Water Act 1989

LITTLE YARRA AND DON RIVERS WATER SUPPLY PROTECTION AREA

STREAM FLOW MANAGEMENT PLAN 2012

State Government Victoria

Melbourne Water

CONTENTS

PREFACE

Throughout Victoria, Stream Flow Management Plans (SFMPs) are being prepared to better manage the surface water resources of particular catchments. The plans are prepared for the benefit of water users and the general community and they aim to improve the environmental health of waterways in these catchments.

The preparation of this SFMP commenced in May 2009 by a consultative committee appointed in accordance with the *Water Act 1989* (the Act). The consultative committee, consisting of the following people, has developed this SFMP following extensive discussions and consideration of technical work.

LITTLE YARRA AND DON RIVERS STREAM FLOW MANAGEMENT PLAN CONSULTATIVE COMMITTEE MEMBERS

Mr Christopher Young (Chair) Landholder

Ms Elizabeth Jacka (Deputy-Chair) Landholder

Mr Kevin Sanders Landholder

Mr Paul Peggie Landholder

Mr Stuart Ryder Landholder

Ms Catherine Drummond Melbourne Water

Dr Elizabeth Wallis Yarra Ranges Shire Council

Ms Penny Winbanks Southern Rural Water

Ms Amber Sprunt Environment Victoria

Dr Daniel Mainville
Department of Sustainability and Environment

PAST CONSULTATIVE COMMITTEE MEMBERS

Ms Amy McDonald Environment Victoria

Mr Murray McIntyre
Department of Sustainability and Environment

Ms Rachel Murphy Yarra Ranges Shire Council

These members were appointed under section 29 of the Act. These appointments were made following nomination by Melbourne Water and recommendations by the Department of Sustainability and Environment.

LITTLE YARRA AND DON RIVERS STREAM FLOW MANAGEMENT PLAN OBSERVERS/ADVISORS

Mr Anthony Urban VRFish

Mr Phil Mitchell
Department of Sustainability and Environment

Ms Anna Lucas Melbourne Water

Mr Paul Rees Melbourne Water

Mr Steve Hosking Melbourne Water

1 INTRODUCTION

Section 27(1) and (2) of the Act allow the Minister to declare a Water Supply Protection Area in order to protect the groundwater resources in the area, the surface water resources in the area or both. Both the Little Yarra River and Don River catchments have been declared under the Act to be a Water Supply Protection Area for surface water (see Section 2).

Once an area is declared as a Water Supply Protection Area, the Minister must under section 29(1) of the Act appoint a consultative committee to develop a management plan for the declared Water Supply Protection Area. The Little Yarra and Don Rivers Consultative Committee (for a list of members - see the Preface) was appointed in accordance with the Act and is made up of landholders, representatives of government agencies, local council and a representative of Environment Victoria.

Section 32A(1) of the Act states that the object of a management plan is to make sure that the water resources are managed in an equitable manner and so as to ensure the long-term sustainability of those resources.

Section 32A(3) of the Act sets out what a management plan may prescribe. Section 32A of the Act, together with the guidelines issued in accordance with section 30 of the Act (titled "*Guidelines for Draft Management Plan: Little Yarra and Don River Catchments Water Supply Protection Area*") provide the scope for this Plan.

Management plans seek to recognise the needs of existing and future 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 in ensuring the long-term sustainability of the water resource.

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, Plenty River, Olinda Creek, Stringybark Creek and Steels, Pauls and Dixons Creeks. The Little Yarra and Don and Woori Yallock Stream Flow Management Plans are the last two plans being prepared under this priority catchments program. Existing plans will be reviewed periodically and if deemed necessary revised in consultation with relevant stakeholders.

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.

This Plan provides descriptions and/or prescriptions for:

- The Water Supply Protection Area (Section 2),
- Water entitlements and use (Section 3),
- Administration and enforcement (Section 4),
- Objectives of the Plan (Section 5),
- Restrictions on taking surface water (Section 6),
- Licence transfers (Section 7),
- Restrictions and prohibitions on the issue of licences (Section 8)
- Metering and accounting (Section 9),
- Monitoring (Section 10)
- Private dams (Section 11),
- Licence conditions (Section 12), and
- Annual reporting (Section 13).

Community consultation undertaken during the development of this draft Plan has included promotion through local media, community information sessions and individual notification of licence holders. A consultative draft was released in July 2011 and submissions were invited. The consultative committee considered the issues raised by the community submissions, and amended the draft Plan in response. A summary of the Consultative Committee's response to these submissions is provided in the Appendix One.

2 THE LITTLE YARRA AND DON RIVERS CATCHMENTS WATER SUPPLY PROTECTION AREA

THE WATER SUPPLY PROTECTION AREA

This Plan applies to the surface waters of the Little Yarra and Don River Catchments Water Supply Protection Area. In accordance with section 27 of the Act, Melbourne Water advertised the proposed Water Supply Protection Area for Little Yarra and Don Rivers in May 2006. After receiving pubic submissions, the Little Yarra and Don River catchments were declared a Water Supply Protection Area in October 2006. The boundaries of the Little Yarra and Don River Water Supply Protection Area may be inspected on Plan No. LEGL./05–526 at the Central Plan Office, Department of Sustainability and Environment.

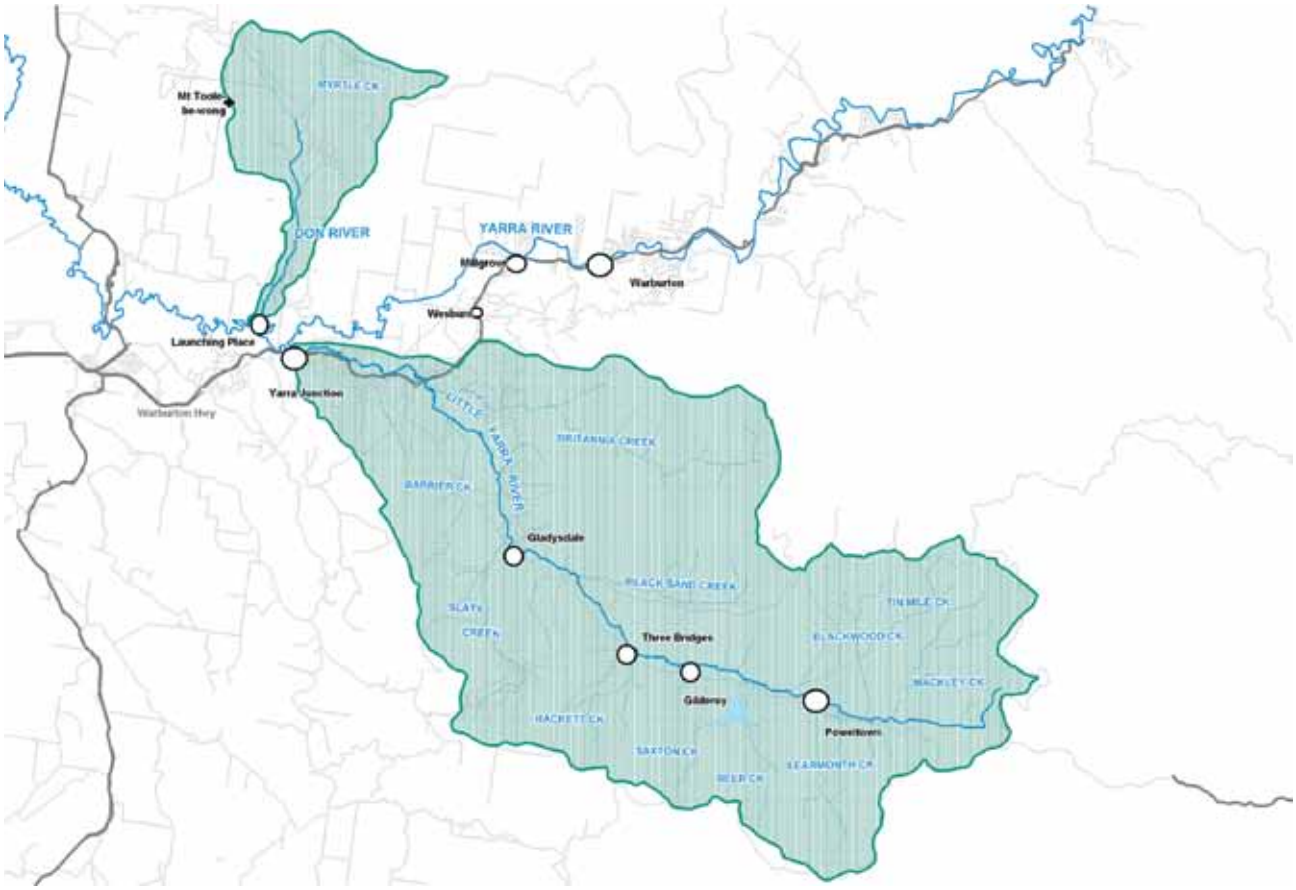
LITTLE YARRA RIVER CATCHMENT

CATCHMENT DESCRIPTION

The Little Yarra River rises to the east of Powelltown in the Yarra Ranges. The stream flows generally north-west through the townships of Powelltown, Three Bridges, Gladysdale, and Yarra Junction, before joining the Yarra River near Don Road in Launching Place. The total catchment area of the Little Yarra River is approximately 154km^2 (LYDEFTP 2004b).

