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

Water allocation planning in Western Australia

A guide to our process






Looking after all our water needs

Water resource allocation planning series

November 2011

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Kununurra diversion dam on the Ord River, Kimberley Region

This document sets out the Department of Water's water allocation planning process so we are transparent and accountable in our approach.

In Western Australia, we manage water abstraction by issuing water licences through the *Rights in Water and Irrigation Act 1914*. Water allocation planning guides our licensing decisions.

Water allocation plans set out how much water can be licensed for abstraction and how much water is left in the system, under the *Rights in Water and Irrigation Act*. Our water allocation plans are non-statutory.

An allocation plan details allocation limits, water for the environment and our approach to managing water resources within a defined plan area. Water resources within the plan area are divided into management areas. A plan may cover a number of management areas.

Since the Department of Water formed in 2005, we have put in place water allocation plans for most of the state's surface water and groundwater resources where there is demand.

In planning, we aim to maximise the water available for abstraction and maintain the integrity of the water resource. This makes water available for communities and economic development, while preserving environments that need water to survive.

Water allocation plans set the approach to managing water abstraction for seven years. We evaluate the effectiveness of our management approach (including the allocation limits) every year by checking if we are meeting the water resource objectives in the plan.

Water allocation planning involves many specialty areas across the department: licensing, measurement, hydrogeology, hydrology, environmental water, policy, legislation and communication. We also meet regularly with external stakeholders and advisors in close consultation for each plan. The scope and funding for each plan depends on the amount of water already abstracted and the risk to the resource.

Ensuring plans reflect all of our legislative and policy requirements, as well as local priorities for managing water in each area, is integral to our water allocation planning process. We work with local water users and stakeholders throughout the planning process to develop an approach to managing water in the plan area. The technical work and policy within our plans also reflect our water reform agenda, committed to under the National Water Initiative and our state blueprint for water reform.

Summary

This five-chapter document covers:

1 why we need water allocation planning

2 what water allocation planning is and what a plan includes

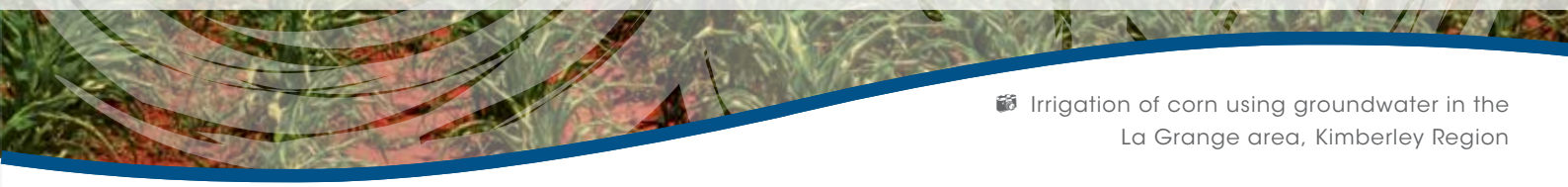
3 how we determine where to plan and how much to invest in planning

4 how the allocation planning process works

5 links with other state planning processes.

Chapter one

Why we need water allocation planning



Irrigation of corn using groundwater in the La Grange area, Kimberley Region

1 Why we need water allocation planning

In Western Australia water demand is increasing rapidly – our population is growing and industry and agriculture are expanding. At the same time our climate is drying.

During the past 30 years, the amount of water abstracted annually for public water supply, agriculture, mining and industry has more than tripled, going from 750 to 2340 GL[1]. At the same time, a 10 per cent drop in average rainfall has led to a 50 per cent decline in average runoff to Perth's water storages[1]. CSIRO climate modelling indicates that further declines are very likely.

Water allocation plans guide our decision-making and ongoing management of water licences. With the increasing demand for water combined with declining water resources, the need for transparent water allocation plans to guide water licensing has become critical. Without careful and considered planning, Western Australia's water resources – and the communities and environment that depend on them – would be at serious risk.

Allocation planning allows us to maximise the amount of water that can be abstracted from a surface water or groundwater resource through water licensing, without damaging the integrity of the resource or the environment. Through our planning processes, we identify the risks associated with abstracting water in the local area, then set licensing policy to keep those risks within acceptable levels.

Water allocation planning sets out where water is available, across the state, for new and future water licences. Allocation planning provides water availability information that is needed for urban, industrial and other development.

In short, we do water allocation planning to:

- maximise how much water is available to allocate
- maintain the integrity of the resource and the environment
- establish the required licence conditions for a local area, to protect other water users and the environment.

To achieve this, we:

- apply a transparent and consistent process to develop water allocation plans
- seek advice from stakeholders throughout the planning process
- put the necessary effort and funding into an area, depending on the current level of allocation and the risk to the resource and its users
- use the best-available information
- provide for ongoing plan review and, if required, adapt our management to meet plan objectives.

[1] Statistics taken from *Western Australia State Water Plan 2007*

Chapter two

The allocation planning model: what allocation planning is

Groundwater drilling investigations on the Scott Coastal Plain, South West Region

2.1 Overview of water allocation planning

In Western Australia, we manage water abstraction through individual licences, with water allocation plans guiding management at a collective or geographic scale. Water allocation plans guide licensing by setting out how much water can be abstracted from a resource and how that abstraction will be managed now and into the future.

We set allocation limits for most of the state's water resources. For each water resource, our investment in planning and management varies, depending on how close we are to reaching full allocation or how critical the water issues are.

We generally develop allocation plans for resources where 30 per cent or more of the allocation limit is already committed. We develop standard plans where abstraction is between 30 and 70 per cent and intensive plans where abstraction is more than 70 per cent. The extra time and cost to develop an intensive plan reflects the increased complexity of managing high-use water resources.

Adaptive management is fundamental to our allocation planning model. This means allocation planning is an ongoing, adaptive process, rather than a one-off event. To ensure that our management approach remains appropriate, we evaluate water allocation plans annually to assess whether they are effective and account for changes to our climate, people's water needs and the environment. Plans are then formally replaced every seven years, unless the evaluation shows it is needed earlier.

Our process to develop a plan is triggered in the state-wide programming stage, in which we identify where planning is needed across the state and how much to invest in developing each plan. We then progress through the initiation, development, release and implementation/evaluation stages for individual plans, focusing on the resource and allocation issues that we need to manage.

At the start of an individual planning project (plan initiation) we do detailed scoping to identify stakeholders and the relevant resource and allocation issues. During the next stage in the process (plan development) we determine how much water can be allocated from a resource – or set of resources – and how the allocated water will be managed. Our decision-making throughout plan development is guided by the objectives we set for water supply, resource integrity and the environment, and input from stakeholders. Specifically we:

