface water–groundwater connections in some south-west river systems. Surface water–groundwater interactions need to be considered when allocating water. Most summer and base flow in streams is maintained by groundwater discharge. Summer flow is generally low and is important in maintaining stream ecology. Because of this and variations in groundwater levels, the department prefers only winter flows to be taken.

Groundwater discharges into the Lower Blackwood River and many of its tributaries including Poison Gully and Milyeannup, Layman, St John and Rosa brooks. Groundwater also discharges to the Upper Margaret River and rivers on the coastal plain including the Scott and Capel rivers (Figure 7).

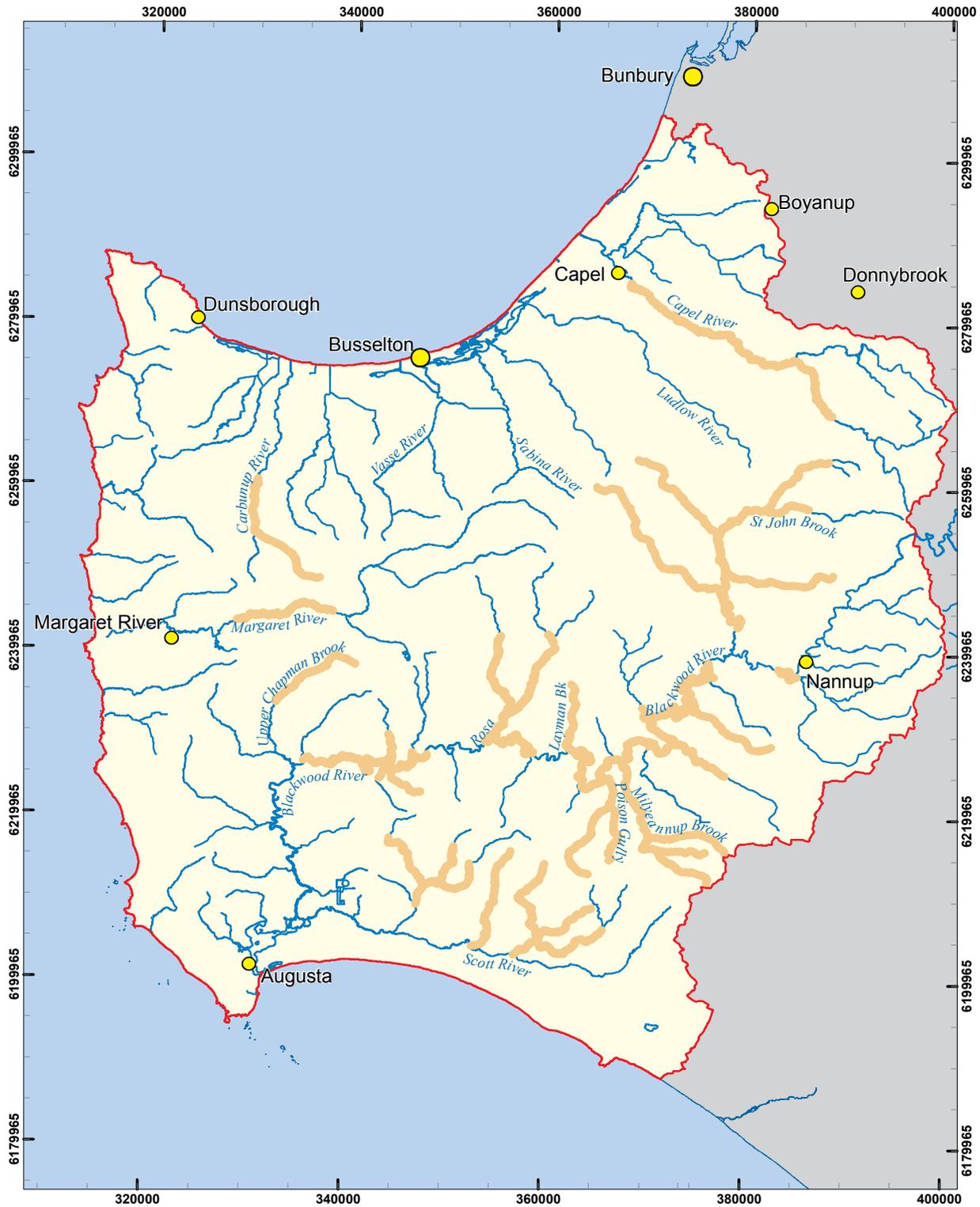
The department is investigating the connectivity between surface water and groundwater in several major rivers in the plan area (Capel, Margaret and Blackwood rivers). The department has completed investigation of the Cowaramup area, building a regional appreciation of surface water–groundwater interactions, particularly along the Margaret River. The work mainly looked at the potential for impacts on river systems as a result of an altered groundwater abstraction regime (Schafer et al. 2007; Schafer et al. 2008). We have used information gained from this study to improve our management rules for taking surface water and groundwater in the area.

The *South West groundwater areas allocation plan (DoW 2009a)* provides rules for groundwater licensing and outlines work planned to assess surface water–groundwater interactions. This work includes the main systems in the Whicher plan area. Surface water–groundwater interactions have been allowed for in the allocation limits of both this plan and the South West groundwater plan.

The use of springs and soaks contributes to the cumulative impact of water use across a catchment. A groundwater licence is required for soaks if the take is for commercial purposes. However, the department is unable to license spring use under existing legislation (RiWI Act).

Implications for water management and use

- The department will consider the interconnectivity between surface water and groundwater when determining surface water or groundwater availability for management areas in the Whicher area.
- The *South West groundwater areas allocation plan (DoW 2009a)* must be considered alongside this plan.



SOURCES
 Department of Water acknowledges the following datasets and their Custodians in the production of this map:
 Dataset Name - CUSTODIAN ACRONYM - Metadata Date
 Towns - DLI - Current
 Hydrography, Linear (Hierarchy) - DoW - November 2007
 WA Coastline 1M - GA - July 2006



LEGEND

- Major Town (>5000)
- Town (>500)
- Whicher plan area
- Surface water/Groundwater connectivity
- Rivers and streams

Datum and Projection Information
 Vertical Datum: AHD
 Horizontal Datum: GDA 94
 Projection: MGA 94 Zone 50
Project Information
 Requester: S. Bowman
 Map Author: E. Said
 Task ID: C2101/003
 Filename: J:\pp\wa\IC2101\003\mxd\090824_Swater_
 Gwater interaction
 Date: 24/08/2009

**Government of Western Australia
 Department of Water**

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Figure 7
 Known surface water-groundwater connectivity in the Whicher area

2

Considerations for water management

- The department is unlikely to support new allocations or licences for direct pumping from surface water resources in summer or during low flow periods.
- Where surface water is not available, there may be groundwater resources that can be accessed as an alternative.
- The department will assess spring use as part of the water balance for the Whicher area.
- A groundwater licence may be required where an excavation dug as part of a dam construction intersects the watertable or where a portion of the water filling the dam is groundwater.

Action 12 –Quantify surface water-groundwater interactions for key river systems and consider how to manage them for the next phase of planning.

Action 13 –Consider developing integrated surface water-groundwater plans for those systems with strong interconnectivity, as part of the next phase of planning.

Action 14 –Assess the need for a policy or introduction of local by-laws on using and managing water from springs.

2.6 Ecology

One of the potential effects of surface water use is the impact on the natural environment. Ecosystems such as in-stream habitats, wetlands and vegetation communities, including the animals that they support, depend on the same water sources that are being used for irrigation and general consumption.

2.6.1 Current status of assessment

The ecological state of the Whicher area's surface water resources ranges from highly modified such as the Capel River to virtually pristine in the Upper Margaret River. Consultants completed a study on behalf of the department on the ecological values of five key surface water systems: the Margaret and Capel rivers and the Cowaramup, Chapman and Wilyabrup brooks. A summary of these values is available in the report *Ecological values of seven south west rivers – a desktop review, 2007* (Wetland Research and Management 2007).

The department has investigated the water required to maintain the ecological values of Cowaramup Brook and has calculated its ecologically sustainable yield (Donohue et al. in prep). The department used this information to review the allocation limit for Cowaramup Brook (DoW 2009c).

Implications for water management and use

- For this plan, the department has considered ecological values by adopting a precautionary approach to allocation decisions for surface water resources with known ecological values, and for those systems with low levels of use where ecological values have not yet been identified.
- When we assess licence applications we will consider local ecological values and potential impacts as part of the RiWI Act Schedule 1, clause 7(2) assessment (Appendix B). The level of assessment will vary depending on the level of risk to the ecology.

- We may specify licence conditions stating when and how water can be taken and associated monitoring conditions for proposals that have the potential to affect a surface water-dependent ecosystem.

Action 15 –Develop a GIS-based decision support tool that identifies surface water-dependent features and their associated ecological, social and cultural values to assist ongoing management.

2.6.2 Future work

The department is currently investigating the water required to maintain the ecological values of the Margaret and Capel rivers and the Chapman and Wilyabrup brooks, building on the detailed hydrological assessments that have been completed to date. The results of the ecological water requirement studies will be used to improve our understanding of the ecologically sustainable yield of these rivers and of other similar rivers.

Action 16 –Finalise and publish ecological water requirement studies for the Margaret and Capel rivers and the Cowaramup, Chapman and Wilyabrup brooks to support the review of allocation limits (Action 24).

2.7 Cultural and social values

Many people who live in or visit the area value the natural environment from both a cultural and social perspective. Therefore, the conservation of the environment is a key consideration in allocation planning. Through planning, the department identifies the important places where social and cultural values are linked to surface water. The water level or water regime that needs to be met to protect the social and cultural values at a particular location is referred to as the social water requirement.

Social values in the Whicher area associated with surface water include canoeing on the Blackwood and Margaret rivers, fishing and camping, and sites of Aboriginal cultural significance. The tourism and lifestyle opportunities available in the region also relate to the social values.

Implications for water management and use

- The approach the department took in setting limits on surface water use to protect ecological values will also protect many of the social and cultural values of the area.
- We will consider recognised social and cultural values that are dependent on surface water and any potential impacts resulting from the taking of surface water, in our assessment of licence applications.
- We consider native title claims and determinations as part of the assessment of a licence.
- Proponents and the Department of Indigenous Affairs are responsible for identifying and assessing impacts on Aboriginal heritage sites. Proponents must follow the appropriate processes under the *Aboriginal Heritage (WA) Act 1972* and the *Native Title (State Provisions) Act 1999*.

2.7.1 Future work

The department has started a process to examine the social and cultural values of surface water and groundwater resources in the south west, including surface water resources in the Whicher area. This work will identify water-dependent areas or elements of value and how they may be affected by changes in flow regimes. We will assess whether these social and cultural water-dependent values can be met through an ecological water requirement. If not, a separate social or cultural water requirement will need to be determined.

Action 17 –Identify the social and cultural values of surface water resources in the Whicher area, for the next phase of planning.

Action 18 –Complete social and cultural requirement studies for key surface water systems, for the next phase of planning.

2

Considerations for water management

2.8 Current water use

In order to determine how much surface water is still available for use, and to understand the impacts of water use, we need to know how much water is currently being used.

In a proclaimed area, where all commercial water allocations are licensed, the total of licence entitlements provides an estimate of surface water use as it represents the maximum amount of water that can be taken from a water resource annually. Where the annual entitlement volume is associated with a dam storage, it may be more than the amount of water actually used. Water use can also be estimated from water use surveys and from crop water demands. Accurate accounting of surface water use requires actual measurement of use, usually through meters.

It is difficult to estimate how much surface water is currently taken for use in the Whicher area as most resources had not been proclaimed until recently and most water allocations had not been formalised as licence entitlements. In proclaimed areas there has been little measurement of actual surface water use.

The predominant land use type in the Whicher area is state forest, followed by agriculture (including dairy, horticulture and viticulture), mining and industrial use, and some urban development (Figure 8). For this plan, the department has estimated water use for irrigated agriculture, which may be surface water or groundwater, by mapping land use and calculating the water demands associated with those land uses. The water demand is an estimate of the water used per hectare depending on variables such as land use type, soil type, rainfall zone, evaporation and irrigation method.