Tributaries of the Little Yarra include Britannia, Black Sand, Blackwood, Slaty, Hackett, Saxton and Learmonth creeks. Much of the upstream region of the catchment is heavily forested, with logging occurring in some areas. Since 1970, 2055 hectares of forest has been logged in the Little Yarra River Catchment. The majority of the logging occurred in the 1980s and 1990s, although some still occurs.

Figure 1 – The Little Yarra and Don River Catchments



Between Powelltown and Three Bridges, there is a narrow strip of cleared land along the Little Yarra River. Below Three Bridges, most of the valley is cleared for a variety of agricultural uses, including orchards, vineyards, vegetables, tree farms and grazing. The upstream reaches of the river system are considered to have high environmental values (LYDEFTP 2004b).

The Little Yarra River drains an area of high and reliable rainfall (average 1400mm per year), and maintains permanent flows throughout the year (LYDEFTP 2004b).

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 a stream flow management plan 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 and management within the Water Supply Protection Area.

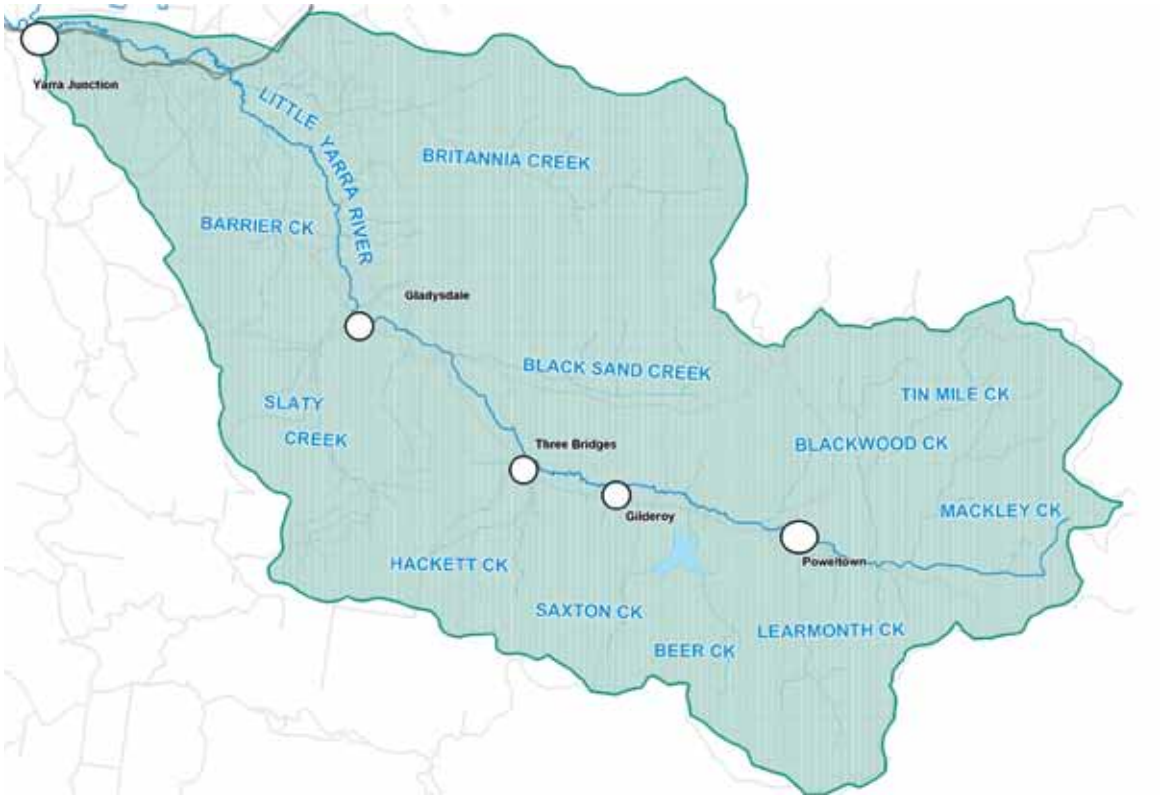
The flows of a river or creek may include high flows such as floods, very low flows, cease to flow events and medium freshening flows that follow dry periods. All components of the flow regime are important to stream health, with local flora and fauna having become reliant on and adapted to particular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

Small native migratory fish within the Yarra River system (including the Little Yarra River) 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.

Eleven species of fish (seven native and four introduced) have been recorded in the Little Yarra River catchment (Ryan 2008). The native species recorded are: Mountain Galaxias, Southern Pygmy Perch, River Blackfish, Short-Finned Eel, Australian Smelt, Short-Headed Lamprey and Pouched Lamprey. The exotic species recorded are: Brown Trout, Rainbow Trout, Roach and Goldfish. Four species of native crayfish have also been recorded in the Little Yarra River Water Supply Protection Area (Ryan 2008). There is some evidence that the River Blackfish in the Little Yarra River are larger in size than other populations in nearby tributaries and the Yarra River. While the reason for this is uncertain, the populations in the Little Yarra River should be seen as of local conservation significance (LYDEFTP 2004b). Notable species of conservation significance, which have not been recorded but are expected to occur, include the Australian grayling (LYDEFTP 2004b).

Platypus are frequently recorded in the Little Yarra River and are likely to be relatively abundant along essentially the entire length (Serena & Williams 2008). Nine species of frogs have been recorded or are likely to occur throughout the Little Yarra River catchment. Macro-invertebrate populations in the Little Yarra River are considered good, with species from mayfly, stonefly and caddisfly families found along the river.

Figure 2 – Little Yarra River Catchment



The aquatic macro-invertebrate communities in both rivers are at, or near, the guidelines in the SEPP (Water of Victoria) Schedule F7 for the Yarra River and tributaries. Many other species of reptiles, amphibians, birds and mammals have also been recorded in the Little Yarra River catchment, including several that are considered threatened in Victoria and/or Australia. These include:

- Leadbeater's Possum (*Gymnobelideus leadbeateri*)
- Southern Brown Bandicoot (*Isoodon obesulus obesulus*)
- Sooty Owl (*Tyto tenebricosa*)
- Powerful Owl (*Ninox strenua*)
- Lewin's Rail (*Lewinia pectoralis*)
- Swamp Skink (*Egernia coventryi*)
- Brown Toadlet (*Pseudophryne bibronii*)

There are also many species of rare or threatened flora recorded in the Little Yarra River catchment, including Tall Astelia (Astelia Australiana) which is listed as vulnerable in Australia.

Two major riparian and floodplain vegetation communities occur along or adjacent to the Little Yarra River. Riparian Forest (dominated by Manna gum) occurs along the Little Yarra River and associated flats and terraces from Powelltown to the confluence with the Yarra Floodplain. Below Gladysdale, as the gradient of the river moderates, this vegetation community becomes somewhat confined to riparian settings and minor levees. Swampy Riparian Woodland (dominated by Swamp gum and Manna gum) has been extensively cleared in the lower reaches of the Little Yarra (below Gladysdale); however, some significant stands remain in good condition.

The upper reaches of the catchment flow through predominately forested catchments and are considered to be of excellent health. Further downstream stream quality deteriorates, due to the loss of habitat and plants, build up of sand deposits, encroachment of willows and other weeds and general deterioration of water quality. Given that the scale of the impacted stream zone is limited, prospects for rehabilitation of the middle and lower reaches of the Little Yarra River are considered to be good. As a consequence of the moderate to steep slope gradients, a large proportion of the catchment could not be selected for agriculture and remains in a comparatively unmodified condition. Only 23% of the Little Yarra catchment has been cleared (LYDEFTP 2004b).

With Melbourne Water's assistance a number of landholders are actively rehabilitating sections of the streamside through the Stream Frontage Management Program. Catchment restoration efforts have included the re-introduction of in-stream habitat, willow removal and replanting programs.

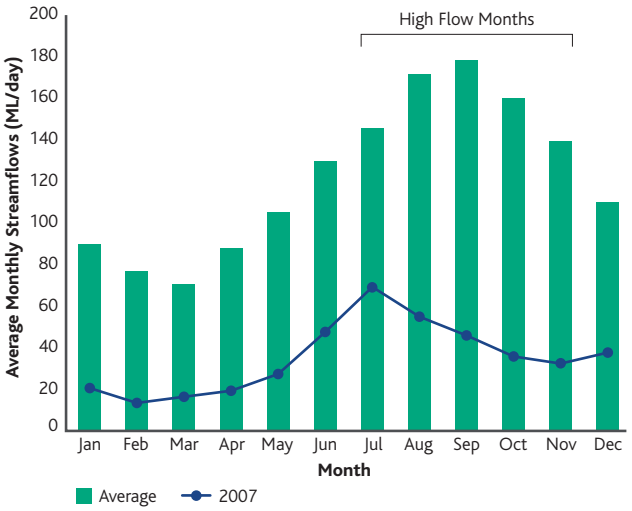
STREAM FLOWS

There is one active flow gauge in the Little Yarra River (229214) at Yarra Junction, which has been operating since April 1963. A computer model was created from this data to relate rainfall in the area to runoff (and hence stream flow) between 1963 and 2007, (SKM, 2009).

The mean annual flow in the Little Yarra River is around 43,000 ML/year (over period 1963-2007). However, on a monthly basis, the stream flow of the river is highly variable, with the highest flows in July to October (inclusive). Base flows in the Little Yarra River are maintained by groundwater discharge (SKM, 2004).

