Water Act 1989

Stringybark Creek
Water Supply Protection Area
Stream Flow Management Plan 2007

Victoria
The Place To Be

MelbourneWater®

TABLE OF CONTENTS

Melbourne Water 100 Wellington Parade East Melbourne
PO Box 4342 Melbourne Victoria 3001 Telephone 131 722 Facsimile 03 9235 7200
melbournewater.com.au ISBN 0 9775858 2 4

1 PREFACE

Throughout Victoria, regional Sustainable Water Strategies consider actions to balance water supply and water demand and ensure healthy rivers. The Stringybark Creek Stream Flow Management Plan is an action to better manage the surface water resources of the Protection Area. It is an adaptive tool that integrates, over time, the recommendations of the Central Region Sustainable Water Strategy to manage the Protection Area's water supply, demand and river health.

A consultative committee, as listed below, has had input into the development of this Plan via extensive discussions and considerations of technical work. The committee recognises that its guidelines are set by the Minister, specifically on the levels of environmental flows.

The Stringybark Creek Stream Flow Management Plan consultative committee members:

Mr Gordon Johns (Chair)	Landholder
Mr Peter Burgi	Landholder
Mr Tyran Jones	Landholder
Mr Henry Kita	Landholder
Ms Patrica Moore	Landholder
Ms Amy McDonald	Environment Victoria
Mr Jamie Ewert	Melbourne Water

These members were appointed by the Minister for Water under section 29 of the *Water Act 1989*. These appointments were made following nomination by the Port Phillip and Westernport Catchment Management Authority and in consultation with Melbourne Water and the Victorian Farmers' Federation.

The Stringybark Creek Stream Flow Management Plan ex officio observers:

Mr Bill O'Connor	Department of Sustainability and Environment
Mr Ian Ada	Shire of Yarra Ranges
Ms Lizzy Skinner	Melbourne Water
Ms Penny Winbanks	Southern Rural Water

Past ex officio observers:

Ms Michelle Authier	Environment Protection Authority
Ms Simone Gunn	Melbourne Water
Mr Ian Morgans	Port Phillip and Westernport Catchment Management Authority
Mr Cameron Welsh	Southern Rural Water

2 GLOSSARY AND TERMS

"**Act**" means the *Water Act 1989*.

"**All-year licence**" means a licence issued under section 51(1)(a) or (ba) or 51(1A) of the Act to take and use water either:
(a) from a waterway; or
(b) from a dam, spring or soak,
between 1 January and 31 December in any year.

"**Catchment dam**" **means** a dam that is not located on a waterway and which captures rainfall run off from the catchment.

"**Cap**" **means t**he maximum combined volume of all licences permitted in the catchment.

"**Clegg Road gauging station**" means the stream gauging station number 229401A located on Stringybark Creek at Clegg Rd, Mt Evelyn.

"**Commercial use**" **means** water used for irrigation of produce to sell and for industrial uses (such as cooling or dairy washing) where there is or may be commercial gain.

"**Dam-filling licence**" **means** a licence to fill on or off stream dams during the dam-filling period. The licence is limited to the volume of the storage. Also known as a winter fill licence.

"**Dam-filling period**" **means** the wetter months of the year when flows are consistently high enough to allow additional water to be harvested over and above extraction by all-year licence holders and environmental flows.

"**Domestic and stock licence**" **(D&S) means** a licence issued under section 51(1)(a) of the Act to take and use water in, and around, a house or for watering of stock, but not for commercial purposes.

"**Environmental flow**" **means** a pattern of stream flows that maintains or improves aquatic ecosystems and their habitats by mimicking the size and timing of natural flows.

"**Ephemeral**" **means** a seasonal waterway where flows are usually intermittent. This means that the river or creek often stops flowing during dry periods.

"**Flow regime**" **means** the range of flows throughout the year which may include low flows, flood events, high flows, and cease to flow events.

"**Fresh**" **means** streamflow peaks occurring after rain. These peaks partially fill the river or creek channel for a number of days. They 'freshen' the river or creek by providing water to flush the system and rejuvenate the aquatic life.

"**Licence for the purpose of dam-filling**" means a licence issued under section 51(1)(a) or (ba) of the Act for the purpose of on-stream or off-stream dam-filling.

"**Macroinvertebrate**" **means an a**nimal species without a backbone that can be seen with the naked eye. Macroinvertebrates are commonly used as a measure of stream health.

"**Median**" **means t**he middle number of a set of numbers, such that half the results are greater than the median and half are less than the median.

"**Melbourne Water**" means Melbourne Water Corporation.

"**Minister**" means the Minister administering the *Water Act*.

"**ML**" **means m**egalitre; one million litres.

"**Natural flow**" **means t**he flow that would exist if there was no harvesting of water by dams or direct extraction. Natural flows are estimated by adding an approximation of the water taken out of the catchment back onto the flows that are recorded at a stream gauge.

"**Off-stream dam**" **means a** dam off a waterway that is filled with water pumped from a waterway.

"**On-stream dam**" means a dam that is located on a waterway that is filled directly by stream flow.

"**Protection Area**" means the Stringybark Creek Water Supply Protection Area

"**Reliability of supply**" **means t**he chance of fully obtaining a volume of water in any year, given as a percentage.

"**Sleeper licence**" **means a l**icence held but not utilised.

"**St Huberts Road gauging station**" means the stream gauging station proposed to be installed on Stringybark Creek at St Huberts Road, Coldstream.

"**Stream Flow Tender**" means the process by which the State Government invested with licence holders to implement environmental flows (refer to Appendix 2 for more details).

"**Water course**" means a natural channel that has a channel bed, banks which are steeper sides of a channel, and a flow of water which must be regular but not necessarily continuous. The flow must emanate from a source other than immediate rainfall, for example from springs, soaks or water percolating from soil.

"**Waterway**" has the same meaning as that defined in the Act.

3 THE STRINGYBARK CREEK PROTECTION AREA

The Water Supply Protection Area

This Plan applies to the surface waters of the Stringybark Creek Protection Area (Figure 1). In accordance with the *Water Act 1989*, Section 27, Melbourne Water advertised the Water Supply Protection Area for Stringybark Creek in August 2002. After receiving public submissions, the Minister for Water declared the Stringybark Creek catchment a Water Supply Protection Area in December 2002. The boundaries of the Protection Area may be inspected on Plan No. LEG./02-0027 at the Land Information Centre, Department of Sustainability and Environment.

A groundwater Water Supply Protection Area has also been declared for an area that overlaps part of the Stringybark Creek catchment (the Wandin area). A groundwater management plan is being prepared for this area by Southern Rural Water. Groundwater issues were not addressed in this plan.

Protection Area Description

Stringybark Creek begins near Silvan in the Dandenong Ranges. The stream generally flows north, passing through the areas of Wandin North and Gruyere, before turning northwest through Yering. Stringybark Creek joins with Olinda Creek around Yering just upstream of its confluence with the Yarra River. The creek is unregulated meaning that stream flows are governed by rainfall and springs rather than being controlled by Melbourne Water. It provides water for irrigators and stock and domestic users, either through direct diversion or water harvesting in farm dams.

The two main tributaries are Little Stringybark Creek and Log Creek. The Protection Area has an area of approximately 76 km^2. Little Stringybark Creek comprises approximately 8.5 km^2, and Log Creek comprises approximately 16 km^2. The Protection Area is predominantly cleared and used for agriculture, rural living and urban residential use. Agriculture in the Stringybark Creek Protection Area is an important component of the economic value of the Yarra Valley. Water is used for irrigation of orchards, berries, nurseries, cut flowers, vegetables, vineyards and dairy pasture.

There are two landfill sites in the Protection Area that are managed by the Shire of Yarra Ranges. The Coldsteam landfill site was closed in 2004. A rehabilitation plan is now being prepared along with EPA Victoria that includes leachate management. All leachate is managed on site and groundwater monitoring bores are regularly tested. The Mt Evelyn landfill site was closed in the 1970s. It has a clay topping that prevents further water seeping in. This cap was enhanced in 1995. Potential leaks were investigated in 1999 but did not appear to be impinging on the creek.

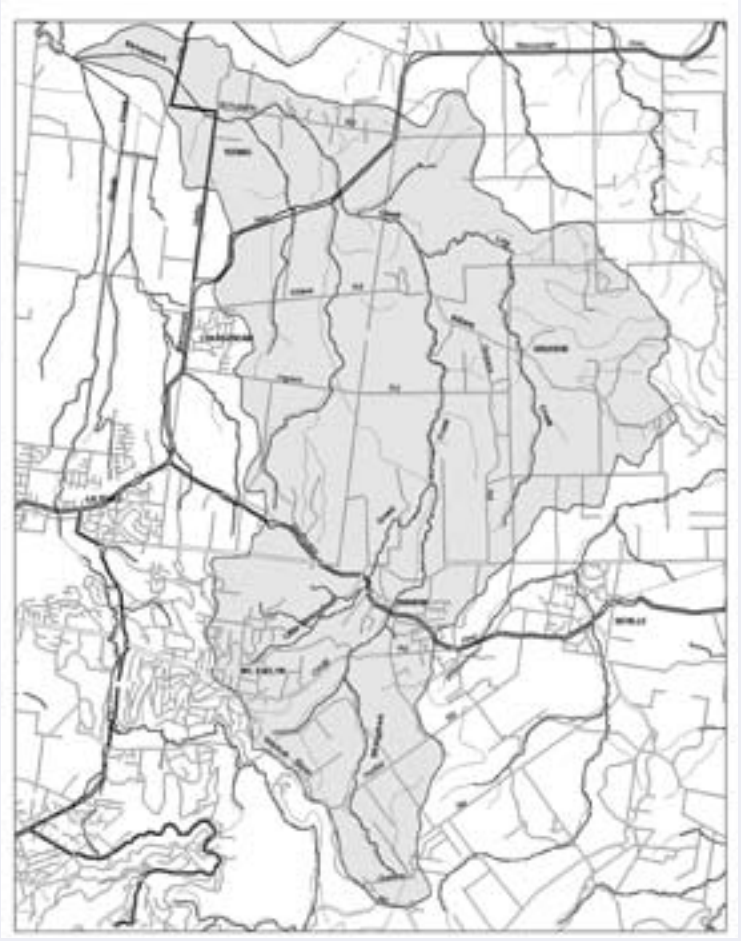


Figure 1 ***Stringybark Creek Water Supply Protection Area (also see inside back cover)***

General environmental values

The environmental condition or health of a river or creek is a product of many factors. Land use within the catchment, the presence of native streamside vegetation, the level of change from its natural state, water quality and water use all affect stream health.

The component of river health addressed within the scope of the Stream Flow Management Plans is the flow regime. While Stream Flow Management Plans recognise other pressures they do not specifically deal with these other issues. Instead Stream Flow Management Plans make rules regarding surface water allocation in the Protection Area.

The flows of a river or creek can be described by its patterns that may include high flows such as floods, very low flows and zero flow events and medium freshening flows that follow dry periods. All components of the flow regime are important to stream health, with local flora and fauna having become reliant on and adapted to particular flow patterns.

Small native migratory fish within the Yarra River system (including the Stringybark Creek) require flushing flows to trigger migrations. Sediment that accumulates on the streambed during the dry periods is flushed downstream by higher flows, deep pools are replenished by fresh water and the silt is removed.

Nine species of fish (four native and five exotic) have been recorded in the Stringybark Creek Protection Area, including Southern Pygmy Perch, Common Galaxias and Mountain Galaxias as well as native crays. None of the native fish are considered threatened in Victoria (Koster and Close, 2001). Other regionally important species, such as River Blackfish, have not been recorded.

Macroinvertebrate populations in the Stringybark Creek are generally less diverse than expected and tend to be dominated by families tolerant to pollution (Bessell-Brown 2000 and Koster and Close 2001).

Other reptile, amphibian, bird and mammal species have also been recorded in the Stringybark Creek, including some that are considered threatened in Victoria. These include (Koster and Close 2001):

- Growling Grass Frog *(Litoira raniformis)*
- Lace Monitor *(Varanus varius)*
- Nankeen Night Heron *(Nycticorax caladonicus)*
- Powerful Owl *(Ninox strenua)*

There are anecdotal sitings of many other species in the Protection Area such as Powerful Owls, Echidnas, Brown Snakes, Lace Monitors and the Yellow Helmeted Honeyeater.

There are also many instream and riparian flora recorded in the Stringybark Creek Protection Area including the swamp bush-pea *(Pultenaea weindorferi)*, considered rare in Victoria and Australia. However, the riparian vegetation is highly disturbed throughout most of the Protection Area, particularly upstream of Wandin and downstream of Yering where exotic grasses and willows are widespread. Some native vegetation is present throughout the middle reaches of the Protection Area, although exotic grasses and blackberry are also common. In the upper reaches, instream habitat conditions are affected by bank instability, sedimentation, dam diversions and on-stream dams. Sedimentation and bank erosion are also evident in the mid reaches of the Protection Area. Instream habitat conditions are extremely poor in the lower reaches of the Protection Area with extensive stream channelisation and dense stands of cumbungi which impede stream flow and reduce habitat diversity.

With Melbourne Water assistance a number of landholders are actively rehabilitating sections of the streamside through the Stream Frontage Management Program. Willow removal and the replanting of indigenous (locally native) vegetation will help to increase environmental values within the Stringybark Creek Protection Area.

Streamflows

In the past, there have been two stream flow gauging stations within the Stringybark Protection Area. One of these is currently located at Clegg Road and the other was located at Killara Road (see Figure 1). The Killara Road site was decommissioned and removed in the late 1980s.

For this Plan, data was required to cover the period 1965 to 2004, however gauge data at Killara Road is only available from 1979 to 1986 and at Clegg Road from 1987 to 2005. In these situations stream flow data is created, using available rainfall data and an understanding of the relationship between rainfall and streamflows.

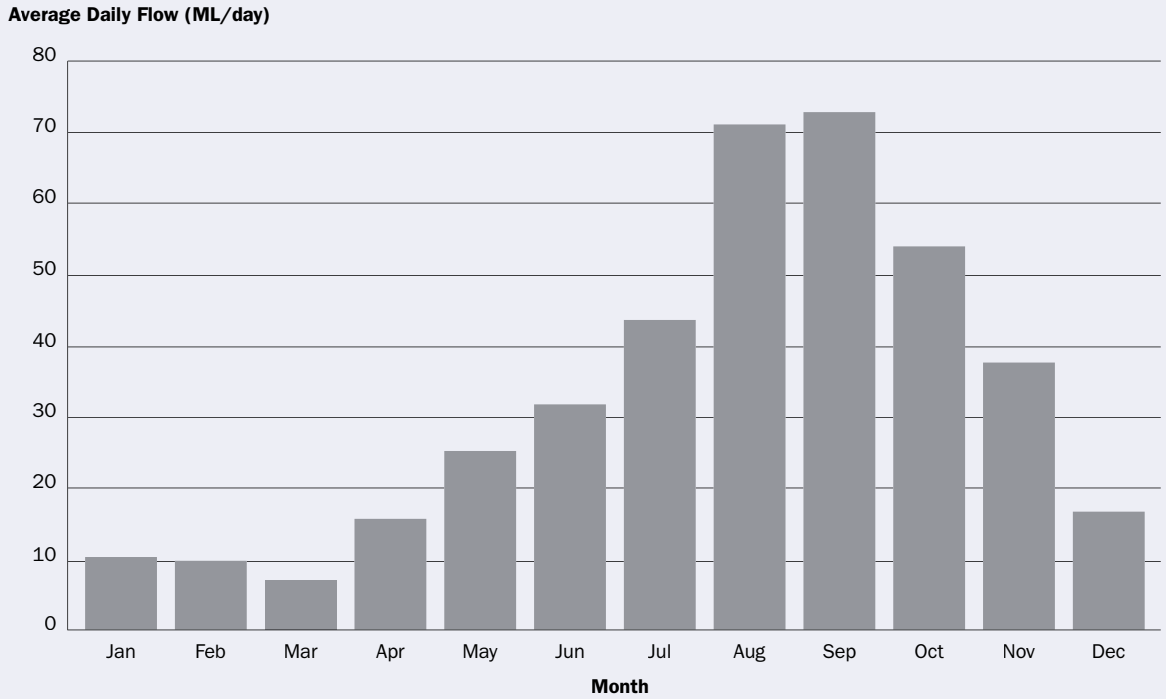
Consequently an analysis was undertaken to determine the local relationship between rainfall, evaporation and stream flow using the available gauged data. The relationship was then used to predict stream flows where no gauged stream flow data was available.

