Water Management Statements
Background Information

June 2016

Water and Marine Resources Division
Department of Primary Industries, Parks, Water and environment

Tasmanian Government

Preferred Citation

DPIPWE (2016). *Water Management Statements. Background Information*. Water and Marine Resources Division, Department of Primary Industries, Parks, Water and Environment, Hobart.

The Department of Primary Industries, Parks, Water and Environment (DPIPWE)

The Department of Primary Industries, Parks, Water and Environment provides leadership in the sustainable management and development of Tasmania's natural resources. The Mission of the Department is to support Tasmania's development by ensuring effective management of our natural resources.

The Water and Marine Resources Division provides a focus for water management and water development in Tasmania through a diverse range of functions, including implementing the *Water Management Act 1999* and the National Water Initiative; design of policy and regulatory frameworks to ensure sustainable use of surface water and groundwater resources; monitoring, assessment and reporting on the condition of the State's freshwater resources; and providing regulatory and policy support for water infrastructure development projects.

CONTENTS

1 INTRODUCTION

This background document is designed to be read in conjunction with Water Management Statements. It describes, and provides links to information, on the generic water legislation and policies that apply to the management of all water resource in Tasmania and explains how Tasmania's water legislation and policy frameworks link to the delivery of National Water Initiative (NWI) consistent water management planning outcomes in Tasmania.

1.1 Scope of Water Management Statements

Water Management Statements provide a public statement that documents how the relevant provisions of the *Water Management Act 1999* (the Act) and the Tasmanian water management policy framework are applied in specific river catchments. In so doing, they describe water available for allocation and the rules for taking water to provide a water regime that furthers the objectives of the Act and is consistent with the planning principles of the National Water Initiative.

Water Management Statements are being developed for a number of river catchments around the State. A range of assessments are conducted to support the development of Water Management Statements. These include the identification of freshwater-dependent ecosystem values, hydrological characterisation, assessments of current water allocations, future water availability and, where relevant, groundwater use (refer to Appendix A for specific details of data sources).

1.1.1 Water Management Act

The Water Management Act 1999 is the overarching legislation providing for the sustainable use and development of Tasmania's freshwater resources and forms part of the State's integrated Resource Management and Planning System (RMPS). The Minister for Primary Industries and Water (the Minister) is responsible for the management of water resources in Tasmania in accordance with the objectives of the Act (Refer to section 1.1.3).

The Act allows for:

- development of statutory water management plans;
- licensing and allocation of water;
- restrictions in case of inadequate water;
- regulation of wells;
- construction and safety of dams; and
- establishment of water supply districts.

The Act is administered on a daily basis by the Department of Primary Industries, Parks, Water and Environment (DPIPWE) (the Department). A range of departmental policies, strategies and guidelines have been endorsed by the Minister and specify how the delegated powers of the Minister are implemented by the Department.

Water Management Statements document how the departmental policies are implemented in areas that are not already covered by statutory water management plans.

Nothing in these statements absolves any person from the need to obtain any licence, permit, approval or other requirement under the Act or in any other applicable legislation.

1.1.2 National Water Initiative

The National Water Initiative (NWI) is the Council of Australian Governments (COAG) principal water policy agreement. Through the NWI, governments across Australia have agreed on actions to achieve a more cohesive national approach to the way water is accessed and used. Tasmania is a signatory and has been actively implementing the NWI reforms since 2005 (see DPIPWE - National Water Initiative).

Tasmania's water legislation and water management policy framework support implementation of Tasmania's commitment to deliver NWI consistent water management planning.

Water Management Statements describe how the State's policies apply to specific water resources. Having regard to the characteristics of NWI consistent water planning, the following NWI planning criteria have been used to frame the scope of Water Management Statements to ensure that they:

- describe the water resources covered, including environmental values and hydrological characteristics, and management arrangements;
- define the basis for allocating water;
- quantify the volume of water available for allocation and measure this against the volume of water allocated;
- define the access rules for water extraction;
- include an appropriate level of assessment; and,
- define the mechanisms for dealing with growth in extraction (adaptive management).

1.1.3 Tasmania's Water Policy Objectives

While implementing the State's policy objectives, it is critical that management is considered in the context of the environmental, economic and social objectives for the catchment(s) being examined.

A key objective of Tasmania's water legislation and associated policy frameworks is to strike a balance in the management of the catchment's water resources, while ensuring that freshwater environmental values and the capacity to support a range of water uses, including stock and domestic use, town water supplies and irrigation, and hydro-electric generation are preserved into the future.