Figure 3 demonstrates the impact the recent low flow period has had on stream flows in the Little Yarra River Catchment. The historical average flow is greater than those experienced in 2007 which was used as a reference 'dry year'. The natural flows in the Little Yarra and Don Rivers display a typical temperate seasonal pattern, with the lowest average monthly flows in March, and the highest average flows in August to October.

Figure 3 – Comparison of historical and 2007 Average daily flows for each month in Little Yarra River at Yarra Junction (Gauge 229214, May 1963 to December 2007)



CURRENT FLOWS COMPARED TO NATURAL FLOWS

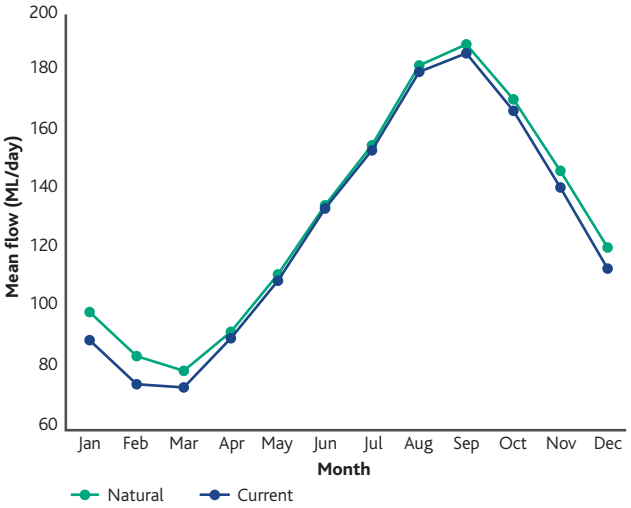
A hydrological computer model was developed to spatially represent the flows and diversions in the Little Yarra and Don River Water Supply Protection Area, and to assess the impacts on water users under several flow management scenarios. The model represents stream flows and irrigation at different points in the protection area and allows 'what if' questions to be asked to determine the likely changes to flows or 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 (see Figure 4). Natural conditions occur when water is not harvested from the protection area.

The modelling found that average daily flows at the Little Yarra River representative site (behind Caulfield Grammar School Camp), are noticeably lower than natural between January and March, with average flows reduced by 9-13%.

Flows in December are reduced by 7%, with all other months showing reductions of 2-3%. The lowest modelled current flow (5.5 ML/d) is 50% reduced below the lowest modelled natural flow (10.7 ML/d). The main deviations from natural flows at the representative site in the Little Yarra River are in the low flow season (LYDEFTP 2004b).

Figure 4 – Average natural and current daily flows for each month in the Little Yarra River (LYDEFTP 2004b). Note – this graph uses modelled values based on the total volume of the diversion licences in the Little Yarra River.



An independent Technical Audit Panel, which consists of independent experts in ecology and hydrology, reviewed the stream flow modelling technical report, as well as the environmental flow study technical reports (McMahon and Hillman 2008, Hillman et al 2008). These reports can be found on the Melbourne Water website.

ENVIRONMENTAL FLOW RECOMMENDATIONS

The environmental flow recommendations for the Little Yarra and Don rivers were developed using the 'FLOWS' method. 'FLOWS' is the standardised state-wide method for determining environmental water requirements for rivers in Victoria. The FLOWS method uses an expert scientific panel including specialists in ecology, hydrology, geomorphology and hydraulic modelling. The key steps in the FLOWS method are: identification of flow dependent environmental values; development of environmental objectives for those values; and determination of a flow regime to meet the environmental objectives.

Environmental flows were recommended by the Little Yarra and Don Environmental Flows Technical Panel after an assessment of historic flow data (natural and current regimes), hydraulic modelling, community consultation, analysis of relevant reports, site visits and through expert opinion. The Technical Audit Panel reviewed the environmental flow study technical reports (McMahon and Hillman 2008, Hillman et al 2008). A minimum flow of 35 ML/d was recommended by the Little Yarra and Don Environmental Flows Technical Panel (2004a) for the representative site on the Little Yarra River. This corresponds to a minimum flow of just over 42ML/day at the Little Yarra River stream gauge 229214 (LYDEFTP 2004a).

Table 1 – Minimum Environmental Flow Recommendations – Little Yarra River at Stream flow Gauge 229214 Environmental flow (ML/day)

Environmental flow (ML/day)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
42	42	42	42	42	42	42	42	42	42	42	42

For environmental flow assessments, a more specific description of the seasonality is required. The flow regime is divided into four seasons, not related to the calendar seasons, but determined by characteristics of the natural flow regime:

- a Low Flow Season (with generally constant low flows – or no flow – with infrequent shorter periods of high flow – freshes and floods – due to small localised rainfall events);
- a Transitional Flow Season from Low to High (higher flows becoming more common with larger more widespread rainfall events);
- a High Flow Season (higher baseflow with frequent, sometimes extended periods of higher flows from widespread high rainfall events); and
- a Transitional Flow Season from High to Low (lower flows becoming more common as rainfall events become smaller and more localised).

Other environmental flow components recommended by the Little Yarra and Don Environmental Flows Technical Panel for the Little Yarra River are shown in Table 2 below.

Table 2 – Little Yarra River Environmental Flow Recommendations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Flow Season (LFS)					T1	High Flow Season				T2	LFS
Cease to Divert Flow: 35 ML/d											
					High Flow Fresh: 200 ML/d, 6 per year, 2 days (or natural)						
					High Flow Fresh: 500 ML/d, 1 in 3 years, 1 day (or natural)						
Bankfull and Overbank Flow: 750 ML/d, 1 year in 7, 1 day (or natural)											

T1 – Transitional season from low flow to high flow season

T2 – Transitional season from high flow to low flow season

* Note the cease to divert trigger is modified from 35ML/d to 42ML/d to take into account inflows from other tributaries (Britannia Creek) downstream of the representative site, but upstream of the flow gauge. Source: (LYDEFTP 2009)

ADDITIONAL ENVIRONMENTAL RECOMMENDATIONS

The Little Yarra and Don Environmental Flow Technical Panel (2004a), made the following recommendations to help improve the health of the Little Yarra River.

- The restoration of riparian and some floodplain vegetation in cleared areas should be a long-term objective.
- Weed management is urgently required to maintain the significant vegetation values and natural stream flows along the river and to prevent or impede the further spread into as yet pristine areas.
- Removal of Large Woody Debris (LWD) should be prevented, unless otherwise demonstrated as a serious threat to a high value asset or human life. Reinstatement should be considered and riparian stands providing potential future sources of LWD should be maintained or regenerated.
- Willow colonisation should be managed to maintain natural channel form and stability.
- Stock access to streams should be minimised or curtailed through fencing of the riparian zone. This includes fencing of wetland or boggy areas adjacent or connected to the tributaries of the Little Yarra River.
- Sources of excess sedimentation (such as from un-made road crossings or eroding banks) need to be reduced wherever they occur (including forestry areas upstream of Powelltown).

DON RIVER CATCHMENT

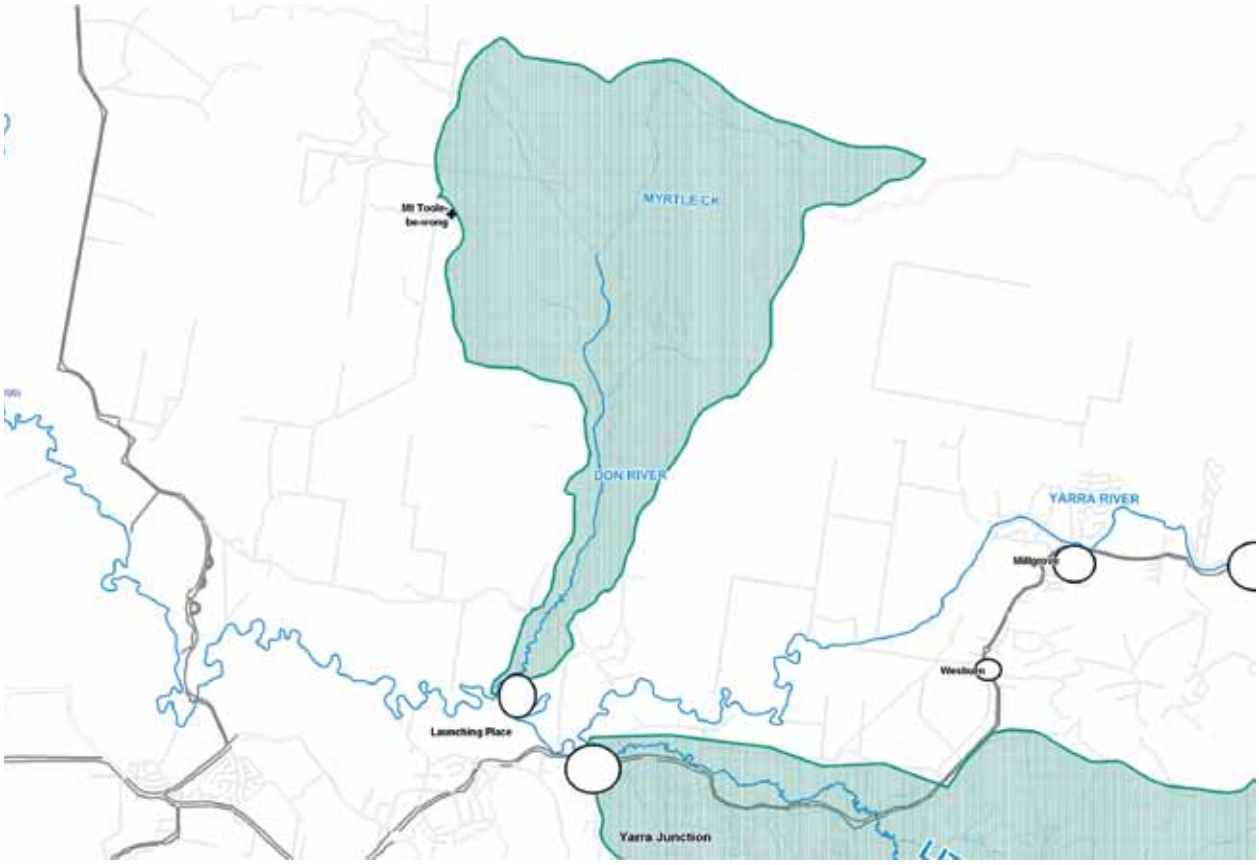
CATCHMENT DESCRIPTION

The Don River rises near Panton Gap on Mt Toolebewong. The river flows south and is joined by a number of small tributaries. The Don River joins the Yarra River near Don Road in Launching Place.