Stream flows were required at different points in the Protection Area, so a comparison was made between stream flows at Clegg Road and Killara Road over the same period. The increase in flow between these two locations was then used to predict stream flows at points between these two gauges, and also downstream of Killara Rd including the creek outlet at Melba Hwy (SKM 2002).

Stream flows within the Stringybark Creek Protection Area are highly seasonal. Anecdotal evidence and historic accounts indicate that Stringybark Creek has stopped flowing in dry years since at least 1912 (Sebire, 1912). The estimated stream flows for the last 40 years support this, with flow ceasing in approximately 1 in 4 years. This is considered to be a natural process that has no adverse environmental effect, providing the creek doesn't cease to flow any more frequently or for longer periods than historically. The average daily flows at the Protection Area outlet are lowest in March at 7ML/day, and highest in September at 73ML/day, although the use of averages masks the real variability of the stream flows.

The average annual flow at the Protection Area outlet is approximately 12,300ML/annum (SKM 2002). The average daily flows for each month are shown in Figure 2 to highlight the wetter and drier months.

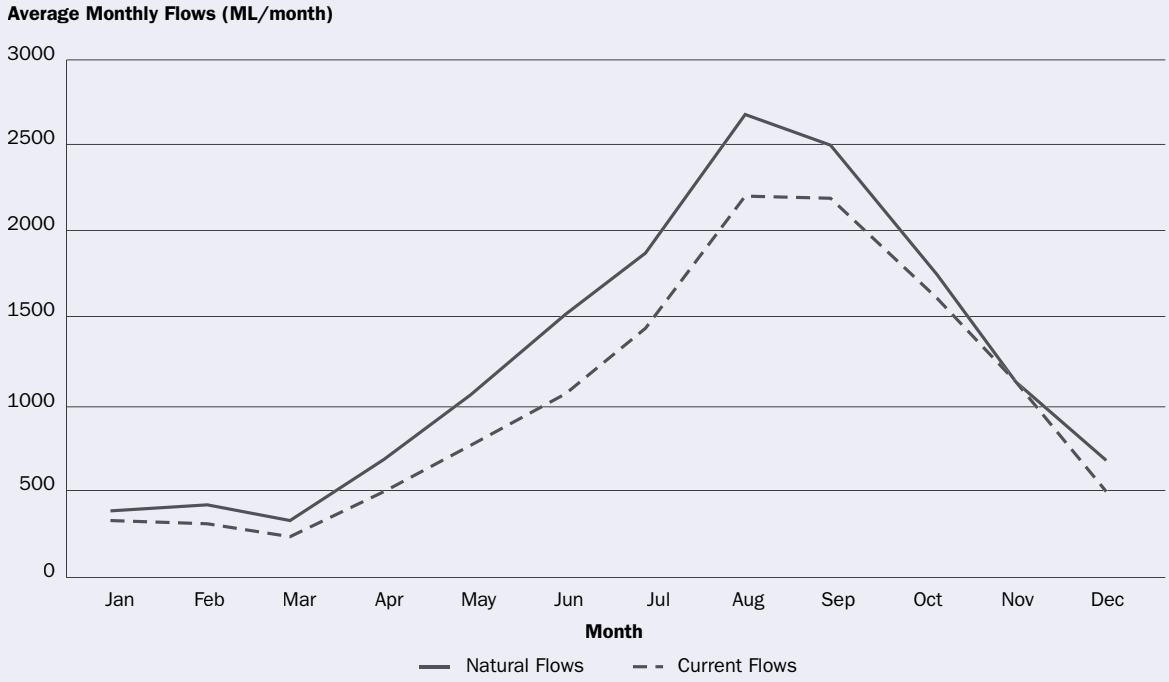
Figure 2 ***Average daily flows for each month at the Stringybark Creek*** *Protection Area* ***outlet 1965-2004 with current levels of diversions.***



Current flows compared to natural flows

A hydrologic computer model was developed to spatially represent the flows and diversions in the Protection Area, and to assess the impacts on water users under several flow management scenarios. The model represents stream flows and irrigation at different points in the Protection Area and allows 'what if' questions to be asked to determine the likely changes to flows on irrigator supplies if conditions are changed. The model provides an opportunity to estimate the change between natural conditions and those currently observed in the Protection Area. Natural conditions occur when water is not harvested from the Protection Area. The modelling found that current water harvesting practices in the Stringybark Creek Protection Area result in a reduction in flows compared with natural conditions, which is represented in Figure 3 below.

Figure 3 ***Average monthly flows under current conditions and natural flows 1965-2004***



The Protection Area contains a large number of on-stream dams, particularly in the upper reaches of Stringybark Creek around Wandin. It is likely that these dams leak, providing a small source of additional water to the Creek over dry periods. The extent of this leakage is unknown, however it may have the effect of helping to maintain stream flows. Therefore, while the total amount of flow is lower than it naturally would be, the stream may now be maintaining its base flow more frequently.

Pressures on agriculture in the Yarra Valley

Despite being part of the Melbourne 2030 Greenwedge zone that prevents growth of urban development in the Stringybark Protection Area, some farmers are feeling pressure from increased land values, increased hobby farming and landholders for lifestyle and tourism development. There is concern that this pressure will result in reduced viability of farming activity in the Stringybark Protection Area.

4 OBJECT OF THE STREAM FLOW MANAGEMENT PLAN

The Stream Flow Management Plan (the Plan) is a legal document prepared under the *Water Act 1989*. The general object of this Plan prescribed by section 32A(1) of the Act is "to make sure that the water resources of the "Water Supply Protection Area" are managed in an equitable manner and so as to ensure the long-term sustainability of those resources".

The Stringybark Creek Stream Flow Management Plan Consultative Committee developed more specific objectives for this Plan. These are:

a. to ensure the surface water resources of the Stringybark Creek Water Supply Protection Area are equitably shared between water users and the environment,
b. to quantify total water use within the Protection Area including all stream flow and surface waters,
c. to ensure, where possible, that licence holders are able to access their full licence entitlement,
d. to attempt to help improve water quality in accordance with the SEPP (Waters of Victoria) Schedule 7 Waters of the Yarra Catchment (EPA, 1999),
e. to attempt to maintain existing species diversity and populations of aquatic flora and fauna and, where possible, provide conditions that will encourage recolonisation of the Stringybark Creek by fish species that can now utilise the upper Yarra system because of the Dights Falls fishway,
f. to resolve areas of limited knowledge and/or understanding to more adequately inform future plan development and review, and
g. to develop a monitoring and review program to determine the effectiveness of the agreed environmental flows.

5 ADMINISTRATION AND ENFORCEMENT

Melbourne Water has the duty of administering and enforcing this Plan. It is responsible for ensuring that:

> the metering and monitoring program is undertaken;
> licence holders comply with rosters, restrictions and licence conditions;
> licences are issued with the appropriate licence conditions; and
> illegal water use does not occur.

6 DEVELOPMENT OF THE PLAN

What is a Stream Flow Management Plan?

A plan defines the total amount of water in a Water Supply Protection Area and prescribes how it will be shared between water users and the environment. It aims to recognise the needs of existing and future water users whilst attempting to maintain or improve waterway health by protecting minimum flows for the environment. Providing sufficient environmental flows to achieve healthy rivers is a key component of ensuring the long-term sustainability of the water resource.

Stream Flow Management Plans in the Yarra River basin

This Plan has been prepared as part of Melbourne Water's program for managing priority catchments throughout the Yarra River basin. Plans have already been prepared for Diamond Creek, Hoddles Creek, the Plenty River, Olinda Creek, and the Steels, Pauls and Dixons Creeks. This program will see new plans developed for other tributary catchments in the basin, and existing plans reviewed when required.

Who develops the Stream Flow Management Plan?

The Stringybark Creek Stream Flow Management Plan Consultative Committee prepared a draft Plan for the Minister. The Minister may then approve the draft Plan, approve the draft Plan with any amendments the Minister considers appropriate, or refuse to approve the draft Plan. This committee appointed by the Minister is made up of landholders, representatives of government agencies and Environment Victoria. The committee has developed the Plan in accordance with the guidelines issued by the Minister titled "Guidelines for the Preparation of a Draft Management Plan for Stringybark Creek Catchment Water Supply Protection Area". These guidelines require the Plan to implement a number of government policies,

including a requirement that the full environmental flows be implemented within five years and that licence volumes be capped at current levels as the Yarra River basin is considered fully allocated. The plan can consider further options for development but any volume identified must be sourced from trading of water licences.

Using advice from numerous scientific and other studies the consultative committee identified improvements that could be made in the management of licences to take and use water and made recommendations that aim to balance reliability for water users and environmental benefits.

Consultation and information available during the development of the Plan

The development of the Plan involved consultation to ensure that the rules and conditions are relevant to local stakeholders. Stakeholders were asked to make recommendations or provide advice to the Minister. As a part of the Plan development, a draft was released for public comment. Following the consultation period, the submissions received were considered and the Plan was ammended.

A summary of the committee's response to the submissions is provided in Appendix 1.

The Plan was submitted to the Minister for approval and tabled before Parliament, after which time the prescriptions are administered and enforced by Melbourne Water.

7 SUMMARY OF PLAN OUTCOMES

Below is a summary of the outcomes and recommendations of the Plan:

- that the dam-filling (winterfill) period be 1 June to 30 November.
- that two gauging stations be used to measure flows in the Stringybark Creek Protection Area. The Clegg Road gauge will continue to be used with an additional gauge installed at St Huberts Road.
- that the Department of Sustainability and Environment will pay the cost of installing the gauging station at St Huberts Road. Diverters will fund ongoing operation, maintenance and associated renewal costs of the gauge.
- that the winter environmental flows in the lower Protection Area will be introduced incrementally over a five-year period, except for licence holders who were successful in their Stream Flow Tender bids (where they agreed to meet the increased environmental flows, their licence conditions will take effect on 1 July 2008).
- that a FLOWS assessment be completed before the five-year review of the Plan to review environmental flow requirements across the whole flow regime of the creeks in the Protection Area.
- that all-year licences be converted to dam-filling licences when traded, where Melbourne Water considers this to be practical.
- that licences can be traded upstream or downstream within the Protection Area following approval by Melbourne Water based on compliance with section 62 of the Water Act.
- that the total licence allocation not exceed 2664 ML, being the total volume of licences issued in 2007, after the completion of Stream Flow Tender.
- that the option to issue "Peak-flow" licences be investigated for consideration in the five- year Plan review.
- that rosters and restrictions be used in the upper Protection Area to share water as streamflow approaches the minimum environmental flow. Melbourne Water should prepare rosters by facilitating discussion between the relevant diverters on an 'as-needs' basis.
- that Melbourne Water and Southern Rural Water should enhance their communication to improve management of groundwater and surface water.
- that the Minister investigates how the current regulatory framework could be improved to allow water to be taken as an average rather than a fixed annual volume.
- that the overall benefit to the environment of increasing dam capacity be considered when applying for the relevant planning permits. The environmental benefits of building the dam need to be greater than the losses, such as vegetation removal.
- that Melbourne Water administer the plan fairly and equally amongst all licence holders.

The committee also discussed the potential for dam-filling licence conditions allowing topping up of dams between 1 December and 31 March. This would be within their permanent allocation during periods of excess flow, and at the discretion of Melbourne Water. This was not consistent with current Government policy and as such, not included in the Plan.

8 LICENCE ALLOCATIONS AND MANAGEMENT

Licensed water allocations

A licence is generally required to take and use water and is issued and managed by Melbourne Water under the *Water Act 1989*:

- *All-year licences* are issued with conditions that allow pumping from a waterway, or harvesting water in a dam, during any month of the year. All-year licences include irrigation, domestic and stock and farm dams licences or registrations (see below).
- *Dam-filling (winterfill) licences* are issued with conditions that allow filling of dams during the dam-filling period, typically by pumping from a waterway or collecting water in the dam.
- *Registration licences* were issued to people who were taking water from a catchment dam that was used for irrigation or commercial purposes in any year within the 10-year period prior to 4 April 2002. Registration licences are a subset of all-year licences in that water can be collected in any month.

Licences are issued and renewed annually. Table 1 provides a summary of diversions in the Stringybark Creek Protection Area at November 2006.

Table 1 ***Summary of diversion licences in the Stringybark Creek Protection Area at November 2006***

	Domestic and Stock licences (ML)	Registered or licensed farm dams (ML)	Irrigation licences (ML) (pumped licensed directly from a waterway)	Total Licenced Allocation (ML)
All-year	4	1311	214	1529
Dam-filling				1147
Total				2676

In general:

- most all-year irrigation licences are held in the upper Protection Area;
- most dam-filling licences are held in the Log Creek catchment and the lower reaches of the Stringybark Creek;
- there are few irrigation licences in the middle reaches; and
- dams are distributed throughout the Protection Area.

Irrigation licence holders were surveyed in 2000 regarding their water use (Grant, 2000). The survey found that although licence holders believed that there was insufficient water overall, 13 licences with a total volume of 82ML were inactive 'sleeper licences'. The survey found that 66ML, or approximately 5% of the total licensed volume, was not being used and that almost all licence holders had access to a dam in which to store water for use in dry periods. However the current capacity of most of these dams is generally small and insufficient to hold the full licence volume. The survey also found that some irrigators also had access to alternative sources of supply, such as bore water.

In 2007, 2 ML of irrigation licence volume and 10 ML of on-stream dam-filling licence volume were surrendered as part of Stream Flow Tender. The total allocation in the catchment is now 2664 ML. This comprises the total irrigation allocation of 212 ML, the total dam-filling allocation of 1137 ML, the domestic and stock allocation of 4 ML, and the registered farm dam allocation of 1311 ML. Refer to Appendix 2 for more detail.

