WATER USE AND MANAGEMENT ARRANGEMENTS

for the

SOUTH ESK RIVER

(above Macquarie River junction)

Water Policy and Planning Branch
Water Resources Division
Department of Primary Industries and Water

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The Department of Primary Industries and Water
The Department of Primary Industries and Water provides leadership in the sustainable management and development of Tasmania's resources. The Mission of the Department is to advance Tasmania's prosperity through the sustainable development of our natural resources and the conservation of our natural and cultural heritage for the future.

The Water Resources Division provides a focus for water management and water development in Tasmania through a diverse range of functions including the design of policy and regulatory frameworks to ensure sustainable use of the surface water and groundwater resources; monitoring, assessment and reporting on the condition of the State's freshwater resources; facilitation of infrastructure development projects to ensure the efficient and sustainable supply of water; and implementation of the *Water Management Act 1999*, related legislation and the State Water Development Plan.

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1 Introduction

This report provides an assessment of the water usage, current allocations and the management arrangements for water resources within the South Esk River (above Macquarie River junction) catchment. It has been prepared by the Water Policy and Planning Branch and will be used as background information for the development of a Water Management Plan for this catchment.

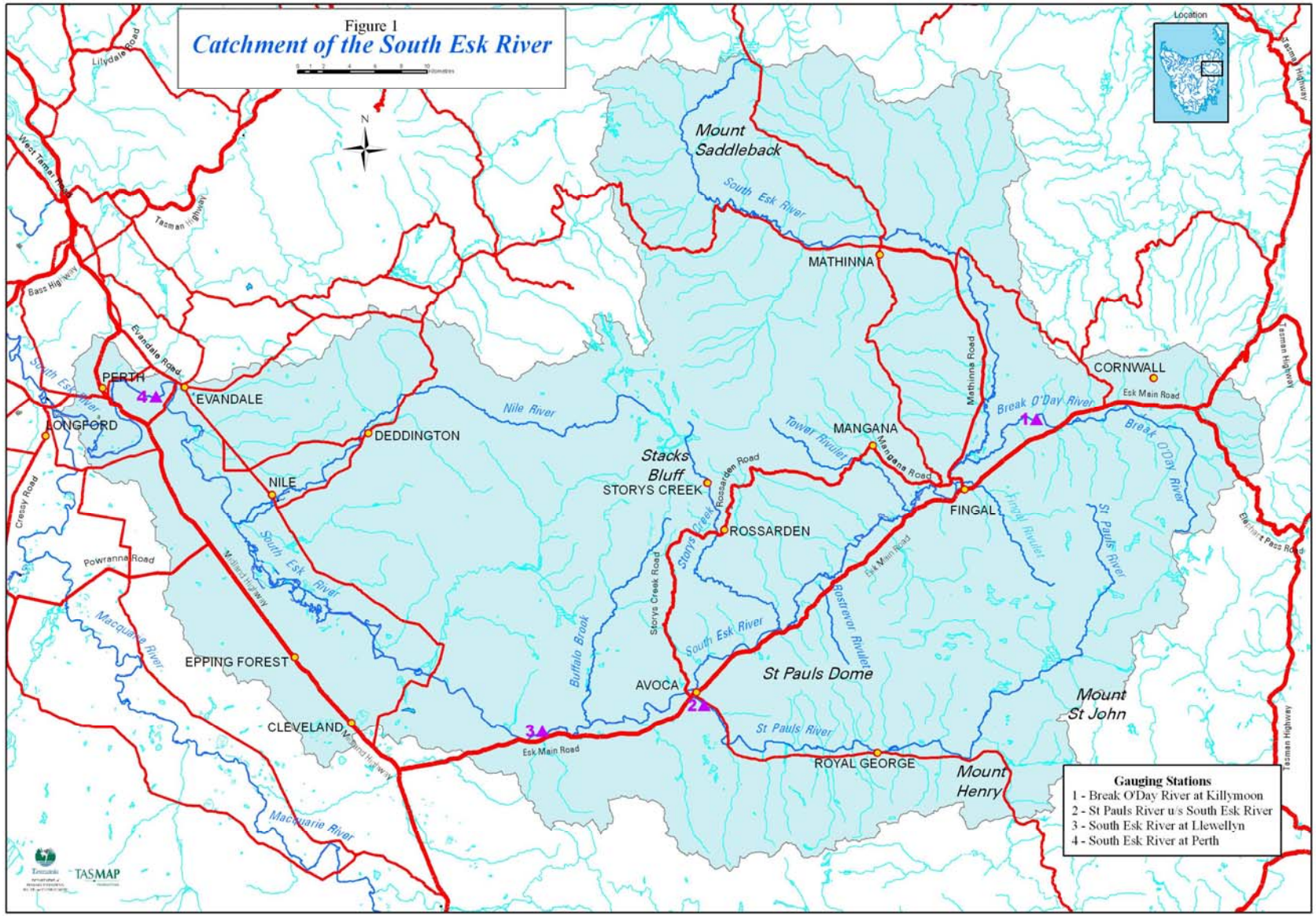
2 About the catchment

The South Esk catchment is one of the largest agricultural catchments in Tasmania, covering approximately 3,350 km2. All runoff from the catchment leaves via the South Esk River, which travels some 230 km from above Mathinna at the top of the catchment to the Tamar Estuary in Launceston. Major tributaries of the South Esk River are the Nile, St Pauls, Macquarie, Lake and Break O'day Rivers.

There is a distinct south-to-north trend to rainfall in the catchment. The southern region of the catchment around Epping Forrest, Cleveland and Avoca has the lowest rainfall in Tasmania with an average annual rainfall of around 550 mm. Rainfall steadily increases with elevation and is highest around the Ben Lomond Ranges and Ben Nevis, where annual rainfall exceeds 1,400 mm.