Along with furthering the objectives of the RMPS of Tasmania, the objectives of the Act (Part 2 Section 6) seek to provide for the use and management of the freshwater resources of Tasmania having regard to the need to:

a) promote sustainable use and facilitate economic development of water resources; and

b) recognise and foster the significant social and economic benefits resulting from the sustainable use and development of water resources for the generation of hydro-electricity and for the supply of water for human consumption and commercial activities dependent on water; and

c) maintain ecological processes and genetic diversity for aquatic and riparian ecosystems; and

d) provide for the fair, orderly and efficient allocation of water resources to meet the community's needs; and

e) increase the community's understanding of aquatic ecosystems and the need to use and manage water in a sustainable and cost-efficient manner; and

f) encourage community involvement in water resource management.

Water Management Statements document the implementation of Tasmania's water legislation and policy frameworks while also recognising the context of current water management in terms of the current level of development and water extraction in a catchment, and the presence of high value freshwater ecosystem values. The existing policy frameworks seek to maximise opportunities for future sustainable use and development of a catchment's water resources.

A number of data sources and planning tools are available to assist with the development of Water Management Statements (see Appendix A for a listing of data sources) and collectively provide information resources to understand the water management regime across catchments. This information also provides an indication of the level of risk with respect to national and State legislative and policy objectives, particularly in terms of the likelihood and severity of impacts on key elements of the natural flow regime that support environmental values and pertain to the security of access for current and future water users.

2 WATER MANAGEMENT ENVIRONMENT

This section describes the water management environment, including the specific water management arrangements of a specific catchment and the relevant water managers and their individual responsibilities. Principal responsibility for the taking of water in Tasmania is vested in the Crown and the Government who administers the Act.

2.1 Water Management Roles and Responsibilities

2.1.1 The Crown

All rights to the taking of water from the water resources of Tasmania are vested in the Crown, with the exception of those rights provided by the Act and rights in respect of water under Part 5 of the Act.

2.1.2 The Government

The Minister for Primary Industries and Water is responsible for administering the Act including, but not limited to, the licensing, allocation and management of water in accordance with Part 3 section 8(1) and (2) of the Act.

Under the Act, the Minister may grant a water licence authorising the taking of water from a water resource. A water licence may have one or more water allocations endorsed upon it, which specify the volumetric, spatial and temporal parameters for taking water.

A number of relevant policies and guidelines have been approved by the Minister that describes how the Department administers discretionary powers under delegation from the Minister under the Act (refer to DPIPWE - Water Resources Policies and Guidelines). Water Management Statements explain how these policies are implemented in the area covered by the statement.

2.1.3 Water Licensees and Rights Holders

Notwithstanding the responsibilities of the Minister, water users are also responsible for taking water in accordance with their licence conditions, their obligations under the Act and other relevant legislation (refer to Accounting for your water). The obligations apply to all water users, including those taking water under Part 5 rights without a licence, individual licence holders and responsible water entities such as TasWater, Hydro Tasmania and Tasmanian Irrigation.

2.1.4 Water Entities

Under the Act, Water Entities may be delegated limited responsibility for the administration of water in a proclaimed district(s) (refer to DPIPWE - Water Districts and Entities).

2.1.5 Irrigation Districts

The water entity responsible for the administration of a proclaimed Water District is able to grant Irrigation Rights in accordance with the legislation. The water entity holds a water licence and bulk allocation(s). The transfer of water to irrigation right holders is generally defined by contracts for the supply of irrigation rights via pipelines or release down natural watercourses that is administered by the water entity.

Water Management Statements only specify rules for water taken by water licensees. In the case of a water entity they are considered to have the same responsibility as any other water licensee when taking water.

The Act includes specific provisions for the administration and supply of irrigation rights by the water entity to its customers. Therefore, these rules relating to the licenced taking of water do not apply to the water supplied by the water entity as irrigation rights. Notwithstanding this, the irrigation entity must comply with its licence and conditions and other authorisations under the Act for the transfer and supply of water via natural water courses.

2.1.6 Hydro-electric Districts

In Tasmania, Hydro-Tasmania holds a special licence, issued under Division 6 of Part 6 of the *Water Management Act*, giving it a right to all the water resources in proclaimed hydro-electric districts (excluding the volume of water held under entitlements by other water licensees and rights to water under Part 5 of the Act). Apart from harnessing water for the generation of electricity, Hydro Tasmania may make water available for other downstream uses with conditions related to the value of that water in the water market. This is usually done through a permanent water transfer or a water supply agreement between Hydro Tasmania and water users.