A. assess information

B. set objectives and allocation limits

C. define the management approach.

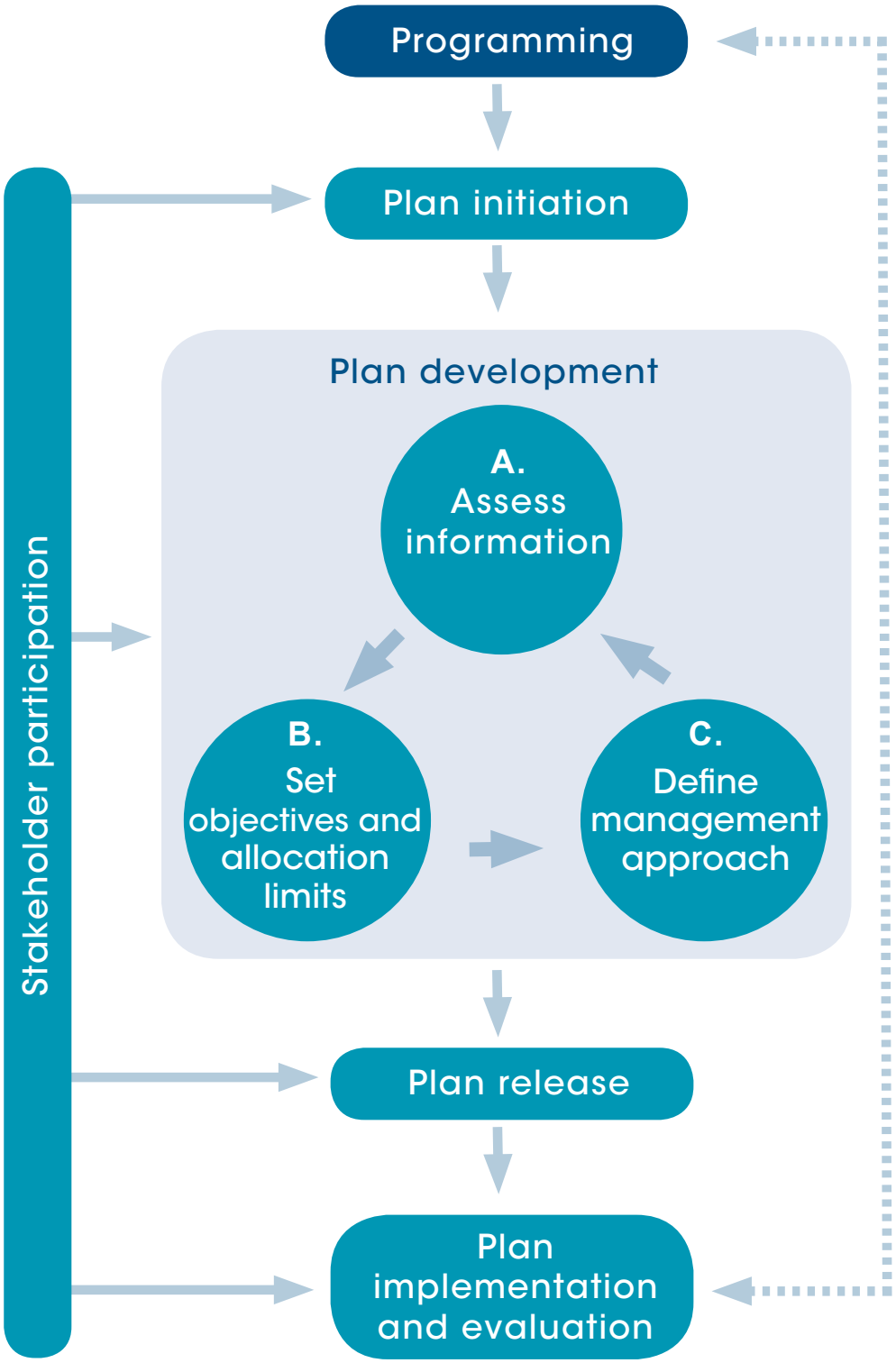


Figure 1
Water allocation planning model

2 The allocation planning model: what allocation planning is

When the plan development stage is complete, the plan is released for public comment. We use feedback from our stakeholders to further develop the plan, sometimes by revisiting our steps. Depending on the plan's complexity, this stage can take some time and is highly interative as we work through ideas and feedback with the community. When the final plan is ready, it is approved by the Minister for Water and formally released, along with an explanation of how we used any additional information and responded to the concerns raised.

Once a plan has been in place for at least a year, the plan evaluation cycle begins. Plan evaluation then takes place on a regular basis, generally annually. If the plan is not meeting its objectives, the annual evaluation process may trigger the start of new planning work. This may be an update of a particular aspect of the plan or, if needed, a full replacement similar to the original plan-making process. This link within the planning process is how we achieve adaptive management.

Stakeholder participation is a crucial part of allocation planning, particularly during plan development and when the plan is released for public comment.

Further detail on each of the steps in the planning process, including how we work with stakeholders, is set out later in this document.

What is an allocation limit?

An allocation limit is an annual volume of water set aside for consumptive use from a water resource. This includes:

- the water that is available for licensing
- the water we account for that is exempt from licensing
  - under stock and domestic and riparian rights
  - for commercial use in unproclaimed areas
- the water we set aside for future public water supply.

Water for the environment is not included in the allocation limit. This is because it is left in the system and considered a non-consumptive use.

Once an allocation limit is in place, we will allocate water up to that limit (and issue licences up to the total volume of water set aside in licensable components of the allocation limit). Once the allocation limit is reached, no more licences are issued and trading is encouraged.

2.2 Our legislative responsibility to plan

Water allocation planning is an important part of meeting our statutory responsibility to manage water. The Department of Water administers the *Rights in Water and Irrigation Act 1914* on behalf of the state government. The department manages water abstraction through issuing licences, under clauses 5C and 26D of the Act[2].

Our water allocation plans are non-statutory and guide the licensing process. In general terms, anyone wanting to abstract water from an aquifer or stream, in a proclaimed area, needs a licence from the department. We base our licensing decisions on the limits and policies that are set out in a water allocation plan (or defined within an allocation limit process).

Our allocation planning processes and the components of an allocation plan reflect the *Rights in Water and Irrigation Act* (Division 3D), and support licence assessment (under clause 7 (2) of Schedule 1). As per the Act, the geographic scale of the plan may vary depending on the type of resource(s) requiring management.

We have improved our current licensing and planning model to reflect the National Water Initiative.

2.3 Water reform in allocation planning

Our allocation plans and planning processes align closely with the water reform taking place under the National Water Initiative, as well as the National Water Commission's guidelines for water planning and management.

There are five clauses of the National Water Initiative (clauses 36-40 inclusive) that specifically cover allocation planning. Outlined below are the clauses and where they are covered within this document:

- Clause 36 – allocation decision making (in Section 4.4: Plan development)
- Clause 37 – meeting ecological and resource security outcomes (in Section 4.4: Plan development)
- Clause 38 – deciding when to plan (in Chapter 3: Programming)
- Clause 39 – the content of a plan as per Schedule E (in Section 2.4: What is included in a plan)
- Clause 40 – implementing the plan (in Section 4.7: Plan implementation and evaluation).

Other reform elements under the National Water Initiative are addressed in the following stages of our planning process:

- adopting a risk-based approach to planning (in Chapter 3: Programming)
- integrated, catchment-scale planning (in Section 4.2: Plan initiation)
- surface water and groundwater interaction; interceptions; defining shares in available water (including security for environmental water); recovering over-allocated resources; and facilitating water trading (in Section 4.4: Plan development)
- adapting management using plan objectives, performance and evaluation; and ongoing monitoring (in Section 4.7: Plan implementation and evaluation)

[2] 5C licence allows the licence holder to 'take' water from a watercourse, wetland or underground source. Under the provisions of section 5C of the *Rights in Water and Irrigation Act,* unless a person holds a licence, any unauthorised taking of water is prohibited except where a person has another right to do so or is exempt from licensing.

A26D licence is issued under the provisions of section 26D of the Act to construct or alter wells. A 26D licence is required to commence, construct, enlarge, deepen or alter any artesian well [26A(1)] or commence, construct, enlarge, deepen or alter any non-artesian well in a proclaimed groundwater area.

2 The allocation planning model: what allocation planning is

2.4 What is included in a water allocation plan

Consistency and transparency are key principles underpinning allocation planning and we aim to produce plans that reflect these. Since 2005, allocation plans have moved towards having a common structure and meeting a minimum standard for content.

To keep plans clear and usable, we release supporting documents with the allocation plan where a lot of information exists. One of the key supporting documents is the allocation methods report, where we set out the information and reasoning behind our decisions on allocation limits.

Our plan content reflects what is required under the *Rights in Water and Irrigation Act* and Schedule E of the National Water Initiative. Some information is presented in the allocation methods report, rather than the plan itself (see Table 1 below).

Table 1
Meeting our statutory and reform requirements

Rights in Water and Irrigation Act requirements [3]	Allocation plan
How water rights are to be allocated to meet various needs, including for the environment	✓
How matters of significance will be taken into account in considering applications for new licences and any renewal, suspension, transfer or cancellation of licences	✓
The assessment of capacity of water sources to provide water at sustainable levels of use and the impact of developing those sources	Method report
The strategies adopted to implement the plan	✓
National Water Initiative requirements [4]	**Allocation plan**
The water source(s) covered by the plan and the condition of the system	✓
The risks that could affect the size of the resource (including climate change, land use planning change, or limitations to knowledge underpinning resource estimates)	Method report
The objectives of the plan, including environmental and other public benefit outcomes proposed during the life of the plan	✓
The knowledge base upon which allocation decisions have been made	Method report
The users and use types of the resource, including Indigenous use	✓
How the resource will be allocated, the reliability of allocations and specific rules and conditions around rates, timings, quantities and monitoring for the water to be taken	✓
Pathways to recover the resource where water is over-allocated	✓

[3] Part III, Division 3D, *Rights in Water and Irrigation Act 1914*
[4] Schedule E, *Intergovernmental Agreement on a National Water Initiative*

Table 2
Allocation plan structure and content

1. Plan context and scope	Plan purpose	The resource and management (use) pressures that led to plan development.
	Plan area	The area in which the plan applies, including a map.
	Water resources covered	Definition and description of the water resources in the plan. Note on any water resources in the plan area not included in the plan.
	Plan timeframe	When the plan starts and is due for replacement.
	How the plan was developed	Outline of how the plan was developed – stages, stakeholder input and assessments. References to supporting documentation with the detail (such as studies, allocation methods report, statement of response).
	Stakeholder interest	A list of the main water-allocation issues raised during the planning process.
2. What the plan will achieve	Outcomes	A list of the ecological, economic and social outcomes of the plan (water allocation related only).
	Objectives	A list of the resource objectives for the plan.
	Strategies	Summary of strategies the plan puts in place to contribute to achieving the objectives (and targets).
3. Water allocation limits or regimes	Allocation units	Description and maps of water resources (management units) used to allocate water.
	Allocation limits or regime	Table of total allocation limits and their individual components – including licensable, unlicensable and public water supply reserves. Current level of allocations and reliability of supply. Notes units that are fully or over-allocated.
	Water left in the system	The regimes, levels, volume or thresholds required for environmental water. May be defined as releases and/or allocations (as flows/levels at defined sites, during defined periods) or as volume or key thresholds.
4. Water allocation and licensing policies	Approach to allocating water	Who may apply for licences and the method for determining priority (such as first-in, category of use or other).
	Local licensing policies	Listing and description of policies that apply to managing licences for plan water resources.
	State-wide licensing policies	Summary of relevant legislative requirements and state policies, with references to documents for detail.
5. Implementing and evaluating the plan	Monitoring	Description of the resource, management (water use) and other monitoring to be implemented.
	Implementation actions and responsibilities	Tabulation of tasks, responsibilities and timeframes.
	Evaluating the plan	Explanation of how and when the plan will be evaluated. Including listing of performance indicators and management responses, against the objectives
	Reporting	Description of frequency, content and distribution method for public reporting to be done during the plan's term.
Glossary	–	Listing of terms and definitions, most if not all from standard glossary. Also acronyms.

