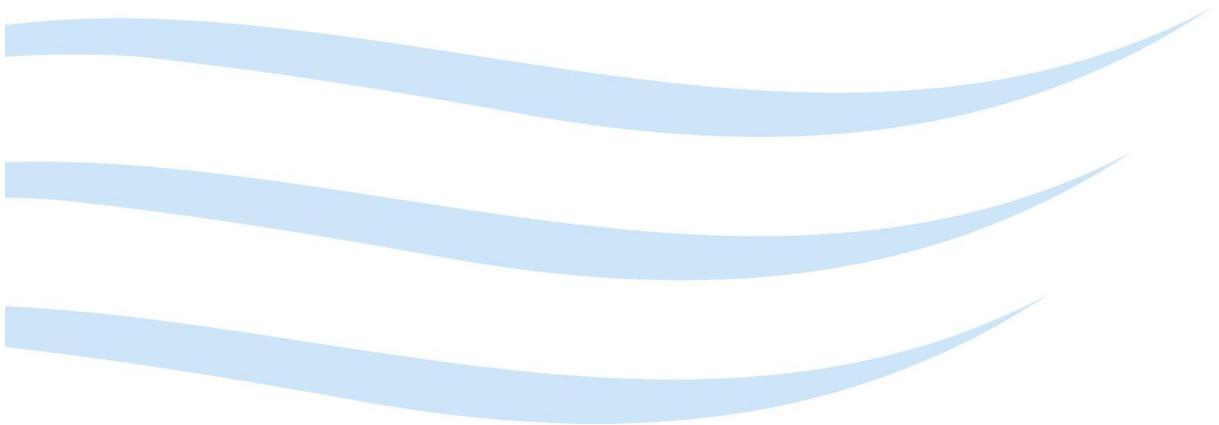


Meander River Catchment Water Management Statement



June 2016

Copyright Notice

Material contained in the report provided is subject to Australian copyright law. Other than in accordance with the *Copyright Act 1968* of the Commonwealth Parliament, no part of this report may, in any form or by any means, be reproduced, transmitted or used. This report cannot be redistributed for any commercial purpose whatsoever, or distributed to a third party for such purpose, without prior written permission being sought from the Department of Primary Industries, Parks, Water and Environment, on behalf of the Crown in Right of the State of Tasmania.

Disclaimer

Whilst the Department of Primary Industries, Parks, Water and Environment has made every attempt to ensure the accuracy and reliability of the information and data provided, it is the responsibility of the data user to make their own decisions about the accuracy, currency, reliability and correctness of information provided. The Department of Primary Industries, Parks, Water and Environment, its employees and agents, and the Crown in the Right of the State of Tasmania do not accept any liability for any damage caused by, or economic loss arising from, reliance on this information.

Preferred Citation

DPIPWE (2016). *Meander River Catchment Water Management Statement*. 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	1
2	WATER MANAGEMENT ENVIRONMENT	1
2.1	Water Management Roles and Responsibilities	1
3	DESCRIPTION OF WATER RESOURCES IN THIS CATCHMENT	2
3.1	Catchment Overview.....	2
3.2	Groundwater and Surface Water Resources.....	2
3.3	Freshwater-Dependent Ecosystem Values	2
3.4	Hydrological Characteristics.....	4
3.5	Surface Water Management Zones	5
3.6	Surface Water Yield	6
3.7	Environmental Water Requirements	6
4	SURFACE WATER ALLOCATIONS	7
4.1	Allocations Overview.....	7
4.2	Take Periods.....	8
4.3	Allocations on an Annual Basis.....	8
4.4	Allocation Limits.....	8
4.4.1	Summer Take Allocations	9
4.4.3	Winter Take Allocations	10
4.6	Surety 8 Water Allocations.....	11
5	WATER ACCESS RULES	11
5.1	Restriction Management	11
5.2	Surety 8 – Rules for Opportunistic Flood Takes	12
5.2.1	Greater South Esk Catchment - Surety 8 Flood Take Trigger	13
5.2.2	Meander Sub-catchment - Surety 8 Flood Take Trigger.....	13
5.3	Groundwater Management	13
6	ADAPTIVE MANAGEMENT FOR THIS CATCHMENT	14
7	REFERENCES	14
	APPENDIX A – INFORMATION SOURCES SUPPORTING THIS STATEMENT.....	16
	APPENDIX B – STREAM FLOW GAUGING AND GROUNDWATER MONITORING STATIONS.....	17
	APPENDIX C – WATER MANAGEMENT ROLES AND RESPONSIBILITIES.....	18

1 INTRODUCTION

The Meander River Catchment Water Management Statement (this Statement) sets out how water resources in the Meander River catchment (this catchment) are allocated and the rules for taking water. This Statement describes a water regime that supports the objectives of the [Water Management Act 1999](#) (the Act) and is consistent with the planning principles of the [National Water Initiative \(NWI\)](#).

Water Management Statements are being developed for a number of river catchments around the State. The document 'Water Management Statements – Background Information' (DPIPWE 2016) provides generic information supporting these statements including links to relevant information and government policies that describe how the Tasmanian Government applies these policies and administers water in the catchments.

Management policies and guidelines are underpinned by the rationale that key characteristics of the natural flow regime should be retained as far as possible, even in situations where the system is highly regulated or modified. While the current management context will influence the level of departure from the natural flow regime, the aim is to maintain the key hydrological components that sustain ecological function and structure of the river system.