Before water licences and allocations are leased or sold, the parties must ensure that approval has been given by the Department to transfer the licence(s) and/or the allocation(s) under Part 6 (Division 4) of the *Water Management Act 1999*. In the case of new allocations in a Hydro-electric District, Hydro Tasmania must also consent to the transfer. Transfers can either be for a limited period (temporary transfer) or on a permanent basis (absolute transfer). DPIPWE, on behalf of the Minister, then issue a licence to authorise the taking of the water by the transferee in accordance with the Act and any water management plan.

3 DESCRIPTION OF WATER RESOURCES

3.1 Catchment Overview

This part of a Water Management Statements briefly describes the specific details of the water resource and catchment areas covered by the statement. A map is provided to show the relevant features of the area and water resources covered by the statement.

3.2 Groundwater and Surface Water Resources

The connectivity between surface water and groundwater resources is recognised by the Act. Water Management Statements describe the provisions that apply to all water resources including surface and groundwater.

3.3 Freshwater-Dependent Ecosystem Values

Water Management Statements are supported by a Conservation of Freshwater Ecosystem Values (CFEV) assessment. The CFEV assessment is a desktop assessment that identifies the significant freshwater-dependent ecosystem values in the areas covered by the management statements.

3.4 Hydrological Characteristics

Water Management Statements include a description of the key characteristics of the flow regime in the catchment. Broadly, the characterisation includes analyses of monthly flow statistics as well as the use of daily flow data to examine specific flow components that are significant features of the hydrology that support environmental and water use and development objectives of the Act. Hydrological analysis may include statistics relating to the frequency, duration and magnitude of flow events based on historic modelled or observed flows. These analysis may identify details such as annual and seasonal median/maximum/minimum flows/yields statistics to describe the variability and longer term average flow conditions. The analysis may also provide details of the frequency and duration of various parts of the flow regime: for example cease-to-flow events or flood flows, monthly or seasonal analysis of flows etc.

A key objective of the hydrological characterisation is to understand how current management of water resources in the catchment protects key features of the flow regime and the level of risk it may pose to the environmental and water use and development objectives of the Act. Management policies and guidelines are underpinned by the rationale that key characteristics of the natural flow regime should be retained as far as possible. This is based on the premise that retaining key components of the natural flow regime will maintain the ecology of a river system, which has evolved in response to the natural flow regime.

3.5 Surface Water Management Zones

Water Management Statements divide catchments into practical management zones that reflect areas of similar hydrology and management. These management zones represent practical management units for the purposes of water management at a catchment scale.

3.6 Surface Water Yield

Water Management Statements shows the historic median natural and/or observed surface water yields for the summer (1 December to 30 April) and winter (1 May to 30 November) take periods for relevant management zones within a catchment. The natural yield is determined using hydrological models that use historical rainfall and evaporation data over a specified periods, to determine the historic natural yields, without the effects of extraction or diversions and dams.

The annual/summer take periods/winter take periods median yield represents the yield that is available or exceeded 50% of the time (or available in full 5 years out of 10) based on the historic period of modelled or observed flow records for the periods specified.

It should be noted that the sum of summer and winter median yields will not equal the annual median yield for the same period of records as they are statistically different calculations. In addition summer and winter periods relates to the “summer take period” and “winter take period” which are usually defined as the periods between 1 December – 30 May, and 1 April – 30 November, respectively.

3.7 Environmental Water Requirements

In Tasmania, water resource management policies and guidelines seek to protect key characteristics of the natural flow regime, even in situations where the system is highly regulated or modified. DPIPWE has adopted the 'holistic' approach to the provision of environmental water requirements, based on the premise that the retention of key characteristics of the natural flow regime provides the best means for ensuring important ecosystem processes and values are maintained.

Components of the natural flow regime that are relevant to the environmental and other objectives of Tasmania's legislative and policy frameworks are:

a) base flows that sustain ecosystem health and populations of aquatic biota, and provide refuge during dry times;

b) moderate flows (freshes) and high flows that provide reproductive cues and dispersal mechanisms for some biota, and are important for transporting material (organic matter, sediments and nutrients) downstream;

c) flood flows that maintain geomorphic processes, support riparian zones, floodplains and wetlands, and maintain connectivity and exchange of resources between rivers and their floodplains;

d) the natural pattern of flow variability, including seasonal distribution, frequency and duration of flows, and rates of rise and fall;

e) groundwater flows and levels critical to maintaining connectivity between surface water and groundwater systems.