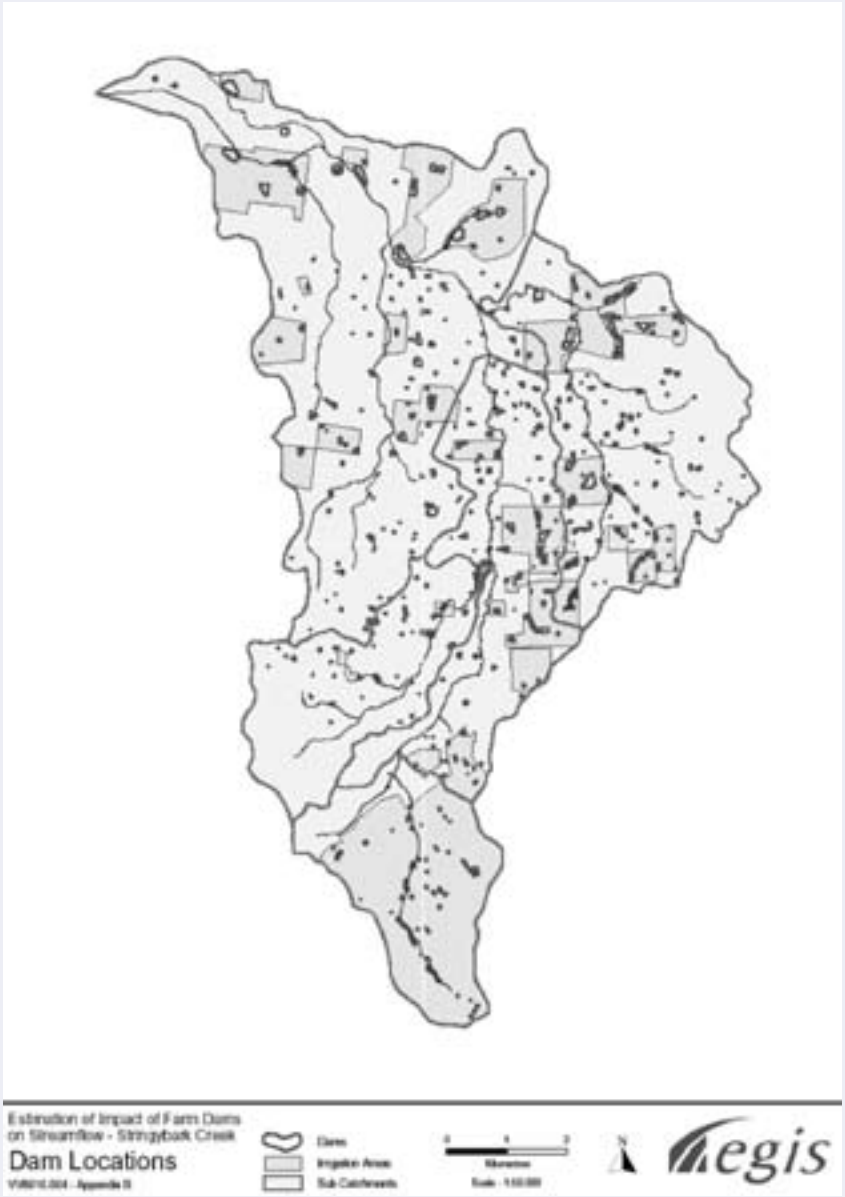
Water use not requiring a take and use licence

Water for domestic and stock use can be taken from a waterway without a licence if the waterway flows through a person's property or the waterway immediately borders a person's property. If a crown frontage or property owned by someone else exists between a person's land and the waterway, a licence for domestic and stock use is required. In the Stringybark Creek Protection Area, there are 150 properties that have a domestic and stock right. This was determined using Melbourne Water GIS layers of property boundaries, crown frontages and the paths of waterways in the Protection Area. The committee has assumed that, if activated, each property would use 1 ML per year when exercising this right, giving a total potential use of 150 ML.

Water can also be collected in a farm dam without a licence provided the water is not used for any irrigation or commercial purpose, for example a farm dam used for aesthetic, stock or domestic purposes. The collection of irrigation reuse water, within allowable volumes, and the collection of rainwater from a roof, is also exempt from any licensing requirements.

There are many dams throughout the Protection Area that collect water from rainfall run off. These have been identified from aerial photographs (Figure 4).

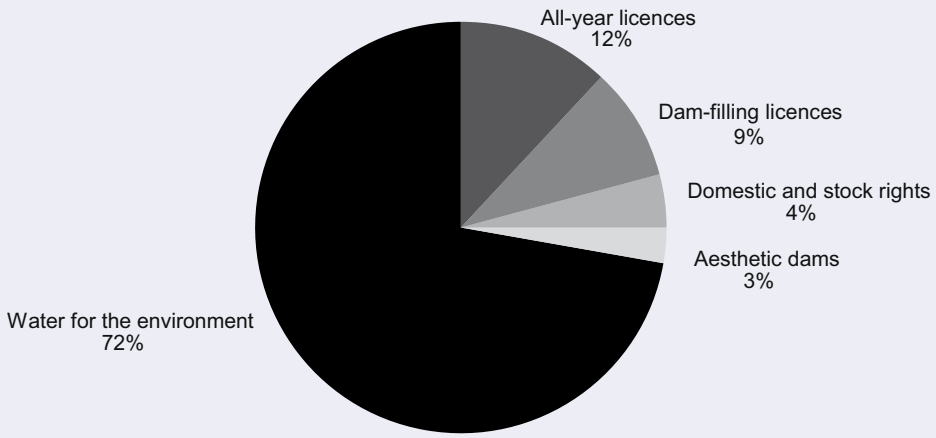
Figure 4 ***The location and surface area of all farm dams within the Stringlybark Creek Catchment Protection Area (EGIS, 2002)***



After eliminating those dams that are linked to an existing licence (i.e. that are known to be used for commercial or irrigation purposes), it can be assumed that the rest are domestic and stock dams or aesthetic dams. Estimating the volume of the domestic and stock/aesthetic dams from aerial photos and a known relationship with the surface area, the combined volume was estimated as 699 ML (EGIS 2002). All non-irrigation dams less than 10 ML in size were (for this Protection Area only) assumed to be domestic and stock dams, with the remainder assumed to be aesthetic dams. Of the total volume of non-irrigation dams (699 ML), 55% (388ML) were considered domestic and stock dams (EGIS 2002).

The total volume of water potentially available for domestic and stock use has therefore been assumed to be 538 ML (150+388). The large remaining volume (311ML) for aesthetic dams is high due to one very large aesthetic dam in the Protection Area. The water allocation of average annual stream flows is shown in Figure 5.

Figure 5 ***Water use in the Stringybark Creek Protection Area as a percentage of average annual stream flows (12,300 ML/year)***



Licence management arrangements prior to the preparation of this plan

Water can be purchased temporarily or permanently from other licence holders, however to date few permanent transfers have occurred.

Licences have traditionally contained conditions that specified a maximum daily rate of diversion, an annual volume and a maximum area that could be irrigated. Pumping was prohibited when visible flows ceased in the creek in order to protect downstream environmental values and water users.

During drought years, since 1997, Melbourne Water used the Yarra River Drought Response Plan to protect a minimum flow of 245ML/day in the Yarra at Warrandyte. When flows approached, or fell below 245ML, water restrictions were applied throughout the Yarra basin, regardless of the flow in individual catchments. In 2003/04 Melbourne Water recognised that flows in the Yarra River did not necessarily reflect flows in Stringybark Creek or other tributary catchments. For this reason, it was decided to base any bans or restrictions on the flows in Stringybark Creek itself, using the Clegg Rd gauge. A trigger level of 1 ML/day during the summer period and 2 ML/day during the winter period was used to trigger bans on the taking of water in the Protection Area.

Caps on licence allocations

Water resources within the Protection Area have been considered fully committed during summer for a long time. Additional all-year licences have not been issued in the Protection Area since 1968. The Victorian Government released its white paper – *Securing Our Water Future Together* in June 2004. In this white paper the Victorian Government placed a ban on the issue of further allocations anywhere in the Yarra River basin (DSE, 2004).

The combined maximum volume of licences in 2007 (the combined total of all-year and dam-filling licences) is 2664 ML (refer to Section 8). Consequently, the overall cap for the Stringybark Creek Protection Area will remain at 2664 ML, preventing additional licences being allocated to the Protection Area.

Where all-year licences are traded, they will be converted to dam-filling licences. Consequently, as licences are traded the volume of all-year licences will decrease and the volume of dam-filling licences will increase accordingly, with the overall water allocation for the Stringybark Creek remaining the same.

The Plan describes the total volume of water that can be taken in any year under licence. In this Plan the total volume is actually comprised of two components - a volume that can be taken during any month of the year and a volume that can only be taken between 1 June and 30 November. These components are discussed below.

All-year licence cap

This represents the volume that can be taken at any time during the year. The maximum volume of all-year licences that can be held in Stringybark Creek is 1527 ML. This is the volume of water allocated under all-year licences at the time of developing the Plan, including water harvested in registered farm dams.

Melbourne Water will continue to reissue existing licences annually, subject to payment of fees and meeting licence conditions. Registration licences will continue in perpetuity.

Dam-filling (winter fill) period and licence cap

Until this Plan was developed the dam-filling period in the Stringybark Creek was from 1 May to 31 October. However, the dam-filling months will be modified to 1 June to 30 November to better reflect the seasonal pattern of flows and the preferences of diverters in the Stringybark Creek Protection Area (Figure 2). This will also allow greater capacity for licence holders to get the required volumes in dry years. The Sustainable Diversion Limit (SDL) set out a dam-filling period of 1 June and 31 October as a default across Victoria. However this default option can be modified in a Stream Flow Management Plan but required an environmental risk assessment of extending the dam-filling period. In assessing this recommendation the committee considered the recommendations of SDL.

Melbourne Water undertook an assessment that identified the duration of flushing flows and the magnitude of low flows to be the aspects of the flow regime most likely to be affected by the dam-filling period. This impact was observed when comparing the natural flow regime with flows influenced by the SDL and proposed dam-filling periods, although this impact is small.

An assessment of stream flow patterns showed that there is little difference in environmental risk of implementing either of the dam-filling period as the flow regime under each option exceeds the assumed minimum flushing requirements for an ecologically healthy river. An assessment of the expected stream flow changes confirms that although daily flows are lower than natural conditions under both extraction regimes, the natural flow patterns will still be retained in each case.

The risk assessment concluded that the ecologically important characteristics of the flows will remain protected and the environmental risk of changing to a 1 June – 30 November dam-filling period is low.

Anyone with a licence for the purpose of dam-filling is able to take water during these months. The volume of water allocated under dam-filling (winter fill) licences at the time of developing the Plan is 1137 ML per year. The volume of dam-filling licences will grow over time as all-year licences are converted upon trade and the total volume of licences in the Protection Area is capped at 2664 ML (ie traded licences will become dam-filling licenses).

Prescription 1 - PROHIBITIONS ON GRANTING NEW LICENCES

1. Melbourne Water must refuse an application under section 51(1)(a) or (ba) of the Act if this will, or may, cause the total volume of water taken in any year under:
   (a) all licences to exceed 2664 ML; or
   (b) all-year licences to exceed 1527 ML.

9 ENVIRONMENTAL FLOWS

Summer environmental flows

In 2001 Melbourne Water commissioned Wayne Koster and Paul Close from the Department of Natural Resources and Environment – Freshwater Ecology to undertake a study titled *An assessment of environmental flow requirements for the Stringybark Creek Protection Area*. This assessment provided recommendations for summer minimum flows in order to meet the following environmental management objectives derived specifically for the Stringybark Creek:

- Maintain appropriate minimum environmental flows over the low flow period.
- Provide appropriate flushing flows and high flow regimes that provide suitable conditions for migration and spawning of native fish species and essential geophysical processes such as channel scouring and silt removal.
- Maintain water quality in accordance with SEPP (Waters of Victoria) – Schedule F7 Waters of the Yarra Catchment (EPA 1999) as amended, including provision of summer flushing flows.
- Ensure that dam-filling diversions are set at a level that does not impact on essential biological and geomorphological processes.

In addition, several management objectives that specifically apply to biodiversity conservation were included in the report. These are not the direct responsibility of the Plan, but are desirable outcomes for the health of the creek.

- Maintain and/or restore diversity and complexity of instream habitat (e.g. woody debris).
- Maintain and/or enhance diversity of aquatic fauna species and encourage recolonization of Stringybark Creek by migratory species.
- Provide unimpeded fish access throughout the Stringybark Creek system through removal of instream barriers.

Environmental flows were recommended after an assessment of historic flow data (natural and current regimes), fish habitat and expert opinion. Fish habitat surveys were undertaken to determine the depths of water and area of submerged habitat at three measured stream flows and at numerous locations in the Protection Area. In most instances, the recommended environmental flow is the same, or close to, the lowest stream discharge measured during the habitat surveys. This is because there were only a limited range of observed flows and the amount of habitat could not be extrapolated beyond the lowest measured. Therefore the depths of water and area of habitat at lower flows have not been determined.

Recommendations for summer environmental flows were made at four locations: Stringybark Creek at Warburton Highway, Little Stringybark Creek at Rodger Road, Log Creek at Medhurst Road, and Stringybark Creek at Melba Highway (see Table 2). The precautionary principle was applied when making recommendations to provide an ecological safety factor to allow for the limited knowledge of the relationship between flow regimes and the ecology of native freshwater fish in the Stringybark Creek.

Table 2 ***Recommended summer environmental flows for the Stringybark Creek (Koster and Close 2001)***

Site Location	Summer Environmental Flow (ML/day)
Stringybark Creek at Warburton Highway	1.5 or natural*
Little Stringybark Creek at Rodger Road	1.0 or natural*
Log Creek at Medhurst Road	1.5 or natural*
Stringybark Creek at Melba Highway	4.5 or natural*

**or natural - flows may naturally fall below the environmental flow but should not do so any more frequently or for longer duration as a result of water extraction.*

It is recognised that the waterways in the Protection Area would naturally dry up over some summers and would frequently fall below the levels recommended above. Therefore these minimum flows do not necessarily need to be constantly maintained. However pumping of water must cease if flows fall below these levels to ensure Stringybark Creek does not dry up any more frequently or for longer periods than it would naturally.

Winter environmental flows

Koster and Close (2001) did not make recommendations for winter environmental flows. Instead they recommended the use of the Sustainable Diversion Limit (SDL) minimum flows that were being developed at the time. The SDL minimum flow is designed to maintain flows within the range of natural winter flow regimes (ie. no lower). This is consistent with the objectives to protect natural flow patterns in the Koster and Close report.

The SDL minimum flow is based on historical stream flow patterns and is calculated to reflect the driest years on record. The SDL specifies an environmental flow of 12.5ML/day at the outlet of Stringybark Creek and 4.8ML/day at Clegg Rd (SKM 2004). These flows are meant to trigger bans on pumping water from 1 July to 31 October.

During the development of the Plan, the SDL minimum flow was recalculated using more up to date flow data that included the current drought. The 1965-2004 'natural flow' data was taken from the REALM computer simulation model of Stringybark Creek (SKM 2002) and used to update the SDL calculations (Nathan *et al*, 2002). Using this more complete flow record, the winter environmental flows at Melba Hwy and Clegg Rd become 11.8 ML/day and 4.3 ML/day respectively.

Note that the dam-filling period extends from 1 June to 30 November, while the SDL environmental flow only applies from 1 July to 31 October. This means that the first and last months of the dam-filling period are governed by the summer environmental flows.