2 The allocation planning model: what allocation planning is

2.5 Supporting documents to the plan

Some plans, particularly intensive plans, can take years to develop and involve many investigations, consultation and studies. This means that towards the end of a planning process, a large amount of information is available to set allocation plan objectives and make allocation decisions.

We develop a number of documents to support the plan and make this information publicly available throughout the process. The supporting documents include detailed information associated with the plan and range from brochures to engage the community, to detailed technical reports, such as environmental water studies and the allocation methods report.

The type of documents we release and when we release them is based on:

- the information we have available to inform our planning
- the stage of the planning process we are in
- the needs and requests of the relevant stakeholders.

2.6 Getting access to plan information

We are committed to making the information we develop in a planning process publicly available. The documents and plans we release are available on our website <www.water.wa.gov.au/allocationplanning> and from the Department of Water's regional offices throughout the state.

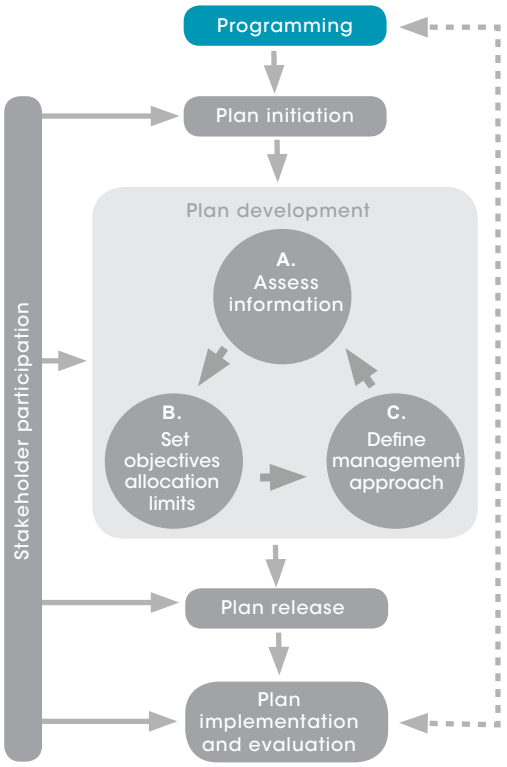
We develop a web page for each plan at the start of the planning process. As the plan is developed and released we publish updates, brochures and documents on the web page. We also notify licence holders and stakeholders in the plan area when:

- we begin a plan
- we are holding workshops to share learning on the plan
- the plan is released for public comment.

Chapter three

Programming: where to plan and how much to invest

Measuring flows on the Boodijidup River, South West Region



During the programming stage, we decide where to undertake planning activity in Western Australia and how much to invest in each plan. We consider all of the surface water and groundwater resources in the state during programming. Programming sits outside of the allocation planning process and is the trigger for the planning cycle to begin. Programming is risk-based: we consider the risk to water resources, existing users and in-situ values from existing and further abstraction.

Planning in the right areas, with the right amount of funding, allows for efficient and effective allocation planning. We aim for the right level of management to suit each allocation plan area across the state. This means that effort and funding goes into the areas where pressures, risks and priorities are higher.

The output of programming is a mandate to plan for specific resources, with a specified level of effort.

After programming, we know:

- where we will plan (as defined resources and proposed management areas)
- when the plans are due for release
- the appropriate planning effort in each area.

Programming may also trigger or involve new surface water or groundwater investigations and other work necessary for future plans.

3 Programming: where to plan and how much to invest

3.1 Prioritising planning activity across Western Australia

We carefully prioritise planning areas across the state, to ensure that plans are produced where they are most required.

State-wide allocation planning activity is split into projects, each of which produces one plan for a resource or set of resources. In 2006, a list of priority planning areas was developed by the Department of Water and endorsed by the Minister for Water. We update this list each year, as we complete plans and new planning priorities arise. New priority areas are identified and resourced (with staff and funding) as part of business planning.

Our timetable of priority areas is based on the following:

- the degree of pressure on the water resource
  - water resources at or approaching full allocation
  - water resources with rapidly increasing water demand
- government priorities
  - water resources of strategic priority for the state or nation
- commitments
  - areas where government commitments have been made
  - commitments in allocation plans,where the plan review is triggered or due
  - other commitments such as audits.

3.2 Putting the right amount of effort into each plan

Based on our criteria for prioritising where to plan, we adopt a risk-based approach to identifying the right response (or level of investment) for each plan area. The pressure on the resource drives the level of our planning response.

We set water resource boundaries to manage water. Management areas are then assessed as categories 1 to 4 according to the percentage of the allocation limit already licensed for abstraction. Put simply, the amount of water already allocated out of the area (as in the pressure the resource is under) sets the category. The category then guides our management response.

Category 1 (C1)	=	0–30% allocated	→	Response 1 (R1)	=	Allocation limit only
Category 2 (C2)	=	31–70% allocated	→	Response 2 (R2)	=	Standard plan
Category 3 (C3)	=	71–100% allocated	→	Response 3 (R3)	=	Intensive plan
Category 4 (C4)	=	>100% allocated	→	Response 4 (R4)	=	Intensive plan

The closer the volume of water already allocated is to the allocation limit, the more intensive the response. This means more effort is applied where demand is at or approaching the limit on availability. This is to manage the high risk of over-allocation and to maximise the water that can be allocated out of the resource (see Table 3).

Where a plan covers several management areas and many resources, the individual resource categories are rolled up to an average category for each management area. We then aim to match the response to the combined resource category.

Table 3
The category/response model for water allocation planning

Category (C)				Response (R)						
Licensed % of allocation limit		Impact from further licences	Risk to in-situ values	Licences required	Plan type	Maximum availability from resource	New information developed for plan	Allocation limits protect in-situ values	Specific rules protect values	Specific regimes protect values
C1	Low 0 < 30	Low	Low	R1 ✓	x	x	x	✓	x	x
C2	Medium 30 < 70	Med	Med	R2 ✓	Standard	x	x	✓	x	x
C3	High 70 < 100	High	High	R3 ✓	Intensive	✓	✓	✓	✓	✓
C4	Over >100	V high	V high	R4 ✓	Intensive	✓	✓	✓	✓	✓

In areas where demand is low (C1 areas), we set limits but do not develop a plan. Allocation limits are set or reviewed based on simple hydrological or hydrogeological assessments. Licensing is guided by state-wide policy.

For other areas (C2–C4) we produce two types of water allocation plans based on effort and complexity.

We develop standard plans for medium-demand areas (C2) where a lower level of planning investment is needed. These plans are based on the use of existing information; applying simple, local management rules; and existing state-wide policy. The resource and its values are protected by setting allocation limits.

We develop intensive plans where demand is high (C3 and C4). To maximise the water available within these plans, we commission new studies to better inform the planning process, and we apply greater effort in modelling and consultation. We also establish more complex management arrangements, including environmental water regimes to maintain resource assets and values, as well as impact management rules for licensees. Monitoring in these plan areas is much more extensive.

In the case of over-allocated resources within plan areas (C4), the plans include pathways to return to the set level of allocation. In Western Australia, over half of the areas we plan in are now at or approaching full allocation (C3).