The outcomes sought through the implementation of the described water management arrangements in this Statement are:

- Certainty in water availability for commercial users (i.e. for consumptive use), while ensuring town water supply, stock and domestic, and environmental water needs are met.
- Maintenance of key features of the natural flow regime throughout the entire catchment, including frequency, magnitude, timing, duration and rate of change in flows to support existing ecosystems dependent upon the water resource.

This Statement draws on information and data from a number of sources including assessments of freshwater-dependent ecosystem values, hydrology and analysis of the Tasmanian water entitlement registry that documents water licences and allocations (refer to Appendix A for a listing of data sources).

For the purpose of this Statement, all surface water flow thresholds referred to relate to those as measured at the relevant stream flow gauging stations located in this catchment (shown in Figure 1 and listed in Appendix B).

2 WATER MANAGEMENT ENVIRONMENT

2.1 Water Management Roles and Responsibilities

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 under Part 5 of the Act.

Water management arrangements in the Meander River catchments are complex and involve several persons, including several irrigation schemes management bodies and one hydro-electric power producer (regions shown in Figure 1). Appendix C outlines the key persons and their roles and responsibilities regarding water management in the Meander River catchment.

3 DESCRIPTION OF WATER RESOURCES IN THIS CATCHMENT

3.1 Catchment Overview

The Meander River catchment (area ~1,600 km²) (Figure 1) is a land-locked sub-catchment of the greater South Esk Basin, which drains a large part of central-east Tasmania and discharges into the Tamar Estuary at Launceston.

The Meander River catchment is predominantly within the Meander Valley Municipality and encompasses several towns, the major ones being Deloraine and Westbury. The catchment lies within the South Esk Hydro-electric Water District and its water contributes to generation of electricity at Trevallyn Power Station. Hydro Tasmania holds a special licence under Division 6 of Part 6 of the *Water Management Act 1999*, conferring upon it the right to all water resources of the catchment (excluding the volume of water held under entitlements by other licensees and rights to water under Part 5 of the Act).

Almost half (49.5%) of allocated water in the Meander River catchment is licensed to a single irrigation entity that manages the transfer and supply of water downstream from the Meander Dam as irrigation rights in accordance with the Act, and the entity's water licence conditions. The Greater Meander Valley Irrigation Scheme delivers water to customers from the Meander Dam via the Meander River, as well as four major pipelines. The bulk of remaining water allocations (50.5%) are licenced to individual agricultural businesses, primarily for irrigation. Whitemore Valley Water Pty Ltd. also supply water from a 900 ML dam on Whitemore Creek to irrigators downstream of the dam via the natural watercourse.

The Cressy Longford Irrigation Scheme and Whitemore Irrigation Scheme divert water from the Poatina Power Station tailrace for supply as irrigation rights to parts of the Meander catchment. Water is diverted to the natural watercourses of the Liffey River and Whitemore Creek from the Cressy Longford Irrigation Scheme and Whitemore Irrigation Scheme, respectively. The Whitemore scheme also has a water licence to harvest flood flows from the Liffey River to supplement supply via the scheme.

3.2 Groundwater and Surface Water Resources

Significant groundwater resources associated with areas of karst and groundwater-dependant ecosystem values are situated in the Meander River catchment (refer to Section 3.3 below and the Assessment of Freshwater Ecosystem Values in the Meander River Catchment report (DPIPWE 2015)). These areas are primarily in the upper part of the catchment and include karst associated with the Mole Creek system that straddles the Meander and Mersey river catchments and the nearby Meander Western Creek karst system. Smaller karst areas are located in the upper parts of Quamby Brook and Liffey River. In these areas there is likely to be a strong connection between surface water and groundwater resources, and the baseflow of rivers and streams within this area is likely to be strongly dependent on discharge from local groundwater aquifers.

3.3 Freshwater-Dependent Ecosystem Values

The Meander River catchment contains many important freshwater-dependant ecosystem values. A detailed assessment of these values is provided in DPIPWE (2015). Areas of high and very high Integrated Conservation Value (ICV) (as ranked in the CFEV assessment (DPIPWE 2015)) include:

- headwater streams and wetlands in the north and north-west of the catchment
- riverine sections of Whitemore Creek, the Liffey River, Quamby Brook and Western Creek
- rivers, wetlands and waterbodies in the south and south-west of the catchment.