The Don River catchment is heavily forested above the Don Road crossing. Below this the area has been cleared for a variety of agricultural uses similar to those in the Little Yarra catchment. The Don River catchment is approximately 21km^2. The Don River drains an area of high and reliable rainfall (average 1000mm per year), and maintains permanent flows throughout the year with a base flow provided by groundwater inputs (LYDEFTP 2004b).

The upper region of the catchment is predominantly tall eucalyptus forests. Here the Don River is confined to a narrow valley with little or no development. In fire protected valleys, Cool Temperate Rainforest occurs in association with these tall forests. Land use in the cleared parts of the valley is primarily centred on rural living and hobby farms. The Don River catchment is unregulated, with water use being primarily domestic and stock use with little or no commercial irrigation.

Figure 5 – Don River Catchment



GENERAL ENVIRONMENTAL VALUES

Six species of fish (three native and three introduced) have been recorded in the Don River Catchment (McGuckin 2006). The three native fish recorded are River Blackfish, Shortfinned Eel and Mountain Galaxias. The three exotic species recorded are Brown Trout, Roach and Oriental Weatherloach. The Highlands Spiny Crayfish has also been recorded in the Don River (McGuckin 2006).

Macro-invertebrate populations in the Don River are considered good, with species from mayfly, stonefly and caddisfly families found along the river. The aquatic macroinvertebrate communities in both rivers are at, or near, the guidelines in the SEPP (Water of Victoria) Schedule F7 for the Yarra River and tributaries. Although there are no official records of platypus in the Don River, there is anecdotal evidence from landholders of platypus sightings in the area. This suggests that platypus are present in the river either through permanent occupation or occasional visitation. There has been limited survey work carried out in the Don River to date. Hopefully future surveys can confirm the presence of platypus and other species.

Other species of reptiles, amphibians, birds and mammals have also been recorded in the Don River area, including some that are considered threatened in Victoria and/or Australia. These include:

- Swift Parrot (*Lathamus discolour*)
- Sooty Owl (*Tyto tenebricosa*)
- Brush-Tailed Phascogale (*Phascogale tapoatafa*)

The vegetation in the Don River follows the same pattern as the Little Yarra River. Between Malleson Glen and Glenewart Reserve, narrow fertile alluvial terraces and the river banks support tall Riparian Forest, typically dominated by Manna Gum (Eucalyptus viminalis). From below Glenewart Reserve to the confluence with the Yarra, Riparian Forest typically remains along the river levees and higher terraces with Riparian Scrub, Swampy Riparian Complex and Damp Heathy Woodland on poorly drained parts of the floodplains.

There are also two endangered vegetation communities (also known as Ecological Vegetation Classes – EVCs) in the Don River Protection Area. Cool Temperate Rainforest occurs in the upper reaches, while Swampy Riparian Complex occurs lower down, near the confluence with the Yarra River. As a consequence of the moderate to steep slope gradients, a large proportion of the catchment could not be selected for agriculture and remains in a comparatively unmodified condition. Only 13% of the Don catchment has been cleared.

With Melbourne Water assistance a number of landholders are actively rehabilitating sections of the streamside through the Stream Frontage Management Program.

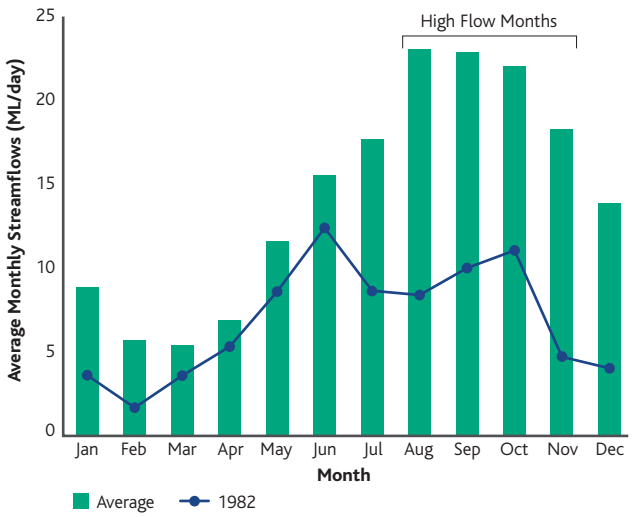
STREAM FLOWS

Gauged stream flow data for the Don River is only available from January 1963 to June 1987, when a gauge was operating at Launching Place (229220). A rainfall-runoff model was created to extend the data series to between 1963 and 2007, where no flow data was available. As part of this Plan, the consultative committee has recommended to the Minister that a flow gauge on the Don River be re-established. Since this request, Department of Sustainability and Environment in conjunction with Melbourne Water has installed a gauge at Dalry Rd on the Don River in September 2011.

The mean annual flow in the Don River is around 4,700 ML/year (over period 1963-2007). However, on a monthly basis, the stream flow of the river is highly variable, with the highest flows in August to November (inclusive). The natural flows in the Little Yarra and Don Rivers display a typical temperate seasonal pattern, with the lowest average monthly flows in March, and the highest average flows in August to October.

Figure 6 demonstrates the impact a low flow year has on stream flows in the Don River catchment. The historical average flow is greater than those experienced in 1982 which is used as a reference 'dry year' from the recorded stream flow data (1963-1987).

Figure 6 – Comparison of historical and recorded 1982 Average daily flows for each month in Don River at Launching Place (Modelled, May 1963 to December 2007)



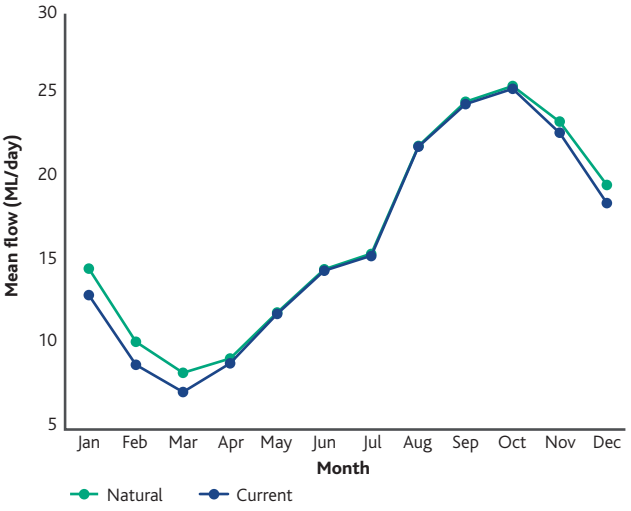
CURRENT FLOWS COMPARED TO NATURAL FLOWS

A hydrological computer model was developed to spatially represent the flows and diversions in the Don River catchment, and to assess the impacts on water users under several flow management scenarios. The model represents estimated 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 or irrigator supplies if conditions are changed. The model provides an opportunity to estimate the change between natural conditions and those currently observed in the catchment (see Figure 7).

Natural conditions occur when water is not harvested from the protection area. The modelling found that average daily flows in the Don River are noticeably lower than natural between November and April. During these months, flows are reduced by 10-15% below natural between January and April, and 2-4% in November and December. For the remainder of the year (May-October), current flows are reduced by 1% or less. The lowest modelled

current (less than 0.1 ML/d) flow is 92% reduced below the lowest modelled natural flow (0.6 ML/d). The main deviations from natural flows at the representative site in the Don River are in the low flow seasons (LYDEFTP 2004b). The stream flow modelling technical report was reviewed by the Technical Audit Panel (McMahon and Hillman 2008, Hillman et al 2008).

Figure 7 – Mean natural and current daily flows for each month in the on River (LYDEFTP 2004b). Note – this graph uses modelled values based on the total volume of the diversion licences in the Don River.



It should be noted, that recent water use in the Don catchment has been significantly less than the use estimated by the model to calculate natural flows. For example, in 2007-08 only 0.9% of the total licensed entitlement volume was used by diversion licences in the Don catchment. In comparison, the modelling assumes all diverter licences are active and accessing water under their licensed volume each year.