To estimate the total current surface water use, we also considered information from water use surveys, licensed entitlements (subtracting groundwater entitlements),

water use from mining, public water supply and farm dam storage. We estimate that the amount of surface water currently used in the Whicher area is about 30 GL/yr.

Implications for water management and use

- The department used the best information available at the time to estimate water use.
- Water availability in the future may change, as estimates of surface water use are refined.
- We will consider use, dam storage, evaporation and dam structural integrity when setting the licence entitlement volume for surface water.

Action 19 –Refine the estimate of current use and improve our licensing database to account for all surface water use and estimates of unlicensed surface water use, as part of the implementation of this plan.

Action 20 –Complete licensing of commercial surface water use in proclaimed areas according to the department’s priority schedule, as part of the implementation of this plan.

2.8.1 Public water supply

Public water supply for towns in the Whicher area is mostly from groundwater. Refer to the *South West groundwater areas allocation plan* (DoW 2009a).

Surface water resources in the Whicher area that are currently used for public water supply (Figure 9) are:

- Margaret River
- Ten Mile Brook, a tributary of the Margaret River (Ten Mile Brook Dam)

- Tanjannerup Creek, a tributary of the Blackwood River (Tanjannerup Creek Dam)
- an unnamed tributary of the Capel River South Branch (Kirup Dam)
- Leeuwin Springs.

The catchment areas of reservoirs used for public drinking water supply are proclaimed under the *Country Areas Water Supply Act 1947*. These areas are called public drinking water source areas and those in Whicher are shown in Figure 9. They can also be viewed

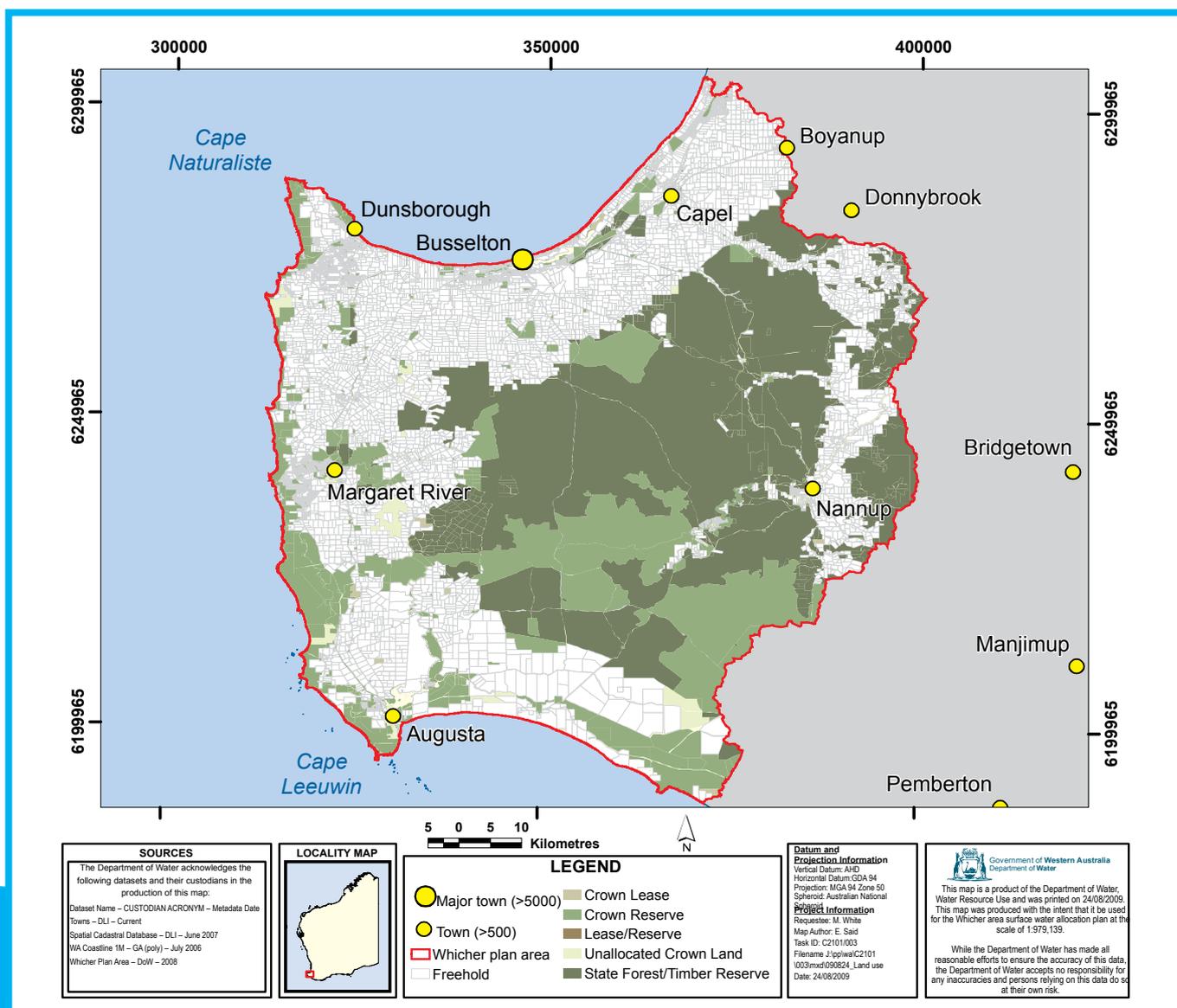


Figure 8
Land use in the Whicher plan area

2

Considerations for water management

on our website (<www.water.wa.gov.au> Tools > Maps and atlases > Geographic data atlas). A registry of drinking water sources within each local government authority is also available at <<http://drinkingwater.water.wa.gov.au>>.

The department protects public drinking water source areas from potential contamination through drinking water source protection plans. These plans identify existing and potential threats to the drinking source and recommend management strategies to avoid, minimise or manage those risks. The protection plans for the Margaret River Catchment Area (including Ten Mile Brook Catchment), Leeuwin Spring Catchment Area, Tanjannerup Creek Dam Catchment Area and Kirup Dam Catchment Area can be viewed on the department's website (<www.water.wa.gov.au> Waterways health > Drinking water > Water source protection plans).

Further information on the drinking water protection program in Western Australia can be found at <<http://drinkingwater.water.wa.gov.au>> or enquiries can be emailed to <drinkingwater@water.wa.gov.au>.

The Water Corporation is the service provider currently licensed to supply up to 2 GL/yr of drinking water to the towns of Margaret River, Prevelly, Gnarabup, Cowaramup, Nannup, Kirup and Mullalyup from the public water supply reservoirs. Approximately 120 ML is drawn from Leeuwin Spring to supply the town of Augusta. A licence is not required to abstract water from the spring as it not located within a water catchment area proclaimed under the RiWI Act.

Implications for water management and use

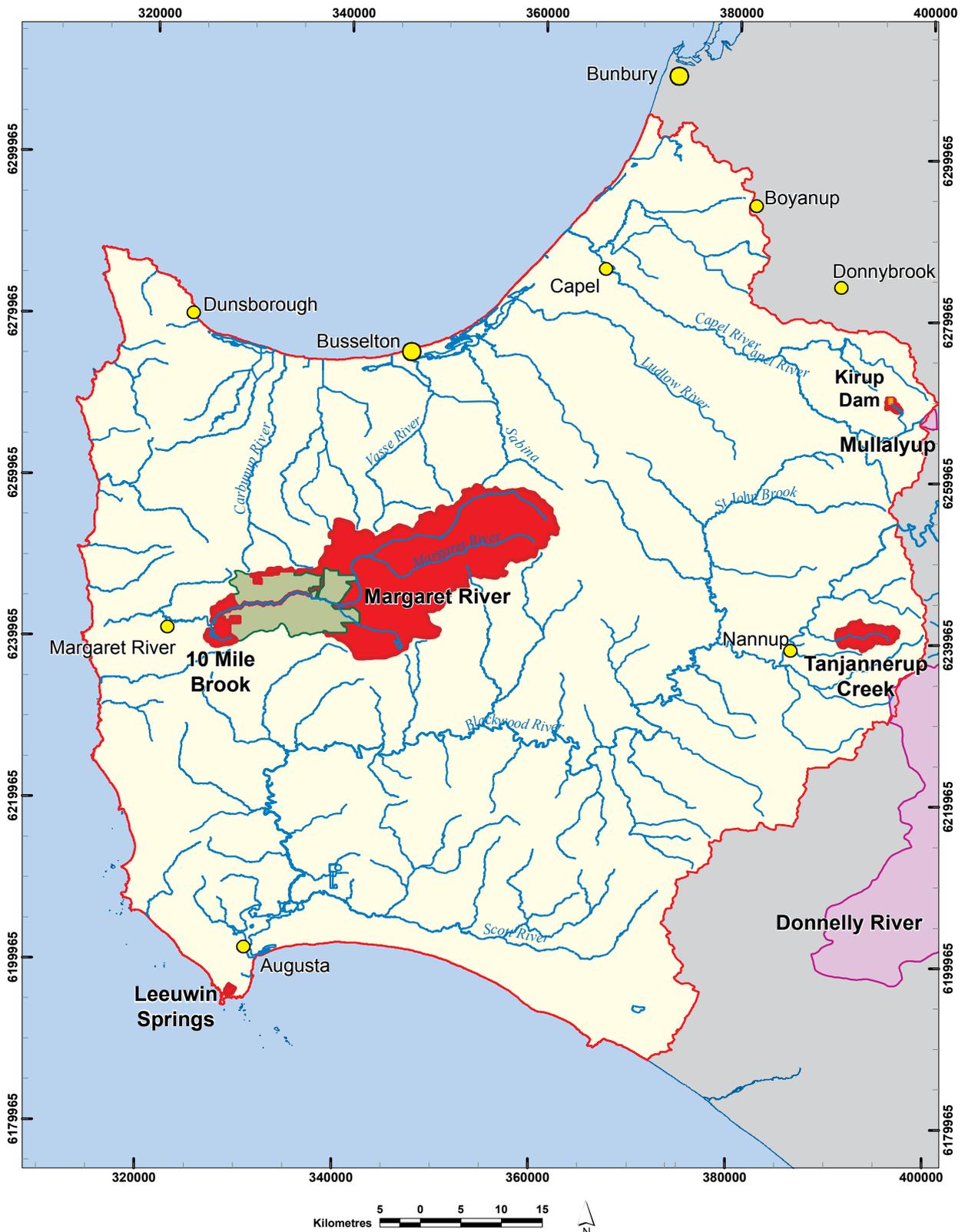
- Water allocation decisions in some catchments will incorporate the need to meet public water supply demands.
- Current and future public drinking water sources are managed with the primary aim of providing safe drinking water (DPC 2007).
- The possible effects of water allocation decisions on water quality will be considered, to prevent contamination of public drinking water source areas.

2.9 Future demand for water

Demand for surface water is increasing in the Whicher area. The area is one of the fastest growing in the state and land use changes are resulting in increased water demands, especially for irrigation and public water supply. The land use is changing from large-scale, broadacre developments to intensive horticulture with an increase in viticulture developments and lifestyle subdivisions and the potential for increases in plantation forestry. Population growth in towns has also increased pressure on public water supplies.

The department in conjunction with REAP Research Pty Ltd has developed a framework for conducting an economic evaluation of water allocation options for areas with high water use, using the Margaret River catchment as a case study. The framework established a process for:

- identifying current and potential future demand for water
- estimating the economic value of the current water use
- identifying the economic value of other water use scenarios and management regimes.



SOURCES
 Department of Water acknowledges the following datasets and their Custodians in the production of this map:
 Dataset Name – Custodian ACRONYM – Metadata Date
 Hydrography, Linear (Hierarchy) – DoW – November 2007
 Public Drinking Water Source Protection Areas (PDWSA) – DoW – 27/02/2006
 WA Coastline 1M – GA – July 2006
 Whicher Plan Boundary – DoW – 2008



LEGEND

Public Drinking Water

Source Areas

- Priority Area – P1
- Priority Area – P2
- Priority Area – P3
- Protection Area-NotAssigned

Whicher plan area

Rivers and streams

Major Town (>5000)

Town (>500)

Datum and Projection Information
 Vertical Datum: AHD
 Horizontal Datum: GDA 94
 Projection: MGA 94 Zone 50
Project Information
 Requester: S. Bowman
 Map Author: B. Huntley
 Task ID: C2101003
 Filename: J:\ppl\wal\C2101003\mxd\090824_1_PDWSA
 Date: 24/08/2009

Government of Western Australia
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Figure 9
 Public water supply (surface water) in the Whicher area

2

Considerations for water management

The Margaret River catchment was chosen because it has a diverse range of land uses, including viticulture, forests and public water supply storage.