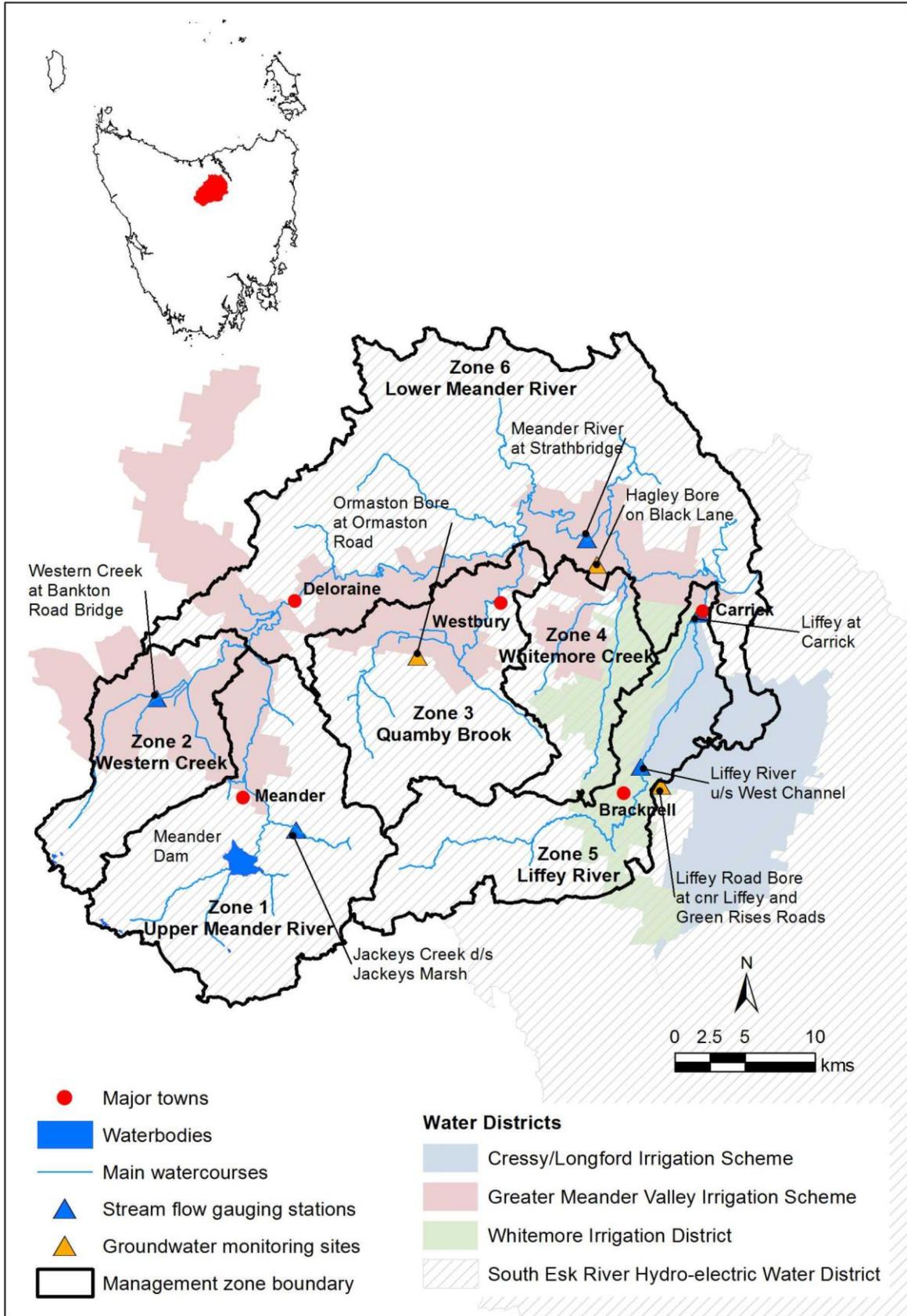


Figure 1: Meander River catchment showing management zones, stream flow gauging stations, groundwater monitoring sites and water districts.

Headwater streams and wetlands in the south of the catchment lie within the Central Plateau Conservation Area so are not impacted by water extraction. The majority of other sites of high conservation significance are located in the upper catchments, also upstream of areas impacted by licenced water extraction. Most of the central part of the catchment has lower levels of conservation significance, with the exception of riverine reaches of the main Meander River that have higher values associated with pockets of remnant riparian vegetation communities.

The Mole Creek and Meander-Western Creek karst systems are of very high ICV related to their unique geomorphology. Additionally, the Groundwater Dependent Ecosystem (GDE) Atlas ([Bureau of Meteorology - GDE Atlas](#)), indicates that most streams and wetlands in the catchment have some degree of reliance on groundwater.

Unique special values occurring within the catchment include threatened fauna species (green and golden frog (*Litoria raniformis*) and white-bellied sea eagle (*Haliaeetus leucogaster*)) and priority fauna species (South Esk freshwater mussel (*Velesunio moretonicus*) and southern toadlet (*Pseudophryne semimarmorata*)). A range of threatened flora species have been recorded in the catchment; mostly occurring in the upland tributaries. Threatened flora communities such as shrubby *Eucalyptus ovata* forest and *E. rodwayi* forest are found in river sections and wetlands throughout most of the catchment, while patches of *Melaleuca ericifolia* coastal swamp forest occur in the lower catchment. Four Springs Creek and Brushy Lagoon are important bird sites.

3.4 Hydrological Characteristics

Hydrological modelling¹ indicates that this catchment naturally experiences a strong seasonal flow pattern, with high river flows over winter and low flows over summer and potentially large annual, seasonal and monthly variations in discharge as shown in Figure 2.