3 Programming: where to plan and how much to invest

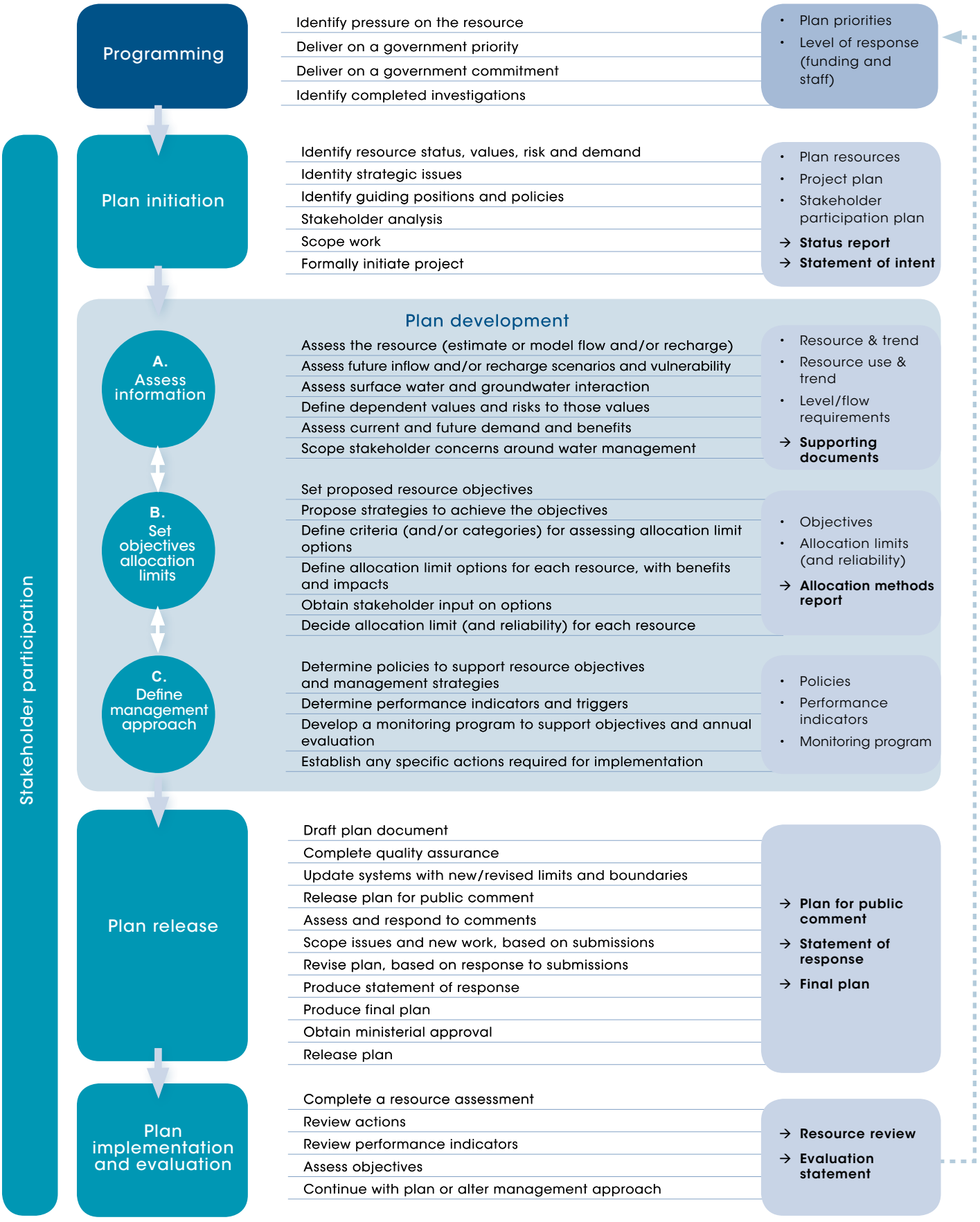


Figure 2
Summary of allocation planning stages, steps and outputs

Chapter four

The allocation planning process: how we plan

Consulting on the Gingin groundwater plan, Swan Avon Region 2011

4.1 Stakeholder participation

Throughout the planning process, we work with a wide range of people, groups and organisations, who either hold water licences or may be affected by water allocation decisions. These stakeholders are a valuable source of information during our consultations.

To maintain transparency in our process, we involve stakeholders early-on for background and advice on the water issues, values, and demands, as well as sharing learning on the nature of the resource and approaches for best management. This helps us to develop a plan for public comment. By providing formal comments on the proposed plan, our stakeholders also help us to improve and finalise the plan.

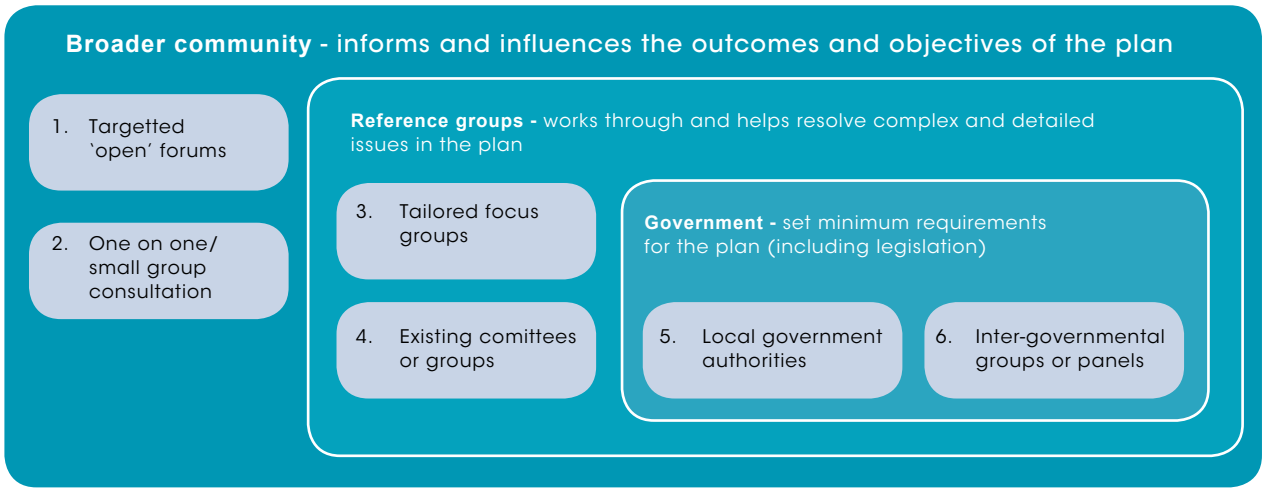


Figure 3
Stakeholder participation within a planning process

Where water resource management committees, advisory groups or other formal groups are already in place, we work closely with them to develop the plan. This is complemented with broader community forums and workshops to allow shared learning with all people interested in the plan. New groups will be established for new plans where we are adivsed by the community that these are needed.

4 The allocation planning process: how we plan

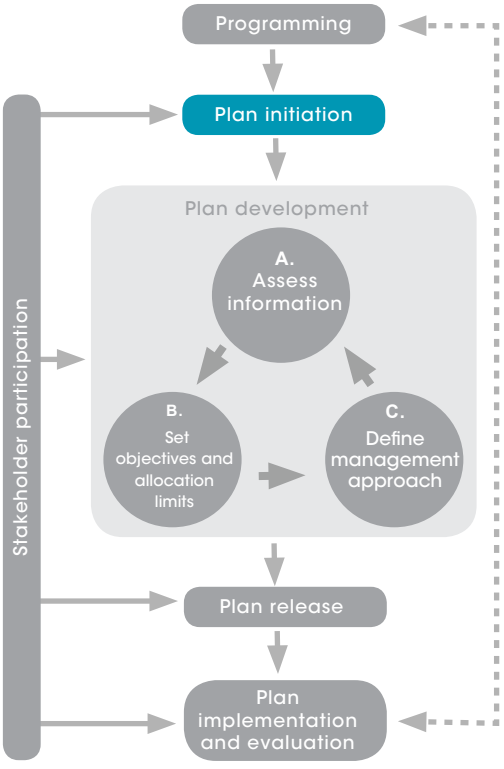
Working with Indigenous groups is often part of our work in allocation planning. Our regional officers, in particular, liaise closely with traditional landowners on a range of water matters. The consultation activities for each plan are designed around working with local Indigenous people to address specific water issues and needs.

For each plan, stakeholder participation is based on the following principles:

- we inform stakeholders when planning in an area is about to begin. They are also provided with information on how they can become involved in the planning process
- we work closely with stakeholders and use the information they provide to develop a plan for public comment
- the information received during the public comment period is used to improve and finalise the plan. We also publicly report how this information was used in developing the plan
- stakeholders are invited to participate in all plans we develop
- the department and the Minister for Water have the final decision-making authority.

Throughout the other sections of this document we discuss stakeholder participation in each of the planning stages in more detail. We also identify the documents we release in each stage.

4.2 Plan initiation



During 'plan initiation', we formally begin the planning process for a particular area. Focusing on the purpose (or driver) for why we are planning in an area, we set the scope of work for the plan. 'Plan initiation' is an important predecessor to 'plan development', as it ensures we design targeted and well-scoped plans that will deliver better water management for the resources in the plan area.

Formally initiating a plan also drives efficient allocation planning processes, by clearly scoping plan outputs, costs, timelines and responsibilities.

During 'plan initiation', we focus on scoping the water resource and allocation/management issues that the plan will need to address. In doing this we formally map out issues, knowledge gaps, further work and project timelines.