Final environmental flow recommendations

To recognise the difference in water harvesting between the upper and lower Protection Area, flows will be measured at two locations within the Protection Area to ensure more reliable data than that available from a single gauge. The recommended environmental flows were not made for Clegg Road and St Huberts Road. However, it was decided that Warburton Highway was close enough to Clegg Road and Melba Highway to St Huberts Road to use the recommended environmental flows at the new locations. The only exception was the winter environmental flow at Melba Highway because during this period the drain that enters Stringybark Creek below St Huberts Road provides significant flow. Consequently, it was decided to adjust the winter environmental flow from 11.8ML/day to 11ML/day to allow for the change in catchment size. Table 3 and Table 4 below outline the final environmental flow recommendations.

Table 3 ***Environmental flows at St Huberts Road for the lower Protection Area***
(The shaded months are the dam-filling months.)

Location	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Environmental flow (ML/day)	4.5	4.5	4.5	4.5	4.5	4.5	11	11	11	11	4.5	4.5

Table 4 ***Environmental flows at Clegg Rd for the upper Protection Area***
(The shaded months are the dam-filling months.)

Location	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Environmental flow (ML/day)	1.5	1.5	1.5	1.5	1.5	1.5	4.3	4.3	4.3	4.3	1.5	1.5

In 2007 the State Government announced that the full environmental flows would be implemented five years after the approval of the plan. The Government also offered financial assistance to licence holders for solutions to implement these flows earlier. This process is outlined in Appendix 2. Although the environmental flows represent only a modest change to the management of licences, the Government recognises that the change may impact on licence holders. Delaying the implementation of the environmental flows increases flexibility for licence holders by allowing them to choose how and when to change to the new environmental flows.

It is not possible to determine every effect the implementation of environmental flows will have on the availability of water for other users. A balance must be sought that allows diverters to adjust to new resource availability while also meeting the required five-year implementation timeframe. To reduce the impact on diverters in the lower Protection Area of potentially getting less water, the winter environmental flows will be introduced incrementally over five years beginning in 2010. Implementation of the summer environmental flows will not be staged, as there are very few all-year licences in the lower Protection Area. Similarly, environmental flows in the upper Protection Area will not be staged, as the increase in environmental flows from 1ML/day to 1.5ML/day is much smaller.

The winter environmental flows for the St Huberts Road gauge will be staged, with environmental flows of 8ML/day applying from 2010. The environmental flows the following year will be 9ML/ day and then 11ML/day for the rest of the five-year period (see Table 5). Successful participants in Stream Flow Tender who agreed to meet the increased environmental flows will change to these flows earlier (see Appendix 2).

Table 5 ***Implementation of the proposed winter environmental flows in the lower catchment Protection Area*** *(measured at St Huberts Rd)*

Year	2010	2011	2012	2013	2014
Environmental flow (ML/day)	8	9	11	11	11

The method that was used to determine the environmental flows for the Stringybark Creek Protection Area has since been superseded by the state-wide method known as FLOWS. The FLOWS method allows environmental flows to be determined for both summer and winter periods with greater confidence. The committee has recommended that a full FLOWS assessment be done before the five-year review of this Plan. This assessment should consider where water users are most active in the Protection Area, including the upper and lower reaches of Stringybark Creek and Log Creek.

Potential impacts of implementing environmental flows on diverters

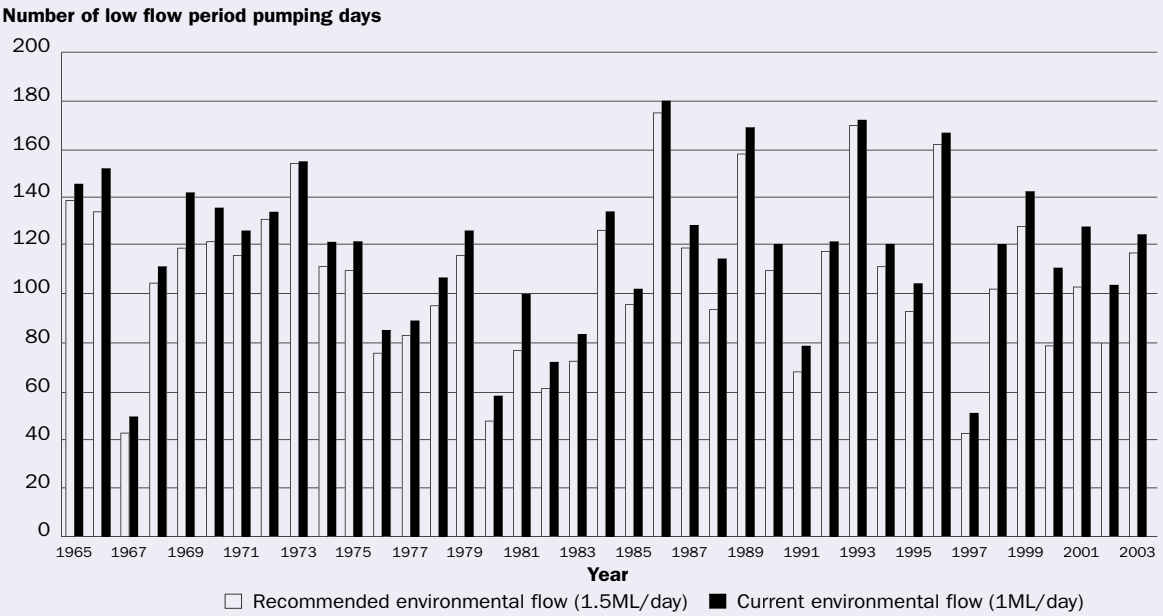
There are a number of ways of looking at the impact of implementing environmental flows on water diverters. In this report the impact has been investigated by looking at the number of ban days per year and the amount of water that can be supplied to diverters. In each case the current Drought Response Plan rules are used as the base case for comparison. Rather than look at the whole Protection Area over a whole year, the analysis looks at restrictions in the low flow period in the upper Protection Area above Clegg Rd, and in the dam-filling period in the lower Protection Area. Breaking the analysis down into these segments is more meaningful as most of the water use, and consequently impacts, in the upper Protection Area are likely to be during the low flow period and in the lower Protection Area during the dam-filling period. For this analysis, it is assumed that flow patterns for the next 40 years will be similar to those between 1965 and 2004, and that all licences will eventually be actively used.

Low flow period in the upper Protection Area

An environmental flow of 1ML/day at the Clegg Road gauge is currently implemented during the low flow period. Figure 6 shows the variation in the number of allowable pumping days with the current and recommended environmental flows implemented. The mean number of allowable pumping days with the current environmental flows during the low flow period is 118 out of a maximum of 183. This means that on average, pumping could occur 64% of the time. When the full environmental flows are implemented the mean number of allowable pumping days may decrease to 107, or 58% of the time. This Plan recommends that rosters and restrictions be implemented in the upper Protection Area to help decrease the rate at which the water levels drop, and hopefully reduce the number of ban days.

Note that these assessments assume that pumping only occurs during the months of December to May. However all-year licence holders are also able to pump in the remaining months.

Figure 6 ***Comparison of the number of days in which pumping may be allowed in the summer period in the Upper Stringybark Creek Protection Area under the full and current environmental flows (max. 183 days).***



An alternative tool for assessing the impact of implementing environmental flows is to compare the volume of water that diverters would have taken each year. Figure 7 and Figure 8 demonstrate the comparison between what the diverters wanted (demand) and what they actually received (supply). It is important to note that this scenario assumes all licences are fully utilised. At present, five percent of licences are 'sleepers', however with the opening up of licence trading markets (section 10) it is reasonably expected that all licences will eventually be fully utilised. Regardless of the timeframe for this to occur, the assessment is based on full licence usage to recognise the potential impacts to all licences that have been issued. In addition, the shortfall is exaggerated because in the model diverters are unable to extract extra water during higher flows to compensate for missed days which is what would actually happen.

Figure 7 and Figure 8 demonstrate that implementing environmental flows may reduce the volume of water supplied if diverters are unable to pump the required additional water on non ban days. This is again shown when comparing the volume of water available in eight out of ten years. Without environmental flows the available annual volume would be 66ML. Under the current environmental flows the available volume would be 57ML and under the full environmental flows the available volume would be 53ML. The volume available in eight out of ten years is considered the benchmark measure of good reliability in unregulated rivers.

Figure 7 ***Comparison of supply and demand for all diversions during the low flow period in the upper Stringybark Creek Protection Area with the full environmental flows. This data assumes that diverters are unable to pump additional water on non-ban days (volume available in eight out of ten years is 53ML).***

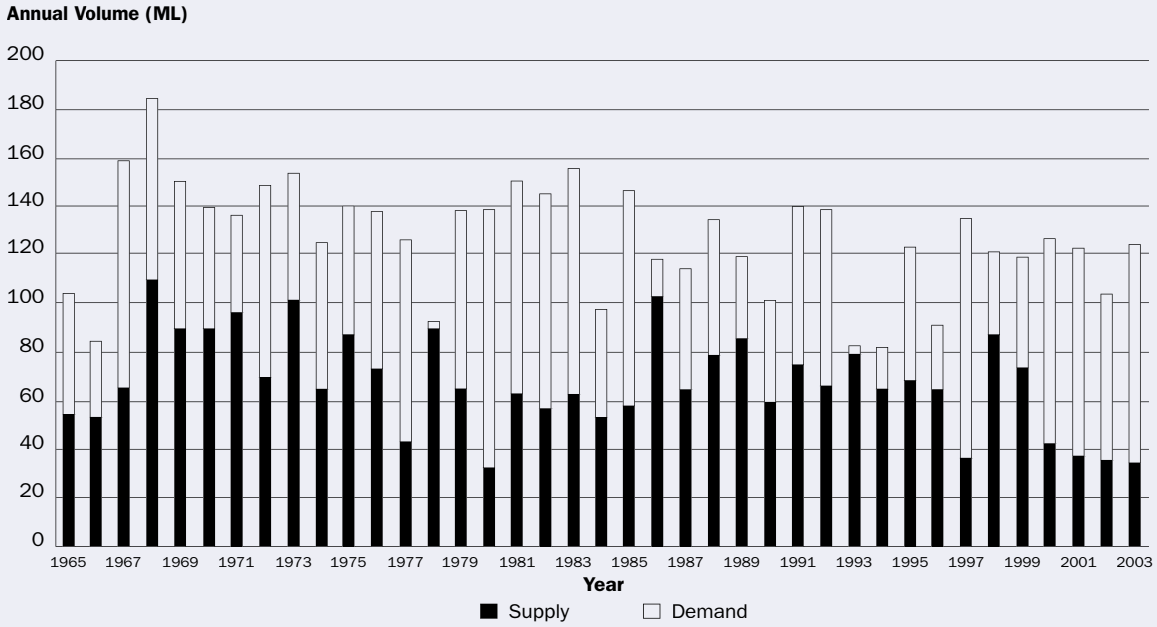
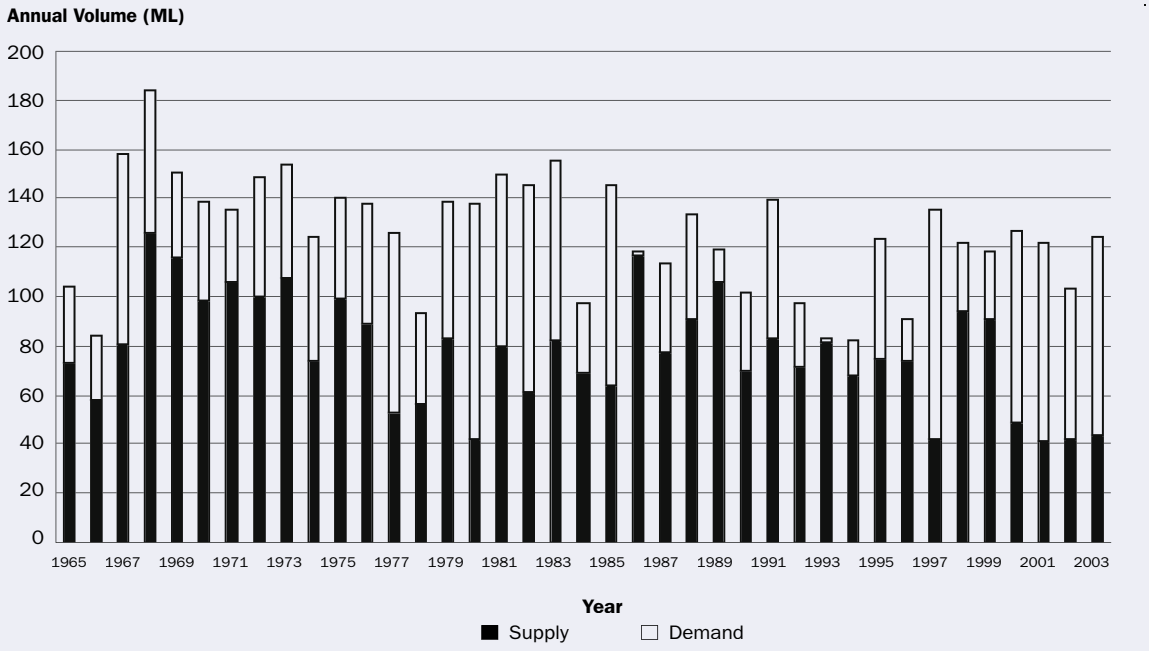


Figure 8 ***Comparison of supply and demand for all diversions during the low flow period in the upper Stringybark Creek Protection Area current environmental flows. This date assumes that diverters are unable to pump additional water on non-ban days (volume available in eight out of ten years is 66ML).***



Dam-filling period in the lower Protection Area

An environmental flow of 2ML/day at Clegg Road gauge is currently in place during the dam-filling period. Figure 9 shows the variation in the number of days that pumping may occur when changing from the current to the full environmental flow of 11ML/day at St Huberts Road. From 1965 to 2004, the mean number of allowable pumping days with the current environmental flows during the dam-filling period was 170, or 93% of the time between 1 June and 30 November. When the full environmental flows are implemented the number of allowable pumping days may decrease to 140, or 77% of the time. With the current environmental flows, the least number of allowable pumping days was 119 in 2002, compared with 44 with the full environmental flows in 1982 (ie worst year) (Figure 9).

Figure 9 ***Comparison of the number of days in which pumping may be allowed in the dam-filling period in the lower Stringybark Creek Protection Area with the recommended and current environmental flows (max 183 days).***

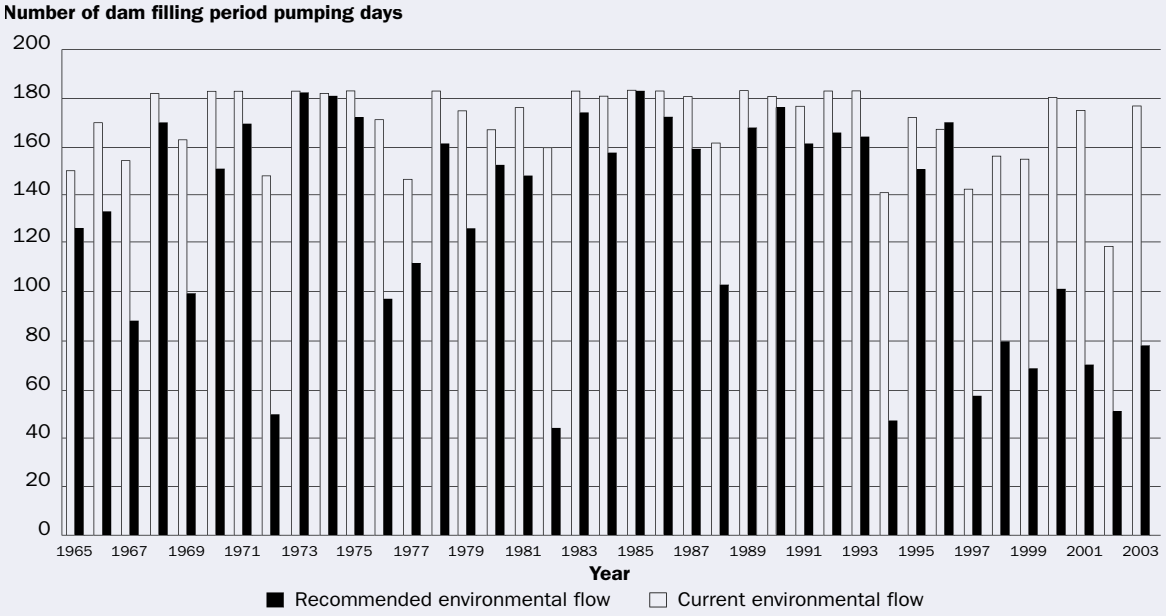


Figure 10 and Figure 11 demonstrate the annual demand for water during the dam-filling period, compared with the volume that can be supplied, with current and full environmental flows being implemented. Again, it is important to note that they assume that all licences are being used at their maximum capacity. In addition, the shortfall is also exaggerated because unlike in reality, the model assumes diverters are unable extract extra water during higher flows to make up for missed days.