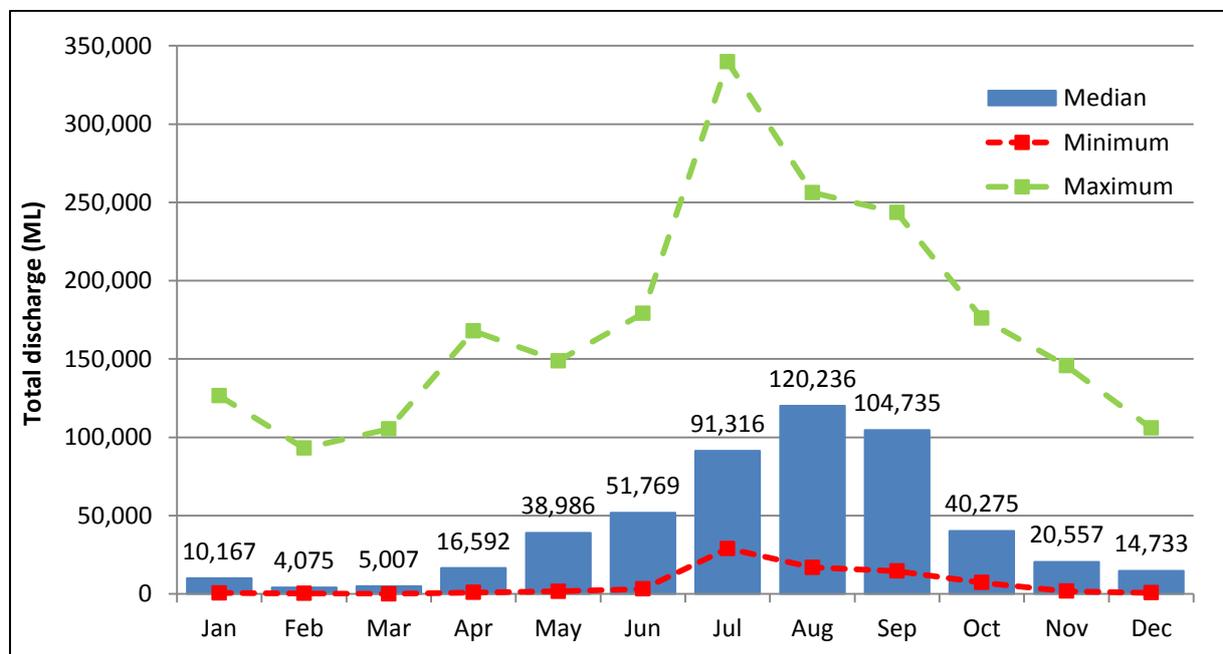


Figure 2: Maximum, median and minimum monthly (modelled natural) total discharge (ML) for the Meander River at the catchment outlet.

¹ Data from TascatchSIM models using SILO rainfall and evaporation data (1969-2007). The model output shown here is for the “natural” scenario (i.e. no dams, diversions or extractions are included).

Assessment of gauged flows in the lower Meander River shows that following the completion of the Meander Dam in 2007 the main changes to the hydrology of the lower river system are; higher flows during the months when irrigation water and environmental flows are released (on average 94% higher), and 20% lower discharge in May and June when the dam is filled by the first autumn high flows events (Figure 3). Other than this, the hydrology of the river system remains largely unchanged.

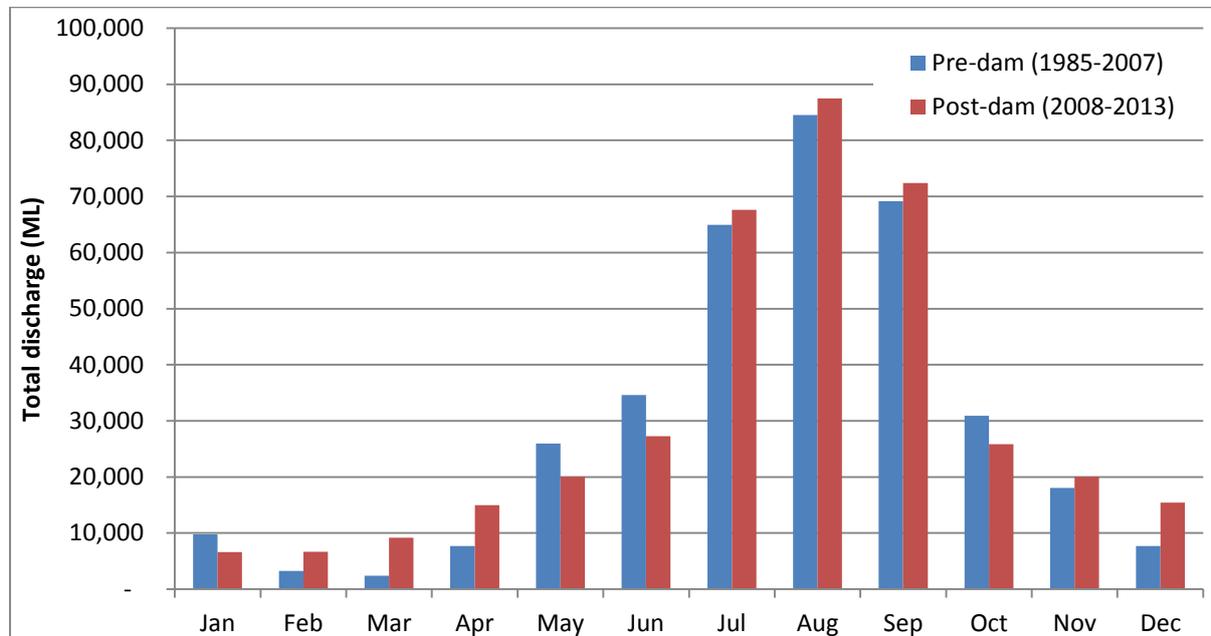


Figure 3: Median monthly discharge (ML) observed at the Meander River at Strathbridge (952) stream gauging station, comparing the pre-Meander Dam (1985-2007) and post Meander Dam (2008-2013) periods.

3.5 Surface Water Management Zones

This Statement divides the Meander River catchment’s water resources into the following six management zones (shown in Figure 1):

1. Upper Meander River
2. Western Creek
3. Quamby Brook
4. Whitmore Creek
5. Liffey River
6. Lower Meander River

3.6 Surface Water Yield

Table 1 shows the median yields for summer (1 December to 30 April) and winter (1 May to 30 November) take periods based on hydrological modelling². This catchment has an annual median yield of 652,042 ML with a median summer yield of 86,573 ML and a median winter yield of 563,308 ML.

Table 1: Modelled natural surface water yield.