The Resource Economics Unit has estimated surface water demand projections in the Whicher area, as part of the State Water Demand Project. The results indicate an increase in annual water use (surface and groundwater) of 26 GL by 2030 (pers. com., R Stone). Assuming the proportions of surface water and groundwater use remain the same, this could mean an increase in annual surface water demand of 17 GL (or over 50 per cent), based on current estimates of surface water use. The forecast agricultural water demands are an indication of the potential for irrigation demand, but future surface water use may be limited by water availability in some areas.

Implications for water management and use

- Surface water demand may be constrained by the amount of surface water available for use in some areas.
- Where surface water use approaches, reaches or exceeds the allocation limit, the department will implement alternative mechanisms for allocating any further water if it becomes available.
- Where water is not available from a surface water source to meet expected applications based on current use, licensing officers will identify other options (for example, groundwater sources or trading) to satisfy demand, and will provide this information to applicants.

2.9.1 Public water supply

The Water Corporation is evaluating the possible use of local groundwater aquifers as supplementary sources of drinking water for the Ten Mile Brook and Tanjannerup Creek surface water sources. The department has reserved 3 GL/yr from the Yarragadee Aquifer on the Blackwood Plateau for future town water supply to supplement these sources (DoW 2009a). The Water Corporation is currently investigating the feasibility of pumping water from the aquifer into the Ten Mile Brook Dam.

Based on current growth and demand trends, Tanjannerup Creek Dam will be able to supply Nannup until around 2014. The Water Corporation will use 0.6 GL/yr of groundwater from the Yarragadee Aquifer to supplement the town water supply for Nannup and surrounding towns along the Darling Scarp up to Kirup. The Water Corporation proposes to incorporate a combination of surface water and groundwater sources for the new integrated water supply scheme to supply these towns. The department is currently assessing this proposal to ensure there are no adverse impacts on the environment.

A number of sites along streams in the Whicher area were identified as potential dam sites in the National Land and Water Resources Audit (WRC 2000a). The list of potential sites needs to be reviewed as they were identified in the 1970s and 1980s. Since this time, streamflow yields have decreased and some of the sites are now located in national parks.

For this plan, the department has not reserved water for public water supply from these potential water supply catchments. However, we recognise that some of these sites may

still be appropriate for public water supply. Conservative allocation limits have been set for these areas so future development for public water supply is not precluded. The department will follow the standard assessment process for applications for water in these areas.

Implications for water management and use

- The department may reserve surface water for public water supply in the future.
- The department encourages the implementation of water use efficiency measures in all water use sectors.
- The department will treat proposals to develop new larger scale public water supplies separately to this plan.

Action 21 –Review and update potential dam sites in the Whicher area, considering potential developments including Water Corporation’s most recent source development plans, for the next phase of planning.

Action 22 –Review water availability for the potential water supply catchments identified in Action 21, including reserving additional water for future public water supply, as part of the next phase of planning.

2.10 Other plans and strategies

In developing this plan, the department has considered a range of legislation, policies, plans and strategies developed by the federal and state governments and other agencies (Appendix D).

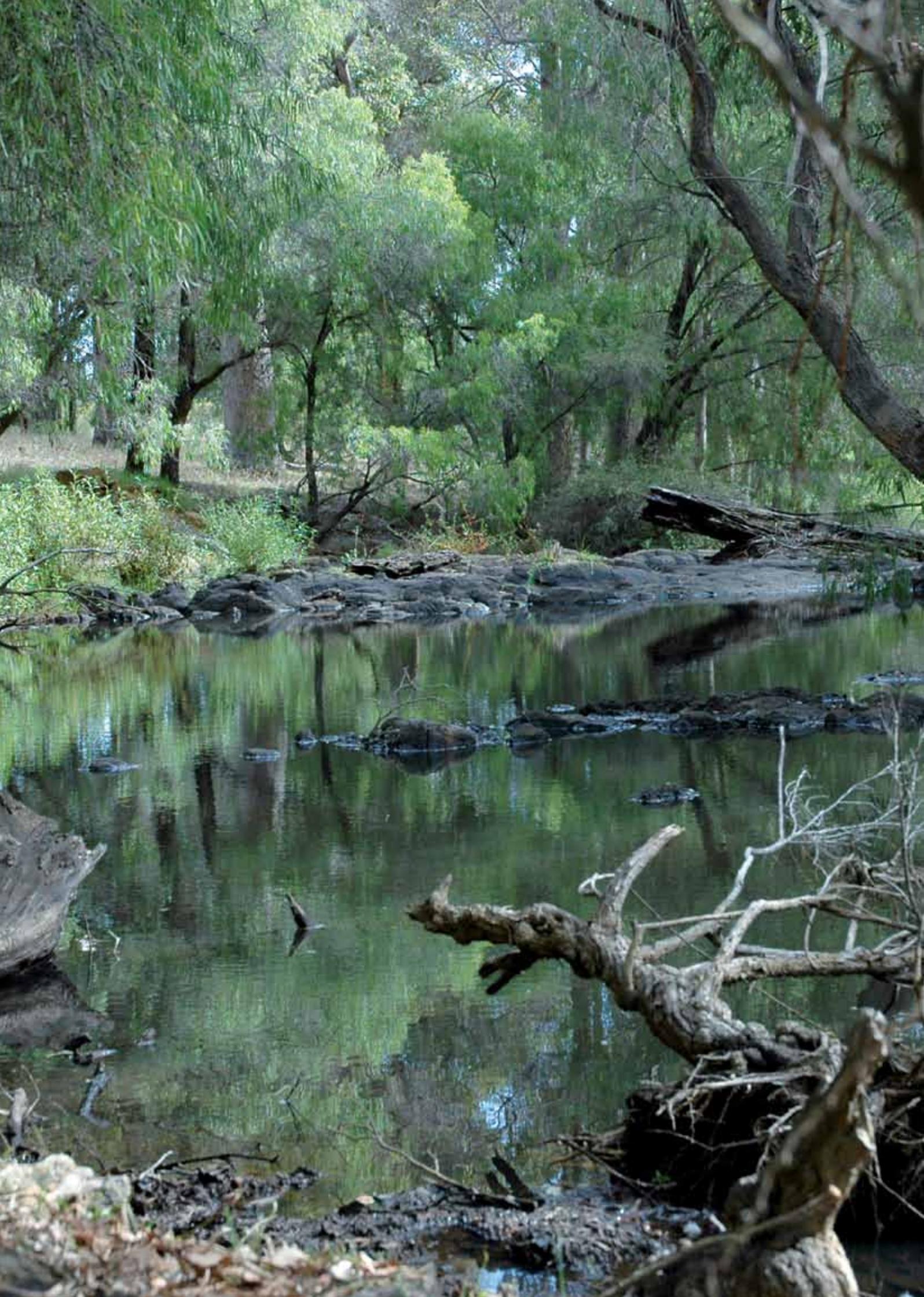
Implications for water management and use

- A change in, or development of, a new water use activity must consider the relevant departmental and other government agency legislation and policies. The department will not issue licences for activities that do not comply with existing government legislation and policies.
- Water access and use should be consistent with the plans and policies for a particular area. Proponents who review this information and liaise with departmental licensing officers early in the development may assist with the timely assessment of a licence application.



Part two

Allocation and management framework



Chapter three

Objectives and performance indicators

3.1 Objectives

The objectives for managing surface water in the Whicher area are based on the considerations in Section 2. The department will, where appropriate, initiate additional investigations and monitoring programs to ensure that the following management objectives are met.

The objectives of this plan are to:

- minimise impacts of new surface water developments on existing water users
- protect key ecological, cultural and social values so they are kept at an acceptable level of risk from the effects of surface water use
- manage commercial use in proclaimed areas through licensing
- provide regular statements against the management objectives outlined in this plan and update the community on the ongoing work to review this plan
- implement effective water management through measurement, monitoring, auditing, compliance and reporting to provide transparency and accountability of water use.



3

Objectives and performance indicators

3.2 Performance indicators

The department will assess progress made towards meeting the objectives of the plan by measuring against the performance indicators in Table 2.

Table 2
Performance indicators for each management objective

Objective	Performance indicator
Minimise impacts of new surface water developments on existing water users	Complaints or disputes about surface water supply are not attributed to new surface water users.
Protect key ecological, cultural and social values so they are kept at an acceptable level of risk from the effects of surface water use	Criteria established through ecological, cultural and social requirement studies that are accepted by the department are met.
Manage commercial use in proclaimed areas through licensing	Licensed commercial use as a proportion of total use increases in proclaimed areas.
Provide regular statements against the management objectives outlined in this plan and update the community on the ongoing work to review this plan	Evaluation statements are published every year on the internet and made available to the community. Feedback from the community indicates that they are satisfied with the information available on surface water planning in the Whicher area.
Implement effective water management through measurement, monitoring, auditing, compliance and reporting to provide transparency and accountability of water use	Progress against actions in this plan is made according to the specified timeframes. Progress is included in the annual evaluation statement.

Chapter four

Water allocation

The Whicher area covers three surface water management areas – Capel River, Busselton Coast and Lower Blackwood (Figure 2). These are divided into 52 surface water management subareas (Figure 10).

4.1 Allocation units

For this plan, the department chose surface water management subareas (Figure 10) as the allocation unit for allocation planning decisions, which include how much surface water in total can be taken from a resource and how much is available for future use. The department developed these boundaries from hydrological catchment boundaries, considering regional planning and management requirements.

4.2 Allocation limits

As water is a finite resource, the department needs to limit how much water can be taken from a system each year. The department weighs up available information to assess how much water should stay in the system for ecological, social and cultural needs and how much water can be sustainably taken from the system for use. The department sets an 'allocation limit' to manage the overall impact of water use (Box 3).

Box 3: Allocation limit

The term 'allocation limit' is defined as the annual volume of water set aside for use from a water resource.

The department will grant water entitlements up to the allocation limit in each subarea subject to the usual licensing application and assessment process.

The department will review allocation limits during the life of this plan (Section 6.4), as work is already underway to increase our understanding of surface water resources in the area. This work includes more detailed hydrological assessments, environmental assessments (including ecological water requirements of key river systems) and improved water use information. We will publicly report changes to the allocation limits in this plan through advertisements in local newspapers and on the department's website. For major amendments of allocation limits, due to incorporation of new scientific information, we may also hold public information sessions.

Action 23 – Incorporate results of ecological water requirement studies to review allocation limits (Action 24).

Action 24 – Where there is new information, review allocation limits for surface water resources in the Whicher area, and revise where justified, within one year of this plan's final release.



Figure 10
 Whicher surface water management subareas

4.3 Resource use

Four categories of 'use' were considered in the allocation limit decision-making process for the Whicher surface water resources:

- 1 Licensed entitlements:** the total (annual) volume of surface water that has been allocated to licensees as entitlements. This may include what is taken for public and private purposes and what can be taken to be stored in a dam.
- 2 Unlicensed commercial use:** the total (annual) volume of surface water that is estimated to be taken for commercial use. This may include water taken for commercial purposes, water taken to be stored in a dam and may include water taken from springs. Unlicensed commercial use occurs in areas that are not proclaimed, where spring use is not controlled or where licences have not yet been issued for pre-proclamation use.
- 3 Non-intensive stock, domestic and garden use:** the estimated (annual) volume of surface water for small-scale use that is exempt from licensing under the RiWI Act. This may include what is taken for use and what can be taken to be stored in a dam.
- 4 Public Water Supply reserves:** the specified volumes of water that are set aside for future public water supply use to secure drinking water sources for the future. No surface water has been reserved for public water supply in the Whicher area for this plan.