By comparing Figure 10 to Figure 11 the impact of implementing the full environmental flows is illustrated. Without environmental flows, there will be some years when diverters will still be unable to get their full allocation. However, implementing environmental flows will increase the shortfall. The volume available in eight out of ten years is 1227 ML without environmental flow requirements. When the current environmental flows are implemented the volume available in eight out of ten years drops to 1176ML and then 1138 ML once the full environmental flows are implemented.

Figure 10 Comparison of supply and demand for all diversions during the dam-filling period in the lower Stringybark Creek Protection Area with full environmental flows.

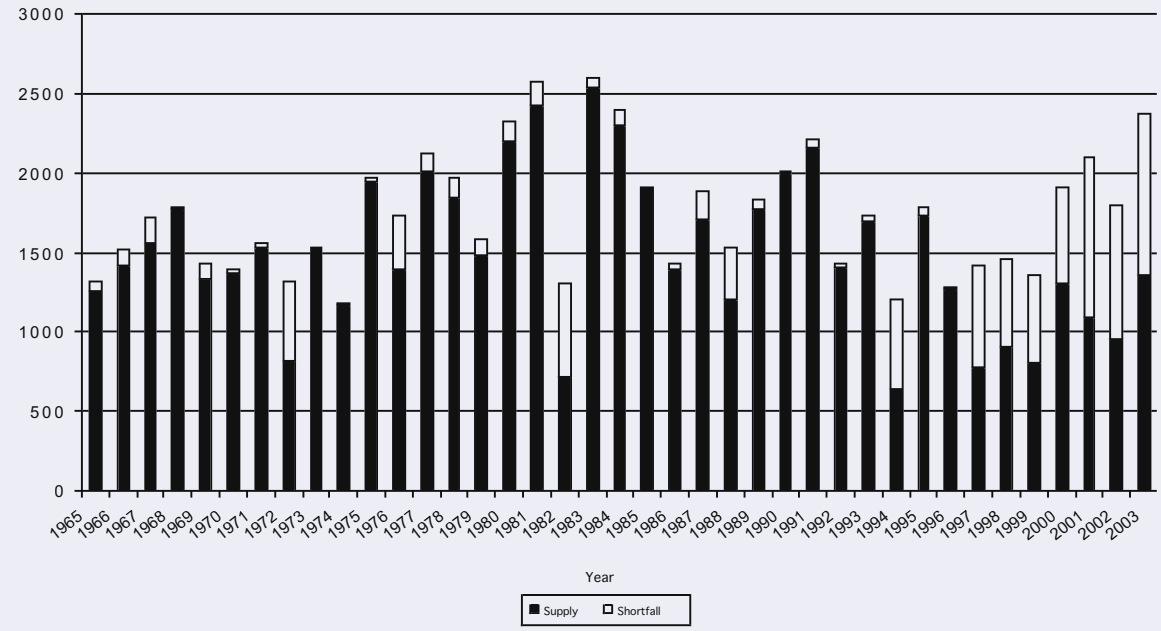
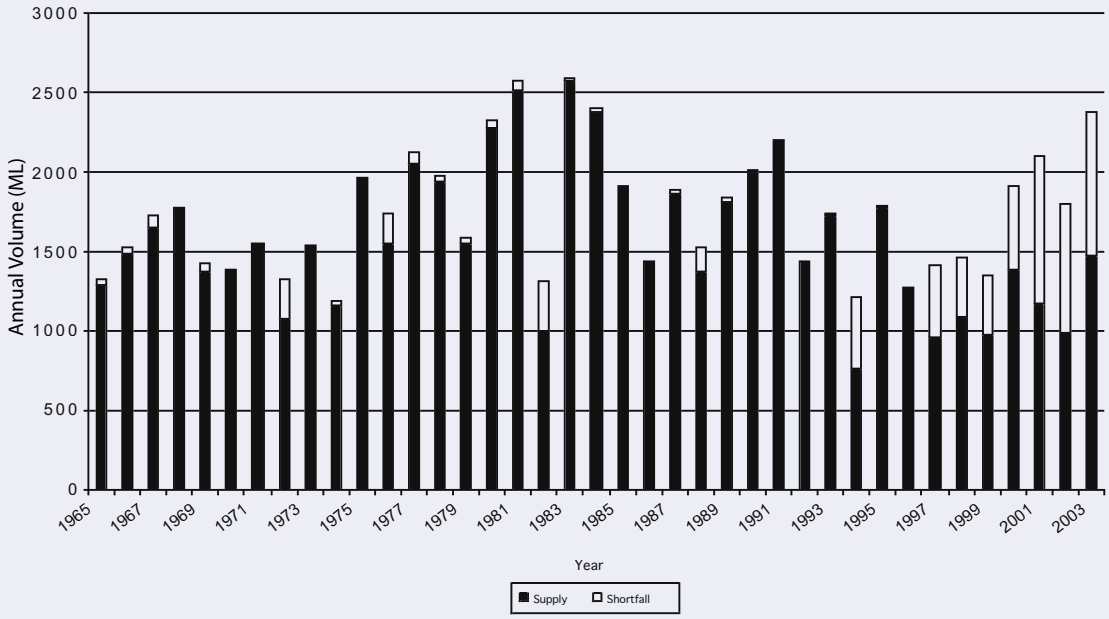


Figure 11 Comparison of supply and demand for all diversions during the dam-filling period in the lower Stringybark Creek Protection Area with current environmental flows.



Cost benefit analysis of implementing environmental flows

The discussion above shows that the implementation of the environmental flows in the Stringbark Creek Protection Area will have some costs to farmers and some benefits for the environment. In 2005, a study was undertaken to examine the magnitude of costs to farmers and then investigated whether these costs were large or small relative to the environmental benefits that might be expected from the implementation of the environmental flows.

The study calculated the costs to farmers over a thirty year period in today's dollars ("present value"). This

represented the amount of money that would need to be invested today in order to cover future costs when they occur.

The study was based on actual licence usage and concluded that dam-filling licence holders would face combined costs of $39,500 from additional pumping costs, as a response to pumping earlier in the season. The study also concluded that all-year licence holders would face combined costs of $85,000 from lost production during dry years. Therefore, the best estimate of the total current cost to farmers was $124,500, compared to other estimates of up to $1,097,000 (URS, 2006).

The study assumed that the community is willing to accept these costs if the environmental flows will improve the environment of Stringybark Creek. The size of costs the community is willing to accept depends upon the environmental values that will be protected or restored.

The study concluded that the 53,700 households in the Shire of Yarra Ranges would accept a cost of $124,500 if at least three native fish species recolonised the creek. Four native fish species are known to currently inhabit the creek, with the potential return of six additional species if conditions are improved. A recolonisation of the creek by additional native fish species is likely, especially if other waterways works are undertaken to enhance the benefits of the proposed environmental flows. However, if the cost is actually $1,097,000 the Yarra Ranges community would require the return of more native fish species than are likely to inhabit Stringybark Creek.

Peak flow licences

Government policy recognises the current competition for water during dry periods. Low flows are insufficient to meet all demands, including environmental demands. Government policy is therefore to reduce irrigator reliance on low flows and to shift extraction demand to periods of higher flow. During these periods, the volume pumped from the creek will be a much smaller percentage of the total stream flow, and allow adequate access to water whilst also meeting the environmental flows.

The committee suggests the concept of a peak flow licence that may allow diverters to have a licence to take water during very high flows. It is envisaged that this licence would be used to fill dams during the infrequent peak flows, and consequently, the licence would have a low reliability. These licences would be in addition to current licences and need to be investigated further through a FLOWS assessment to determine the environmental risk and the volumes that would actually be available. In addition, appropriate agencies will need to investigate how the licences would be administered.

It is recommended that within five years after the commencement of the Plan, Melbourne Water investigate the feasibility of granting new licences to take water during very high flow periods, specifically to determine:

(a) the feasibility of administering such licences,
(b) a sustainable volume that could be allocated and the potential effects on existing water users and the environment,
(c) the minimum flow before harvesting may commence,
(d) the licence reliability of supply, and
(e) waterway reaches within the area where such licences may be granted.

Changes to licence conditions to implement the environmental flow recommendations

The conditions of licences will be amended to ensure that they reflect the requirements of this Plan.

Licence conditions include a requirement to stop pumping water from the creek during very low flows. These rules protect the environmental flows described in this Plan.

Schedule 1 outlines the conditions that will be placed on all licences. The conditions are specific to each licence type and will be applied on renewal of licences or granting of new licences.

Prescription 2 - LICENCE CONDITIONS

A licence granted under section 51 of the Act is subject to each condition set out in Schedule 1, in relation to that licence's purpose.

10 TRADING AND ROSTERING OF LICENCES

Trading rules

The *Water Act 1989* allows licences to be transferred (traded) following approval by Melbourne Water. Licences can be transferred on the sale of the property or can be transferred to the owners of other land within the Protection Area. Licences can be transferred permanently or temporarily for the remaining months of the financial year.

Water licence transfers promote water use efficiency by establishing a market to sell unused allocations and providing access to water if no more new licences are being issued. However, water transfers also have the potential to increase the overall water use, as unused licences become active.

When considering an application to transfer a licence, Melbourne Water is required by the Water Act 1989 to consider any adverse effect that the transfer may have on existing users or on the environment.

Diversions in the Upper Stringybark Creek Protection Area have the most significant impact during the low flow period. To reduce this impact, all-year licences will be converted to dam-filling licences when permanently traded, where Melbourne Water considers this is practical.

Licences can be transferred temporarily without needing to be converted to dam-filling conditions.

Trading will not put additional pressure on stream flows in the upper Protection Area because all-year licences are to be converted to dam-filling licences upon trade (where practical). Consequently, the trading of licences upstream will be allowed in the Stringybark Creek Protection Area, subject to a site assessment by Melbourne Water. It needs to be noted that Amy McDonald representing Environment Victoria did not agree to this decision and that, unlike other decisions that were made by the committee through consensus, this decision was decided by a vote.

The maximum volume of a transferred licence will be determined by Melbourne Water after considering the volume of water available at the new location, and the water needs of existing licence holders and the environment at that location.

Melbourne Water may or may not alter the licence conditions of a transferred licence depending on whether the location of the licence changes as a result of the transfer. In other words a licence that is transferred from one person to another but is still being used at the same location may not need to have its conditions changed. This may occur if a farm is sold to another person and the actual farming activity continues without change.

Although there is pressure on flows in the Stringybark Creek, it is not enough to warrant implementing a 20% reduction in licence volume upon trade as implemented in the north of Victoria. Consequently, licence volumes will not be reduced when traded.

Prescription 3 - TRANSFERRING LICENCES

Note: Section 62 of the Act empowers Melbourne Water to approve an application temporarily or permanently to transfer a licence.

3.1 Melbourne Water may grant an application made under section 62(3) of the Act to permanently transfer a licence upstream or downstream from a location within the Protection Area and without reduction in volume.

3.2 Melbourne Water must refuse an application madeunder section 62(3) of the Act to permanently or temporarily transfer a licence if this will cause the limits referred to in prescription 1 to be exceeded.

3.3 Subject to prescription 3.4, if approving an application to permanently transfer a licence into or within the Protection Area, Melbourne Water must amend its conditions to ensure that it is a licence for the purpose of dam-filling where Melbourne Water deems that this is practical.

3.4 In deciding whether to amend, delete or add to the conditions to which a licence is subject when it is permanently transferred, Melbourne Water may have regard to whether the location at which water is taken or collected will, or will not, change.

3.5 Melbourne Water may grant an application made under section 62(3) to temporarily transfer a licence into or within the Protection Area without amending its conditions.

Rostering and restrictions

During periods of low stream flow, rosters or restrictions on water extraction may be used at any time throughout the year to share available flows or to protect environmental flows. Rosters or restrictions will be negotiated with licence holders at the time and rules developed on a case by case basis. Melbourne Water should facilitate the discussion between the relevant diverters on an 'as-needs' basis.

Farm dams that have been licensed or registered as a result of the passage of the *Water (Irrigation Farm Dams)* Act 2002 will not be subject to rosters or restrictions due to the physical limitations of these dams which do not provide a mechanism to pass incoming flows.

Prescription 4 - ROSTERS AND RESTRICTIONS

4.1 Melbourne Water may prepare and implement rosters or restrictions in accordance with the principles specified in prescription 4.2 to specify a maximum volume or percentage allocation of water that a licensee may take or use on any rostered day (or lesser roster period).

4.2 In developing rosters or restrictions Melbourne Water must have regard to the need to:

(a) maintain flows above the minimum levels specified under licence conditions 1.1 & 1.2 of Schedule 1;

(b) limit the number of days upon which licensees are unable to take water because of the effect of licence conditions 1.1 & 1.2 of Schedule 1;

(c) take account of:

(i) the relative requirements of different crops and other uses of land for water;

(ii) differences between types of licence, maximum volumes which may be taken under licences, and pumping capacities; and

(iii) the need for all licensees to have fair and reasonable access to available water, given the matters referred to in sub-paragraphs (i) and (ii).

11 FARM DAMS

Construction of new dams

There are a number of on-stream dams in Stringybark Creek, particularly around the Wandin area. The State Rivers and Water Supply Commission originally encouraged the building of on-stream dams as pumping points for irrigators. However, we are now aware of the environmental effects of these dams, and do not want more dams built across the creek. Therefore no new dams on "watercourses" will be permitted.

The definition of a "waterway" is included in the Water Act 1989 and by convention is applied to any drainage line with a catchment above it of 60 hectares or greater. Stringybark Creek has many gullies and other features that meet this definition of a waterway. The environmental impact of constructing dams on many of these gullies is likely to be minimal as they are ephemeral and generally cleared pasture with no remnant vegetation. Consequently, new dams can be built on a waterway but will need approval from the licensing authority and still require a licence for the water collected in that dam if the water is used for commercial purposes (eg. irrigation of crops).

Aesthetic Dams

Generally aesthetic dams do not need a licence to take and use water, yet they can still capture significant volumes of water. As water is lost from the dams through evaporation, and replaced by rainfall, they can impact on the availability of water downstream.