Management Zone	Median Yield (ML)	
	Summer	Winter
1. Upper Meander River	36,052	200,014
2. Western Creek	14,179	69,026
3. Quamby Brook	5,981	70,063
4. Whitemore Creek	1,728	14,387
5. Liffey River	15,754	103,220
6. Lower Meander River	13,587	120,230
Meander River Catchment (at outlet)	86,573	563,308

3.7 Environmental Water Requirements

An environmental flows assessment was conducted for the Meander, Macquarie and South Esk rivers in 1996 (Davies & Humphries 1996). This study utilised the Instream Flow Incremental Methodology (IFIM) approach, which has since been superseded in DPIPW by the [Tasmanian Environmental Flows Framework](#). Further to this, in 2002, Hydro Tasmania (2002) conducted complementary environmental flow investigations as part of the Meander Dam Development Proposal and Environmental Management Plan to assess the potential impact of the dam on the flow regime and the ecosystem values downstream of the dam wall. The monthly minimum daily (base flow) releases recommended in the latter study are presented in Table 2.

These recommendations were made to maintain aquatic ecosystem values in the Meander River at a 'moderate' level of risk for all months of the year. These flow releases mimic natural seasonal base flow variation and therefore have the capacity to protect ecological values downstream of Meander Dam. These flow release recommendations were subsequently adopted as licence conditions for the Meander Dam licensee with the intention that these flows are delivered downstream as far as the confluence with the South Esk River.

² Data from TascatchSIM models using SILO rainfall and evaporation data (1969-2007). The model output shown here is for the "natural" scenario (i.e. no dams, diversions or extractions are accounted for).

Table 2: Minimum Environmental Water Requirements immediately downstream of Meander Dam (from Hydro Tasmania 2002)

Month	Flow levels	
	ML/day	cumecs
January	54.4	>0.63
February	31.1	>0.36
March	20.7	>0.24
April	70.8	>0.82
May	164.2	>1.90
June	207.4	>2.40
July	207.4	>2.40
August	207.4	>2.40
September	207.4	>2.40
October	207.4	>2.40
November	121.0	>1.40
December	86.4	>1.00

4 SURFACE WATER ALLOCATIONS

4.1 Allocations Overview

As of November 2014, there were 143 licensed water users, holding 155 water licenses with a combined annual takeable allocation of 40,949 ML (excluding S1 and S8) in the catchment. Tasmanian Irrigation (TI) hold the largest water entitlement in the catchment with a total of 25,500 ML allocated on their licence at the Meander Dam. The total allocated volume (November 2014) represents 6% of the median annual yield (652,042 ML) for the catchment.

This allocated volume does not include the remaining water that is licensed but not allocated under Hydro Tasmania's special licence for non-consumptive hydro-electric generation purposes (refer to Section 4.4 below).

The allocated water is used for irrigation scheme supply (62.25%), irrigation (35.3%), aquaculture (1.5%), town water supply (0.9%), stock and domestic (0.03%) and other commercial (0.02%) purposes.

Water is allocated at four surety levels:

- Surety 1 483 ML (0.9%)
- Surety 5 35,506 ML (68.9%)
- Surety 6 5,330 ML (10.3%)
- Surety 8 10,192 ML (19.8%)

Surety 1 comprises a small volume of water allocated for essential town water supplies under Part 6 of the Act. However, water for essential purposes including stock and domestic, fire fighting and other specified purposes can be taken without a licence as Part 5 water rights under the Act.

Surety 2 water pertains to water retained in the river system to provide for environmental water needs. This water (along with Surety 1 allocations) is protected by access rules regulating extraction of water by lower surety (Sureties 5, 6 and 8) users.

Surety 5 comprises water access entitlements under Part 6 of the Act for taking of water for commercial purposes.

Surety 6 comprises water access entitlements under Part 6 of the Act for taking of water for commercial purposes at a lower level of reliability than Surety Level 5.

Surety 8 comprises lower reliability (flood take) water that is in excess of hydro-electric generation requirements, i.e. it is only available at times of flood or spilling of hydro-electric dams associated with high flow events. The majority (9,439.8 ML) of Surety 8 water is allocated on an annual basis with a smaller volume (752 ML) allocated in the winter period only.

4.2 Take Periods

Most water licences in the Meander River catchment authorise taking of water in two take periods that coincide with periods of low (summer) and/or high (winter) flows in the Meander River (refer to Figure 2). The summer take period is between 1 December and 30 April and the winter take period is between 1 May and 30 November.

4.3 Allocations on an Annual Basis

On an annual basis, the total volume of water potentially available for allocation in the Meander River catchment is 133,122 ML, which represents 20% of the median annual yield of this catchment. Of this volume, 103,310 ML has a notional reliability of greater than 80% and 29,812 ML is between 50-80% reliable.

The total volume of existing allocations (annual takeable volume, November 2014) is 51,511 ML. Therefore, the volume of water allocated represents 8% of the median annual yield (652,042 ML), or 38% of the available allocation limit for the Meander River catchment.

4.4 Allocation Limits

Allocation limits are set by applying the Department's allocation policy (see [DPIPWE - Water Resources Policies and Guidelines](#)). Modelled Meander River catchment yields, based on CSIRO Dry Climate (Cdry) scenario (Ling et al 2009), are used to calculate allocation limits for each management zone. This dataset accounts for a future dry climate change scenario (refer to Water Management Statements – Background Information (DPIPWE 2016)).

The Meander River catchment falls within the South Esk River Hydro-electric District, and consequently, the water resources in the catchment are in effect already fully committed. Hydro Tasmania holds a special licence under Division 6 of Part 6 of the Act, conferring on it the right to all the water resources of this catchment. Exceptions include rights held under Part 5 of the Act, and by other licensees whose rights were either granted at the commencement of the Act to replace existing rights, or have been granted since by means of a transfer with the agreement of Hydro Tasmania. For this reason, the allocation limits established in this Statement do not identify additional water for allocation, but rather the volume of water potentially available for new allocations by means of transfer from Hydro Tasmania. Therefore, the granting of new allocations will be within the specified limits of existing allocation policies and guidelines and subject to the agreement of Hydro Tasmania.