We establish a multidisciplinary project team (including regional staff) and commit people to a project schedule.

We also notify the public that planning will begin and start discussions with our stakeholders.

For each planning project, we:

- ✓ specify the location and water resources the plan will cover
- ✓ define the likely management areas and resources
- ✓ assess the allocation status and condition of the resources
- ✓ define the current and proposed management approach
- ✓ identify the water resource and management issues to be addressed
- ✓ prepare an analysis of interested parties and stakeholders likely to be affected by the plan
- ✓ identify guiding positions and policies (state-wide and local)
- ✓ assess the existing technical information on the resource (including in-situ values and water requirements)
- ✓ define any required assessments, considering existing work
- ✓ formally initiate the project.

Stakeholder participation

Our main goals at this stage are to decide on the scope of the plan, with particular attention to water resource and allocation issues, as well as advise our stakeholders that the planning process will begin and invite them to participate. Internally, we develop a communications plan for stakeholder participation in the planning process. This includes identifying stakeholders, what their interests are and how we can best engage with them during the planning project.

During 'plan initiation', we involve stakeholders by:

- ✓ scoping the main water management issues that people or organisations have
- ✓ writing to stakeholders letting them know our intent to plan
- ✓ releasing a statement of intent, setting out the water issues we're considering, proposed work, timeframes, and opportunities for input
- ✓ developing a web page at <www.water.wa.gov.au> for the plan area.

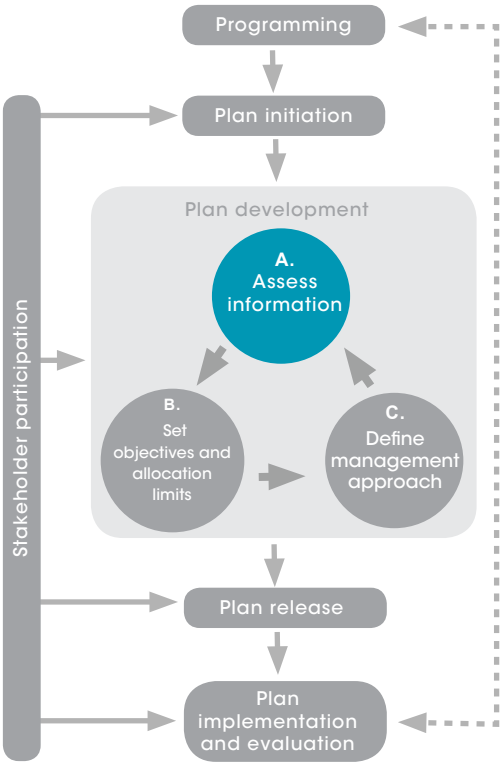
Where an intensive plan is being developed, we may also undertake more detailed issue scoping via stakeholder interviews.

The major outputs of 'plan initiation' are:

- → status report
- → statement of intent.

4 The allocation planning process: how we plan

4.3 Plan development: A. assess information



This is the stage where we begin to produce the plan. Our goal is to gather technical information on the resource (including the environment and what it needs to survive), as well as water demand. This supports the objectives and limit setting.

Understanding future trends in resource availability (supply) and water demand are important outputs of this stage.

Although 'assess information' forms part A of plan development, the three stages within plan development can be iterative, with initial work being revisited as our management approach is further refined.

In addition to this, we often commission investigations and studies before planning begins, to either support immediate licensing activity or prepare for future planning. This is particularly the case for hydrological, hydrogeological and ecological work which can take years to complete.

At the end of this stage, we understand:

- the resource hydrology, hydrogeology and supply, including trends
- the environment and how much water needs to be left for it to survive
- consumptive water use and demand, including trends
- water-related local, economic and social issues.

We develop all plans using the best-available scientific information. Generally, standard plans (for lower-use areas or where no previous plan exists) are based on desktop analyses of existing information. Intensive plans for areas at or approaching full allocation (C3 or C4) require major technical input to best manage the effect that higher abstraction levels may have on other users or the environment. For these plans, field work can form a major part of our work.

Sometimes, due to urgency, we may develop allocation limits and policy for a higher-use plan area based on existing information, rather than wait for the results of new studies. We then make revisions at a later point once new studies are completed.

Table 4
Work required in plan development: 'assess information'

		Resource assessment		Values			
Response	Aim	Surface water	Groundwater	Ecological	Economic	Social	Cultural
R1 Limits only no plan	Basic approach to avoid potential impact	Flow estimate from gauge data or regional model	Basic rainfall recharge, throughflow or discharge estimate	Existing info Regional mapping	Existing use info Licence analysis	Existing info	Existing info Important sites
R2 Standard plan	Standard approach to avoid impacts and prepare for C3	Flow estimate from gauge data or regional model	Detailed recharge, throughflow or discharge or regional model	Existing info Important sites Risk areas	Existing use info Licence analysis	Existing info	Existing info Important sites
R3 Intensive plan	Detailed approach to maintain C3 status and begin impact management	Flow estimate from gauge data or calibrated, localised model	Regional model and/or local models	Environmental water requirements Buffer zones Scenarios Risk maps	Use analysis Current and future use trends	Sites Flow/level requirements Risk maps	Sites Flow\level requirements Risk maps
R4 Intensive plan	Detailed approach to return resource to C3	Flow estimate from gauge data or calibrated, localised model	Regional model and/or local models	Environmental water requirements Buffer zones Scenarios Remediation measures	Impact/ cost analysis for recoup	Sites Flow/level requirements Remediation measures	Sites Flow/level requirements Remediation measures

The major steps within 'assess information', include:

- ✓ understanding the resource by
  - developing conceptual or numerical models for hydrology and/or hydrogeology to estimate flow and recharge
  - assessing inflow, recharge or throughflow scenarios under future climate and land use
  - assessing surface water and groundwater interaction and aquifer interconnectivity
- ✓ understanding how much water needs to be left in the system by
  - determining ecological values/dependence and ecological water requirements
  - determining social and cultural values/dependence and water requirements
  - scoping stakeholders' water-related concerns around the environment

4 The allocation planning process: how we plan

- ✓ understanding water demand and trends by:
  - assessing current licensed and unlicensed water demands
  - assessing possible future water demands
  - scoping the main stakeholder concerns around licensing, allocation and use.

Understanding the resource

Understanding the resource, in terms of the quantity and quality of water in the plan area, is the first part of deciding how much could possibly be abstracted (in stage B).

The methods we use to understand the resource may vary across plans and even within a plan. Generally, when we set allocation limits for low-use areas (C1 and C2) we use existing information to derive an understanding of the resource. This includes basic recharge and throughflow estimates, simple assessments of gauged and measured data, and regional models.

In high-use areas (C3 and C4), where we do intensive planning, understanding the resource is often a complex and costly process. It involves detailed investigation, modelling work and analyses.

We select the method based on:

- the identified issues the plan needs to resolve or manage
- the best-available information we have at the time
- our likely management approach, which depends on the complexity of managing to the limits and/or policies.

Outputs from understanding the resource are:

- → resource condition and trend reports
- → hydrological or hydrogeological summaries
- → model development and calibration reports
- → scenario modelling results.

Understanding how much water needs to be left in the system

Before we decide how much water can be abstracted from a water resource, we first assess how much water the environment needs to maintain its integrity and associated values (ecological, social and cultural). This is part of the environmental water component of allocation planning.

We consider environmental water as:

- water that is left in the environment (retained in-situ), achieved by setting an annual limit on how much can be allocated out of the system
- water that is put back into the system, through pumping or releases, to meet specific environmental requirements.

How we determine environmental water may vary for each plan process depending on the resource type, how the resource is accessed, the significance of the resource's environmental assets, how much information is available, and how modified the resource is.

Environmental water may be defined within the plan as an annual volume or as a regime.

In understanding how much water needs to be left in the system, we:

- ✓ identify the environmental values (ecological, social or cultural) associated with the resource
- ✓ establish the significance of those values at a local, state and national level
- ✓ investigate how people use and value the local water-dependent areas (by investigating environmental, social and cultural values and risks to those values)
- ✓ estimate the surface water or groundwater regimes (flows and levels) that will maintain those values.

When determining surface water or groundwater regimes for maintaining environmental values, we focus on flow components. For surface water, these include low or base flows, low and high flow freshes, bank-full flows, overbank flows and cease-to-flow periods. For groundwater regimes, these include minimum dry-season water levels, maximum wet-season water levels, minimum and maximum rates of water level rise and fall, and water quality changes.

Our approach to monitoring and reporting on environmental water is mapped out in the monitoring and evaluation component of each allocation plan. Our investment in determining and then managing environmental water varies according to the resource category (see Table 4).

Outputs from understanding how much water needs to be left in the system may include:

- → ecological, social and cultural value reports
- → ecological, social and cultural water requirement reports.

Understanding water demand and trends

Current and predicted future demand is a major deciding factor in how we set allocation limits or regimes for all planning projects. Understanding demand and trends involves looking at how the local, regional and state economies depend on the resource. We assess current demand and future trends when we begin planning in an area, helping to shape our decision-making throughout the whole process.