New aesthetic dams need a dam construction licence if they exceed a certain size. The Plan does not permit the construction of dams on watercourses, however a large dam off a watercourse may still be allowed if *a licence to construct works etc* is issued under section 67 of the Water Act. As the licence limits in the Plan have already been reached, any section 67 licence issued to construct an aesthetic dam can include a condition requiring the dam owner to obtain a diversion licence equal to the annual evaporation from the dam.

Dam owners in this situation would be encouraged to obtain a licence by transfer for a volume of water equal to the annual evaporation from the dam.

Dams on subdivisions

The subdivision of rural land may increase the number of dams, particularly domestic and stock dams, throughout the Protection Area. The *Water Act 1989* enables a management plan to limit the maximum volume of water retained in private dams on new lots in a subdivision.

The Plan limits the volume of water that can be retained in domestic and stock dams on subdivided lots to the greater of:

- those dams that were there before the Plan, and
- a volume that is reasonable to meet the domestic and stock water needs of the land, calculated in accordance with approved guidelines.

Once this limit is reached no additional water can be retained in additional domestic and stock dams. Melbourne Water will liaise with the Shire of Yarra Ranges to encourage the Shire to consider these prescriptions of the Plan when considering applications in the Stringybark Creek Protection Area to subdivide land or for planning permits that include dams for aesthetic purposes.

Prescription 5 - NEW DAMS, AESTHETIC DAMS AND DAMS ON SUBDIVISIONS

Note: Section 67 of the Act allows Melbourne Water to grant a licence to construct works etc. This includes operation of dams. Section 71 of the Act empowers Melbourne Water to set conditions for these licences.

5.1 Melbourne Water will not issue any licence under section 67 of the Act to construct a dam on a watercourse.

5.2 For the purposes of clause 5.3, a dam is:

(a) operated for aesthetic purposes if it is constructed after the commencement of this Plan and is used for recreational purposes; but

(b) not operated for aesthetic purposes if it is:

(i) constructed or used for domestic and stock, irrigation or commercial purposes; or

(ii) designed specifically for environmental, rather than aesthetic or recreational purposes and is used for erosion control or nature conservation purposes.

5.3 A person must not operate a dam by taking or storing water for aesthetic purposes at any time when, in the opinion of Melbourne Water, the volume of evaporation from that dam alone, or in combination with evaporation of other aesthetic dams in the Protection Area, would cause the combined volume taken under licences and aesthetic dams to exceed the limits referred to in prescription 1.

5.4 The total volume of water for domestic and stock purposes that may be taken from all private dams within a subdivision must not exceed the greater of:

(a) the total volume taken from all private dams on that land before the relevant plan of subdivision was approved; and

(b) the total volume required for domestic and stock purposes on that land, as determined by Melbourne Water in accordance with the Notes on Aesthetic Dams in the Irrigation and Commercial Farm Dams Compendium of Ministerial Guidelines and Procedures.

12 IMPLEMENTING THE PLAN

Monitoring the effects of the Plan

During the implementation of the Plan, information will be collected to allow a meaningful review of its effectiveness in meeting its objectives. Whilst it is important to measure the success of the Plan against its objectives, it is also important to keep in mind that environmental change may be incremental and cumulative. Therefore, short term monitoring may not identify any significant changes to stream health over the five-year period.

Melbourne Water currently monitors stream health across the Yarra Basin by undertaking water quality, macroinvertebrate, fish and geomorphological studies. Information on the stream health of Stringybark Creek will be incorporated into existing Melbourne Water programs. Data collected by metering and stream flow gauging will also be an integral part of the monitoring program. The monitoring program should collect data to:

- confirm assumptions about water use,
- assess in-stream environmental health, and
- assess whether the Plan is protecting the environmental flows.

Melbourne Water will not attempt to demonstrate any ecological improvements from the implementation of the environmental flows.

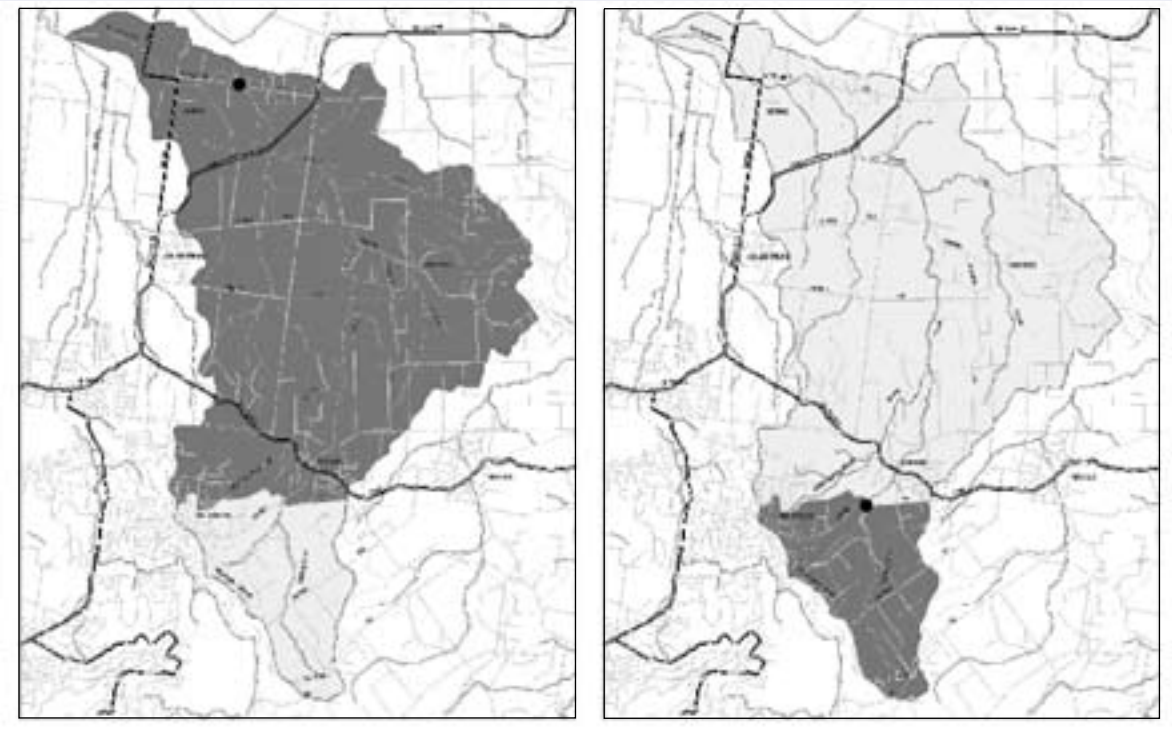
Data on the following indicators will be collected during the five-year life of the Plan:

- fish populations including species present, age classes, condition and numbers caught.
- Waterway condition through Index of Stream Condition Assessments.
- Stream flows, collected continuously at the gauges proposed in this Plan.
- Water use via meters for active water users with licences greater than 5 ML.
- Water use practices via a survey of licence holders.

Monitoring stream flows

Licence holders in the Protection Area are currently managed from one stream flow gauge located at Clegg Road. The current environmental flow for the whole Protection Area at Clegg Road is 1ML/day from 1 December to 31 May and 2ML/day from 1 June to 30 November. The committee has recommended using two gauging stations to better represent and protect the upper and lower Protection Area. The additional gauge will also provide valuable flow information that will be useful for future management decisions. Consequently, the committee recommends continuing the use of the Clegg Road gauge to monitor the upper Protection Area, and installing a second gauge at St Huberts Road to monitor the lower Protection Area (see Figure 12).

Figure 12 ***Upper and lower** Protection Area **for the purpose of managing licences. The gauges are shown as black dots. All licence holders in the darkly shaded area will be managed according to flows at the relevant gauge.***



The Department of Sustainability and Environment will pay the costs of installing the St Huberts Rd gauge because the primary rationale for a new gauge is the need to monitor flows as a part of the implementation of environmental flows. The committee considers this to be a public benefit rather than a private benefit. Licence holders will fund ongoing operation, maintenance and associated renewal costs of the gauge through payment of their diversion licence fees.

Monitoring water usage

Effective water resource management relies upon information about water usage patterns and volumes. This information will be collected by metering extractions. Melbourne Water must install meters to measure any water that is taken under licence. Meters are not required for licences less than 5 ML in volume or for licences that are inactive. Most licences have already been metered.

Melbourne Water must read all-year licence meters annually and read dam-filling licence meters before 1 June and after 30 November each year

Prescription 6 - MONITORING

6.1 Melbourne Water must install a stream flow gauging station on Stringybark Creek at the easterly road crossing on St Huberts Rd Coldstream at DSE's cost.

6.2 Melbourne Water must:

(a) continuously record flows at the Clegg Rd and St Huberts Rd gauging stations;
(b) periodically inspect the condition of each gauging station;
(c) maintain each gauging station in good condition; and
(d) keep a record of each inspection and work undertaken under paragraph (a) or (b).

6.3 Melbourne Water must install a flow meter to measure water taken for irrigation or commercial purposes under any actively used licence greater than 5 ML in volume granted within the Protection Area under section 51(1)(a) or (ba) of the Act.

6.4 Melbourne Water must:

(a) periodically inspect the condition of each flow meter installed under prescription 6.3;
(b) maintain each flow meter in good condition;
(c) replace any damaged flow meter; and
(d) keep a record of all work done under paragraph (b) and (c).

6.5 Melbourne Water must:

(a) read each meter referred to in prescription 6.3 at least:
    (i) once in every year in the case of an all-year licence; and
    (ii) shortly after the beginning and end of the dam-filling period in every year, in the case of a licence for the purpose of dam-filling; and
(b) record, for each meter:
    (i) the reading obtained;
    (ii) the number of the relevant licence;
    (iii) the date on which the meter is read; and
    (iv) any information about the accuracy of the meter which Melbourne Water considers relevant; and
(c) if a meter becomes defective, registers incorrectly or is removed for any reason, estimate the correct registration in any of the following ways:
    (i) by comparison with the quantity of water taken under similar conditions during some other period;
    (ii) by comparison with the quantity of water taken after the meter has been restored to proper order;
    (iii) by comparison with the registration of a substitute meter used temporarily in place of the defective meter; or
    (iv) by applying a correction factor if the meter is found to have a consistent error of registration.

6.6 Melbourne Water must propose to the Minister a program to monitor the implementation of the Plan, including arrangements to monitor:

(a) the effects of the Plan on the reliability of supply to licensees;
(b) the ability of the provisions to maintain environmental flows set out in Schedule 1; and
(c) in-stream environmental indicators.

6.7 The Minister may:

(a) approve a plan proposed under prescription 6.6;
(b) approve that plan, subject to amendments made by the Minister; or
(c) refuse to approve the plan.

6.8 Melbourne Water must implement a plan in the form approved by the Minister under prescription 6.7.

Redressing historical overuse

When meters are fitted to pumps, licence holders sometimes find that they are using more water than they are allowed under their licence. This is generally recognised as accidental overuse in the absence of any way to measure volumes taken. Licence holders in this situation have the opportunity to make adjustments such as finding ways of using less water or purchasing licences from others to make up the volume shortfall. However continuing overuse penalises others who are staying within their licence volumes. Therefore adjustments have to be made within a defined timeframe.

The Plan allows water licences to be permanently transferred without being converted to dam-filling conditions if this will make up a shortfall from overuse. This exception only applies for the first 12 months of the Plan's life.

Prescription 7 - REDRESSING HISTORICAL OVERUSE

7. Where historical overuse has occurred, Melbourne Water may approve an application under Section 62(3) of the Act to permanently transfer a licence within the first 12 months after the commencement of the Plan without being subject to prescription 3.3 if this will address the volume of overuse.

Review of the Plan

Melbourne Water must review the implementation and object of this Plan five years after it commences; and thereafter, at intervals of no more than five years. Melbourne Water must propose any consequential amendment (if any) to the Minister. Any amendment will require a review of all information and consultation with all stakeholders. The *Water Act* provides for the constitution and convening of a consultative committee to develop any proposed amendment and the process to be followed by the Minister before approving it. The review of the Plan may reconsider the total cap on allocations. If the cap is increased beyond the level recommended in this Plan, a separate licence for the environment should be created to protect the 12 ML surrendered as part of Stream Flow Tender.

Prescription 8 - REVIEW OF PLAN

8. Melbourne Water must:
   (a) review the implementation and object of this Plan:
      (i) five years after it commences; and
      (ii) thereafter, at intervals of no more than five years; and
   (b) propose any consequential amendment (if any) to the Minister.

Compliance and Reporting

The *Water Act* states that an approved management plan is binding on every person including every statutory body.

Anyone who takes water without proper authorisation may be guilty of an offence under the *Water Act* and be liable to prosecution. This may include anyone who takes water without a licence or who takes more water than the licence allows.

Licence holders are also required to comply with their licence conditions and licences can be revoked or not renewed if licence conditions are not complied with.

The Act requires Melbourne Water to report on its activities in carrying out its duties in relation to this Plan in each financial year and to give the report to the Minister and the Port Phillip and Westernport Catchment Management Authority by 30 September in each year; and make a copy available for public inspection at its offices.

13 FURTHER RECOMMENDATIONS TO ASSIST IN IMPLEMENTING AND REVIEWING THE PLAN

Additional recommendations have been proposed by the committee. Although these do not form part of the Plan, it is believed that it is important that they be noted.

Inadequate communication between Melbourne Water and Southern Rural Water has led to a significant knowledge gap about groundwater and surface water interactions, and inefficient management of these two resources. Melbourne Water and Southern Rural Water should enhance their communication to improve management of groundwater and surface water.

The Minister should investigate implementing a regulatory framework that will allow water to be taken in a flexible manner over a five-year period. For example changes could allow licence holders to take their allocation based on three or five-year rolling average volumes instead of an annual limit. This allows water to be taken in wet years and reduces pressure on the creek in dry years.

It has been noted that there may be conflicting policies that may hinder farmers increasing their dam capacity. It was decided that the overall environmental benefit of building a new dam to reduce the stress on the Stringybark Creek in summer should be investigated when farmers apply for planning permits to build their dam. For example, applications to Council to remove vegetation in order to increase the size of a dam need to be investigated in the context of the environmental benefits associated with increasing the size of the dam. To help implement the Plan, the overall benefit to the environment of increasing dam capacity needs to be considered when applying for the relevant planning permits. The environmental benefits of building the dam need to be greater than the losses, such as vegetation removal.

The committee discussed options to increase the flexibility of dam-filling licences. For instance, there will be some years when diverters are not able to get their full dam-filling licence allocation and would like to top up their dams during flood events when there is abundant water over topping the bank.

A change in licence condition would allow dam-filling licence holders to capture water during the high flow events between 1 December and 31 March, providing they do not exceed their annual allocation. This would be an unreliable and opportunistic licence condition that may only be able to be utilised every two or three years.

While the committee considered this idea to have merit, it was in conflict with established government policy that prohibits additional access to flows over summer. As such, no formal recommendation was included in the Plan.

14 APPROVAL

I, Tim Holding, Minister for Water, approve this Plan in accordance with section 32A of the *Water Act 1989*.

TIM HOLDING MP
Minister for Water

Date 7/01/08

15 REFERENCES

Bessell-Brown, T. 2000. *Environmental health of streams in the Yarra catchment.* Environmental Protection Authority, Victoria.

DNRE, 2002, The FLOWS method – a method for determining environmental water requirements in Victoria, Department of Natural Resources and Environment, Victorian Government.