4.4.1 Summer Take Allocations

A total volume of 9,607 ML of water is available at greater than 80% reliability in the summer take period (refer to Table 3). As at November 2014, the total volume of existing allocations during the summer take period was 7,952 ML.

Therefore, 1,675 ML of water at $\geq 80\%$ reliability is potentially available for further consumptive water use in the summer take period, conditional on Hydro Tasmania's approval to transfer the water.

DPIPWE is, however, currently reviewing summer allocations in all catchments. While this review is undertaken, applications for summer water will not be progressed.

Table 3: Summer period water allocation limits and existing allocations.

Management Zone	Volume (ML)		
	Allocation Limits ($\geq 80\%$ Reliability ³)	Existing Allocations	Available For Further Allocation ⁴
1. Upper Meander River	4,829	4,829 ⁵	0
2. Western Creek	2,310	997	1,313
3. Quamby Brook	595	109	486
4. Whitmore Creek	279	70	209
5. Liffey River	2,543	1,624	919
6. Lower Meander River	1,456	303	1,153
Meander River catchment (at outlet)	9,607	7,932	1,675

³ Allocation limits at 80% reliability is the volume of water expected to be available 8 years in 10.

⁴ Water resources fully committed under Hydro Tasmania's special licence. New allocations require formal consent and transfer of allocations from Hydro Tasmania.

⁵ Includes 4,785 ML proportion of TI's annual allocation (25,500 ML) apportioned to the summer take period.

4.4.3 Winter Take Allocations

A total volume of 123,513 ML of water is potentially available at greater than 50% reliability in the winter take period (refer to Table 4).

As at November 2014, the total volume of existing allocations during the winter take period is 33,017 ML (comprised of 29,958 ML at Surety 5 and 3,059 ML at Surety 6).

Therefore, 90,498 ML of water is potentially available for further consumptive water use in the winter take period, conditional on Hydro Tasmania's approval to transfer the water.

Table 4: Winter period water allocation limits and existing allocations.

Management Zone	Surety Level	Allocation Limits (ML)		Existing Allocations (ML)	Available for Allocation ⁶ (ML)
		80% ⁷	50% ⁸		
1. Upper Meander River	5	46,113	-	21,109 ⁹	25,004
	6	-	8,973	0	8,973
2. Western Creek	5	19,333	-	2,043	17,290
	6	-	2,764	417	1,966
3. Quamby Brook	5	10,577	-	1,801	8,776
	6	-	6,178	583	5,595
4. Whitemore Creek	5	2,974	-	1,880	1,094
	6	-	1,156	268	888
5. Liffey River	5	19,634	-	651	18,893
	6	-	5,921	533	5,388
6. Lower Meander River	5	18,454	-	2,474	16,071
	6	-	7,828	1,258	6,570
Meander River Catchment (at outlet)	5	93,703	-	29,958	63,745
	6	-	29,812	3,059	26,753

⁶ Water resources fully committed under Hydro Tasmania's special licence. New allocations require formal consent and transfer of allocations from Hydro Tasmania.

⁷ Allocation limits at 80% reliability is the volume of water expected to be available 8 years in 10.

⁸ Allocation limits at 50% reliability is the volume of water expected to be available 5 years in 10.

⁹ Includes 20,715 ML of TI's annual allocation (25,500ML) apportioned to the winter take period.

4.6 Surety 8 Water Allocations

A total volume of 10,192 ML of Surety 8 water is allocated (Table 5). Of this volume, 9,440 ML is allocated on an annual basis and 752 ML is allocated in the winter take period only. This water is only available under opportunistic high flow (flood) triggers (see Section 5.2).

Table 5: Total volume of existing Surety 8 allocations in the Meander River catchment (November 2014).

Management Zone	Volume (ML)
1. Upper Meander River	24
2. Western Creek	878
3. Quamby Brook	1,082
4. Whitemore Creek	1,200
5. Liffey River	3,414
6. Lower Meander River	3,595
Meander River Catchment (at outlet)	10,192

5 WATER ACCESS RULES

This section describes the rules that apply to the taking of water on a daily basis in the Meander River catchment.

In addition to these rules, water licences also specify conditions that apply to the taking of water at the offtake location. Together, these rules and water licence conditions serve to protect the components of the natural flow regime on a daily basis.

5.1 Restriction Management

When the measured flow at the specified flow gauging stations drops to a set threshold (Table 6), the taking of water from a watercourse, other than for specified purposes through rights under Part 5 of the Act, is restricted. In the Meander River catchment, a staged restriction approach has been adopted (from lowest to highest Surety Level) (see [DPIPWE - Water Restrictions](#) for current restriction notices that are in place).

Flow thresholds for surface water are measured at the relevant stream flow gauging stations shown in Figure 1 and Table 6 (refer to the [DPIPWE - Water Data](#) for information on current flow conditions or [DPIPWE – WIST](#) for historic flow information).

Table 6: Daily restriction management thresholds in the Meander River catchment.