ENVIRONMENTAL FLOW RECOMMENDATIONS

Environmental flows were recommended by the Little Yarra and Don Environmental Flows Technical Panel after an assessment of historic flow data (natural and current regimes), community consultation, analysis of relevant reports, site visits and through expert opinion. The Technical Audit Panel reviewed the environmental flow study technical reports (McMahon and Hillman 2008, Hillman et al 2008). A minimum flow of 3 ML/d (December – June) and 10ML/d (July – November) was recommended by the Little Yarra and Don Environmental Flows Technical Panel for the representative site on the Don River (LYDEFTP 2004a).

Table 3 – Minimum Environmental Flow Recommendations – Don River Upstream Dalry Road

Environmental flow (ML/day)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	3	3	3	3	3	10	10	10	10	10	3

* Note: The values for the Don River provided above are derived from the LYDEFTP 2009.

At the time of the study there was no operating streamflow gauge in the Don River. As such the Little Yarra River streamflow gauge (229214) was being used to initiate cease to divert triggers for both catchments. As a gauge has recently been installed in the Don River, the minimum flow values will be implemented independent of the Little Yarra River gauge.

Other environmental flow components recommended by the Little Yarra and Don Environmental Flow Technical Panel for the Don River are shown in Table 4 below.

Table 4 – Don River Environmental Flow Recommendations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Flow Season						T1	High Flow Season				T2
Cease to Divert Flow: 3 ML/d						Cease to Divert Flow: 10 ML/d					CTD: 3 ML/d
Low Flow Fresh: 10 ML/d, 6 per year, 4 days (or natural)						High Flow Fresh: 45 ML/d, 1 per year, 3 days (or natural)					LFF
						High Flow Fresh: 80 ML/d, 1 in 5 years, 1 day (or natural)					
Bankfull and Overbank Flow: 100 ML/d, 1 in 5 years, 1 day (or natural)											

T1 – Transitional season from low flow to high flow season
T2 – Transitional season from high flow to low flow season
LFF – Low Flow Fresh recommendation includes December
Source: (LYDEFTP 2009)

ADDITIONAL ENVIRONMENTAL RECOMMENDATIONS

The Little Yarra and Don Environmental Flow Technical Panel (2004a), made the following recommendations to help improve the health of the Don River.

- The presence of deeper areas in the Don River is almost exclusively driven by the presence of Large Woody Debris (LWD) and associated organic material (leaves and twigs). Removal of LWD should be prevented, unless otherwise demonstrated as a serious threat to a high value asset or human life.
- Riparian vegetation provides the major source of Large Woody Debris to the channel. LWD encourages diversity in the bed form and variation in water depth for in-stream habitat, and reduces the energy of the flow leading to a reduction in bank erosion. Riparian stands providing potential future source of LWD should be maintained or regenerated.
- The restoration of riparian and some floodplain vegetation in cleared areas should be a long-term objective.
- Restoring riparian vegetation, where it is disturbed or absent, will improve the conditions of the food chain in the river.
- Any willow colonisation should be managed to maintain natural channel form and stability.
- Stock access to streams should be minimised or curtailed through fencing of the riparian zone. This includes fencing of wetland or boggy areas adjacent to the Don River.
- Sources of excess sedimentation (such as from un-made road crossings or eroding banks) need to be reduced wherever they occur.

3 WATER ENTITLEMENTS AND USE

The Yarra River catchment is capped at current entitlement levels and no new water entitlements are available. This cap applies to the Little Yarra and Don River catchments also. As such the only way to obtain a new or increased entitlement is through water trading.

LICENCE TYPES

A licence is required to take and use water and is issued and managed by Melbourne Water under section 51 of the Act:

- 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, commercial and domestic and stock.
- Dam-filling (winterfill) licences are issued with conditions that allow filling of dams during the dam-filling period (See Schedule 1), typically by pumping from a waterway or collecting water in the dam.
- Registration and farm dam 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.

CURRENT WATER USE

Licences are issued for a term of three years and can be renewed prior to expiry. Table 5 provides a summary of diversions in the Little Yarra River catchment and the Don River catchment at July 2010.

Table 5 – Water Entitlements in the Little Yarra and Don catchments (including farm dam registrations and licences)

	Volume (ML)	
Allocation Category	**Little Yarra**	**Don**
Irrigation & Commercial	859	105
Farm Dam (Registered)	216	1
Farm Dam (Licensed)	5	0
Domestic and Stock & Irrigation	24	23
Domestic and Stock (Licensed)	90	16
Town Supply	163	0
Total Allocation	**1357**	**145**

Derived from Melbourne Water Diversions Database - Correct as at 20.07.10

Actual water use varies considerably between seasons/years and is dependent on climate, rainfall, stream flow, irrigation method and land use.

Metering of all active irrigation and commercial surface water use licences 5ML and above has been introduced. This enables users to operate within their licence conditions and entitlements and provides water resource managers with improved knowledge of water use impacts on the environment.

WATER USE NOT REQUIRING A TAKE AND USE LICENCE

Under section 8(1) of the Act, water for domestic and stock use can be taken from a waterway without a licence, if a person has access to the waterway by a public road or road reserve, if the waterway flows through a person's property or if the waterway immediately borders a person's property and the bed and banks of the waterway remain the property of the Crown. 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 to take water from the waterway. The prescriptions of this Plan do not apply to water for domestic and stock use taken in accordance with section 8(1) of the Act.

SMALL CATCHMENT DAMS

Small catchment dams are used to store water for both domestic and stock use and irrigation. There are 176 small catchment dams in the Little Yarra and Don River catchments with a total estimated volume of 509 ML (26 ML in the Don catchment and 482 ML in the Little Yarra catchment) (SKM, 2009).
The distribution of small catchment dams in the Little Yarra and Don River catchments is shown in Figure 8.

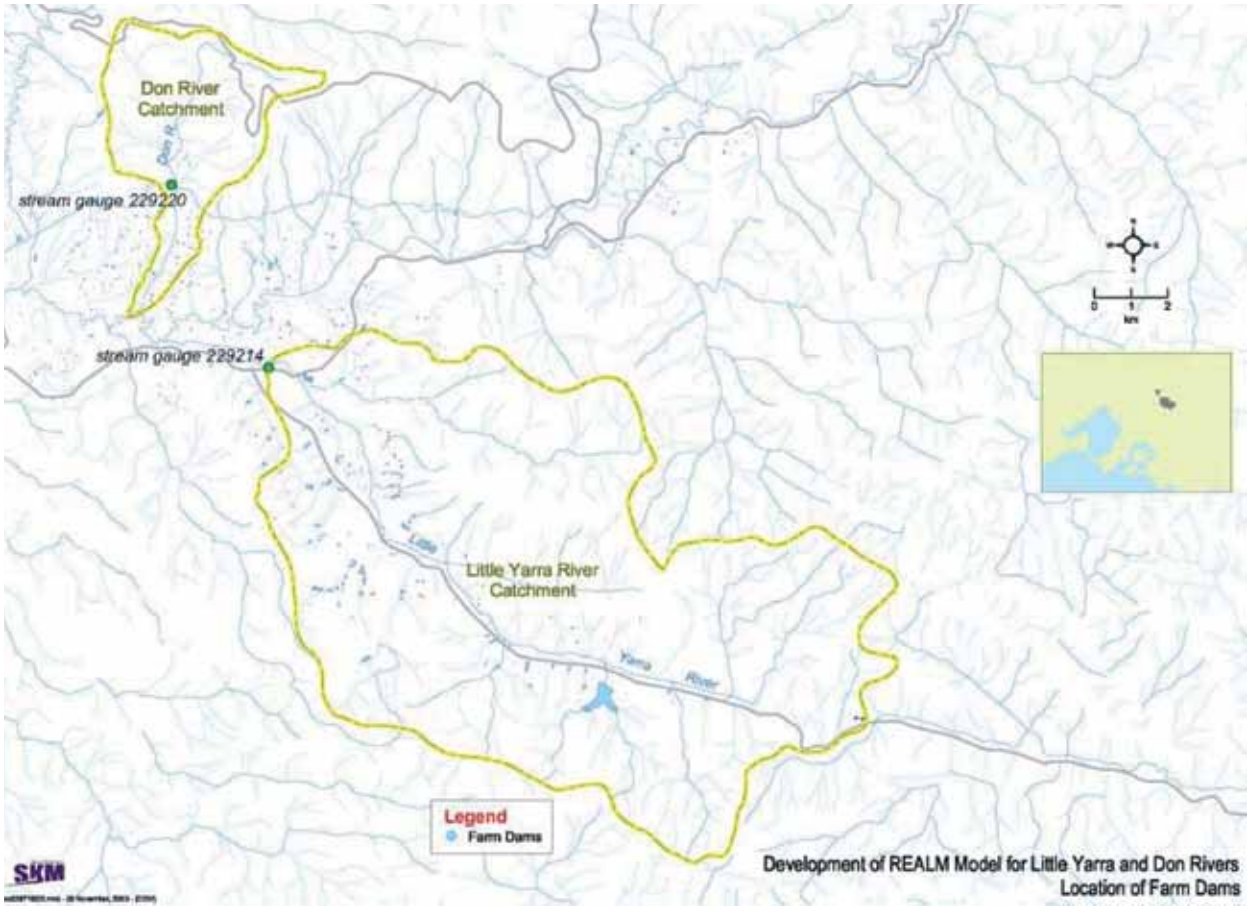
DAIRY WASH LICENCES

Historically, water used to wash down farm dairies was estimated to be relatively small. In most instances, section 51 licence volumes were below the actual volumes used or no licence existed as it was incorrectly assumed the water was being taken in accordance with section 8(1) of the Act. This position represents a historical inconsistency between policy and accounting for actual dairy wash use.