DSE, 2004, *Securing our Water Future Together – Victorian Government White Paper,* Department of Sustainability and Environment, Victorian Government.

Egis, 2002, *Estimation of Impact of farm dams on streams – Stringybark Creek,* Report prepared for Melbourne Water, Egis Consulting.

GHD, 2004, *Stringybark Creek REALM Model Extension – Summary,* Report to Melbourne Water, GHD.

Grant, L., 2000, *Stringybark Creek Diversion Permit Holder Survey Results,* Farview Consulting P/L.

Koster W & Close P, 2001, *An assessment of environmental flow requirements for the Stringybark Creek Catchment,* Department of Natural Resources and Environment.

Melbourne Water and Port Phillip and Westernport CMA, 2004, *Port Phillip and Westernport Regional River Health Strategy – Draft for consultation,* Melbourne Water.

Sebire M, 1912, *Early History of Wandin 1867 to 1893,* Essay entered at the Annual Show of Wandin District Horticultural Society.

SKM, 2002, *Stringybark Creek Reliability of Supply Assessment,* Report prepared for Melbourne Water, Sinclair Knight Merz.

SKM, 2004, *Estimating available water in catchments using sustainable diversion limit. SDL instruction manual – draft A.* Report prepared for Department of Sustainability.

URS 2006, *Stringybark Creek economic study.* Report prepared for Melbourne Water.

16 APPENDIX 1

CONSULTATIVE COMMITTEE RESPONSES TO COMMUNITY SUBMISSIONS ON THE DRAFT SFMP

DSE – Department of Sustainability and Environment
MEEPPA – Mt Evelyn Environment Protection & Progress Association
HEWI – Healesville Environment Watch Inc.
EV – Environment Victoria

Environmental Flows – General (Prescription 3 and Schedule 1).
General committee comments: Noted and no further action required.

Respondent	Comment	Advisory Committee Comment
DSE	Prescription 3 – This is not a prescription relevant to a SFMP – it is covred by the Water Act. Delete	Deleted
MEEPPA	Environmental flows should recognise the full flow regime.	Noted
MEEPPA	A FLOWS study is undertaken as a matter of urgency.	Noted
HEWI	Environmental flows should recognise the full flow regime.	Noted
HEWI	A FLOWS study is undertaken as a matter of urgency.	Noted
HEWI	System requires more water than the minimum set by scientific modelling.	Noted
Jeff Grogan	The impact on us with the new environmental flows increasing could be severe as 2-3months of cut-off and rostering could mean we are only able to access less than 50% of our allocation. This could lead to crop loses and substantial loss of revenue, resulting in staff retrenchments etc. One of our options would be to increase our pumping capacity to effectively harness high flows. The cost to replace existing pump and pipeline would be approximately $40,000. This would however have the undesirable affect of triggering flow bans.	Centre for Agriculture and Business has put a submission to get funding for a project looking at a pilot/demonstration to see if dam sharing might work. It is anticipated subsidies will address issues such as this.
Environment Victoria	Congratulates the committee on committing to full recommended environmental flows.	Committee notes that they had no influence over the Minister's guidelines, specifically in relation to the levels of the environmental flows.
Clare Worsnop	Am concerned that the minimum stream flow is insufficient for the healthy and realistic health of the vegetation and fauna.	Noted
Shire Yarra Ranges	The staged implementation of environmental flows, which is reliant on the installation of the St Huberts Rd gauging station, is supported by the Shire. This demonstrates the ability for this Plan to be implemented in a practical manner. The policies to enable implementation of environmental flows in the Stringybark Creek Catchment seem to complement each other to ensure environmental flows are maintained through various mechanisms.	Noted

Environmental Flows – Upper Water Supply Protection Area (Schedule 1. Point 1.1).

General Committee Comments: Noted and no further action required.

Respondent	Comment	Committee Response
Gavin Bullas	They seem to be workable for my own application of water for these periods.	Noted
A Edwards	Is the current environmental flow (1ML/day) insufficient to support the desired condition for wildlife?	Yes

Environmental Flows – Lower Water Supply Protection Area (Schedule 1. Point 1.2)

General Committee Comments: Noted and no further action required.

Respondent	Comment	Committee Response
Gavin Bullas	Would not make changes to the recommendations. I feel it is a good idea that dams should be refilled if and when storm flooding occurs.	Noted
Alan Upton	Greater chance of extreme flows therefore could have even more flexibility for licence holders.	Noted

Cost Benefit Analysis of Implementing Environmental Flows

General Committee Comments: This study was done to understand and indicate to the Minister the magnitude of the likely losses to the farming community.

Respondent	Comment	Committee Response
MEEPA	The economic study contained in the report is superficial and devalues the environmental benefits of the Stringybark Creek.	Noted
Jeff Grogan	Assuming that as a business, we are prepared to accept a loss for the sake of new aquatic species introducing themselves is totally flawed.	Noted
Jeff Grogan	The draft proposal suggests that the Shire of Yarra Ranges would accept costs of up to $124,000 and losses of up to $1,097,000. Are we therefore to assume that there will be compensation for capital expenses in achieving the environmental flows and compensation for crop losses on a year that we are not able to harvest our allocation of water? If so, is the shire community aware of its liabilities for achieving such goals in stream life?	Noted

Dam-filling period (Prescription 2)

General Committee Comments: Melbourne Water to followed this up with a risk assessment that documented the logic and justified the decision.

Respondent	Comment	Committee Response
EV	EV does not support this recommendation. The proposed changes to the winterfill period may have impacts on fish migration and breeding. EV proposes that no changes are made to the current winterfill period.	Noted
DSE	Not Supported. Need risk assessment and independent ecological advice regarding possible impacts to the environment in the months of June to November.	Risk assessment complete with a summary in the Plan.

Top up licences (Prescription 2)

General Committee Comments: This will remain in the Plan as something the committee discussed but made no formal recommendation.

Respondent	Comment	Committee Response
MEEPPA	Over the bank flow events should not be harvested as additional water for farmers. These have a natural function in assisting in floodplain health.	Noted
HEWI	Over the bank flow events should not be harvested as additional water for farmers. These have a natural function in assisting in floodplain health.	Noted
Gavin Bullas	I feel it is a good idea that dams should be refilled if and when storm flooding occurs.	Noted
Gavin Bullas	Great idea. As over the past 6-7 years most of our rain has occurred in the stormier months of September to March (comment on peak flow licences is also relevant).	Noted
EV	EV does not support this recommendation. Again, natural flow regimes, including excess flows, are required to support ecosystem function. EV suggests that inclusion of this recommendation in the draft be reconsidered.	Noted
DSE	Dam-filling licences allowing topping up of dams - This recommendation should be removed as it is in conflict with government policy of no new summer diversions (refer to Our Water Our Future).	Noted
Allan Upton	Good idea and plan	Noted

Peak flow licences

General Committee Comments – This will remain in the plan as it is only an investigation and will be examined in light of the FLOWS study. The committee recommends the FLOWS study be completed urgently.

Respondent	Comment	Committee Response
Gavin Bullas	I feel this would be very difficult thing to implement and govern. How fast can someone obtain the ok to implement of activate this licence? If this licence is already held who/how will it be policed effectively?	These are all questions that would be considered during the investigation.
EV	EV does not support recommendation 9 regarding investigation of peak flow licences. Peak flows are an important ecological process. Diverting additional water during these periods will have adverse environmental impacts. EV suggests that this recommendation be removed from the draft Plan.	Noted
A Edwards	Good idea.	Noted
DSE	Conditionally supported. Would need FLOW study and risk assessment first.	Noted
Alan Upton	Very good	Noted

Trading rules (Prescription 4)

General Committee Comments: The cap should not be reduced. Water traded out of the catchment frees up water to be traded back into the catchment. The committee does not support a 20% reduction in water allocation upon trade.

Respondent	Comment	Committee Response
Gavin Bullas	I feel licences should only be held by land owners and not transferable at anytime or traded down or up stream. If someone doesn't use their water – this should be to the benefit of the stream – not another user down/up stream.	Noted
Gavin Bullas	Non-transferable rights. If land usage has changed so be it. One day that owner may sell – the new buyer may want to farm only to find that any water rights were sold off and now they can't get any water.	Noted
Ficorilli	Our licence/storage is 15ML and it is filled in the winter. It is during the spring/summer period when water is used on our crops. Normal rainfall seepage and runoff cover most of our needs yet at times we need the flexibility to access/buy or trade an extra 6ML from downstream or access the remaining water in our dams after 15ML limit is used. This draw down of water from our dam will not effect the environment.	Noted
EV	While supporting the principle of water trading, EV does not support this recommendation in its current form. Trading should only be allowed from upstream users to downstream users. Trading upstream increases the stress on rivers as more water is out of the system for a longer stretch of river.	Noted
DSE	The plan discusses the potential impacts of implementing environmental flows on the reliability of supply of diverters. The assessment of reliability of supply should guide the committee in making decisions regarding improving reliability of supply, such as reducing the level of allocation through trading.	Noted
DSE	Trading has to comply with section 40 of the Water Act – ie. have regard for impacts on other users and the environment.	Noted
DSE	Regarding the reduced reliability after implementing recommended environmental flows, suggest the committee consider increasing this reliability through cap reductions via trade.	Noted
DSE	Not supported. Trading must comply with Section 40 of the Water Act – i.e. have regard for impacts on other users and the environment etc.	Melbourne Water will always have discretion and will assess the impacts on other users and the environment etc.
Shire of Yarra Ranges	It is important to monitor trading within the catchment to ensure trading does not cause detrimental impacts on the stream, particularly in the realm of maintaining a sustainable base flow for long term in stream health.	Noted

Licence allocations and management (Prescription 1)

General Committee Comments: Noted and no further action required

Respondent	Comment	Committee Response
Gavin Bullas	If my understanding is correct these recommendations will not effect my allocations so I don't mind the supposed limits set.	Noted
A Edwards	It sounds reasonable guide that may need to be reviewed depending on the yearly rainfall.	Noted
Allan Upton	OK	Noted
DSE	Support the committee recommendation. Suggest the committee considers reducing cap volume by trade, which would result in improved reliability of supply.	Noted
Shire Yarra Ranges	The Shire supports the prescription to cap the total volume of water available to (a) all licences and (b) all-year licences. Investigation into the provision of increased flexibility of licences by utilising rolling averages, or other roll over schemes, is encouraged by the Shire.	Noted

Stream Gauge and Monitoring (Prescription 6)

General committee comment: Noted

Respondent	Comment	Committee Response
HEWI	The second flow gauge should be installed without delay	Noted
Francis Smith	Clegg Rd gauge does not detect high flows after rain – the data may therefore be inaccurate.	Noted
Clare Worsnop	Am concerned that stream flow meters don't give an accurate reading for whole creek. Demand that Melbourne Water do a stream flows reading and measurement immediately.	Noted.

Water recycling and efficiencies

General committee comment: Committee supports these comments however they are outside the scope of this project.

Respondent	Comment	Committee Response
MEEPA	Recycled water should not be used to augment environmental flows.	Agree but outside scope of this project.
HEWI	Recycled water should not be used to augment environmental flows.	Agree but outside scope of this project.
HEWI	Where appropriate we would be supportive of industry and agriculture using recycled water to reduce reliance and stress on the creek.	Agree but outside scope of this project.
A Edwards	A lot of water is wasted from glasshouses and plastic houses. It should be collected and re used for irrigation so that they have cheap (phytophora free) to water their crops all year.	Agree but outside scope of this project.
MEEPA	Further improvements need to be made to increase this baseline environmental flow. Specifically, the State Government should invest more in programs to assist farmers to increase their water use efficiencies.	Agree but outside scope of this project.
HEWI	Further improvements need to be made to increase this baseline environmental flow. Specifically, the State Government should invest more in programs to assist farmers to increase their water use efficiencies.	Agree but outside scope of this project.

Complementary Works

General Committee Comments: Committee supports these comments however they are outside the scope of this project.

Respondent	Comment	Committee Response
MEEPA/HEWI	Melbourne Water must undertake works such as the restoration of in stream vegetation and the removal of weeds.	Agree but outside scope of this project.
HEWI	We would like to see a more persistent approach by Melbourne Water in approaching landholders along the length of the Stringybark Creek to join this scheme.	Agree but outside scope of this project.
HEWI	Weedicide, fungicides – Comprehensive research into their composition, frequency and mode of application should also be a continuing priority. Use reduction must be encouraged and specific products prohibited promptly if a cumulative effect is found.	Agree but outside scope of this project.
HEWI	Encouragement of and support for more volunteer Water Watch activities and revegetation projects to raise community awareness for the essential biodiversity protection in this region.	Agree but outside scope of this project.
A Edwards	Put a stop to the pollution to the water catchment by houses that almost run into it directly.	Agree but outside scope of this project.
A Edwards	Clean weeds from banks and start a program of native vegetation regeneration as a barrier to erosion and silting. Also, regulate earthworks that are creating large amounts of silt!	Agree but outside scope of this project.
Francis Smith	The Forest Rd precinct must have no further clearing to ensure safe passage of animals that use Stringybark Creek as a migratory route.	Agree but outside scope of this project.
Francis Smith	Replanting of indigenous vegetation is recommended as a high priority.	Agree but outside scope of this project.
Francis Smith	If water for irrigation is limited, consider dams to reduce evaporation…perhaps an education program along with a subsidy could be considered.	Agree but outside scope of this project.
Allan Upton	Extensive tree planting along creek particularly in the lower reaches will have a big influence outside this plan 5 year life. Guidelines and recommendations should be looked at now.	Agree but outside scope of this project.

Other

Respondent	Comment	Committee Response
HEWI	Monitoring of all dams in terms of size, the consequent impact on flow rates and the environmental effects on the Stringybark Creek are essential and a closer working relationship with the Shire of Yarra Ranges is imperative.	Noted
HEWI	Ask that Melbourne Water include specific objectives for optimum habitat and biodiversity restoration within the Final SFMP recommendations	Noted however outside scope
Gavin Bullas	How does the flow from the last 8 years compare to flows of 50 odd years ago? Are we over reacting to a dry spell?	This information is currently unavailable. The FLOWS study will address this.
EV	EV partially supports recommendation 5 regarding FLOWS assessment. As noted in the draft plan, environmental base flows are insufficient to ensure stream health. Rather, a full flow regime must be implemented that mimics, as closely as possible, natural conditions. EV requests that Melbourne Water undertake a FLOWS study as a matter of priority.	Agreed.