Box 4: Current surface water use

The estimated current surface water use for this plan is defined as the total amount of water that is taken from surface water resources including licensed and unlicensed use.

Licensed use has historically only applied to the Margaret, Capel and Tanjannerup surface water resources and accounts for less than 20 per cent of the estimated surface water use in the Whicher area. As the department progressively licenses surface water use in the newly proclaimed areas, licensed use will increase and unlicensed use will decrease. However, as unlicensed use is currently very high the department must estimate and account for this use when working out how much water is available to ensure resources are not over-allocated. The department has not set aside water for public water supply reserves in this plan, but we may set it aside in the future.

Estimated current use figures are included in Table 3 and represent historical water use levels (use prior to proclamation in September 2007). These estimates come from either land use mapping and known crop demand, or dam storage estimates, whichever is greater (DoW 2009c). These figures are only estimates and therefore exact water availability is not provided in this plan (Section 4.5). Water use and availability figures will be refined as licensing progresses.

4.4 Methodology used to set allocation limits

For each subarea, the department set an allocation limit based on the best information available at the time. As ecological, social and cultural water requirements have not been determined formally (through studies or investigations), a precautionary (conservative) approach was adopted for the scientific assessment (DoW 2009c). The exception is the Cowaramup subarea, where the department completed an ecological water requirement study while we were finalising the plan.

4

Water allocation

For the scientific assessment we also incorporated a drier climate than the long-term average, using available data from the period 1975–2005. We then weighed up the risk to the environment against the economic benefit of the water use. This approach is consistent with the department’s *Statewide policy no. 5 – Environmental water provisions policy for Western Australia* (WRC 2000b) and the National Water Initiative agreement to improve the way water is allocated, used and managed for environmental outcomes (Australian Government 2004a).

The decision-making methodology we used to determine allocation limits considered streamflow yields, environmental information, licensed use, estimated unlicensed use, future demand, farm dam storage, land use information and regional knowledge. Detail on the methodology is provided in the *Whicher surface water allocation limits: methodology report* (DoW 2009c), available from the department’s website – <www.water.wa.gov.au/allocationplanning> Whicher surface water.

By setting allocation limits the department increases the security of water supply access for existing users and increases the security of water for the environment.

We set allocation limits on the basis that each subarea is managed independently. This suggests that subareas such as Middle and Lower Margaret River do not receive water flows from upstream which results in allocation limits for these, and other similar ‘cross-subarea’ river systems, being set conservatively. This approach may be reviewed in the future.

4.5 Water availability

The department assesses the amount of water available (at a particular date) by first developing an allocation limit, which indicates how much water in total can be taken from a surface water management subarea in any given year (Box 5). Total current use is then estimated (Section 4.3 and Box 4).

Box 5: Available water

The water available for new developments in a subarea, under this plan, is calculated as the allocation limit minus the current use.

The allocation limit and the water availability status for each subarea is provided in Table 3. Usually the department would provide volumes for water availability but as most of the Whicher area was only recently proclaimed and is yet to be licensed; volumes of water available are not accurately known. Therefore only a water availability status is provided in Table 3. Water availability is also shown in Figure 11. The water availability status was correct at the time this plan was written (November 2008).

Water availability will change in the Whicher area as water is allocated to new developments, existing licences expire and estimates of water use are refined (Section 4.3).

For current information on whether water is available for new developments following the release of this plan, please contact one of the department’s South West Regional offices.

Table 3
Allocation limits and available surface water in the Whicher area

Surface water management area	Surface water management subarea	Area km ²	Allocation limit ML/yr	Available water ¹ for new developments
Busselton Coast (Cape to Cape North)	Biljedup	21	330	Yes
	Cowaramup	30	470	Limited ²
	Ellen	28	1180	Yes
	Gunyulgup	66	1090	No
	Naturalist	64	310	Yes
	Quininup	30	550	No
	Wilyabrup	89	2480	No
	Boodjidup	62	3210	Yes
	Calgardup	72	2530	Yes
	Turner SW	96	2140	Yes
Busselton Coast (Cape to Cape South)	Buayanup	201	3540	Yes
	Carbunup	165	4320	Yes
	Dunsborough Coast	158	3000	Limited
	Vasse Diversion	283	3340	Yes
	Wonnerup	477	4240	Yes
	Upper Margaret	273	170	No
	Ten Mile Brook	5	1000	No
	Bramley	47	1810	Yes
	Lower Margaret	45	1670	Yes
	Margaret Town	32	910	Yes
Capel River	Middle Margaret	86	3200	Yes
	Capel River Central	111	980	No
	Capel River North Branch	88	4700	No
	Capel River South Branch	168	2730	Limited
	Capel River West	81	490	No
	Five Mile Brook	87	270	Yes
	Gynudup Brook and Tren Creek	188	1380	Yes
	Lower Blackwood: Huf Reach	251	260	Yes
	Lower Blackwood: Nannup Reach	328	2600	Yes
	Lower Blackwood: Estuarine Reach	184	2840	Yes
Lower Blackwood River ³	Lower Blackwood: Hardy Estuary	100	1200	Yes
	Adelaide	64	0	No
	Ballan	54	0	No
	McAtee	113	0	No
	Poison	50	0	No
	Readia	20	0	No
	Rosa	227	0	No
	Ellis	44	130	Yes
	St John	575	750	Yes
	Miliyeannup	107	30	Yes
Lower Blackwood River (tributaries)	Red Gully	133	80	Yes
	Tanjannerup	21	140	No
	Beenup	17	290	Yes
	Carlotta	160	5850	Yes
	Chapman	65	2100	Yes
	Glenarty	32	1110	Yes
	McLead SW	95	4270	Yes
	Rushy	23	1050	Yes
	Scott	702	16 010	Yes
	Turnwood	12	360	Yes
Upper Chapman	118	2800	Yes	
West Bay	31	940	Yes	

¹ Available water is considered to be limited if estimated current use is greater than 70 per cent of the allocation limit. No water available means that either the allocation limit has been reached or the allocation limit has been set at zero or current use to protect the environment.

² Numbers or text in italics indicate that these have changed from the draft to the final plan. See Whicher surface water allocation limits: methodology report (DoW 2009c) for details.

³ Water quality from the lower Blackwood River is low (brackish-moderately saline).



SOURCES
 Department of Water acknowledges the following datasets and their Custodians in the production of this map:
 Dataset Name - CUSTODIAN ACRONYM - Metadata Date
 Surface water management subareas - DoW - September 2007
 Hydrography, Linear (Hierarchy) - DoW - November 2007
 WA Coastline 1M - GA - July 2006



LEGEND

— Main river

Subareas - water availability for new developments

- Yes – water is available
- Limited – water use = 70% of allocation limit
- No – use = 100% allocation limit
- No – maintain existing land management

Datum and Projection Information
 Vertical Datum: AHD
 Horizontal Datum: GDA 94
 Projection: MGA 94 Zone 50
Project Information
 Requester: S. Bowman
 Map Author: E. Said
 Task ID: C2101/003
 Filename: J:\pplwa\C2101\003\mxd\060624_Subarea_water_availability.mxd
 Date: 24/08/2009

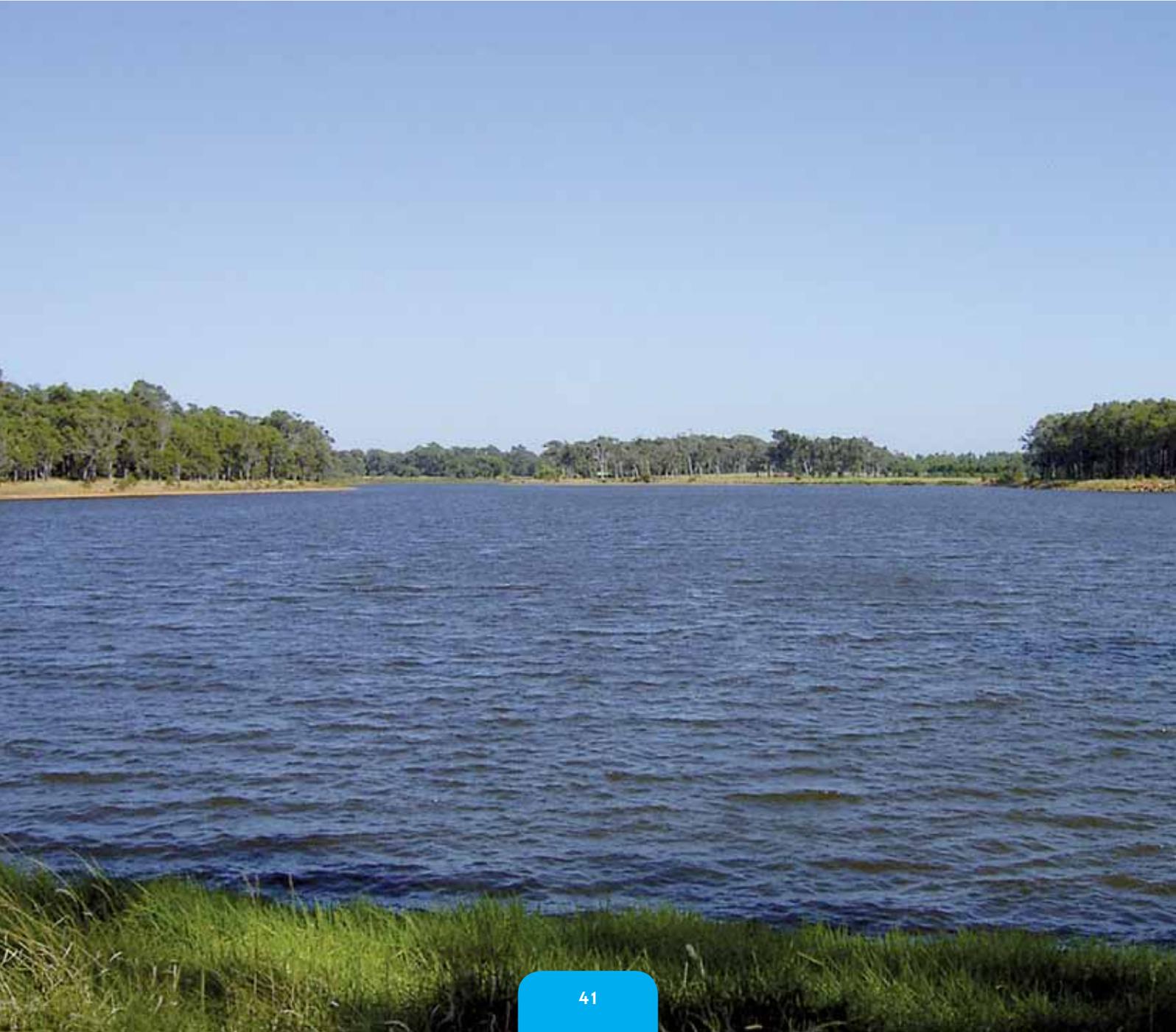
Government of Western Australia
 Department of Water
 This map is a product of the Department of Water, Water Resource Use and was printed on 24/08/2009. This map was produced with the intent that it be used for the Whicher area surface water allocation plan at the scale of 1:662,000.
 While the Department of Water has made all reasonable efforts to ensure the accuracy of this data, the Department of Water accepts no responsibility for any inaccuracies and persons relying on this data do so at their own risk.

Figure 11
 Surface water availability in the Whicher area

4.6 Fully-allocated subareas

A number of Whicher subareas are fully allocated, based on the best estimates of current surface water use, which means that no surface water is available for new developments (Table 3 and Figure 10). As estimates of surface water use are refined, some of these areas may become over allocated and some areas with limited water availability may become fully or over allocated.

Action 25 –Prioritise updating of water use estimates (Action 19) and licensing (Action 20) according to the level of allocation (those areas that are fully allocated and approaching full allocation first), as part of the implementation of this plan.



Chapter five

Allocation and licensing policies

Allocation and licensing policies allow us to allocate water in an equitable and considered way. Policies provide advice and rules on where and how water can be taken.

All statewide policies endorsed by the department, which are relevant to surface water, are applied through this plan. All state legislation relating to water and its use also apply to this plan area. The department also developed new policies at a local scale for the management of surface water resources in the Whicher area. The local policies in this plan supersede any statewide policies that are inconsistent with this plan.