In catchments that are largely unregulated, environmental flows assessment typically provide recommendations for the management of low flows through monthly or seasonal cease-to-take triggers and high flow thresholds to manage the harvesting of water from flood events. In regulated systems, monthly or seasonal water release rules and management minimum flows may also be used to maintain the seasonal pattern of baseflows.

In catchments where water management statements are developed, the water access rules that are implemented generally recognise the current management context and the need to maintain the key hydrological components that support the ecological function and structure of the system as well as balancing the environmental objectives of the Act with providing optimal access to water for consumptive uses to provide for the water use and development objectives of the Act.

This section of Water Management Statements includes information about environmental flows assessments that have been undertaken and details environmental water provisions that are currently implemented and how this is balanced with providing optimal access to water resources.

4 SURFACE WATER ALLOCATIONS

4.1 Allocations Overview

Limiting the volume of water available for allocation to a particular level is an effective measure in ensuring that the water regime provided under allocation policy frameworks retains the broad hydrological characteristics necessary to give effect to the Acts objectives (refer to Section 1.1.3). Generally, the approach used to determine the allocation limit for a river system is based on assessing the volume of water available at a certain level of reliability, taking into account environmental water needs. The policy aims to retain 80% of the median annual discharge, which aims to provide water for other uses while meeting the needs of freshwater-dependent ecosystems.

The approach to determining allocation limits is one in which water for lower surety uses is managed under licences and/or allocations of specific surety levels that denote the priority of access when water becomes limited. The highest surety water, environment (Surety 2) and stock and domestic use (Surety 1), is not allocated but is "quarantined" and protected from being accessed by lower surety water users.

In accordance with the Act (Section 8), the Minister must allocate water in a manner consistent with the objectives of the Act and the Resource Planning and Management System, taking into account the needs of major ecosystems and any effect that a decision may have on other water users.

Under Section 8(1)(b) of the Act, a function of the Minister is to develop and coordinate policies relating to the sustainable use and development of Tasmania's water resources.

Guidelines have been developed to provide the Department of Primary Industries, Parks, Water and Environment with guidance when exercising discretionary powers under the *Water Management Act 1999* for issuing new water allocations (refer to the DPIPWE - Water Resources Policies and Guidelines).

Any application for a water licence, new allocation or transfer will be assessed on a case by case basis, taking into consideration factors such as local hydrology and water availability, impacts on existing water users and freshwater-dependent ecosystem values as they relate to the proposed extraction point. The approval of new allocations or transfers must also be consistent with allocation policies which define methods to conservatively determine allocation limits.

4.2 Take Periods

Water Management Statements specify take periods and rules for taking water on a daily or monthly basis, or in specific take periods, that serves to protect the daily, monthly and seasonal patterns of variability in the flow regime. In most cases the summer take period is 1 December-30 April and the winter take period is 1 May-30 November[1].

4.3 Allocations on an Annual Basis

This section summarises the volume of water available for allocation on an annual basis (1 May to 30 April) and measures this volume against the volume of water allocated, on an annual basis (1 May to 30 April).

The volume of water made available by applying the allocation policy is also compared to the median annual yield to determine if the allocation limits are consistent with the objective of the allocation policy to protect approximately 80% of the median annual yield.

4.4 Allocation Limits

The critical element of the water allocation policy is the provision for catchment-wide sustainable allocation limits in summer and winter take periods. In summer, water will not generally be allocated below a level of 80% reliability. In most catchments, the water available during summer at a level of reliability of >80% has already been fully allocated. For this reason there has been a general moratorium in place since 1995 on further allocations of water in the summer take period.

The sustainable allocation limit consists of two parcels of water. Firstly, the volume of water available at 80% reliability, after the environment's share has been determined with the environment's share being the sum of the relevant 30th percentile monthly yields (yield that is

[1] The allocation figures presented in Management Statements recognise that the 'take period' dates on water licences may vary from the standard take period dates.

exceeded in 70% of the months) in summer and 20th percentile monthly yields (yield that is exceeded in 80% of the months) in winter.

The second parcel of water is a 20% share of the volume of water available between 50% and 80% reliability. The 20% share is based on an approach which aims to retain 80% of the median annual discharge for the environment. This approach is considered likely to preserve the key elements of the natural flow regime and hence ensure that the water needs of freshwater-dependent ecosystems are met. Furthermore, providing such a limit also ensures that the reliability of allocations is maintained, given that increasing levels of allocation reduce reliability for all water users.