These mountains are covered by snow for up to several months of the year, and Ben Lomond National Park is a locally popular for skiing. Throughout the middle and lower catchment, irrigated and broad-acre cropping is widespread, along with grazing of beef cattle and sheep. Native forest harvesting and tree plantations (hardwood and softwood) occur in the higher elevations east of Ben Lomond. The catchment around Storys Creek and Rossarden also has a long history of mining, and acid drainage from this area continues to impact on the environment of the South Esk River. Mining for coal is also currently undertaken east of Fingal.

Catchment Map



3 Water Usage

Water usage within the catchment is primarily surface water with little groundwater used. Use of fresh water resources comprises of town water supply, stock and domestic, irrigation, fish farm and power generation.

Water used for town water, stock and domestic and fish farm operations rely on taking water from permanent stream flows where irrigation and power generation usage is broken up into river run and/or dam storage.

Water usage figures were taken from a water usage survey during the 2002-03 season. Water usage data was collected for the 1999/00 to 2002/03 period.

The usage figures identified on average water usage of 17986ML within the three given seasons.

Table 1 shows the annual surveyed water usage for the 1999-2003 period.

Table 1-Annual survey water usage for the 1999-2003 survey period

Upper Esk	**Avoca to Break O'Day**	**St Pauls River**	**Nile River**	**Lower Esk**	**TOTAL**
3060	4025	422	3394	7085	**17986**

4 Current Allocations

There are at present 86 water licence holders within the catchment ranging from Surety 1 (town water and stock and domestic) to Surety 8 (flood harvesting).

Table 2 provides a breakdown of the surety levels and their respective allocation volumes and Table 3 provides a list of current allocation for each sub-catchment by purpose. Table 4 shows storage allocation for each subcatchment.

There is a fish farm operation in the headwaters of the catchment with an annual allocation of 9490ML. This water is returned to the stream as it is operated as a flow in/flow out system and as such in non-consumptive. The remaining allocations are consumptive.