In understanding demand and trends, we:

- ✓ review our licensing, allocation and metered abstraction databases for current licensed abstraction (including data on pending applications and reserves for public water supply)
- ✓ estimate exempt and unlicensed abstraction (under stock and domestic and riparian rights and other exemptions)
- ✓ define demand types (as categories), total potential abstraction volumes and number of licensees/abstractors

4 The allocation planning process: how we plan

- ✓ consider what stakeholders' future water demands may be
- ✓ assess current land use and proposed changes that may affect future water demand and quality
- ✓ consider information relating to future water demand from other plans (regional, state-wide), external studies (such as CSIRO) or planning agencies.

In intensive plan areas we may also decide to:

- ✓ review our licensing and allocation databases for current licensed abstraction (including pending applications and reserves for public water supply)
- ✓ estimate or determine actual water abstraction versus licensed rights to abstract (to define any 'sleeper' components or over-abstraction for existing licences) through metering or water use surveys
- ✓ undertake modelling of the impact of current and potential abstraction on water flows and levels.

Our main outputs from understanding demand and trends may include:

- → issue scoping reports
- → water use surveys.

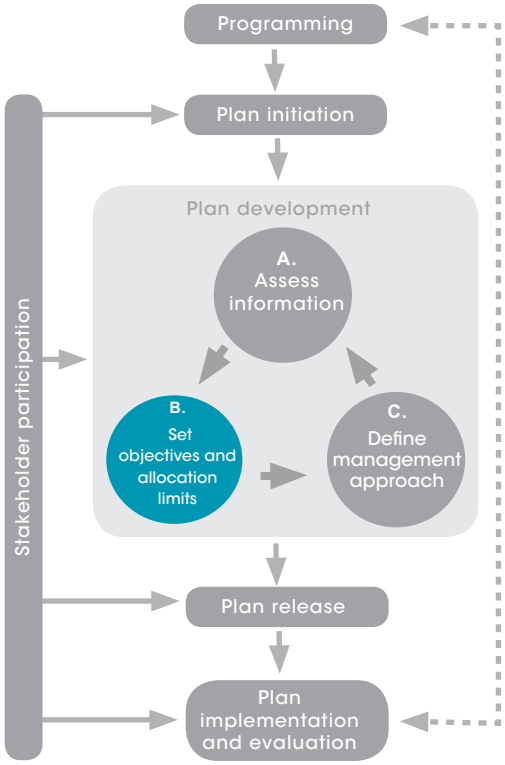
Stakeholder participation

During the 'assess information' stage we work closely with stakeholders to understand how water is used in the area and how people value and enjoy the local water-dependent environment. The information raised during this stage and suggestions to improve management shape our allocation decision-making.

To support stakeholder participation in our planning, we:

- ✓ make technical and planning information available to stakeholders on our website
- ✓ hold meetings and workshops to discuss information and share learning about the resource, the environment and local water management issues
- ✓ hold meetings and workshops to receive feedback on local water management issues, including possible future demand

4.4 Plan development: B. set objectives and allocation limits



During this stage we define the plan objectives and set environmental water and allocation limits (or regimes) for each resource or management area.

To set our objectives and decide environmental water and allocation limits, we draw on all of the identified issues and existing work completed to date. Our decision-making processes involve multidisciplinary project teams and boards, across the department, as well as stakeholder input.

Underpinning all of our decisions at this stage is the need to best-manage water resources (by setting and meeting the right plan objectives), while being mindful of how these decisions may affect water users and the environment, now and in the future.

As part of being transparent in our decision making, we develop an allocation methods report detailing the methods and reasoning behind our allocation decisions. The method report is released along with the plan for public comment.

In 'set objectives and allocation limits', we:

- ✓ define objectives (consistent with the resource, the environment, current and future water demand and identified issues)
- ✓ identify strategies to meet objectives and performance indicators
- ✓ define criteria for assessing allocation options
- ✓ develop and assess allocation options
- ✓ gather input from stakeholders on allocation options
- ✓ decide on the appropriate environmental water and allocation limits (or regime) for each management unit
- ✓ develop management strategies consistent with the preferred allocation limits
- ✓ document the accepted costs, risks and benefits.

4 The allocation planning process: how we plan

Setting objectives

We use objectives to map out what the plan needs to achieve and guide our decision-making around environmental water, allocation limits and policy. We set water resource objectives, then establish management strategies for how we will achieve the resource objectives. A licensing policy or monitoring commitment could be part of a management strategy.

Water resource objectives relate to the actual water resource and how we want it to respond to our management. Resource objectives relate to water quantity and quality. The objectives specify whether we maintain, increase, improve, restore, reduce or decrease surface water flow, groundwater levels or water quality.

Water resource objectives contribute to ecological, social and economic outcomes, so these requirements are factored into our resource objectives. However, the resource objective will always relate directly to the water resource and how we expect it to change, or remain, over time.

Management strategies define how we will deliver the resource objectives: they usually relate to implementing an allocation limit, how environmental water will be met, how water is abstracted and the rules around abstracting water. Some common examples include increasing water efficiency in the area, maintaining abstraction within the allocation limit or establishing environmental water regimes.

We develop the objectives based on our previous work in 'assess information', where we considered what was happening with the resource, its environmental and social values and existing and future demand. Based on this we set our objectives, working with stakeholers to define what we want to achieve and the required water regime to achieve it. We then define the management strategies that will deliver the objectives.

Across plan areas, quantity and quality-based water resource objectives are set by considering the following:

- the resource and how it is accessed
  - groundwater (unconfined, confined, isolated)
  - surface water (regulated, self-supply, direct pumping)
- the condition of the resource
- the environment and significance of ecological, social and cultural values
- water demand
  - current and future
  - level of development
- any impacts from water abstraction
  - water quality
- land use
  - current and future.

Table 5
Setting objectives, management strategies and performance indicators

	Resource objective	Management strategy	Performance indicator
What	A measurable statement which sets out what the plan is meant to achieve	The allocation limits, policies or actions that ensure the plan will deliver the objectives	What we will measure to check if the plan meets the objective or not
Why	So we can measure if the plan is successful or not	So we have clear management tools and actions to achieve the plan objectives	So there is a quantitative component of the resource objective that can be measured, to determine whether the plan is performing as per the objective or not
Examples	Maintain flow regime to meet existing licensed demand and minimum environmental flow requirements	• Set allocation limit • License to allocation limit • Establish reservoir release rules	Flow: gauged flow at station ABC does not drop below XX ML/day at station ABC, during winter flow period.
	Restore groundwater level in the vicinity of wetland ABC	• Reduce allocation limit to XX ML/year • Establish management zones • Facilitate trading • Encourage water use efficiency • Conduct licence compliance to identify sleeper components • Recoup sleeper components	Groundwater level: groundwater levels do not drop below measured level of XX mAHD at sites ABC and DEF, during summer months
	Maintain reliability of supply	• Set allocation limit at XX ML/year • Define licence conditions • Develop monitoring program • Undertake compliance	Reliability: licence holders are able to take their full allocation a minimum of four out of five years
	Maintain or improve salinity in the aquifer for productive use	• Set allocation limit at XX ML/year • Establish management zones • Define licence conditions • Develop monitoring program • Undertake compliance	Salinity: measured level of salinity is below 1000 mg/L TDS at stations A, B, C

Deciding on environmental water

Building on our work in 'assess information', we decide on the environmental water provision as part of setting objectives and allocation limits. To do so we:

- ✓ specify water resource objectives to meet ecological, social and cultural outcomes (as above)
- ✓ define the level of risk to the environment, including how the environment bears the risk of low water availability in dry periods
- ✓ set out the environmental water regime (as flow, level or volume) required to meet the objectives.

4 The allocation planning process: how we plan

Calculating a resource yield

The baseline for deciding an allocation limit is to estimate the resource yield. We consider the yield as the amount of water that can be taken out, once the environmental water requirement is met.

To estimate a yield, we:

- ✓ estimate or determine streamflow or aquifer recharge/discharge/throughflow (during 'assess information')
- ✓ decide how much to leave in the resource (including environmental water).

We also consider other factors in defining the yield such as how modified the resource is compared with its natural state, and where relevant, water quality factors such as a saltwater interface. For some resources, there are a range of yield options based on different objectives and scenarios for the resource.

Deciding allocation limits

Deciding allocation limits is a complex trade-off process. It recognises that consumptive and non-consumptive (in-situ) uses are in competition with one another. A common situation is current and future demand requiring more water to be abstracted, versus reliability for existing users and the need to maintain the environment.

Deciding allocation limits forms the crux of our allocation planning process and draws on:

- the trigger for why we began the planning process (in 'programming')
- the resource and/or management issues we identified at the very outset of the plan process (in 'plan initiation')
- the work we've completed to assess information on the resource
- what we expect to achieve in the area, in terms of water management outcomes, as expressed in the objectives
- our ability to manage the resources into the future (our management approach and ongoing plan implementation and evaluation).