River	ML/day	Stage	Restriction	Comment
Liffey River u/s and d/s West Channel	15 at West Channel or 7 at Carrick	1	Take reduced to a total of 1 ML/day per licence (Sureties 5 & 6 combined)	Stream level should rise
	15 at West Channel or 7 at Carrick	2	Total ban on Surety 6. Surety 5 limited to authorised amount.	
	10 at West Channel or 7 at Carrick	3	Total ban on Surety 5 and Surety 6 takes	
Quamby Brook d/s Eden Rivulet	5	1	100% ban on Surety 6 direct takes on first reaching trigger	Stream flow should rise
	5	2	100% ban on all Surety 5 and Surety 6 takes	
Western Creek, Dale Brook & Blue Drain at Bankton Road Bridge	5	1	Takes restrict per licence to 1 ML/day (Surety 5 & 6 combined)	
	5	2	Takes restricted per licence to 0.5 ML/day (Surety 5 & 6 combined)	
	5	3	Total ban on all Surety 5 & 6 takes	

5.2 Surety 8 – Rules for Opportunistic Flood Takes

The Tripartite Memorandum of Understanding (MoU) between DPIPWE, the Tasmanian Farmers & Graziers Association (TFGA) and Hydro Tasmania 2004, specifies rules for accessing flood take allocations at Surety 8.

Under the terms of the MoU access to this water is provided by Hydro Tasmania during periods of high flow when Trevallyn dam is spilling (approximately 70 days per year); when flows are in excess of Hydro Tasmania's capacity to generate power from the water.

Once relevant triggers are met (see Sections 5.2.1 and 5.2.2 below), licensed water users may take Surety 8 allocations in accordance with licences for a minimum of five (5) consecutive days. This is dependent on environmental requirements being met and authorisation being provided by DPIPWE. The take period may be extended for up to five (5) more days or until such time as Trevallyn Dam ceases to spill, on approval by Hydro Tasmania and with the written authorisation of DPIPWE.

Refer to [current irrigation restrictions and other notifications](#) for information on current flood take notices. If a notice is not in place then there is no authorisation to take Surety 8 allocations.

5.2.1 Greater South Esk Catchment - Surety 8 Flood Take Trigger

DPIPWE may authorise Surety 8 takes for 5 days when the sum of the flows measured at the three gauging stations specified in Table 7 exceed 70 cumecs in the greater South Esk catchment.

Table 7: Long-term flow sites used to determine Surety 8 flood take triggers in the greater South Esk catchment.

Site Number	Site Name
162	Meander at Deloraine Bridge
150	South Esk at Llewellyn
18312	Macquarie downstream Elizabeth

5.2.2 Meander Sub-catchment - Surety 8 Flood Take Trigger

Table 8 shows the Meander sub-catchment triggers for Surety 8 flood takes under the MoU. These triggers apply when the Meander sub-catchment has flood flows but the catchment-wide trigger has not been met.

Sub-catchment triggers at Hydro Tasmania's Meander at Deloraine flow gauging station (site 162) are set based on a flow that is exceeded 20% of the time or about 70 days per year on average¹⁰.

Table 8: The sub-catchment trigger flows for accessing flood takes in the Meander River.

Site name	Summer Trigger (1 November - 31 July)		Winter Trigger (1 August - 31 October)	
	ML/day	cumecs	ML/day	cumecs
Meander at Deloraine Bridge (Site Number 162)	1950	22.6	2600	30.1

5.3 Groundwater Management

Any extraction of groundwater in this catchment 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 ([DPIPWE - Groundwater](#)). Under Part 5 of the Act, groundwater can be extracted without a licence.

Currently, there are 560 registered bores, situated mostly in the lower parts of the Meander River catchment. Of these, 236 bores are listed as functioning, with an additional 76 noted as capped awaiting further development (DPIPWE GWIMS database; see Appendix A). The yield from most bores is generally low, and while the total volume of water being extracted

¹⁰ Memorandum of Understanding Between Hydro Tasmania the TFGA and DPIPWE (2004) Attachment B Flood Take Rules – South Esk Basin

cannot accurately be estimated, it is thought that groundwater use is low relative to surface water. Consequently, the level of risk to groundwater systems and groundwater dependent ecosystem values is considered to be low.

DPIPWE maintains a register of groundwater bores installed, and groundwater level is monitored at selected locations in the catchment (see Figure 1 and Appendix B for groundwater monitoring locations). Where necessary, future policy and management measures may be implemented, commensurate with the level of risk. Management of groundwater extraction may include, but not be limited to, the application of restrictions to commercial groundwater extraction under Part 5 water rights at the same time as those applied to licenced surface water allocations.

6 ADAPTIVE MANAGEMENT FOR THIS CATCHMENT

As at November 2014, the existing allocations in the Meander River catchment are still well within sustainable allocation limits (refer to Section 4.4). The water regime provided under the NWI consistent policies and management arrangements identified in this Statement retains much of the variability of the natural flow regime. By specifying allocation limits that preserve approximately 80% of the median annual flow in the river system, and access rules and licence conditions that provide for the day-to-day management of water extractions, the current management arrangements ensure that water extraction is fair and orderly and does not significantly affect ecologically important parts of the flow regime. Therefore, the risks to water resources and environmental values in this catchment are considered to be low.

If the level of allocation exceeds 70% of the allocation limit or if new risks emerge, DPIPWE in consultation with the community may consider the need to review future management arrangements. This Statement will also be reviewed on an ongoing basis, to reflect periodic changes to relevant Departmental policies and other management arrangements. Periodic reviews of the effectiveness of access rules and 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.

The Department's state-wide water monitoring program underpins ongoing water management decisions in the Meander River catchment (refer to Water Management Statements – Background Information (DPIPWE 2016)) and some monitoring of the aquatic environment is undertaken on a routine basis. The relevant stream flow gauging sites for the catchment are listed in Appendix B.