Table 2-Surety level allocations for each subcatchment (ML)

	Upper Esk	**Avoca to Break O'Day**	**St Pauls River**	**Nile River**	**Lower Esk**	**TOTAL**
Surety 1 (direct)	201.5	90.9	0	0	30.4	**322.8**
Surety 3 (direct)	0	0	197.1	7320	0	**7517.1**
Surety 5 (direct)	10054.6	1247.2	239.25	45	3635.3	**15221.35**
Surety 5 (storage)	4083.5	232	371	2913.5	4768.65	**12368.65**
Surety 6 (direct)	2045	845	300	10	4640	**7840**
Surety 6 (storage)	0	0	0	0	3948	**3948**
Surety 8 (storage)	0	375	0	0	1983	**2358**
TOTAL	**16384.6**	**2790.1**	**1107.35**	**10288.5**	**19005.35**	**49575.9**

Table 3 Current allocations by purpose for each subcatchment (ML)

	Upper Esk	**Avoca to Break O'Day**	**St Pauls River**	**Nile River**	**Lower Esk**	**TOTAL**
Irrigation	6592.5	2339	1107.4	10288.5	18959.6	**39287**
Fish Farm	9490	0	0	0	0	**9490**
Mining	0	314	0	0	0	**314**
Water Supply	302.1	136.7	0	0	45.80	**484.6**
TOTAL	**16384.6**	**2789.7**	**1107.4**	**10288.5**	**19005.4**	**49575.6**

Table 4 Storage allocation in the subcatchments

	Upper Esk	Avoca to Break O'Day	St Pauls River	Nile River	Lower Esk	TOTAL
Storage Allocations (ML)	**4083.5**	**607**	**371**	**2913.5**	**10699.7**	**18674.4**
No of allocations	**12**	**6**	**10**	**8**	**35**	**71**

4.1 Flow Meters

All water users with direct take allocations are required to have flow meters installed on all off takes points and report their water usage information to the Department. A weekly record to be maintained throughout the season and provided to the Department by June each year. During restriction periods however, daily records are to be kept and forwarded to the DPIW at the end of each restriction week.

There are currently 49 meters installed with another 17 required to be installed, identified as a result of a field survey undertaken by the regional Water Ranger during the 2007-08 irrigation season.

5 Management Arrangements

5.1 South Esk Hydro District

Hydro Tasmania has the right (special licence-Surety 4) to all the water resource within the South Esk Hydro District for power generation.

Hydro Tasmania prior to January 2000 allowed water to be allocated to water users for irrigation and other commercial uses were as town water was allowed to be taken under various Municipal Acts.

On the 13th January 2004 a Memorandum of Understanding MOU was signed between Hydro Tasmania, The Tasmanian Farmers and Graziers Association and the Department of Primary Industries, Water and Environment. This set out a framework for future water allocations within the catchment. The preceding sections provide details on the framework.

5.1.1 Historical Use

The MOU recognises that some water users are taking in excess of their current allocation limits. It was agreed that this over usage would be recognised formally and placed on water users water licence as a permanent right. A survey was undertaken during 2003 to collect water usage data from the irrigation seasons 1999 to 2002 and adopted the highest annual usage figure. This included water taken under previous Temporary Allocation arrangements.

New Surety 6 allocation have been issued as a result of the 2003 water usage survey and as such water that had been used over and above existing allocations have been recognised.

5.1.2 Flood Takes

It was agreed that taking flows during high flow periods would not impact on the capacity for Hydro Tasmania to generate power. A catchment wide trigger was set at 70 cumecs based on the sum of the flows at the three gauging stations within the District. Also, sub-catchment triggers were set for the three sub-catchments, which reflect that these flows would equate to a Trevallyn Dam spill condition.

As part of the flood flow management arrangements, DPIW determined that a minimum flow must be maintained before a sub-catchment flood take is approved. The flood take will be approved subject to the flows exceeding the minimum flow level for the relevant month.

Table 4 provides the trigger flows for each sub-catchment and table 5 provides the minimum flows levels that need to be exceeded prior to flood take being approved.

Table 4-Sub-catchment trigger levels

Site name	Summer Trigger		Winter Trigger	
	(Ml / day)	(cumecs)	(Ml / day)	(cumecs)
Meander @ Deloraine	2300	22.6	2600	30.1
South Esk @ Llewellyn	2020	23.4	1750	20.3
Macquarie d/s Elizabeth	450	5.2	350	4.1

Source: Memorandum of Understanding between Hydro Tasmania, The Tasmanian Farmers and Graziers Association and the Department of Primary Industry, Water and Environment, 2004

Table 5-Sub-catchment minimum flow requirements (ML/day)

Site name	Dec-April	May	June	July	Aug	Sep	Oct	Nov
Meander @ Strathbridge	175	320	810	1610	1710	1830	650	390
South Esk @ Llewellyn	172	250	400	700	850	850	475	172
Macquarie d/s Elizabeth	86	86	175	460	360	230	110	86

5.1.3 Dams on Ephemeral Streams

Dams positioned on streams that stop flowing over summer months has been identified as ephemeral streams and as such dam owners are required to release a nominal flow during the flowing period and do not have to release flows during other times.