To decide allocation limits for the plan area, we:

- ✓ establish a range of allocation limit options for each resource, based on yield estimates and other information gathered in the assessment stage
- ✓ analyse each allocation limit option, identifying the risks and benefits of each (according to environmental, economic and social criteria)
- ✓ identify where trade-offs exist
- ✓ gather stakeholder input on options
- ✓ undertake internal workshops (project team and board) to select the allocation limit option that best meets the plan objectives, considering the identified risks and benefits and guiding principles from government policies and regional plans
- ✓ decide the allocation limit (and reliability) for each water resource.

Stakeholder participation

In 'set objectives and allocation limits', we consult stakeholders by:

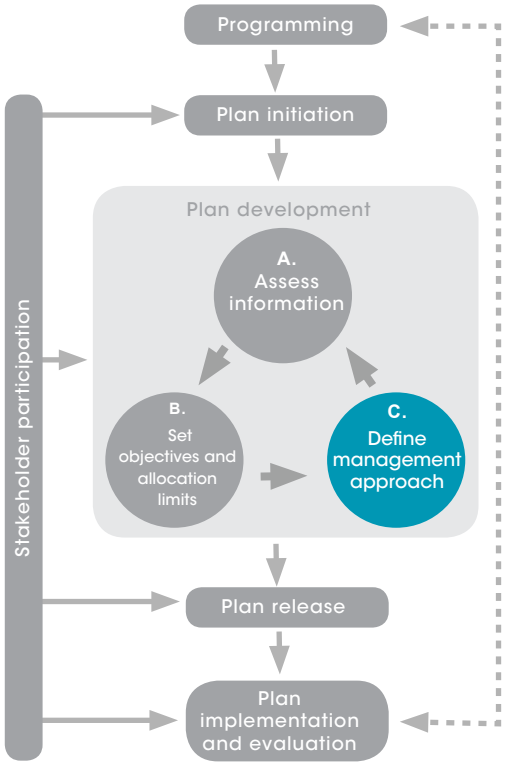
- ✓ working through proposed objectives and allocation limits at meetings or workshops.

During this stage of the planning process, we work with stakeholders to consider the options available and discuss our proposed decisions. To support this stage in the process, we release the allocation methods report. The methods report gives the technical background to the allocation limit or regime and how the decisions were reached.

Our main output from 'set objectives and allocation limits' is:

- → the allocation methods report.

4.5 Plan development: C. define management approach



In this last stage of developing the plan, we define our ongoing management approach for the plan area. We set out what will be put in place, in terms of local licensing policy, and how we will manage the water resources once we release the plan.

Water licences are our statutory instrument to manage water abstraction. The policies we develop during this stage help us to translate the plan objectives to the licensing process and individual licence holders.

The way we manage the water resources into the future is based on:

- achieving our water resource objectives
- measuring if we are achieving our objectives or not (the performance indicators and monitoring program)
- adapting our management if we are not achieving those objectives (as assessed in plan evaluation).

The management approach we establish in each plan is matched with our capacity to manage the resources and an appropriate level of investment. This means that in lower-use areas, we apply more simple measures to manage the water resources. In higher-use areas, where more water is abstracted, we have more complex arrangements, such as regular monitoring and metered abstractions.

4 The allocation planning process: how we plan

In defining the management approach for a plan area, we:

- ✓ develop policies to support the water resource objectives and deliver the management strategies
- ✓ determine performance indicators to measure the objectives
- ✓ develop a monitoring program to test the resource and performance indicators
- ✓ establish any actions required for plan implementation, including triggers in C3 or C4 areas where an immediate management response may be necessary.

Developing plan policies

All licensed water abstraction in Western Australia is guided by the Department of Water's state-wide policies. However, the state's water resources vary greatly in both type (surface water or groundwater) and how they are accessed. This means we need to deal with local issues and manage to specific resource objectives – thus we develop local policies for licensing officers to apply in the relevant plan area.

Specific licensing policy, particularly around managing the impact of abstraction, is almost always required for intensive plans. In some plans, we may define management zones where licensing officers may apply a specific management approach.

To develop plan policies, we:

- ✓ scope the local resource and allocation issues to be managed through licensing
- ✓ consider existing licence conditions and how they are implemented
- ✓ scope any policies required to deliver a plan objective (as part of the management strategy)
- ✓ check the proposed issues are not covered by a state-wide policy
- ✓ scope any policy that is covered by state-wide policy but requires improved, more specific management
- ✓ define local policies to be included as conditions on licences in the plan area.

Developing the plan monitoring program

The final stage in developing a plan is to set out the plan area's ongoing monitoring program.

The monitoring program establishes how, when and where we will measure the plan's water resources to check if they are performing against the plan's objectives. We expect the monitoring results will indicate whether our strategies to manage the resources are successful or not.

Monitoring can be costly and time consuming. Plan monitoring programs align closely with the planning response. Standard plans may use existing monitoring networks. Intensive plans, for high-demand or high-risk resources, may include complex monitoring arrangements.

Our main driver in developing the monitoring program is to:

- efficiently and effectively determine whether plan water resources are performing as per the objectives
- identify if and when we need to adapt our management strategy to meet the resource objectives.

The monitoring program focuses on measuring possible quantity or quality changes to the plan resources. In the program, we set out the:

- performance indicators
- triggers for specific indicators or values (like wetlands)
- location and frequency of monitoring
- responsibilities for monitoring.

Performance indicators are assessed each year as part of the annual plan evaluation but triggers may happen at any time. Triggers sit outside of performance indicators and are used in high-value or high-risk situations.

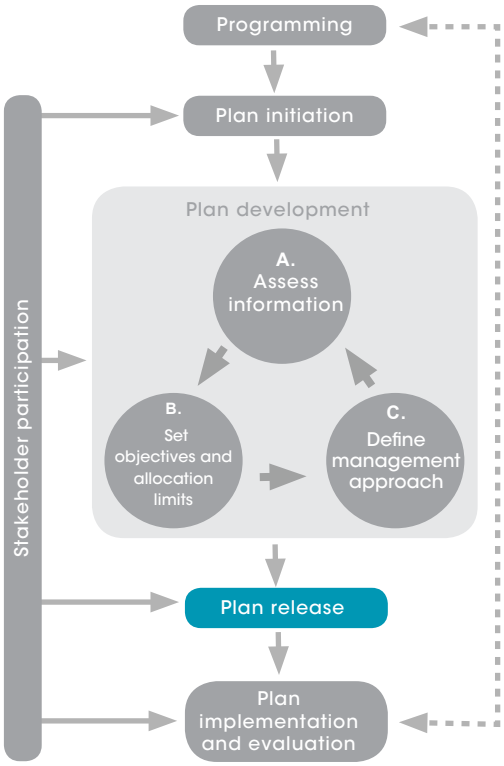
Monitoring programs may combine licensee monitoring and departmental networks (both regional and local). In each region, the split of monitoring between the department and licensees depends on licensing arrangements and the extent of the department's surface water and groundwater monitoring networks.

Stakeholder participation

In establishing the management approach, our stakeholders:

- ✓ discuss proposed policies and monitoring programs (particularly where large licence holders do significant monitoring) at meetings or workshops run by the department.

4.6 Plan release



'Plan release' is where we make our whole plan document, and methods report, publicly available for the first time. During this stage, we work closely with stakeholders to gather feedback on our proposed approach to managing the relevant water resource.

The plan release process involves two plan documents: the plan for comment and the final plan. The final plan draws on the formal feedback we receive during the comment period and is approved by the Minister for Water.

We value people's input to our planning processes and formally consider all comments we receive in regard to the initial plan. We release a statement of response with the final plan; this details how the comments have informed the final plan.

4 The allocation planning process: how we plan

'Plan release' is a rigorous process that can sometimes involve revisiting our plan development work. 'Plan release' can sometimes take up to a year depending on the complexity of the issues we are dealing with in the plan area.

The main principles behind our work in 'plan release' are:

- to give our stakeholders the opportunity to comment on our plan
- consider all of the comments we receive in finalising the plan
- remain transparent in our decision-making and make information available so that people can understand and comment on our decisions
- follow rigorous communications, publications and approvals processes before the Minister for Water enacts the final plan document.

During the plan release stage, we:

- ✓ assemble and publish a plan for public comment
- ✓ update water management databases and systems with any new or revised resource boundaries and allocation limits
- ✓ release the plan for public comment
- ✓ gather public and stakeholder contribution
- ✓ assess and respond to this input
- ✓ develop a statement of response
- ✓ finalise the plan
- ✓ obtain Ministerial approval
- ✓ release the final plan.