EV	Re recommendation 13 – investigating regulatory framework that allows water to be taken as an average. EV requires further information before endorsing this recommendation. The intent of the recommendation is not clear and further work is necessary to assess the potential ecological impacts of the proposal.	Intent of recommendation 13 clarified in the Plan.
EV	Re recommendation 14 – re considering the overall benefits to the environment when applying for permits to build a dam. Again, the intent of this recommendation is not clear. EV suggests that the proposal be reworded to state that the full environmental impacts, both positive and negative, of increasing dam capacity need to be considered when applying for the relevant permit.	MW to clarify the intent.
A Edwards	Reduce mega-rights to licences that don't use it so that others can have some.	Committee does not believe this will be a problem because the licence volumes are so small.
DSE	It is important that, prior to consulting with the community, the committee reaches consensus and has confidence in the plan's outcomes. If the committee believes there are fundamental concerns with the SFMP planning process, they should seek clarification from the Minister.	The comment in Plan regarding the Minister's guidelines will be reworded and remain in the plan.
DSE	Other SFMPs refer to no new dams on "waterways" – why is "watercourse" used here? What applies to new dams on waterways?	A watercourse is something that looks like a creek. Waterways include anything with a catchment 60Ha or greater. Some of these minor waterways may be considered suitable for dams subject to an environmental impact assessment. A licence is still required to build a dam on a waterway. The intent of this clause has been clarified in the Plan.
Francis Smith	Prescription 7 – Monitoring assumes that accurate metering of all streams is paramount to this whole program and where equipment is not maintained properly then the complete process is called into question.	Noted. Melbourne Water to follow up.
Francis Smith	The source of Stringyark Creek described in the plan is incorrect especially the Valley Tract.	Noted.
Francis Smith	Frank has identified a whole suit of species in the Stringybark Ck catchment that the Plan does not mention.	Include a statement in the plan.
Francis Smith	Rainfall data collected at Olinda Forest dam (Silvan Res) shows the highest rainfall month to be October. This doesn't match the highest stream flows months shown in the plan (figure 2). For this reason I believe that there should be a higher correlation between actual rainfall statistics and 'fill ups' etc.. To be fair the Olinda Forest Dam stats are from 1931.	Note
Francis Smith	The upper catchment flows through a drier Sclerophyll terrain and would have more in common with the rainfall at Mt Evelyn and Wandin which is historically lower than around the hills and forest. After the end of next year we will have averages over 10 years for these areas. In addition the rainfall patterns over 80 years have changed due to vegetation clearing and climate change.	Note

Francis Smith	The date on bans should not extend beyond October 31st and should extend to March 31st. Allowing fill ups till the end of November is part of the .. 'history of overuse' particularly in drier years. 1981/82 to 1996/97 are examples of this. The demand is now outstripping supply in some years by nearly 100%. If we are talking sustainability well then lets begin practising it. The recommended seasonal Low flow trigger is 1.5 ML(per day) but with the licensing and control of aesthetic dams/diversions etc. the seasonal Low Flow trigger could be raised to 2ML and would help with the much needed seasonal flushing.	Previously discussed
Shire Yarra Ranges	Object of the SFMP. We suggest that the Plan reflects an equal commitment to environmental and economic values as articulated by objective and Prescription 2 – Schedule 1. Over time this should be measured as part of Melbourne Water's monitoring program as determined under Prescription 7 – MONITORING.	Attempts will not be made to completely measure changes. This is outside terms of reference.
Shire Yarra Ranges	It is difficult to provide detailed comment regarding the provisions in this prescription as licence condition 1.2 in Schedule 2 was not available in the Draft Plan. The Shire would like to ensure environmental requirements are considered equally to the needs of licence holders, and believes this is the intent of licence condition 1.2 in Schedule 2, as discussed with Ian Ada, the Shire representative in development of this Plan. This point is surely the foremost original intent for developing Stream Flow Management Plans for such waterways in the first instance.	Amend
Francis Smith	Aesthetic dams should be controlled i.e. permission needed to fill these dams… No new aesthetic storages should be constructed and all existing storages should be metered at the landholder's expense… Recommends that the committee raise this issue with the Minister and suggest a change in the legislation.	Noted. Aesthetic dams require a licence for the evaporation component.
Clare Worsnop	There is not enough consideration given to climate change.	The committee believe this is beyond the possibilities of the project due to a lack of information.
Clare Worsnop	Silt build-up disturbance to habitat for mammals.	Noted however outside scope. Minimal compared to 30 years ago.
Clare Worsnop	Not enough consideration to monitoring of pumping particularly on drought years.	Noted.
Allan Upton	What dispute mechanisms are available for disputes between Melbourne Water and users?	Altered wording in Allan's comments.
DSE	Recommendation 13 – Minister to investigate regulatory environment – this should be removed as a recommendation as it is not consistent with the Act – should be included in the covering letter to the Minister.	This will remain in the Plan but reworded to clarify the intent of the recommendation
DSE	Recommendation 14 – overall benefit of dam building. Need to note that benefits to the environment of increasing dam-filling capacity include reducing pumping by diverters in summer, when ecological stress in rivers and streams is greatest.	Noted and amended
DSE	Suggested additional recommendation: Recommend that meters also be installed on all registered dams greater than 5 ML	The committee noted that at this stage the benefits achieved from installing meters on all registered dams greater than 5ML does not warranted the cost required to do this.

DSE	Suggested additional recommendation: Should include prescription that a dam constructed after the commencement of the SFMP must allow bypass of summer flows – e.g. -"The licensee must not allow water (other than rain water supplied to a dam from the roof of a building, or a bore or for use other than domestic and stock use) to collect in the dam between 1 December and 31 May in the following year"	The committee believes this is impractical.
Shire Yarra Ranges	Monitoring – The Shire is interested in receiving information about the state of the catchment and working towards improving its health where possible.	Noted
Shire Yarra Ranges	Redressing historical overuse. This policy provides a degree of flexibility to allow users to redress overuse within a reasonable period. This is supported by the Shire.	Noted
Shire Yarra Ranges	The Shire of Yarra Ranges considers native vegetation removal very seriously and also understands the need to manage stream flow in a more sustainable manner. Therefore, the Council will investigate applications to remove native vegetation, to municipal dams, in an integrated manner assessing all environmental benefits. However, all applicants from across the Shire are required to provide any reasonable alternatives which avoid native vegetation removal in accordance with the Victorian Government's requirements of the Native Vegetation Management Framework and Clause 52.17 and Clause 53 of the Shire of Yarra Ranges Planning Scheme.	Noted
Shire Yarra Ranges	It is understood that the impact of aesthetic and stock and domestic dams can have a significant impact on stream flow. The Shire commends the consultative committee for developing policies for the management of aesthetic dams and associated evaporation. However, the Shire is concerned about the definition of aesthetic dam 6.1 (b) (ii) "designed specifically for environmental… purposes". Based on known water quality treatment and design performance of lakes, ponds, etc which has been conducted by CRC Freshwater Ecology/CRC Catchment Hydrology/ Melbourne Water partnership – the Shire does not believe that many claims can be made that a constructed dam performs any reasonable or adequate "environmental purpose… for erosion control or nature conservation…" If this can be proven, through other statutory controls, the Shire suggests the water which will be "lost" from the system through evaporation should be accounted for in Prescription 1 Prohibition on granting new licences. These constructions should also be required to apply key principles and design elements of Melbourne Water's Wetland Design Guildelines and be appropriately assessed by Melbourne Water prior to construction. The Shire also commends the committee for prescription 6.3 and invites Melbourne Water to begin discussions with the Shire to determine the most appropriate way to implement this policy.	Noted
EPA	It light of the likely future change in land use within the catchment there are likely to be opportunities for the decommissioning of unutilised farm dams. It is suggested that further comments be added to reflect this opportunity within the catchment through the decommissioning of dams.	In the five years of the plan this point is not expected to make a significant difference.

EPA	The document refers to the State Environment Protection Policy (SEPP) Schedule F7 – Waters of the Yarra Catchment (see p. 17). The SEPP may be revised following the Water Quality Improvement Plan process and as such in order to reflect likely future changes to F7, it is suggested that the document be amended with the addition of " (as amended)"	Amended.

16 APPENDIX 2: STREAM FLOW TENDER

Environmental flows as set by the Stream Flow Management Plan will be implemented in five years (on 1 July 2012). To help achieve these environmental flows earlier, the State Government has made financial assistance available to licence holders via Stream Flow Tender, in exchange for changing licence conditions to improve environmental flows.

Stream Flow Tender was held in Olinda Creek, Stringybark Creek, Pauls Creek, Steels Creek and Dixons Creek in May-July 2007. Participants in *Stream Flow Tender* submitted bids for funding in exchange for altering their licence conditions in one of three ways:

- Changing the time of access to water to reflect the environmental flow recommendations in the Stream Flow Management Plan;
- Reducing their licence volume by a specified amount; or
- Surrendering their entire licence.

OUTCOMES IN STRINGYBARK CREEK

Nineteen bids were received in Stringybark Creek, and of these, 15 bidders were successful. This resulted in:

- Surrender of 12 ML of licence volume (2 ML all-year licence and 10 ML on-stream dam-filling licence); and
- 566 ML of licence volume (13 licences) that will be managed in accordance with the licence conditions specified in the Stream Flow Management Plan.

As a result, the recommended cap on licence volume in the catchment is 2664 ML on all licensed irrigation, which reflects 1527 ML of all-year licences. Reducing the recommended cap ensures that the surrendered licence volume remains in Stringybark Creek for the environment.

All successful bids will result in change to licence conditions (either reduced licence volume or changed conditions of access) on licence renewal on 1 July 2008. All other licence holders will change their licence conditions on 1 July 2012, with staged implementation of winter flows in the lower catchment, as stated in Schedule 1 of the Stream Flow Management Plan.

ENVIRONMENTAL OUTCOMES IN STRINGYBARK CREEK

Stream Flow Tender increased environmental flows in Stringybark Creek. The improvement in flows in Stringybark Creek is approximately 65% of the benefit that will be achieved by the full implementation of the Stream Flow Management Plan, which will occur in 2012.

Schedule 1

LICENCE CONDITIONS

1. Licence to take and use water from a waterway for any purpose other than domestic and stock use: [section 51(1)(a)]

1.1 From 1 July 2012, a licensee located above Clegg Road must not take any water from a waterway when the stream flow at Clegg Road gauging station:
- (a) is 1.5ML/day or less, at any time between 1 November and 30 June; or
- (b) is 4.3 ML/day or less, at any time between 1 July and 31 October.

1.2 A Licensee located below Clegg Road must not take any water from a waterway when the stream flow:
- (a) in 2010, or in the year after the installation of the St Huberts Road gauging station, whichever is the later, is 8ML/day or less at the St Huberts Road gauging station, any time between 1 July and 31 October; or
- (b) in the following year, is 9 ML/day or less at the St Huberts Road gauging station, at any time between 1 July and 31 October, or
- (c) in all subsequent years, is:
  - (i) 4.5 ML/day or less at the St Huberts Road gauging station, at any time between 1 November and 30 June in the following year; or
  - (ii) 11 ML/day or less at the St Huberts Road gauging station, at any time between 1 July and 31 October."

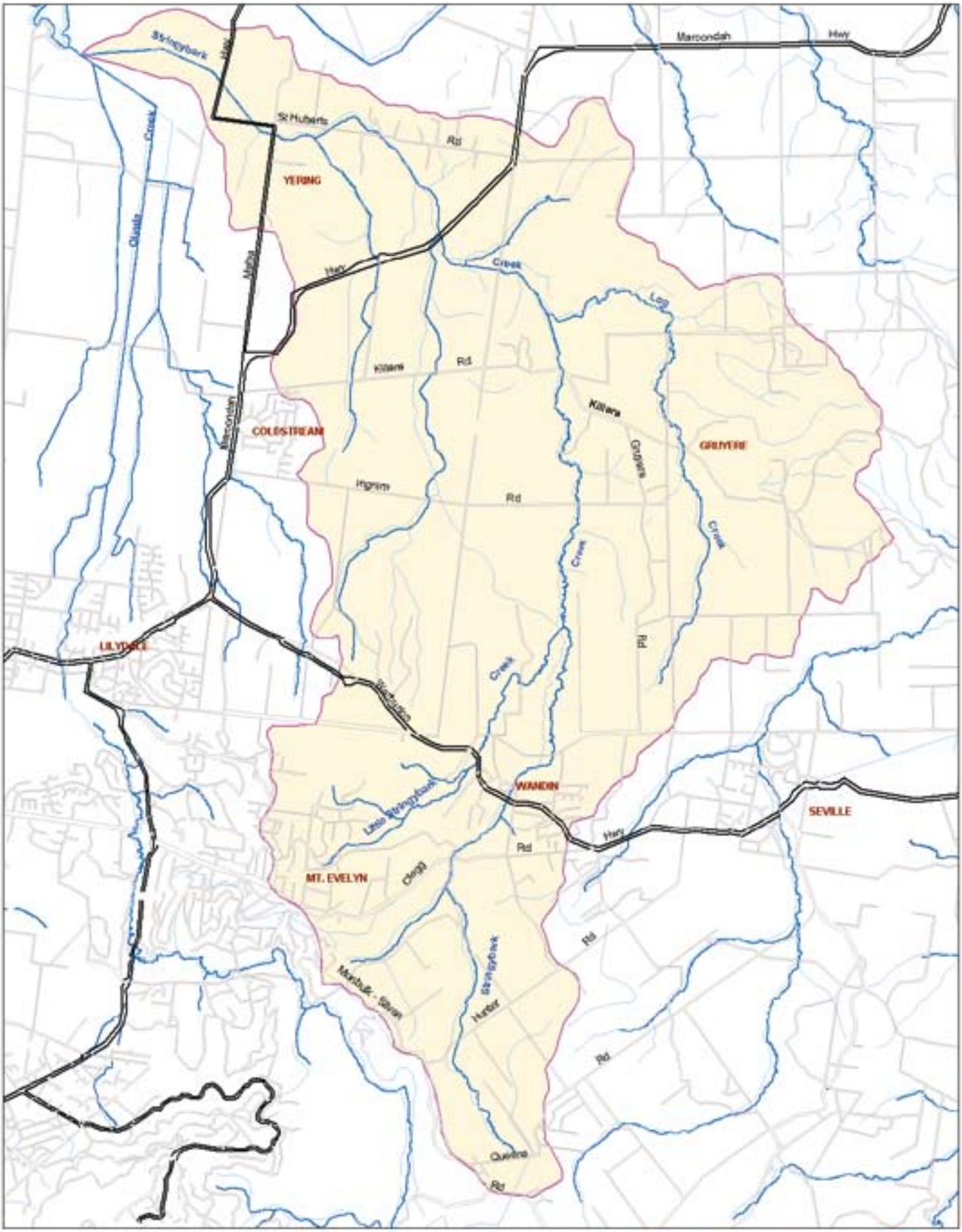
1.3 The Licensee must comply with any roster or restriction prepared and implemented by Melbourne Water under prescription 4 of the Stringybark Creek Water Supply Protection Area Stream Flow Management Plan.

Note: Notwithstanding clause 1.1, where the Licensee was a successful participant in Stream Flow Tender, the Licensee must comply with their new licence conditions, as stated on their agreement with Melbourne Water, from 1 July 2008.

2. Licence to take and use water from a waterway (section 51(1)(a); or a spring or soak or dam for a use other than domestic and stock use (section 51 (1)(ba).

From the date upon which Melbourne Water installs a flow meter to measure water taken, used or collected for commercial or irrigation purposes, the Licensee is not required to comply with the condition describing the area to be irrigated in the First Schedule of this Licence.

Note: These conditions are additional to, or replace, existing licence conditions where appropriate.



Stringybark Creek Catchment
Water Supply Protection Area

Melbourne Water

Melbourne Water
100 Wellington Parade, East Melbourne
PO Box 4342 Melbourne Victoria 3001
Telephone 131 722 Facsimile 03 9235 7200
melbournewater.com.au

ISBN 0-9751899-8-0

Printed on paper manufactured at the Burnie mill in Tasmania, which has ISO14001 environmental system certification. Water at the mill is recycled and reused. The paper is acid free, has neutral pH and is made of pulp from plantation timbers and pre-consumer waste.