Water Management Statements set out the allocation limits for each management zone within a catchment showing the volumes of water available at Surety 5 (80% notional reliability) in the summer and winter take periods. In the winter take period a further parcel of less reliable Surety 6 is also provided for allocation.

The calculation of allocation limits takes into account the risks of future climate change by using the CSIRO sustainable yields C_{dry} future climate scenario when modelling future yields. Thereby, water is allocated conservatively accounting for water availability under a dry future climate scenario (see CSIRO Sustainable Yields).

It should be noted that applying the allocation methodology described above in ephemeral or highly variable systems may not meet the policy objective to retain 80% of the median yield as the natural flow regime features months of very high, low or zero flow that may lead to under or over estimation of environmental water requirements and an unreasonably low or high proportion of the available yield being allocated. Therefore, assessing the proportion of water available under allocation limits as a proportion of the median annual yield is used to test if the policy objective of retaining approximately 80% of the median yield is being met. In ephemeral systems the majority of water tends to be available during infrequent and unreliable flood flow events. Access to flood flows in these catchments is managed though high flow thresholds (see 4.5 below) that are set to limit access until an adequate flood flow is provided to deliver the relevant ecological and geomorphological processes provided by these flows.

4.5 Opportunistic Water Allocations

Opportunistic water may be available in some catchments. Allocations are taken opportunistically during major flood events and access is managed using high flow triggers. Opportunistic flood take water is generally available at a lower reliability than Surety 6 water (typically allocated at Surety 7 or 8 and available at less than 50 % reliability).

5 WATER ACCESS RULES

Water Management Statements document the rules that are currently in place for a catchment. The objective of access rules is to provide for fair and orderly access to water and the achievement of environmental and water use objectives of the Act and are a key element of NWI consistent water management planning.

It should be noted that there are a range of mechanisms that together protect the key elements of the natural flow regime and existing water entitlement holders rights. Allocation limits, standard licence conditions together with access rules ensure that key components of the annual, seasonal and daily flow regime are maintained.

Whilst a water allocation limit is an effective measure in preserving the overall hydrological character of a river system, daily access rules aim to ensure that the effect of daily consumptive water extraction on any particular aspect of the flow regime is not harmful to the environment. Together with allocation limits that limit the overall volume that can be

extracted on a seasonal or annual basis, these rules ensure that key components of the flow regime are maintained to provide environmental and other public benefit outcomes.

These access rules also ensure that the rights of water users with higher surety water allocations are not impinged, and that the taking of water is managed in an orderly and equitable way.

5.1 Restriction Management

Part 6, Division 3 of the Act provides for the taking of water from a watercourse to be restricted or prohibited if there is inadequate water. Restriction management generally focuses on the implementation of staged restrictions on the taking of water during times of low flow (refer to DPIPWE – Current Water Restrictions and Flood Take Notices for current notifications). Restrictions are applied in descending order of surety: thereby ensuring that the higher surety allocations are given preference (refer Act 94(2)(a)).

A Water Licence specifies a surety level for a water allocation attached to that licence. Surety levels indicate:

- the priority of any entitlement to take water when supply is limited; and
- the notional and/or relative reliability of different allocation types.

Standard licence conditions also apply to all licences and serve to manage the risks to the environment and other water users at the off take point (refer to DPIPWE - Surface Water Allocation Decision Framework).

Specific catchment wide access rules may also apply to parcels of water at different surety levels to deliver the objectives of the Act and manage orderly and fair access to water in descending order of priority from Surety 1 (highest priority/reliability) to Surety 8 (lowest priority/reliability).

Further information can be found in Part 56(1)(c) and 59 of the Act and also refer to DPIPWE - Water Restrictions for current restriction notices, and DPIPWE - Applying for a Water Licence for a summary of surety levels.

5.2 Rules for Opportunistic Flood Takes

High flow access triggers are generally set at, or above, a ‘bank full’ flow threshold to protect the environmental outcomes provided by these flows. Large floods generally occur infrequently and therefore opportunistic takes may be unreliable.

Authorisation to take water is subject to flow thresholds being met and may be conditional on written authorisation being provided by DPIPWE (refer to DPIPWE – Current Water Restrictions and Flood Take Notices for current notifications).