We developed the policies to support the principles and objectives of the plan (Sections 1.2 and 3.1) and they are the basis of a formal policy framework for surface water in the Whicher area. We developed them in the context of increasing demand for surface water in a drying climate. The policies aim to protect the surface water resources and the environment, and provide security for water users. As the competition for surface water increases (as a result of increasing surface water demand and/or further drying of the climate), we will develop additional surface water policies for the Whicher area.

Licensing and water allocation decisions should be based on the best available information. Through the decision-making process, local and regional scale impacts of taking surface water should be considered. The department's South West regional offices are responsible for allocating surface water (including issuing licences) in the Whicher plan area.

Action 26 -Improve the surface water licensing support systems, as a priority, to assist licensing officers to make surface water allocation decisions, as part of the implementation of this plan.

5.1 Allocation approach

The department will license all historical (pre-proclamation) surface water use (Policy 1.1) subject to the assessment process (Appendix B), including an assessment of water use efficiency. In subareas where there is currently a high level of use, this process will be completed before any further water is allocated and licensed.

The department will review allocation limits in areas where historical surface water use is higher than the allocation limit. We may increase allocation limits to equal historical use if we consider the risk to be manageable.

Surface water will be allocated on a 'first-in first-served' basis for all subareas up to 70 per cent of the allocation limit.

When 70 per cent of the allocation limit is reached (or exceeded after licensing historical use) the approach for allocating the remaining water will be reviewed. As competition for water increases, the department recognises that water needs to be managed more carefully, therefore in some catchments an alternative approach may be more appropriate than 'first-in first-served' (Policy 1.2).

If through a subsequent planning process, allocation limits are revised and additional surface water is released in a subarea, the department will also consider an alternative allocation mechanism for allocating this water (Policy Action 27).

5.2 Allocation policies

Allocation policies are the procedures and rules required by the department to ensure that water is allocated according to the *Rights in Water and Irrigation Act 1914*. Allocation

policies provide a structure for assessing and issuing licences. The following policies also act as guidance to ensure surface water in the Whicher area is allocated in line with ecological, social, cultural and economic considerations. Unless specified, the following policies (Table 4) apply to all surface water resources in the Whicher area (proclaimed and unproclaimed areas).

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
1 Allocating water	
1.1 Historical (pre-proclamation) use	The department will license historical (pre-proclamation) surface water use in the areas proclaimed on 21 September 2007 (Cape to Cape North, Cape to Cape South, Geographe Bay Rivers and Lower Blackwood River surface water areas), subject to compliance with other relevant regulations, land use planning requirements and the 7(2) licensing assessment (Appendix B). In areas where there is currently a high level of use, we will complete this process before we allocate and license any further surface water.
1.2 Allocation approach	The department will allocate surface water on a 'first-in first-served' basis in each allocation unit up to 70 per cent of the allocation limit. When 70 per cent of the allocation limit is reached, or exceeded after licensing historical use, we will review the approach for allocating the remaining water. This may be 'first-in first-served' or an alternative allocation mechanism (Policy Action 27).
1.3 Reaching the allocation limit	When the total surface water use reaches the allocation limit for a particular allocation unit, the department generally will refuse applications for surface water entitlements for new developments. In unproclaimed areas, the department will provide advice to the relevant shires on surface water availability relative to the allocation limit. If through a subsequent planning process, allocation limits are revised (Action 24) and additional surface water is released in an allocation unit, the department will consider the most appropriate approach for allocation.
1.4 Local impacts	The department will refuse an application for a surface water entitlement that is within an allocation limit for an allocation unit if local impacts are unacceptable. The department will consider the potential impacts on downstream users and the environment as part of the 7(2) licensing assessment.

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
2	Licensee responsibilities
<p>Note: Development approval is required from some local government authorities for construction associated with the capture and storage of water. We recommend that landowners contact their local council and Department of Water offices early on in planning for the development of land and water resources to ensure plans are achievable.</p>	
2.1	Application requirements
	2.1.1 It is a water user's responsibility to apply for a licence if their surface water use is in a proclaimed area. This applies to historical use and new developments. The department will progressively license surface water use in the areas proclaimed on 21 September 2007 (Cape to Cape North, Cape to Cape South, Geographe Bay Rivers and Lower Blackwood River) according to our priority schedule (Policy 2.1.2).
	2.1.2 The department will specify the timeframe within which surface water users (including historical users) in a particular subarea must apply for a water licence. The department will announce the timeframe through its website and the media.
	2.1.3 Applicants may be required to submit information on the surface water resource to be provided by a hydrologist or other suitably qualified professional (Policy Action 28).
	2.1.4 It is the applicant's responsibility to provide any information requested by the department, to enable us to complete the assessment of their licence application. The department will assess any requested information in accordance with <i>Statewide policy no. 17 - Timely submission of required further information</i> (DoW 2007d).
2.1.5 All applicants that are required to provide the department with additional information following submission of their application must comply with <i>Statewide policy no. 17 - Timely submission of required further information</i> (DoW 2007d).	
2.2	Licence renewals
It is the licence holder's responsibility to submit an application to extend the term of their existing licence prior to the expiry date. In fully allocated areas, the department does not guarantee that the licence will be renewed if it is left to expire. The conditions of the licence will continue to apply until the department has assessed the renewal application.	
2.3	Reporting requirements
Information submitted by a licensee on water levels, water flow, water quality, metered use and hydrological work (including any local models) may be used by the department to report on the condition of surface water resources in the plan area (Policy Action 29).	

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
3	Licensing rules and requirements
Note: The department is considering extending the period for which licences are valid (Policy 3.1.7).	
3.1	General requirements
	3.1.1 The department will assess all surface water licence applications in accordance with Schedule 1, Clause 7(2) requirements of the RiWI Act.
	3.1.2 The department may require new applications to construct a dam to include surveyed characteristics (level; area; volume), so that we can determine the capacity of the dam storage.
	3.1.3 If a dam has the potential to pond water over an adjoining property, the department will require the applicant to seek legal access to the affected property. Where dams exist over multiple property boundaries and the properties are subsequently sold or subdivided, the vendor and purchasers should formalise how the dam will be managed.
	3.1.4 Interference (including the construction of dams and weirs) with the bed and banks of a proclaimed watercourse or a watercourse on crown land will require a permit as stated in Sections 11, 17 and 21 of the RiWI Act. These permits will be subject to certain terms, conditions and restrictions. The department does not have regard to the safety of: <ul style="list-style-type: none"> a the design; or b the method of construction, or operation, of the works, or action, that would be authorised by a permit to interfere with bed and banks (RiWI Regulations 2000).
	3.1.5 Where the department requires an application to be advertised, the application will be advertised in the public notice section of a local and state newspaper, with an invitation to comment (at least 15 days following the advertisement notice) on the application. The public comments must be submitted to the department. Proof of advertising must be submitted to the department before we can complete our assessment of the application.
	3.1.6 Applications to take surface water within public drinking water source areas (PDWSA) (Figure 9) must be undertaken in accordance with the relevant drinking water source protection plans implemented by the department (see < http://drinkingwater.water.wa.gov.au >). For more information see the Department of Water's water quality protection note <i>Land use compatibility in public drinking water source areas</i> (WQPN 25) (< http://drinkingwater.water.wa.gov.au >).
3.1.7 The department will generally issue licences for a term of up to ten years.	
3.2	Annual water entitlements
	The department will consider the amount of surface water to be used and stored, evaporation and water required to maintain dam structural integrity when determining the annual water entitlement for a surface water licence.

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
3.3 Licence conditions	3.3.1 The department may, at its discretion, include in a licence any terms, conditions or restrictions as stated in Schedule 1, Clause 15 of the RiWI Act.
	3.3.2 Licence conditions may state when flows must be bypassed during the year.
3.4 Operating strategies	<p>Operating strategies will be applied according to the Statewide policy no. 10 – Use of operating strategies in the water licensing process (WRC 2004a). Operating strategies are applicable to any licensed entitlement where additional information is needed to ensure any potential impacts from taking surface water are identified and managed.</p> <p>Operating strategies must be developed by the licensee. All conditions and requirements in the strategy must be auditable and appropriate for the purpose of taking the surface water. The department will use information submitted in the operating strategy to develop licence conditions and/or additional monitoring or measurement requirements in the operating strategy or as a schedule to the licence.</p> <p>Operating strategies may include:</p> <ul style="list-style-type: none"> • efficiency plans, including water conservation measures, where large quantities of water are being used • monitoring programs and impact management plans, where impacts from taking water are predicted • nutrient and irrigation management plans, where there is the potential to contaminate water sources.
4 Stock and domestic policies	
4.1 General	4.1.1 Dams for non-intensive or non-commercial (stock and domestic) purposes will not require a licence to take surface water and must not exceed a storage capacity of 8000 kL. However, the department will account for them when determining the water availability for an allocation unit.
	4.1.2 Construction of dams for stock and domestic purposes still requires a permit to interfere with bed and banks (Policy 3.1.4).
5 Climate considerations	
<p>Allocation and licensing decisions for this plan will take into account a relatively drier climate period, based on rainfall data from the period 1975–2005. The department will develop policy on how allocation and licensing decisions should consider future climate change, including the potential impacts on supply for existing and proposed developments, and on the environment (Policy Action 34).</p>	

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
6	Environmental policies
<p>Note: Strategies to address riparian zone management issues are contained in river action plans. River action plans for rivers in the Whicher area are listed in Appendix D and are available on the department's website (<www.water.wa.gov.au> Waterways health >Looking after our waterways > Restoring > River action plans).</p>	
6.1	Environmental impact management
	6.1.1 As part of the licence assessment process, the licensing officer will set the level of assessment based on the level of risk. A proposal with a high level of risk to the environment may require assessment under the <i>Environmental Protection Act 1986</i> . If a project requiring surface water is submitted where the scale or scope means that the department cannot fully consider it under this plan and the RiWI Act, the department may refer the proposal to the Environmental Protection Authority (EPA) for assessment. The department will provide the EPA with advice. EPA approval of a proposal does not guarantee approval of the water licence. The department must still assess the surface water licence application and incorporate EPA advice where relevant.
	6.1.2 All surface water licence applications must comply with relevant environmental legislation as well as the policies and rules stated in this plan.
	6.1.3 The department prefers pumping from a watercourse into an off-stream storage. However, the department will consider and assess new on-stream dams where the applicant can demonstrate that there is no suitable place to locate the off-stream storage. The department will assess whether downstream users are likely to be affected.
	6.1.4 All new on-stream dams with the potential to cause unacceptable impacts to downstream users and the environment will be required to have a low-flow bypass system and may also require other controls that allow for the migration of aquatic species. The department may require existing on-stream dams to have a bypass system to control flows, as well as other controls that allow for the migration of aquatic species. The department will implement this policy as required, which is consistent with the department's <i>Statewide policy no. 5 – Environmental water provisions policy</i> (WRC 2000b) on providing water for environmental flows and passage of aquatic life.
6.1.5 The department is unlikely to approve new applications to take surface water (including direct pumping) from a watercourse during periods of low flow (generally in summer), due to the ecological needs of the system during that time.	
6.2	Water quality
	If surface water is extracted for private supplies, it is advisable to filter, treat and test the water according to public health advice available from the Department of Health, Water Unit. The Department of Water also provides guidance for drinking water through water quality protection notes (WQPN) (< http://drinkingwater.water.wa.gov.au > see WQPN 41 <i>Private drinking water supplies</i>). The <i>Australian Drinking Water Guidelines 2004</i> (Australian Government 2004b) and <i>Australian Fresh and Marine Water Quality Guidelines</i> (ANZECC & ARMCANZ 2000) also provide information on relevant drinking water quality criteria.
6.3	Point source pollution
	Point source pollution of water through any activity that may cause environmental harm may be regulated through the <i>Environment Protection Act 1986</i> . The Department of Environment and Conservation (DEC) should be contacted if a pollution event has been identified.