To address this issue, a state-wide transition program was implemented. The dairy shed water licence transition program required dairy farmers without a section 51 licence or with a section 51 licence that did not sufficiently represent their current water use, to apply for a new licence or amend an existing licence to reflect their actual water demands. The amnesty under this program ended on 26 April 2010. All licences are expected to be issued under the program before the end of 2011.

An Order declaring the surface water Permissible Consumptive Volume (PCV) for the Yarra Basin was made in 2010 (See also Section 6). This order declares that the PCV in the Yarra Basin is 435,982 ML plus the volume that may be taken under any licence issued or amended or to be issued or amended under section 51 of the Act in the Yarra Basin to take and use water for the purposes of dairy shed cleaning.

Figure 8 – Location of Farm Dams in Little Yarra and Don Catchments



4 OBJECT OF THIS PLAN

This Plan is a legal document prepared under the Act. The general object of the 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 consultative committee developed more specific objectives for their catchments. These are:

- To maintain the existing species diversity and populations of native aquatic species and, where possible, provide conditions that will encourage recolonisation by historic aquatic species
- To help improve water quality in accordance with the SEPP (Waters of Victoria) Schedule 7 - Waters of the Yarra Catchment
- To clearly define water availability and access
- To establish clear water trading rules that provide for the protection of the environmental flows in the waterways and the water needs of water users
- To identify areas of limited knowledge and/or understanding to more adequately inform future plan development and review. Including but not limited to groundwater, logging and domestic and stock use in the Little Yarra and Don catchments
- To improve monitoring and metering in order to more accurately and sustainably manage waterways.

5 ADMINISTRATION AND ENFORCEMENT OF THIS PLAN

Melbourne Water Corporation 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 appropriate licence conditions; and
- illegal water use does not occur.

6 RESTRICTIONS ON TAKING SURFACE WATER

TOTAL LICENSED ENTITLEMENT LIMIT

A PCV was first declared for the whole of the Yarra Basin in November 2006. A permissible consumptive volume is the limit for the total volume of surface water that may be taken from the area (whether for use in the area or elsewhere) under the Act or any other Act during a specified period. This Plan is able to make further prescriptions on the amount of water that can be extracted from the Little Yarra and Don Rivers. Under the Plan this amount of water is defined as licensed entitlement limit. The consultative committee reviewed two approaches for setting licensed entitlement limits:

1. Setting an annual licensed entitlement limit – this approach sets a total annual licensed entitlement limit in the catchment for all types of licences.
2. Setting both an all year and a winter fill licensed entitlement limit – this approach sets two licensed entitlement limits, one for licences that can take water at any time during the year and another limit for the discrete winter fill period where licence holders can only take water during the defined winter fill months.

In the review of the two approaches, the objectives of this Plan (See Section 4) were considered, with particular reference to:

- To maintain the existing species diversity and populations of native aquatic species and, where possible, provide conditions that will encourage recolonisation by historic aquatic species;
- To help improve water quality in accordance with the SEPP (Waters of Victoria) Schedule 7 - Waters of the Yarra Catchment;
- To clearly define water availability and access;
- To establish clear water trading rules that provide for the protection of the environmental flows in the waterways and the water needs of water users.

In addition, modelling was completed to assess the total volume of surface water available under current management and the recommended environmental flow regime to determine appropriate licence entitlement limits. This information was considered by the consultative committee to determine the best approach for each of the catchments and is described below.

LITTLE YARRA RIVER

The modelling incorporated full environmental flow requirements and current entitlement demands (assuming full uptake of current licences). This approach ensures that all environmental flow objectives are to be met and current reliability for existing entitlements (including sleeper licences) is maintained.

The Little Yarra catchment has a current annual entitlement of 1,357 ML. This represents the total volume of water that can be taken during each year (including winter fill). Current reliability for the Little Yarra River is shown in Table 6. To assess reliability a criteria of 80% has been adopted historically as a reasonable estimate of reliability in unregulated rivers where supply of water depends solely on rainfall and natural river flows. Modelling showed that diversion demands have less than 80% reliability both over the summer and winter months (meaning in less than 80 out of 100 years the full demand of diverters will be met).

Table 6 – Reliability of the Little Yarra River system (SKM, 2011)

Season	Current reliability: Percentage of years with no shortfalls	Average Annual Shortfall volume (ML)
High flow season/Winter fill demand	45%	4
Low flow season/Summer demand	41%	101
Annual (All year includes All year and winter fill demands)	25%	106

Table 6 shows the percentage of years that there were no shortfalls in demands (full demand required is supplied by the river). The Little Yarra catchment can currently supply all demands in 25% of years, 41% of low flow seasons and 45% of high flow seasons.

Under current inflows and demands, the Little Yarra River catchment can not deliver the environmental flow requirements and still meet the 80% reliability criteria on an annual basis. This is due to the nature of demands, as both the existing diversions and environment require access to water at the same time throughout the year. However, the average annual volume of shortfall is reasonably small therefore a small reduction of demands in the high flow seasons would allow 100% of restricted demands to be supplied (Table 6).

Additional modelling was also completed that reassess the demand pattern of diverters.

Based on this analysis, the current level of entitlements is at or close to sustainable levels. This suggests that allowing an increase in entitlements in the catchment would result in an increased stress on the environment and reduced reliability of supply for existing diverters. The resulting outcome would not be consistent with the objectives of this Plan. The consultative committee also considered adopting the second approach of both all year and winter fill allocation limits in the catchment. As there is higher demand on the Little Yarra River during the summer months, the consultative committee considered the need to set a winter fill cap in addition to an all year entitlement cap to protect the catchment not only from an increase to demands in summer but unsustainable increase to winter demands.

Additional modelling was also undertaken to assess alternative winter fill demand patterns in the catchment and whether this improved the potential for development. This modelling showed that the catchment stream flows could support further development if demand patterns were changed in the model. The consultative committee considered these results and agreed there was potential for further winter fill development in the catchment.

After consideration of both modelling approaches, the consultative committee recommends adopting an annual entitlement limit for the following reasons:

- Reliability in summer is significantly lower than in the winter months. It is also the time of year that the environment experiences the most stress due to low flows.
- The consultative committee supports shifting demand from summer to winter months where possible. Setting a winter fill limit will restrict this flexibility. Therefore, an annual entitlement cap maintains flexibility in managing the system while ensuring extraction is set at a sustainable level.
- The consultative committee believe there is an existing ability to develop under current allocations through trading.
- The consultative committee also noted the current limited knowledge of seasonal variability in streamflow and the resulting uncertainty with climate variability and when water may be available for use in any one year. Allowing flexibility in the timing that water is accessed is required to balance the needs of the environment with licensed diverter needs. Adopting an entitlement limit for all licence types provides flexibility through transfers of licences while balancing these needs.
- The consultative committee acknowledges there is limited potential for further large scale irrigation development in Little Yarra catchment due to other land use constraints (for example planning scheme regulations, property size and changing land use in the region). Licence transfer rules developed under this Plan are consistent with this approach (Section 7). It is a requirement of all licence transfers that Melbourne Water assess impacts of a transfer on the environment and other users.

The consultative committee recommends the implementation of an annual entitlement limit at the current level of entitlements, 1,357 ML. The consultative committee recommends that the entitlement limit be reassessed at the five year review to determine the risk to the environment and security of supply. The review should assess if the entitlement limit is adequate to support the level of development experienced throughout the duration of the plan.

DON RIVER

The same approach was taken in modelling the amount of water that can be extracted from the Don River. The modelling incorporated full environmental flow requirements and current entitlements demand (assuming full uptake of current licences). This ensures that all environmental flow objectives are to be met and current reliability for existing entitlements (including sleeper licences) is maintained.

The Don catchment has a current annual entitlement of 145 ML. This represents the total volume of water that can be taken during each year (including winter fill). The Don catchment can currently supply all demands in 5% of years, 20% of low flow seasons and 11% of high flow seasons (Table 7). These results are based on modelled flow as there is no gauge currently on the Don River system. Modelling using different assumptions for winter fill demand indicated the catchment could support further development in winter.

However, as there was limited gauged data for the Don River, the consultative committee adopted a precautionary approach until more data was available.

Table 7 – Reliability of the Don River system (SKM, 2011)

Season	Reliability: Percentage of years with no shortfalls	Average Annual Shortfall volume (ML)
High flow season/Winter fill demand	11%	5
Low flow season/Summer demand	20%	6
Annual (All year includes All year and winter fill demands)	5%	9

As noted in Section 2, recent water use in the Don catchment has been significantly less than the current entitlement limit. The consultative committee acknowledges there is limited potential to increase demand due to other land use constraints (for example planning scheme regulations, property size and changing land use in the region). As a result the consultative committee acknowledges the catchment is limited by land use rather than reliability of supply to diverters.

The consultative committee recommends the implementation of an annual entitlement limit at the current level of entitlements, 145 ML. The consultative committee recommends that the entitlement limit be reassessed at the five year review to determine the risk to the environment and security of supply. Due to the limited gauge data on the Don River it is further recommended that no new diversion licences be granted in the catchment prior to this review, even if some of the existing entitlements are traded out of the catchment.