Statutory water management planning, in accordance with Part 4 of the Act, may be required if there is strong competition for water resources. Statutory processes ensure that water allocation decisions that are outside the default policy frameworks are developed using detailed social, environmental and economic assessments, and include transparent community consultation. Statutory planning processes ensure that allocation decisions that are outside the bounds of the allocation policy framework are consistent with the *Water Management Act 1999* and NWI policy objectives.

7 REFERENCES

Davies, P. E. and Humphries, P. (1996). *An environmental flow study of the Meander, Macquarie and South Esk rivers, Tasmania*. Report to the Department of Primary Industries and Fisheries, Hobart.

DPIPWE. (2015). *Assessment of Freshwater Ecosystem Values in the Meander River Catchment*. WMP 15/01. Department of Primary Industries, Parks, Water and Environment, Hobart.

DPIPWE. (2016). *Water Management Statements: Background Information*, Department of Primary Industries, Water and Environment, Hobart.

Hydro Tasmania. (2002). *Meander Dam Feasibility Studies: Environmental feasibility report*. Report No. TAS-106880-CR-01.

Ling, F. L. N, Gupta, V., Willis, M., Bennett, J. C., Robinson, K. A., Paudel, K., Post, D. A. and Marvanek, S. (2009). *River modelling for Tasmania. Volume 4: the South Esk region*. A report to the Australian Government from the CSIRO Tasmania Sustainable Yields Project, CSIRO Water for a Healthy Country Flagship, Australia.

APPENDIX A – INFORMATION SOURCES SUPPORTING THIS STATEMENT

Freshwater-dependent ecosystem values in this catchment were assessed using the Conservation of Freshwater Ecosystems Values (CFEV) assessment framework ([CFEV Program](#)).

Hydrological character assessment for this catchment uses hydrological modelling of the historic flow period (1970-2007) for the Meander River ([Hydrological Modelling Reports](#)). Data is from the TascatchSIM models using SILO rainfall and evaporation data over the period 1970-2007. The model output is for the “natural” flow scenario i.e. no dams, diversions or extractions are included.

Observed flows at Meander River at Strathbridge (952) stream gauging station are also used to compare the changes in flows related to the development of the Meander Dam and current management provisions. Observed flows before meander Dam was built (1985-2007) are compared to flows post development of the Meander Dam (2008-2015).

Information about existing entitlements were extracted from the Water Information Management System (WIMS) for the Meander River catchment in November 2014. Data were assessed to identify the volume, timing and distribution of licensed water entitlements from the Meander River catchment. WIMS is the Department’s official register of water licences and entitlements. Information on water entitlements can be accessed via the [Water Information System of Tasmania](#) (WIST).

Allocation limits and water available for allocation for this catchment were 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 (C_{dry}) climate scenario derived by the Tasmanian Sustainable Yields Project. The model is run using rainfall and evaporation data over an 84 year period for the Meander River catchment. This model output produces modelled yields representing a dry future climate scenario.

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 was assessed using data extracted from the Groundwater Information Management System (GWIMS) database in November 2014. This information can also be accessed via the [Groundwater Information Access Portal](#).

APPENDIX B – STREAM FLOW GAUGING AND GROUNDWATER MONITORING STATIONS

Stream flow measured at 15 minute instantaneous intervals at each of the gauging stations.

Water resource	Gauging station	Easting	Northing
Liffey River at Carrick	164	500153	5401881
Meander River at Strathbridge	852	492101	5407225
Western Creek at Bankton Road Bridge	3395	461415	5395749
Liffey River upstream West Channel	18209	495955	5390840
Jackeys Creek downstream Jackeys Marsh	18221	471342	5386301

Groundwater monitoring stations where standing water depth is recorded hourly or when a change water level occurs.

Water resource	Monitoring station	Easting	Northing
Hagley Bore on Black Lane	5512	492829	5405381
Osmaston Bore at Osmaston Road	5521	480025	5398765

APPENDIX C – WATER MANAGEMENT ROLES AND RESPONSIBILITIES

Key persons responsible for water management under the *Water Management Act 1999* in the Meander River catchment.

Person	Role	Responsibility
The Minister	Administration of water under the Act	Administration of the water resources of Tasmania in accordance with the Act and other relevant national water policy commitments.
Department of Primary Industries Parks, Water & Environment (DPIPWE)	Delegated authority to implement administration of the Act where provided by the Minister	Administration of the Act where devolved to DPIPWE. This includes administration, licensing and allocation of water in accordance with policies and guidelines approved by the Minister.
Water Licensees and Part 5 Right holders	Authority to take water under the Act	Taking of water in accordance with water licence conditions and other relevant provisions under the Act.
Water Entity - Hydro Tasmania	Authority to take water under the Act and responsibility for management of water in accordance with its special licence in Hydro-electric districts	Administration of water licenced to Hydro Tasmania in the Greater South Esk Hydro-electric Water District in accordance with conditions of the special licence and other relevant provisions under the Act.
Water Entity - Tasmanian Irrigation Pty. Ltd.	Authority to take water under the Act and administration and management of supply of irrigation rights in accordance with the relevant provisions of the Act and the <i>Irrigation Clauses Act, 1973</i>	Administration of the supply of irrigation rights in the following Water Districts (see Figure 1): <ul style="list-style-type: none"> Whitemore Irrigation District Greater Meander Valley Irrigation District (In addition to responsibility as a water licence holder)
Water Entity - Cressy Longford Irrigation Scheme Ltd.	Authority to take water under the Act and administration of the supply of irrigation rights in accordance with the relevant provisions of the Act and the <i>Irrigation Clauses Act, 1973</i>	Administration of the supply of irrigation rights in the Cressy Longford Irrigation Water District.