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
7 Cultural policies	
7.1 Cultural sites	7.1.1 All applicants are required to meet any statutory requirements under the State's <i>Aboriginal Heritage Act 1972</i> or the Australian Government's <i>Native Title Act 1993</i> , where applicable.
	7.1.2 Where an application is located on or near (1 km radius) an identified Aboriginal site of significance (see the Aboriginal sites register at <www.dia.wa.gov.au/AHIS/>) that has the potential to be affected by the proposed taking of surface water, the proponent will need to contact the Department of Indigenous Affairs and meet all requirements of the <i>Aboriginal Heritage Act 1972</i> before the licence assessment can be completed.
7.2 Native Title	7.2.1 The department, during the notification period or during ongoing negotiations, will assess any application that requires notification through the Native Title claimants. The department will not allocate the requested water until the negotiations are completed. This does not result in any exemption to the <i>Statewide policy no. 17 - Timely submission of required further information</i> .
	<p>7.2.2 Native Title is considered in conjunction with water resource development proposals. Notification under the <i>Native Title Act 1993</i> is not required where:</p> <ul style="list-style-type: none"> • Native Title has been extinguished by a prior grant of a tenure (e.g. freehold land, residential leases, commercial leases, exclusive agricultural and exclusive pastoral leases, conditional purchase leases and war service settlement or perpetual leases) • water usage is consistent with the purpose of the tenure (e.g. water use in relation to a mining tenure is for mining related purposes) • the taking of water is within the purpose of a reserve or within the statutory powers enabling the management of the reserve (e.g. crown reserve) or • the licence is a renewal, re-grant, re-making or an extension of the term of a previous licence granted before 23 December 1996 • the licence is for the same term as the previous licence. <p>If the proposal does not comply with these points, the department will notify the proponent and the Native Title claimants in writing. The department will request comments on the proposal by the Native Title claimants. Comments must be provided in a reasonable timeline, as identified in the letter of notification from the department.</p> <p>Comments received by the department from the Native Title claimants will be considered in the assessment of the application to take water under section 7(2) of the RiWI Act. If no comments are received in the specified timeframe, the assessment will proceed.</p>

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
8	Measurement
8.1	Measurement of water take
	The department may require that licensees install and maintain a cumulative water meter, as per the RiWI (Approved Meters) Order 2009. The department will specify the frequency of readings and reporting requirements in the licence conditions.
9	Trading
	<p>Note: As part of the next phase of planning for the Whicher area, the department will refine policy on trading surface water entitlements (Policy Action 35). Surface water trading is not limited by the release of this policy and some trading already takes place (mainly transfers). Water trading must be consistent with <i>Statewide Policy no. 6 – Transferable (tradeable) water entitlements for Western Australia</i>, unless otherwise stated in this plan. Refer to Statewide Policy No. 6 for the following aspects of trading:</p> <ul style="list-style-type: none"> • Boundaries of trading: 4.2 Water availability, (i) and (ii) • Accurate measurements: 4.2 Water availability, (iv) • Impacts of trading: 4.3 Environmental and resource management, (ii).
9.1	Other forms of surface water trade
	The department will consider other forms of surface water trading, including transfers and downstream releases. Surface water users should contact the department to discuss their proposal.
9.2	Applications to trade surface water
	The department will only consider a trade if the seller holds a valid surface water licence.
9.3	Conditions of trade for moving surface water entitlements
	Trades (transfers and agreements), involving movement of water, will be subject to release conditions and will consider, but are not limited to; timing of release, pumping arrangement, flow rates, water quality and stability of the banks of the watercourses used to convey traded water.
10	Water use
10.1	Efficient use of water
	Surface water must be used efficiently and applicants must show how their proposed water use meets best management practice for that particular water use in a particular location. The department may require efficiency plans as part of an operating strategy for larger operations (Policy 3.4).
10.2	Alternative water supplies
	If alternative supplies such as recycled, drainage, or desalination water are part of a proposal to take surface water, proponents should contact the department as early as possible to determine the required approval process and supporting information.

Table 4
Surface water allocation and licensing policies for the Whicher area

Policy group	Policy detail
11 Public water supply	
11.1 Existing public water supply	11.1.1 Water supply to water service providers is secured through current licences and future allocations for private use will not affect this security.
	11.1.2 Existing public water supply providers must comply with the relevant drinking water source protection plans developed by the department (see < http://drinkingwater.water.wa.gov.au >).
	11.1.3 In areas of public water supply (Figure 9) where surface water supply could decrease as a result of climate change, public water supply providers should develop a drought contingency plan to be agreed to by the department, documenting proposed drought management and emergency supply options.
12 Compliance and enforcement	
12.1 Compliance audits	The department will conduct compliance audits every three to five years for all licensees with entitlements greater than 50 000 kL/yr and upon renewal of all other licences.
12.2 Enforcement action	12.2.1 Failure to comply with a condition on a licence may result in the department taking enforcement action.
	12.2.2 The department will take enforcement action when it is required to protect the state's water resources or other users by ensuring that the requirements of the legislation are complied with. When making decisions on enforcement action and exercising its legislative powers, the department will apply the principles outlined in the enforcement and prosecution policy (DoW 2008c).
12.3 Offences	A person who commits an offence against the RiWI Act may not be able to hold or trade a licence to take water.
13 Complaints and disputes	
Note: This plan provides rules for the management of surface water resources within the Whicher area. The Whicher Water Resource Management Committee may provide advice to the department on broad compliance issues.	
13.1 Managing complaints and disputes	The department will deal with individual complaints and disputes according to <i>Statewide Policy No. 12 – Management of complaints and disputes on watercourses in Western Australia</i> (WRC 2004b).

5.3 Policy actions

The department has identified the following policies that need to be developed, as part of the next phase of planning for surface water in the Whicher area.

Table 5 Policy actions	
Policy group	Policy action
Allocating water	
Alternative allocation mechanisms	Action 27 Develop policy for allocating water in allocation units where use is greater than 70 per cent of the allocation limit or where additional water is released, considering alternative allocation mechanisms.
Licensee responsibilities	
Application requirements	Action 28 Develop policy for standard hydrological information to be submitted to the department with surface water licence applications.
Reporting requirements	Action 29 Develop policy for standard monitoring and reporting requirements associated with a surface water licence (similar to <i>Statewide policy no. 19 - Hydrogeological reporting associated with a groundwater well licence</i> (DoW 2007e)). This would include hydrological reports, monitoring reports (water use and quality) and a stated level of information which must be submitted to the department for review.
Licensing rules and requirements	
Licence conditions	Action 30 Develop policy (rules) on the filling of dams, considering licence conditions or short-term licences.
	Action 31 Develop policy (procedures) on how to implement 'rules of take' in the future, including minimum flow threshold and maximum extraction rate.
	Action 32 Develop policy on resource sharing, including licensing arrangements that consider variations in annual supply of water.

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Allocation and licensing policies

Table 5
Policy actions

Policy group	Policy action
Public water supply	
Public water supply reserves	Action 33 Develop policy on public water supply reserves for surface water, including setting aside water in reserves and accessing reserves.
Climate considerations	
Impact of future climate change	Action 34 Develop policy on how allocation and licensing decisions should consider future climate change, based on results from the investigation of the impact of different climate scenarios.
Trading	
Trading policy	Action 35 Refine policies on trading for surface water entitlements, including the following considerations: <ul style="list-style-type: none"> • how the department will assess proposed trades • where trading will be permitted • the component of the licence entitlement that can be traded • measurement of surface water use.
Interceptions	
Dams	Action 36 Develop policy on managing and licensing dams that intersect groundwater and take surface water.
Plantations	Action 37 Develop policy on managing and regulating commercial plantations.

Chapter six

Implementing and reviewing the plan

The South West Region is recognised as a priority area for water management planning by the state and federal governments. Setting out how we will implement, evaluate and review the plan will enable the department to manage the Whicher surface water resources successfully.

6.1 Implementing the plan

Actions required to implement this plan are summarised in Table 6. Actions to inform the next phase of are summarised in Table 8.

Table 6
Actions to implement the plan

Action	Action no.	Responsibility*	Timeline
Evaluation statement			
Provide regular statements via the department's website on the plan implementation (Section 6).	Action 1	South West Region	Annually
Allocation decisions			
Finalise and publish ecological water requirement studies for the Margaret and Capel rivers and the Cowaramup, Chapman and Wilyabrup brooks to support the review of allocation limits (Action 24).	Action 16	Environmental Water Planning	Last quarter of 2009
Incorporate results of ecological water requirement studies to review allocation limits (Action 24).	Action 23	Allocation Planning	Third quarter of 2010
Where there is new information, review allocation limits for surface water resources in the Whicher area, and revise where justified, within one year of this plan's final release.	Action 24	Allocation Planning	Third quarter of 2010

Table 6
Actions to implement the plan

Action	Action no.	Responsibility*	Timeline
Licensing			
Investigate the use of local by-laws and provide advice to local government authorities to better control farm dams off watercourses.	Action 9	South West Region	2009
Complete licensing of commercial surface water use in proclaimed areas according to the department's priority schedule.	Action 20	South West Region	2012
Develop policy for allocating water in allocation units where use is greater than 70 per cent of the allocation limit or where additional water is released, considering alternative allocation mechanisms.	Action 27	Water Licensing (Policy)	Last quarter of 2009
Licensing support			
Refine the estimate of current use and improve our licensing database to account for all surface water use and estimates of unlicensed surface water use, as part of the implementation of this plan.	Action 19	South West Region	Ongoing
Prioritise updating of water use estimates (Action 19) and licensing (Action 20) according to the level of allocation (those areas that are fully-allocated and approaching full allocation first).	Action 25	Allocation Planning	Ongoing
Systems			
Develop a GIS-based decision support tool that identifies surface water-dependent features and their associated ecological, social and cultural values to assist ongoing management.	Action 15	Environmental Water Planning	Third quarter of 2010
Improve the surface water licensing support systems, as a priority, to assist licensing officers to make surface water allocation decisions.	Action 26	Water Licensing	Third quarter of 2009

* Department of Water branch that is responsible for implementing the actions in the plan

6.2 Evaluating the plan

To identify whether the management approach in this plan is working to achieve its objectives, the department will release an evaluation statement annually (through the South West Regional office). The statement will identify:

- the status of water use
- the status of all actions required by the plan
- performance against the plan objectives (Section 3.1), including resource performance (as per Table 2 in Section 3.2)

- responses that have been triggered and the effectiveness of these responses (as per Table 7)
- any minor changes to the plan.

Throughout the life of the plan, the department will need to respond to changes in the status of the surface water resources in the Whicher area, in addition to the actions identified throughout the plan. The department has set triggers for responses that will be necessary when these situations arise (Table 7).

Table 7
Management triggers and responses

Situation	Trigger	Response
High level of use	Surface water use is greater than or equal to 70 per cent of the allocation limit for an allocation unit.	The department will start a more detailed assessment of information used to set the allocation limit.
Fully-allocated resource	Surface water use reaches the allocation limit for an allocation unit.	No surface water entitlements will be granted for new developments. Applications may be granted over the allocation limit temporarily under extenuating circumstances.
Local impacts are not acceptable	The licence assessment process for a development proposal determines that local impacts are not acceptable.	The department will refuse the licence application or will require the applicant to amend the proposal so impacts are acceptable.
Applying for a licence for historical surface water use	A historical surface water user does not submit an application for a water licence.	The department will reserve the volume of historical surface water use until this use is licensed. The department will contact the water user to ensure they apply for a licence.
Reduced water availability: impact of drying climate	Surface water flows decrease significantly due to further reductions in rainfall.	The department will review allocation limits, plan principles, objectives and policies and revise if necessary.

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Implementing and reviewing the plan

6.3 Reviewing the plan

The department will review this plan following the release of each annual evaluation statement. Following the review, we may recommend that this plan is still adequate for water management, or we may recommend that a revision and update is required. The Western Australian government is currently updating and reviewing its state water resource legislation. Any significant changes in legislation that may affect this plan will be included in plan reviews.

6.4 Future water allocation plans

While this plan sets out our water use management approach for the next few years we are also looking ahead and working towards improving planning. We have identified priority actions that will contribute to future planning in the Whicher area (summarised in Table 8). As with the actions for the plan implementation, we will report against their progress each year in the evaluation statement.