PRESCRIPTION 1:
PROHIBITIONS ON GRANTING NEW LICENCES

Section 32A(3)(d) of the Act allows for a management Plan to prescribe restrictions or prohibitions on the issue of licences under section 51 or 67.

1.1 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 all licences to exceed:

a. The Permissible Consumptive Volume declared for the Yarra Basin; or

b. 1,357 ML in the Little Yarra River catchment; or

c. 145 ML in the Don River catchment.

1.2 The above prescription applies except where Melbourne Water renews a surface water licence that authorises the use of surface water in accordance with any state-wide policy approved by the Minister, and the Permissible Consumptive Volume and total catchment licence volumes are deemed to be adjusted by any additional volume of surface water authorised under the renewed licence.

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. In the Little Yarra River catchment licences are managed during periods of reduced flow using a staged approach with the introduction of restrictions (reduced hours of pumping and rosters) followed by bans if flows decline further. For the Don River catchment, bans are introduced directly once trigger levels are reached. At present, restrictions are introduced in the Little Yarra River when the seven-day rolling flow average at the Little Yarra River gauge (229214) is 60ML/day or less (Table 8). Bans on diversions from both the Little Yarra and Don Rivers are currently introduced when the seven-day rolling flow average at the Little Yarra River gauge (229214) is 35ML/ day or less.

It is recommended that the cease to divert trigger continues to be implemented using a seven-day rolling average. This helps to meet the environmental flow recommendations, by ensuring that the first high flow in the transitional or high flow season is preserved to provide spawning and migration cues for fish.

The winter-fill period for the Little Yarra River and Don River under this Plan is 1 July to 30 November (see Schedule 1). This allows five months for diverters with a winter-fill licence to meet their demand, while balancing the needs of the environment, by reducing demand during the summer period.

Table 8 – Drought Response Plan Trigger levels for licensed diverter restrictions and bans in the Little Yarra (Melbourne Water, 2007)

Restriction Level	Little Yarra River at Yarra Junction (Gauge 229214) Low and high flow Trigger (7-day rolling average ML/day)	Details of Water Restrictions		
		Licence Type	Low Flow Period (1 Nov – 30 Jun)	High Flow Period (1 Jul – 31 Oct)
Restriction	60	Direct Irrigation	Diversions limited to maximum 7 hours between 6am-9am and 6pm-10pm on allotted group day	Diversions limited to maximum 7 hours between 6am-9am and 6pm-10pm on any day
		Industrial	Volume diverted to be reduced by 50%	Volume to be diverted to be reduced by 25%
		Stock and Domestic	Pumping banned if alternative supply available	Not restricted
		Winterfill (on and off-stream)	Refilling of storages is banned	Dam filling limited to maximum four hours per day (8 am - 12pm)
Ban	35	All	Diversions and refilling banned	Diversions and refilling banned

CEASE TO DIVERT TRIGGERS TO PROTECT ENVIRONMENTAL FLOWS

LITTLE YARRA RIVER

The consultative committee acknowledges that the minimum environmental flow recommendation is 42ML/day.
The consultative committee proposes that the triggers on the Little Yarra River be set at 39ML/day on the endorsement of this Plan for five years, and be then subject to review (Table 9).

Prescription 6 and Schedule 1 provide details about how these minimum environmental flows will be administered.

DON RIVER

The recommended minimum environmental flows for the Don River of 3 ML/day (Dec – Jun) and 10 ML/day (Jul – Nov) will be implemented following the approval of the plan (Table 10).
The proposed trigger levels for the Don River should be reviewed after five years with reference to any gauge data.

Table 10 – Proposed ban trigger levels for the Don River Catchment

Proposed Ban Trigger levels (7-day rolling average ML/day)		
Licence Type	**Low Flow Period** (1 December – 30 June)	**High Flow Period** (1 July – 30 November)
All	3 ML/day	10 ML/day

Prescription 6 and Schedule 1 provide details about how these minimum environmental flows will be administered.

Table 9 – Recommended ban and restriction trigger flows for the Little Yarra River catchment

Restriction Level	**Little Yarra River at Yarra Junction (Gauge 229214) Low and high flow Trigger (7-day rolling average ML/day)**	**Details of Water Restrictions**		
		Licence Type	**Low Flow Period** (1 December – 30 June)	**High Flow Period** (1 July – 30 November)
Restriction	60	Direct Irrigation	Diversions limited to maximum 7 hours between 6am-9am and 6pm-10pm on allotted group day or by agreement with	Diversions limited to maximum 7 hours between 6am-9am and 6pm-10pm on any day
		Industrial	Volume diverted to be reduced by 50%	Volume to be diverted to be reduced by 25%
		Stock and Domestic	Pumping banned if alternative supply available	Not restricted
		Winterfill (on and off-stream)	Refilling of storages is banned	Dam filling limited to maximum four hours per day (8 am - 12pm)
Ban	39	All	Diversions and refilling banned	Diversions and refilling banned

PRESCRIPTION 2: ROSTERING AND RESTRICTIONS

Section 32A(3)(g) of the Act allows for a management Plan to prescribe restrictions to be imposed on the taking of surface water at any locations specified in the area, if necessary to ensure that – (i) specified flows at any particular time or for any particular circumstances are maintained; or (ii) the permissible consumptive volume for the area is not exceeded; or (iii) the environmental water reserve is maintained in accordance with the environmental water reserve objective.

Melbourne Water may prepare and implement rosters or restrictions 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). In developing rosters or restrictions Melbourne Water must have regard to:

(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 subparagraphs (i) and (ii) above.

2.1 The rostering and restrictions arrangements for the Little Yarra River will remain as outlined in Melbourne Water's Drought Response Plan (Melbourne Water, 2007). To enable efficient use, individual rostering times can be altered as agreed to with Melbourne Water. The rostering and restrictions for the Little Yarra River are – A maximum of 7 hours between 6am & 9am and 6pm & 10pm on allotted group days, or as agreed with Melbourne Water.

2.2 The Don River does not currently have any rostering and restriction arrangements in place. However as noted above, Melbourne Water may prepare and implement rosters and/or restrictions if required, whilst having regard to points (i), (ii) and (iii) above.

RATIONALE FOR THE RESTRICTIONS

In 2004 Sinclair Knight Merz (SKM) completed a water resource allocation model of the Little Yarra and Don Rivers titled Estimation of Stream flow and Demand Data and Development of a REALM model of Little Yarra and Don River catchments. This report provided baseline data for an environmental flows study of the Little Yarra and Don Rivers. The Little Yarra and Don Rivers Environmental Flow Technical Panel (Dave Crook, Tim Doeg, Geoff Vietz and Matt White) completed the report titled Environmental Flow Determination For The Little Yarra and Don Rivers: Final Recommendations in 2004.

This assessment provided the recommendations for environmental flows in order to meet the following environmental management objectives derived specifically for the Little Yarra and Don Rivers:

- Maintain or improve channel form and process for ecological benefit,
- Maintain or restore self-sustaining populations of the major fish species in the systems,
- Maintain or improve macro-invertebrate communities to meet State Environmental Protection Policy Schedule F7 guidelines,
- Maintain extant and restore degraded riparian and floodplain vegetation, and
- Maintain flow conditions suitable for platypus in the Little Yarra River

The minimum environmental flow of 42 ML/d (35 ML/d at representative site) for the Little Yarra River was recommended as this is the minimum volume which meets the following environmental requirements:

- Provides at least 50% of the width of deep pool areas with depths over 50cm, primarily for larger river blackfish,
- Provides at least some water deeper than 20cm in other areas, for small fish species, and
- Completely cover the sand bed of the stream to any depth (both for macroinvertebrates and plants growing at the edge of the stream).

The minimum environmental flow of 3 ML/d (Dec to Jun) and 10 ML/d (Jul to Nov) for the Don River was recommended as this is the minimum volume which meets the following environmental requirements:

- Provide at least 50% of the width of deep pool areas with depth over 40cm, for River blackfish and other smaller fish,
- Provide water depths up to 10cm in riffle areas, and
- Completely cover the bed of the stream to any depth (both for macroinvertebrates and plants growing at the edge of the stream).

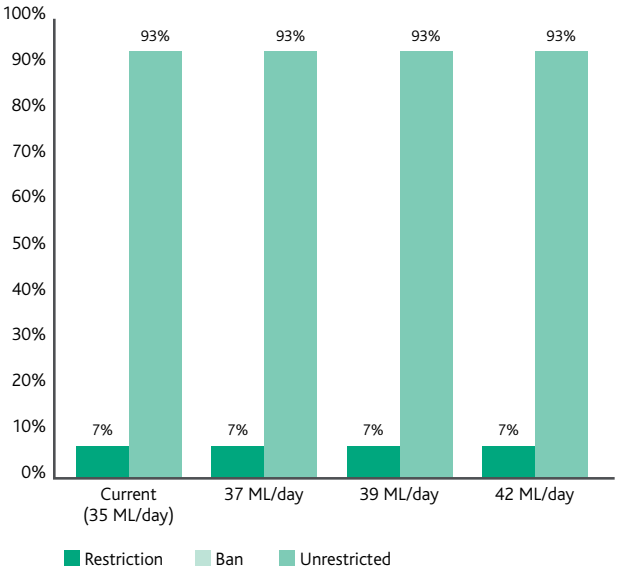
POTENTIAL IMPACTS OF IMPLEMENTING ENVIRONMENTAL FLOWS ON DIVERTERS

The potential impacts to diverters of implementing the recommended environmental flows vary depending on whether it is a wet, dry or average year. The consultative committee reviewed several trigger scenarios under these three climatic conditions.