5.3 Groundwater Management

Under Part 5 of the Act, the owner or occupier of land may take groundwater from the land for any purpose without a water licence, unless:

a) the land is situated in a Groundwater Area appointed by the Minister and a licence is required in that Groundwater Area, or

b) the land is situated in a water management plan area and a licence is required by the Water Management Plan, or

c) the taking would cause, either directly or indirectly, material environmental harm or serious environmental harm.

Any extraction of groundwater must comply with the relevant statutory instruments, as set out in Part 7 of the Act, and the Department's regulations and policies pertaining to groundwater abstraction, licensing and management (refer to DPIPWE - Groundwater).

The level of management of groundwater is based on the assessed risk to the connected water resource and groundwater depended ecosystems, and other water users rights.

6 ADAPTIVE MANAGEMENT

If allocation limits are approached in the future and there is demand for additional water, further assessment work may be required to review the limits in light of knowledge of climate change impacts, more specific environmental requirements and any other relevant factors, before considering if more water is made available for allocation. Any revision of allocation limits must be supported by evidence that further water could be available consistent with the environmental and water use and development objectives of the Act.

Depending on the results of such assessments consideration will be given to future management arrangements, including the need for a formal planning process in accordance with Part 4 of the *Water Management Act 1999*, if required.

In addition, periodic reviews of the effectiveness of access rules and water management approaches may be used to inform adaptive management. If verified and balanced evidence can be provided to support improved management approaches, then changes may be considered so long as they are consistent with, and further, the environmental and water use and development objectives of the Act. These amendments to policies and access arrangements may mean that Water Management Statements are periodically updated to include these changes.

6.1 Monitoring

Stream flow gauging and water extraction and management information can be analysed to determine whether the intended water regime and specific river flow conditions were achieved with respect to the flow regime and its capacity to maintain environmental and water access outcomes. Data is available on the Department's Water Information System Tasmania (WIST) website.

River height and stream flow are recorded at stream flow gauging stations located within relevant catchments. Groundwater levels are also recorded at groundwater monitoring bores located in specific catchments. These data can be sourced from DPIPWE's state-wide water monitoring network

Water licence information (i.e. changes to the number and total volume of licensed surface water allocations) is maintained by DPIPWE and can be used to ensure that the total volume of water allocated in this catchment is not in excess of the allocation limits.

The Department maintains records of, and monitors compliance with, any water restrictions within catchments. Additional surveillance monitoring information relating to the environment may be drawn upon where appropriate, to determine the effectiveness of the provisions of Tasmania's water legislation and policy framework objectives.

APPENDIX A – INFORMATION SOURCES SUPPORTING THE STATEMENTS

Freshwater-dependent ecosystem values are identified using the Conservation of Freshwater Ecosystems Values (CFEV) assessment framework. Reports are available as supporting information used to identify high value freshwater-dependent ecosystem values for a Water Management Statement area.

Hydrological character is described using hydrological modelling of flow for a catchment (Hydrological Modelling Reports). Data is from the TascatchSIM models using SILO rainfall and evaporation data over the period 1969-2007. The model output is generally for the "natural" flow scenario i.e. no dams, diversions or extractions are included.

Information about existing entitlements are extracted from the Water Information Management System (WIMS). Data is assessed to identify the volume, timing and distribution of licensed water entitlements in the catchment. WIMS is the Department's official register of water licences and entitlements. Information on water entitlements can be accesses via the Water Information System of Tasmania (WIST).

Allocation limits and **water available for extraction** is generally calculated using the Water Assessment Tool (WAT) to provide allocation limits for the various management zones by applying the Department's water allocation policy and guidelines to the catchment yields derived under CSIRO's future dry climate scenario derived by the Tasmanian Sustainable Yields Project (TAS SY). The model is run using rainfall and evaporation data over an 84 year period for the catchment. This model output produces modelled yields representing a dry future climate scenario which account for future climate change risks to yields.

The volume of water available for allocation is calculated by subtracting the existing volumes allocated from the sustainable allocation limits derived from WAT.

Groundwater bore information is assessed using data extracted from the Groundwater Information Management System (GWIMS) database. This information can also be accessed via the Groundwater Information Access Portal.

Assessments may be conducted to identify the extent and number of groundwater bores. Potential extraction may be estimated based on records of the numbers of known active bores and potential yields based on driller's logs and estimates of pumping time. Estimates of groundwater use may also consider relevant factors such as groundwater quality and suitability for use, seasonal factors and availability of alternative surface water resources.

The assessment considers the catchment scale risks to the connected water resource by assessment of the extent and estimated volume of groundwater use relative to the allocation limits and volume of water allocated, and the potential impacts to the connected water resources.