The department intends to complete a statutory water allocation plan for surface water resources in the Whicher area under the new water resources management legislation currently being drafted. We have started or identified much of the work needed to develop this plan.

Some of the new concepts that future water allocation plans for surface water resources in the Whicher area may consider include:

- resource sharing, including the establishment of consumptive pools (the amount of a water resource that can be made available for take from a given surface water system under the rules of the relevant water plan)
- conversion of existing water licences to new perpetual water access entitlements – issued as a share of water from the consumptive pool as defined in the relevant water plan
- description of the locally applicable water trading rules
- specification of any water resource management requirements, such as for water metering or measurement
- accounting for and regulating water intercepting activities, such as the use of water by plantations.

These changes will only be introduced where there is a demonstrable need and after comprehensive consultation with stakeholders and the wider community in the South West.

Table 8
Actions for the next phase of planning in the Whicher area

Action	Action no.	Responsibility*	Timeline
Monitoring program			
Review the existing surface water monitoring program and modify where feasible to meet surface water planning objectives.	Action 5	Allocation Planning	End of 2011
Resource investigations and assessments			
Investigate the impact of different climate scenarios on surface water availability.	Action 3	Strategic Water Planning	Early 2010
Investigate the feasibility of applying a rules-based approach to surface water management as part of licensing.	Action 4	Allocation Planning	Mid 2010
Investigate the feasibility of applying a resource sharing approach for managing surface water.	Action 6	Allocation Planning	Mid 2010
Determine appropriate reliabilities for surface water entitlements.	Action 7	Water Licensing	End of 2009
Investigate the impact of dam size and density on streamflow.	Action 8	Allocation Planning	Early 2010
Investigate and account for plantation water use as part of the water balance.	Action 10	Allocation Planning	After 2011
Quantify surface water-groundwater interactions for key river systems and consider how to manage them.	Action 12	Allocation Planning	End of 2012
Review and update potential dam sites in the Whicher area, considering potential developments including the Water Corporation's most recent source development plans.	Action 21	Allocation Planning	Mid 2010
Review water availability for the potential water supply catchments identified in Action 21, including reserving additional water for future public water supply.	Action 22	Allocation Planning	End of 2011

Table 8
Actions for the next phase of planning in the Whicher area

Action	Action no.	Responsibility*	Timeline
Policy			
Assess the need for a policy or introduction of local by-laws on using and managing water from springs.	Action 14	Water Licensing (Policy)	Mid 2010
Develop policy for standard hydrological information to be submitted to the department with surface water licence applications.	Action 28	Water Licensing (Policy)	Mid 2010
Develop policy for standard monitoring and reporting requirements associated with a surface water licence.	Action 29	South West Region	Mid 2010
Develop policy (rules) on the filling of dams, considering licence conditions or short-term licences.	Action 30	Environmental Water Planning	End of 2010
Develop policy (procedures) on how to implement rules of take in the future, including minimum flow threshold and maximum extraction rate.	Action 31	Allocation Planning	End of 2010
Develop policy on resource sharing, including licensing arrangements that consider variations in annual supply of water.	Action 32	Water Licensing (Policy)	End of 2010
Develop policy on public water supply reserves for surface water, including setting aside water in reserves and accessing reserves.	Action 33	Allocation Planning	Mid-2010
Develop policy on how allocation and licensing decisions should consider future climate change.	Action 34	Allocation Planning	End of 2009
Refine policies on trading for surface water entitlements, including the following considerations: <ul style="list-style-type: none"> • how proposed trades will be assessed by the department • where trading will be permitted • the component of the licence entitlement that can be traded • measurement of surface water use. 	Action 35	Allocation Planning	Mid-2010
Develop policy on managing and licensing dams that intersect groundwater and take surface water.	Action 36	Water Licensing (Policy)	End of 2009
Develop policy on managing and regulating commercial plantations.	Action 37	Strategic Water Planning	End of 2009

Table 8
Actions for the next phase of planning in the Whicher area

Action	Action no.	Responsibility*	Timeline
Environmental investigation			
Incorporate the impacts of plantation water use into surface water allocation decisions.	Action 11	Allocation Planning	End of 2009
Identify the social and cultural values of surface water resources.	Action 17	Environmental Water Planning	End of 2009
Complete social and cultural requirement studies for key surface water systems.	Action 18	Environmental Water Planning	End of 2009
Next plan			
Develop a program of stakeholder consultation.	Action 2	South West Region	End of 2009
Consider developing integrated surface water-groundwater plans for those systems with strong interconnectivity.	Action 13	Allocation Planning	After 2011
* Department of Water branch that is responsible for implementing the actions in the plan			



Appendices

Whicher area water allocation plan



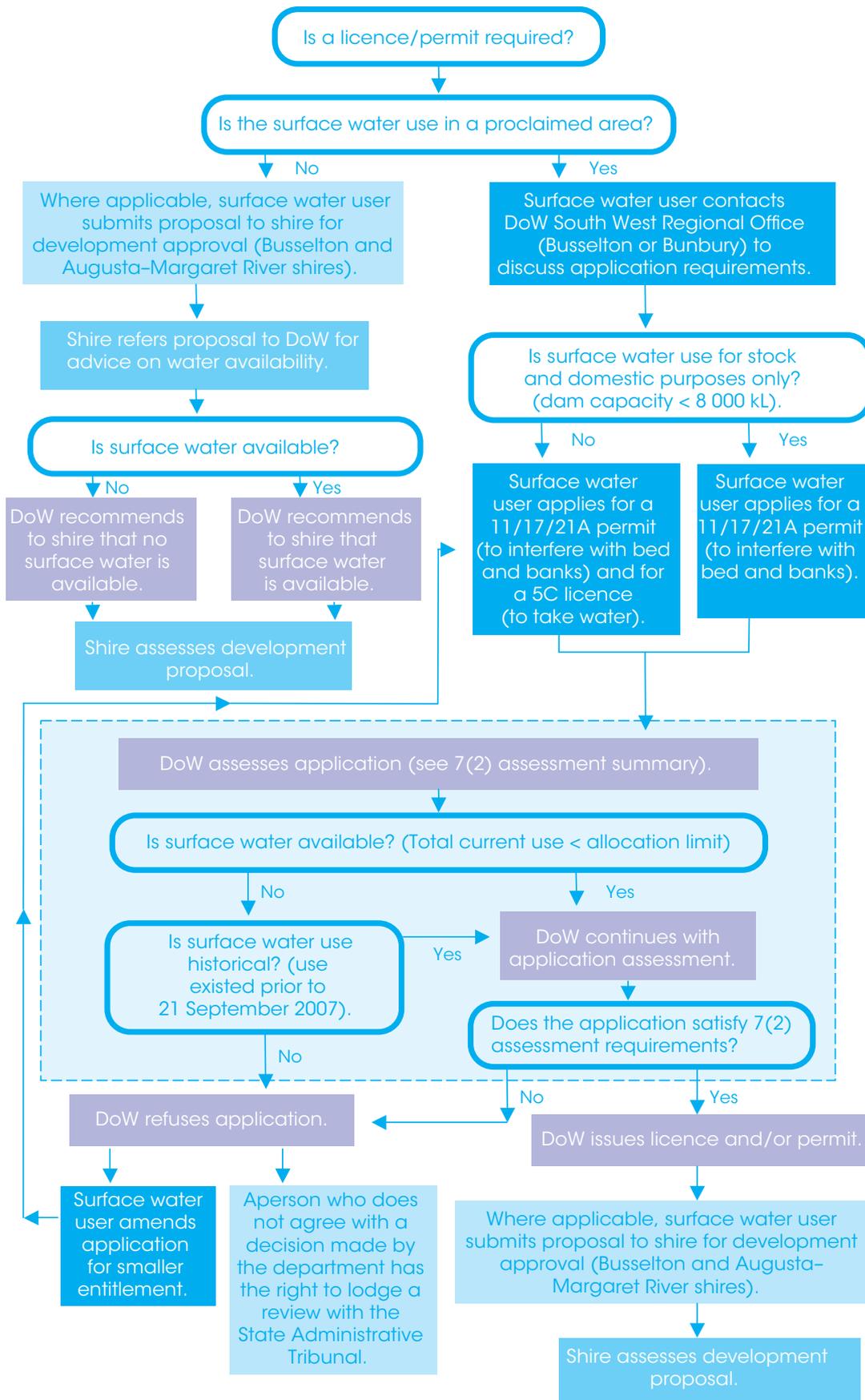
Surface water management area	Surface water management subarea
Busselton Coast (Cape to Cape North)	Biljedup
	Cowaramup*
	Ellen*
	Gunyulgup
	Naturalist
	Quininup
	Wilyabrup
Busselton Coast (Cape to Cape South)	Boodijidup
	Calgardup
	Turner SW
Busselton Coast (Geographe Bay Rivers)	Buayanup*
	Carbunup*
	Dunsborough Coast*
	Vasse Diversion*
	Wonnerup*
Busselton Coast (Margaret River)	Upper Margaret*
	10 Mile Brook*
	Bramley*
	Lower Margaret*
	Margaret Town*
	Middle Margaret*
Capel River	Capel River Central
	Capel River North Branch
	Capel River South Branch
	Capel River West*
	Gynudup Brook and Tren Creek*
Lower Blackwood River	Lower Blackwood: Hut Reach*
	Lower Blackwood: Estuarine Reach
	Lower Blackwood: Hardy Estuary*
Lower Blackwood River (tributaries)	Adelaide
	Rosa
	Tanjannerup*
	Beenup*
	Chapman
	Glenarty
	McLeod SW
	Rushy
	Turnwood
	Upper Chapman
West Bay	

* Subarea is partly proclaimed-see proclamation maps for details.

The Department of Water assesses individual applications to interfere with bed and banks (11/17/21A permit) and to take water (5C licence) under Schedule 1, Division 2, clause 7(2) of the RiWI Act. The level of assessment will vary depending on the level of risk to the environment and downstream users.

Relevant consideration of RiWI Act		What the department considers
7(2) (a)	<p>Public interest Does the proposal have any economic, social or recreational benefits to the public? This is assessed from a regional or statewide point of view.</p>	<ul style="list-style-type: none"> social benefit (including water for community parks and gardens) recreational benefit (including aesthetics of a natural system, camping, fishing) economic benefit (including regional development, prospective employment) advertising of proposals under RiWI Act to build information to assess public interest.
<p>Sustainability assessment A sustainability assessment considers economic, social and ecological factors together and attempts to satisfy as many factors as possible, with minimal trade-offs, applying the principles below:</p> <ul style="list-style-type: none"> long-term economic health equity and human rights biodiversity and ecological integrity. 		
7(2) (b)	<p>Ecologically sustainable</p>	<ul style="list-style-type: none"> water availability requirements of relevant management plan (allocation) hydrological assessment impact on any ecologically significant sites to protect the ecology an assessment is made on the need for: <ul style="list-style-type: none"> monitoring as part of the licensing conditions an operating strategy an Irrigation Development Assessment Form a water use plan a water quality assessment clearing approval requirements land capability water use efficiency requirements.
<p>Environmentally acceptable Can the economic, social and ecological considerations be satisfied? If not, are the impacts acceptable?</p>		
<p>Economic <i>Long term economic health</i> Recognise needs of current and future.</p>		<ul style="list-style-type: none"> any economic values identified through allocation planning categorisation of economic status: Public-Commercial or Non-commercial, or Private-Commercial or Non-commercial economic benefit to local, regional or state market.
<p>Social <i>Equity and human rights</i></p>		<ul style="list-style-type: none"> any social and recreational values identified through allocation planning. cultural and heritage considerations: <ul style="list-style-type: none"> Aboriginal sites of significance Native Title claims Australian Heritage Listings social and recreational benefits or liabilities (including fishing).
<p>Ecological <i>Biodiversity and ecological integrity</i></p>		<ul style="list-style-type: none"> findings of the 7(2) (b) assessment.
7(2) (d)	<p>May prejudice other current and future needs for water The regional view</p>	<ul style="list-style-type: none"> hydrological report or assessment – effects on current and future needs for water and possible ecological and environmental impacts on surrounding areas.
7(2) (e)	<p>Detrimental effect on another person The local view</p>	<ul style="list-style-type: none"> need for advertising process. need for a request and assessment of an operating strategy.
7(2) (f)	<p>Could be provided for by another source Assessment considers alternative options and sources</p>	<ul style="list-style-type: none"> most appropriate resource – hydrological report or assessment and water availability availability of other sources – groundwater most economically available source.
<p>Are in keeping with: (i) Local practices Local practices and planning requirements</p>		<ul style="list-style-type: none"> local government authority approval and/or zoning other relevant approvals (DAFWA, DoIR, and DEC) common practice within the area.
<p>(ii) Relevant local by-law</p>		<ul style="list-style-type: none"> by-laws under RiWI Act or <i>Environmental Protection Act</i> (none currently in place for surface water resources in the Whicher area).
<p>(iii) Plan approved under Part III Division 3d Subdivision 2</p>		<ul style="list-style-type: none"> plan approved under Part III Division 3d Subdivision 2 (statutory): none at present for surface water resources in the Whicher area next plan for surface water resources in the Whicher area will be statutory under the new water resources legislation currently being drafted.
<p>(iv) Relevant previous decisions of the commission</p>		<ul style="list-style-type: none"> departmental policies and plans previous licensing decisions where relevant.
<p>Are consistent with: (i) Land use planning Instruments</p>		<ul style="list-style-type: none"> <i>Environmental Protection Act</i> clearing requirements local government approval local government authority planning.
<p>(ii) The requirements and policies of other government agencies Issue of a licence cannot pre-empt approvals under the <i>Native Title Act 1993</i> and Part V of the <i>EP Act</i></p>		<ul style="list-style-type: none"> DoW refers proposal to other government departments, where appropriate.
<p>(iii) Any inter-governmental agreement or arrangement</p>		<ul style="list-style-type: none"> related inter-governmental agreements or arrangements (e.g. State Development Acts).