5.1.4 Large Dams

Where large dams in excess of 3,000ML are proposed the MOU requires the proponent to develop alternative arrangements with Hydro Tasmania and other stakeholders.

5.1.5 Water Trading

The MOU stipulates that any water allocation issued under these arrangements may not be traded on a permanent basis until the allocation issued under this agreement has been held for at least twelve months. If the property has changed hands prior to the twelve months the new owner is transferred the allocation on permanent basis. Temporary trading is allowed to take place during the twelve-month period.

5.1.6 Monitoring and Metering

Water users who received an allocation under the MOU agreement are required to install flow meters and report water usage information to the Department.

5.1.7 Non-flood water

An initial transfer of 10,000ML per annum agreed to be made available to dam permit holders who have obtained a permit to construct a dam since 1st July 1999. This water can be taken as either a fixed term or an absolute transfer at a maximum volume of ⅓ of storage capacity.

5.1.8 Review of MOU

It was agreed that this MOU was to continue for a ten-year period from signing and may be renewed for a further ten-year period with written approval from all parties

5.2 Restriction Management

The system is managed at two points within the catchment 1) St Pauls River at a site just up stream with the confluence of South Esk River (station number 18311) and 2) South Esk River at Llewellyn (Hydro Tasmania site).

Current restriction trigger levels for both systems are outlined in Table 6.

Table 6-Restriction Trigger levels

Sub-catchment name	Cease to Take ML/day	Stages
St Pauls River u/s South Esk River	1.5	• Stage 1 – 5ML/day (roster) • Stage 2 – 2ML/day (roster)
South Esk River at Llewellyn	40	• Stage 1- 125ML/day (50% S6) • Stage 2 - 105ML/day (100% S6) • Stage 3 – 86 ML/day (50% S5) • Stage 4 – 50ML/day (maximum 0.65ML/day S5, Tue, Thur and Sat) • Stage 5 – 40ML/day (100% S5)

5.2.1 Historical Restriction Management

The history of restriction is varied and relates to the stream flow conditions at the time, but over the last 5 or so seasons some level of restriction have been imposed and also including several bans for the last two seasons.

6 Dams

Current records stored in the Water Information Management System (WIMS) database shows 160 dam permits storing 40392ML with a high proportion used for irrigation. Dam storage capacity range from <1ML up to 2140ML with the average storage capacity being around 300ML. Table 6 shows the numbers of dam permits pre 2000 until mid 2008 either for irrigation or stock purpose. Table 7 provides yearly amounts of dams that have been approved and permits issued.

Storage allocations (table 4) are less than what is provided in table 7 as "Irrigation dams" this is due to the fact that dam permits and water allocations have not been approved at the same time. The Department is working through these applications in a timely manner.

Table 7 Dams permits for each sub-catchment

	Dam Permits	**Irrigation dams ML (permits)**	**Stock dams ML (permits)**	**TOTAL ML (permits)**
Pre 2000	113	23001 (94)	405 (19)	**23406 (113)**
2000	6	520 (5)	1.5 (1)	**521.5 (6)**
2001	11	4345 (11)	0	**4345 (11)**
2002	5	662 (5)	0	**662 (5)**
2003	6	1435 (6)	0	**1435 (6)**
2004	5	2664 (4)	8 (1)	**2672 (5)**
2005	5	1757 (4)	10 (1)	**1767 (5)**
2006	1	408.5 (1)	0	**408.5 (1)**
2007	6	5175 (6)	0	**5175 (6)**
2008	2	582 (2)	0	**582 (2)**
TOTAL	**160**	**39967.5 (138)**	**424.5 (22)**	**40392 (160)**