Stakeholder participation

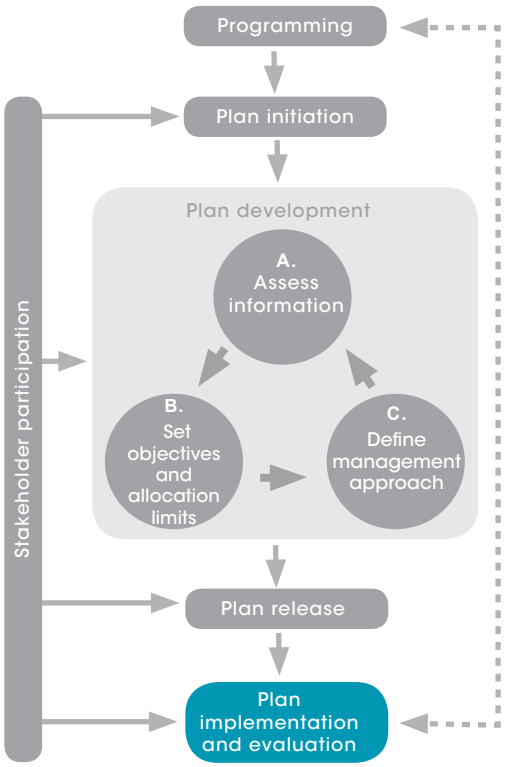
Once a plan is ready for public comment, we run meetings and workshops with water users and relevant stakeholders to discuss and receive input on the proposed approach to water allocation. To do this we:

- ✓ notify stakeholders in writing that the plan is open for comment
- ✓ advertise the comment period and any public meetings in local newspapers
- ✓ run meetings, workshops and site visits to explain the plan and encourage submissions
- ✓ develop and distribute plan communication materials (brochures, presentations and posters as required)
- ✓ review all submissions and adjust the plan
- ✓ release a statement of response along with the completed plan (this outlines how we took into account, in the final plan, the issues raised in the submissions).

Our outputs in 'plan release' are:

- plan communication materials
- plan for public comment
- statement of response
- final plan.

4.7 Plan implementation and evaluation



Once a plan is approved by the Minister for Water, it becomes the approach to managing water for the plan area. When the plan has been in place in the relevant region for a year, the plan evaluation cycle begins.

Plan evaluation takes place regularly for all plans. Ongoing evaluation provides the feedback loop within the planning process that allows us to achieve adaptive management.

To implement plans, we work with stakeholders such as water users, industry and other government agencies to ensure the plan remains valid into the future.

If a plan is evaluated and the performance indicators show that the resources (or our management strategies) are not tracking as per the plan objectives, then action is taken to either review our management approach, or possibly to undertake new planning activity.

In some cases it is not necessary to undertake a new planning cycle for plans not meeting their objectives. We may be able to adjust our management approach, such as revising the strategies, allocation limits, policy or licensing approach (including compliance activity). If licencees are not directly affected, a full plan review may not be required.

4 The allocation planning process: how we plan

Implementing the plan

When a plan is finalised the relevant regional office of the department will begin to implement the management approach defined within the plan.

Internally, we focus on supporting the licensing officers administering the new plan.

We complement plan implementation with:

- ✓ internal work around delivering the plan through licensing
- ✓ licence compliance in the plan area
- ✓ community information and meetings/workshops.

Ongoing monitoring and evaluation

Plan evaluation is driven by the monitoring program developed as part of the plan. During plan evaluation, we:

- ✓ establish whether the plan is meeting its objectives or not
- ✓ undertake further studies, where identified.

The evaluation statement reports on the plan's objectives, performance indicators, triggers and responses, and actions. To support the plan evaluation, we produce a resource review each year, which tells us how the resource is tracking over time.

The evaluation statement is a brief summary and covers:

- allocation status (as in changes to status and over-allocated resources)
- new allocation issues
- implementation actions
- triggers reached
- plan performance (as in performance indicators and objectives)
- evaluation of management set out in the plan
- next steps.

The resource review includes the measurement and monitoring information associated with implementing the plan, including:

- trends in water levels or flow
- trends in water quality, where they are set in the plan
- trends in other measurements, where they are set
- changes to the monitoring program, where required
- update on the resources, where investigations have provided new information
- any future work we have planned for the area.

Stakeholder participation

Frequent reporting is a key part of transparency around our performance in managing resources as well as keeping our stakeholders up-to-date.

Once the plan is in place and the evaluation cycle begins, we:

- ✓ publish a resource review
- ✓ publish an evaluation statement
- ✓ take into account new water allocation planning issues that are identified by water users and others throughout the year.

Our outputs from plan evaluation are:

- → resource review
- → evaluation statement.

Chapter five

Linking allocation planning to other state planning process

Melaleucas on the Yeal Lake, Gnangara Mound, Swan Avon Region

5.1 Water planning framework for Western Australia

In Western Australia, water allocation plans are guided by other state and regional policy. Water allocation plans sit alongside a range of water plans, as shown in the figure below.

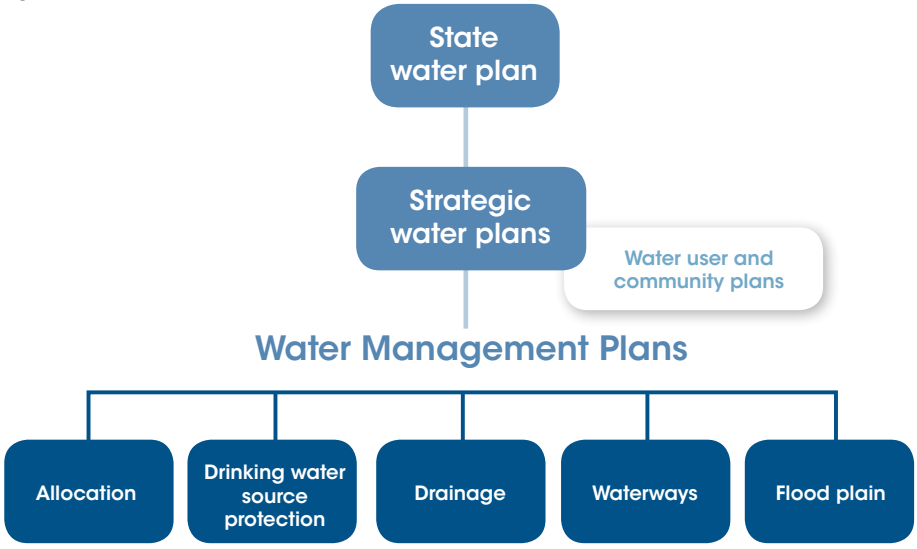


Figure 4
The Western Australian water planning framework

The 2007 *State water pl*an and strategic or regional water plans provide the long-term vision for how we manage water resources across Western Australia. The plans outline strategic directions for government investment and action, and cover all aspects of water management. The objectives and management arrangements we establish in water allocation plans are consistent with the broader objectives and approaches set out in these plans.

In allocation planning, we also take into account other plans relating to water management, such as drinking water source protection, drainage, waterways, and floodplains. When we define allocation issues and set the objectives and allocation approach for each area, we take into account other water management areas, like water source protection or drainage. This ensures we are consistent and operate with an aligned purpose across government.

Often during allocation planning processes, our stakeholders raise issues such as flooding or river restoration within the plan area. While we do indirectly consider these issues in setting our allocation and management approach, the issues themselves are addressed within other planning processes.

Glossary

Abstraction	The withdrawal of water from any surface water or groundwater source of supply
Allocation limit	Annual volume of water set aside for consumptive use from a water resource
Environmental water requirement	The water regime needed to maintain the current ecological values (including assets, functions and processes) of water-dependent ecosystems consistent with the objectives of an environmental flow study
Environmental water provision	The water regime resulting from 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
In-situ water	Represents water that needs to be left in system, including the water needed to maintain the integrity of resource, ecological, social and cultural values
Licence (or licensed entitlement)	A formal permit which entitles the licence holder to 'take' water from a watercourse, wetland or underground source under the *Rights in Water and Irrigation Act 1914*
Management area	A defined surface water area or groundwater area proclaimed under the *Rights in Water and Irrigation Act 1914*
Over-allocation	Where the total volume of water allocated out of the resource (that could be abstracted at any time) is over the set allocation limit
Over-use	Where the actual volume of water abstracted from the resource is over the set allocation limit
Recharge	All water that enters a resource, such as rainfall recharge, induced recharge from other aquifers or throughflow
Reliability	The frequency with which a water licence holder can access their full licensed volume
Water allocation	The specific volume of water allocated to a licence, in a given period, bound by rules established in the relevant plan or state-wide policy
Yield	Water that can be abstracted out of the system, after environmental water is met

Legislation

Government of Western Australia 1914, *Rights in Water and Irrigation Act,* Perth, Western Australia.

Policy

National Water Commission 2004, *Intergovernmental Agreement on a National Water Initiative,* Canberra, Australian Capital Territory.

Symbols

Thoughout this document the symbol ✓ denotes our actions and → denotes our outputs.

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