Approvals process to take surface water in the Whicher area



D Appendix

Other plans and strategies to be considered in the Whicher area

Plan	Consideration	Department
State Water Plan 2007	Strategic direction	DoW
South West Regional Water Plan	Strategic direction South West community issues Overarching water management issues	DoW
South West groundwater areas allocation plan	Groundwater allocation plan for the majority of the plan area	DoW
Kirup Dam Catchment Area drinking water source protection plan	Manages land and water use activities in this area to ensure safe drinking water quality	DoW
Margaret River Catchment Area (including Ten Mile Brook Catchment Area) drinking water source protection plan	Manages land and water use activities in this area to ensure safe drinking water quality	DoW
Tanjannerup Creek Dam Catchment Area drinking water source protection plan	Manages land and water use activities in this area to ensure safe drinking water quality	DoW
South West Natural Resource Management Strategy	Natural resource planning and management	SWCC
Busselton Wetlands Conservation Strategy	Land use and environmental management in wetland areas	WAPC
Augusta-Walpole Coastal Strategy (draft)	Statutory planning scheme for land use and zoning	WAPC
Leeuwin-Naturaliste Ridge statement of planning policy report	Land use change and planning	WAPC
Leeuwin Spring Catchment Area and Fisher Road Wellfield Water Reserve drinking water source protection plan	Manages land and water use activities in this area to ensure safe drinking water quality	DoW

DoW = Department of Water
SWCC = South West Catchments Council
WAPC = Western Australian Planning Commission

Other documents to consider

River Action Plans, Department of Water

- Capel River Action Plan, 1999
- Carbanup River Action Plan, 2000
- Ellen Brook River Action Plan, 2005
- Margaret River Action Plan, 2003
- River Action Plan for the Sabina, Abba and Ludlow Rivers, 2002
- River Action Plan for the Cape Naturaliste Streams, 2006
- River Action Plan for the Gynudup Brook and Tren Creek, 2004
- Vasse River Action Plan, 2000

National parks management plans, Department of Environment and Conservation

- Leeuwin-Naturaliste National Park, 1989
- Parks of the Leeuwin-Naturaliste Ridge, Scott National Park and Gingilup Swamps nature reserve, 2008
- Shannon and D'Entrecasteaux National Parks, 1988, amended 2001 and (draft), 2005

Major legislation relating to water resource management in the South West

Commonwealth legislation

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Commonwealth Environmental Protection and Biodiversity Act 1999*
- *National Environmental Protection Council Act 1994*
- *Natural Heritage Trust Act of Australia 1997*
- *National Water Commission Act 2004*
- *World Heritage Properties Conservation Act 1995*

State legislation

- *Aboriginal Heritage Act 1972*
- *Conservation and Land Management Act 1984*
- *Contaminated Sites Act 2003*
- *Country Areas Water Supply Act 1947*
- *Environmental Protection Act 1986, amendment 1998*
- *Environmental Protection Regulations 1987*
- *Heritage of Western Australia Act 1990*
- *National Trust of Australia (WA) Act 1964*
- *Native Title (State Provisions) Act 1999*
- *Pollution of Waters by Oil and Noxious Substances Act 1987*
- *Rights in Water and Irrigation Act 1914, Regulations 2000*
- *Soil and Land Conservation Act 1945, Regulations 1992*
- *State Administrative Tribunal Act 2004*
- *Town Planning and Development Act 1928*
- *Water Agencies (Powers) Act 1984*
- *Water and Rivers Commission Act 1995*
- *Waterways Conservation Act 1976*
- *Western Australian Planning Commission Act 1985*
- *Wildlife Conservation Act 1950, Regulations 1970*

Glossary¹

Whicher Area surface water allocation plan

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 unit	Defined unit for allocation and licensing decisions for a particular plan area.
Annual water entitlement*	Volume of surface water that can be taken from a watercourse during a specified water year.
Biodiversity	Biological diversity or the variety of organisms, including species themselves, genetic diversity and the assemblages they form (communities and ecosystems). Sometimes includes the variety of ecological processes within those communities and ecosystems.
Catchment	Area of land from which rainfall run-off contributes to a single watercourse, wetland or aquifer.
Climate change	A change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
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.
Consumptive pool	Amount of a water resource that can be made available for use in a given water system under the rules of the relevant statutory water plan.
Current water use*	Total amount of water that is taken from surface water resources including licensed and unlicensed use.
Dam	An embankment constructed to store or regulate surface water flow. A dam can be constructed in or outside a watercourse.
Discharge	Water that moves from the groundwater to the ground surface or above, such as a spring. This includes water that seeps onto the ground surface, evaporation from unsaturated soil, and water extracted from groundwater by plants or engineering works.
Ecologically sustainable yield	Amount of water that can be abstracted/extracted over time from a water resource while maintaining the ecological values (including assets, functions and processes).
Ecological values	Natural ecological processes occurring within water-dependent ecosystems and the biodiversity of these systems.

¹ Terms in this glossary marked with an * have definitions specific to this plan.

Glossary

Ecological water requirement	Water regime needed to maintain the ecological values (including assets, functions and processes) of water-dependent ecosystems at a low level of risk.
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.
Environmental water provision	Water regimes that are provided as a result of the water allocation decision-making process taking into account ecological, social, cultural and economic impacts. They may meet in part or in full the ecological water requirements.
Evaporation	Loss of water from the water surface or from the soil surface by vaporisation due to solar radiation.
Extraction	Taking of water, defined as removing water from or reducing the flow of a waterway or from overland flow.
'Fit for purpose'	Water use is matched to an appropriate quality.
Flow	Streamflow in terms of m ³ /yr, m ³ /d or ML/yr. May also be referred to as discharge.
Groundwater	Water that occupies the pores and crevices of rock or soil beneath the land surface.
Groundwater area	Boundaries that are proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> and used for water allocation planning and management.
Hectare	A surface measure of area equal to 10 000 square metres or approximately 2.47 acres.
Historical surface water use*	Surface water use as determined by the department, existing before the proclamation of the Cape to Cape North, Cape to Cape South, Geographe Bay Rivers and Lower Blackwood River surface water areas under the <i>Rights in Water and Irrigation Act 1914</i> on 21 September 2007.
Interception	A broad term encompassing the interception of rainfall, surface water runoff and groundwater recharge by a land use activity.
Licence	A formal permit that entitles the licence holder to take water from a watercourse, wetland or underground source.
Licensed use*	Total (annual) volume of surface water that has been allocated to licensees as entitlements. This may include what is taken for public and private purposes and what can be taken to be stored in a dam.
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.
On-stream storage	Storages (such as farm dams) that are built on or within a defined waterway or watercourse.
Over-allocated	Total surface water use is greater than the allocation limit for a designated management area.

Plantation	A non-irrigated crop of trees grown or maintained so that the wood, bark, leaves and/or essential oils can be harvested or used for commercial purposes (including through the commercial exploitation of the carbon absorption capacity of the forest vegetation).
Precautionary Principle	Taking a cautious approach to development and environmental management decisions when information is uncertain, unreliable or inadequate.
Proclaimed resource	An area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> 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 RiWI Act.
Recharge	Water that infiltrates into the soil to replenish a groundwater aquifer.
Reliability	Frequency with which water allocated under a water access entitlement can be supplied in full. Referred to in some states as 'high security' and 'general security'.
Riparian right	Right of a riparian landowner to take water from a watercourse, that flows through their property, unlicensed and free of charge for the purpose of stock and domestic use, without sensibly diminishing the flow of water downstream.
Salinity	Measure of total soluble salt or mineral constituents in water. Water resources are classified based on salinity in terms of total dissolved solids (TDS) or total soluble salts (TSS). Measurements are usually in milligrams per litre (mg/L) or parts per thousand (ppt).
Self-supply	Water diverted from a source by an individual, company or public body for their own private use.
Social value	A particular in-situ quality, attribute or use that is important for public benefit, welfare, state or health (physical and spiritual).
Soak	An excavation below ground level that usually intercepts groundwater. Where a wall is also constructed above ground, a combination of surface runoff and groundwater may be captured. Soaks may also be constructed close to a watercourse to obtain water. Other names for soaks include excavations, dugouts or sumps.
Social water requirement	Elements of the water regime that are needed to maintain social and cultural values.
Spring	A spring is where water naturally rises to and flows over the surface of land.
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 management 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.

Glossary

Surface water management 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.
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: <ul style="list-style-type: none"> 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 <i>Rights in Water and Irrigation Act 1914</i>)
Transferable (tradeable) water entitlement	Ability to transfer or trade a water entitlement, or a part thereof, to another person within a common water resource.
Unlicensed use*	Total (annual) volume of surface water that is estimated to be taken for commercial use. This may include water taken for commercial purposes, water taken to be stored in a dam and may include water taken from springs. Unlicensed commercial use occurs in areas that are not proclaimed, where spring use is not controlled or where licences have not yet been issued for pre-proclamation use.
Use*	Water taken for private benefit consumptive purposes including irrigation, industry, urban, stock and domestic, aesthetics, lifestyle and storage.
Watercourse	A watercourse means: <ul style="list-style-type: none"> 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 any thing 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 any thing referred to in paragraph a, b or c. (Definition from the <i>Rights in Water and Irrigation Act 1914</i>)
Water access entitlement	A perpetual or ongoing entitlement to exclusive access to a share of water from a specified consumptive pool as defined in the relevant water plan.
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 <i>Rights in Water and Irrigation Act 1914</i> or a licence.
Water regime	A description of the variation of flow rate or water level over time. It may also include a description of water quality.
Water reserve	An area proclaimed under the <i>Metropolitan Water Supply, Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> to allow the protection and use of water on or under the land for public water supplies.
Waterways	All streams, creeks, stormwater drains, rivers, estuaries, coastal lagoons, inlets and harbours.

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)

Shortened forms

DAFWA	Department of Agriculture and Food Western Australia
DEC	Department of Environment and Conservation
DoIR	Department of Industry and Resources (Department of Mines and Petroleum, Department of State Development and Department of Commerce as of 1 January 2009).
DoW	Department of Water
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
NWI	National water initiative
PWS	Public water supply
RiWI Act	<i>Rights in Water and Irrigation Act 1914</i> and Regulations 2000
SWCC	South West Catchments Council
WAPC	Western Australian Planning Commission
WRC	Water and Rivers Commission
WC	Water Corporation

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