LITTLE YARRA RIVER

In an average year (see Figure 9) there is no difference to the number of days on ban or restriction under all trigger level scenarios. Under all trigger levels 93% of days are unrestricted and 7% of days are restricted.

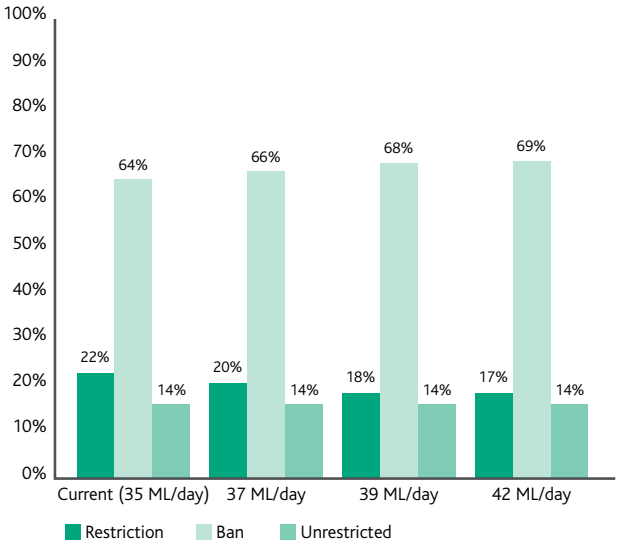
Figure 9 – A comparison of the availability of water for diversions under four different cease to divert triggers (35, 37, 39 & 42ML/day), in an average year (1978-79).



In a dry year (2006/07 - driest year on record) (see Figure 10) all three trigger levels (37, 39 & 42ML/day) produce slightly different levels of bans and restrictions than under the current trigger level (35ML/day). Under the current scenario 64% of days are on ban, 22% of days are on restrictions and 14% of days are unrestricted. Under the 37ML/day trigger level there is a 2% shift of days from restriction (20%) to ban (66%) compared with the current levels.

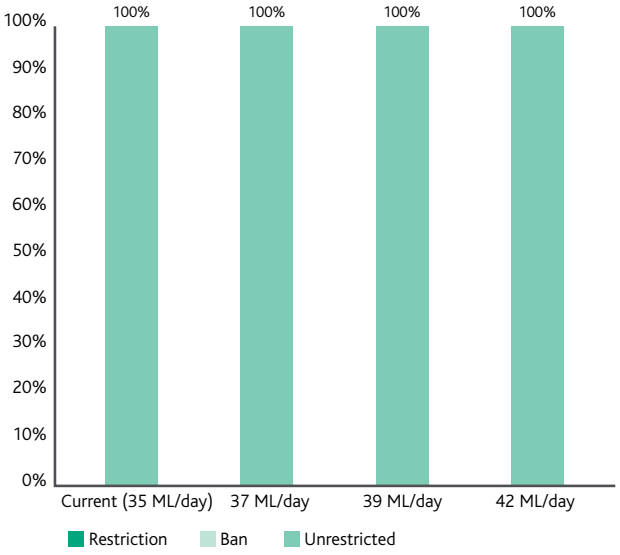
Under 39ML/day trigger levels there is a 4% shift of days from restriction (18%) to ban (68%). Under the 42ML/d trigger levels; there is a 5% increase in the days on ban (69%) and a 5% decrease in the days on restriction (17%). In this scenario, the annual increase occurs during the summer months (when water is in greatest demand), restricting access to water for longer periods than under the other ban level scenarios. Under all four trigger levels 14% of days remain unrestricted.

Figure 10 – A comparison of the availability of water for diversions under four different cease to divert triggers (35, 37, 39 & 42ML/ day), in a dry year (2006-07).



In a wet year (1993-94 wettest year on record) (see Figure 11) there is no difference to the number of days on ban or restriction under all trigger level scenarios. Under all trigger levels 100% of days are unrestricted.

Figure 11 – A comparison of the availability of water for diversions under four different cease to divert triggers (35, 37, 39 & 42ML/ day), in a wet year (1993-94).



Further hydraulic modelling was undertaken to assess the implications of implementing 39ML/day against the environmental criteria. A flow of 39 ML/d for the Little Yarra River meets the following environmental requirements:

- Provides at least some water deeper than 20cm in other areas, for small fish species, and
- Completely cover the sand bed of the stream to any depth (both for macroinvertebrates and plants growing at the edge of the steam).

However a flow of 39 ML/d provides at least 42% of the width of deep pool areas with depths over 50cm. In comparison to 42ML/day which provides at least 50% of the width of all modelled deep pool areas with depths over 50cm (Table 11).

Table 11 – Hydraulic modelling results at deep pool locations.

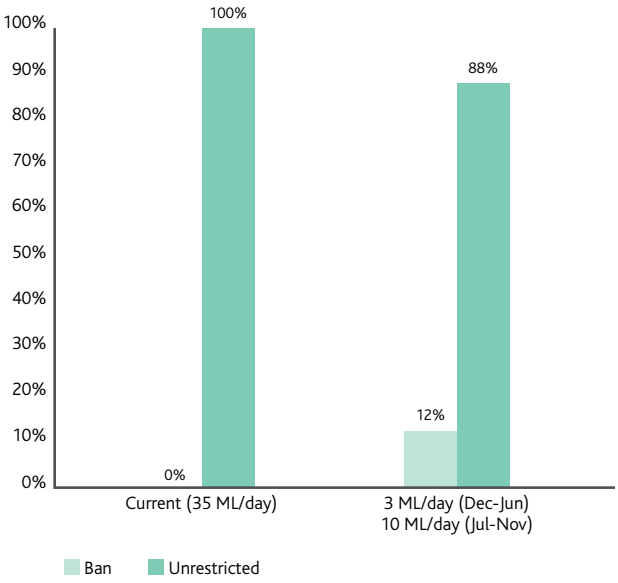
Flow at Gauge site	Location 1		Location 2		Location 3	
	Max. depth (cm)	% > 50 cm	Max. depth (cm)	% > 50 cm	Max. depth (cm)	% > 50 cm
39 ML/day	67	51	59	**42**	85	52
42ML/day	71	53	64	**50**	89	53

As shown above, an increase to the cease to divert threshold is likely to only impact diverters in dry years. The consultative committee recognise there have been several consecutive dry years recently. It is proposed to increase the trigger level to 39ML/ day for the duration of the Plan until review. A cease to divert flow of 39ML/day was adopted as a compromise between the impact on diverters' reliability of supply and on the environment.

DON RIVER

Under the proposed cease to divert trigger levels (3ML/day Dec-Jun, 10ML/d Jul-Nov), there would be changes to the number of days and the times of the year when it is possible to divert water from the river. The proposed trigger levels require a flow gauge to be installed in the Don River, as currently the Don River is administered using the Little Yarra River flow gauge (229214).

Figure 12 – A comparison of the availability of water for diversions under the current (35ML/d - Little Yarra River Gauge) and proposed trigger levels (Dec –Jun 3ML/day, Jul –Nov 10ML/ day – Don Gauge) in an average year (1966-67).



In an average year (1966-67) the percentage of days on ban would increase from 0% to 12% under the proposed trigger levels. All of these bans would occur during the high flow period (Jul-Nov) when demand is generally low.

In the driest year on record (2006-07) the percentage of days on ban would increase from 64% to 75% under the proposed trigger levels. Although there is an overall increase in the percentage of days on ban, there is actually a reduction in the percentage of days on ban during the low-flow season (Dec-Jun) when demand is greatest. All of the increase in bans would occur during the high flow period (Jul-Nov) when demand is generally low.

Figure 13 – A comparison of the availability of water for diversions under the current (35ML/d - Little Yarra River Gauge) and proposed trigger levels (Dec –Jun 3ML/day, Jul –Nov 10ML/ day – Don Gauge) in a dry year (2006-07).

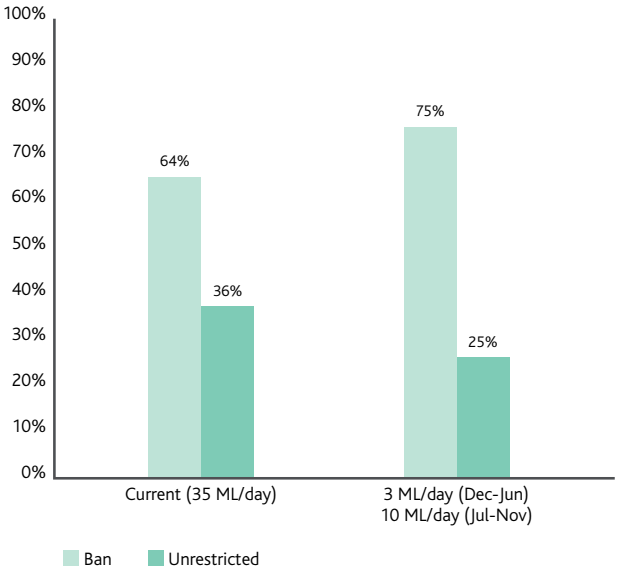
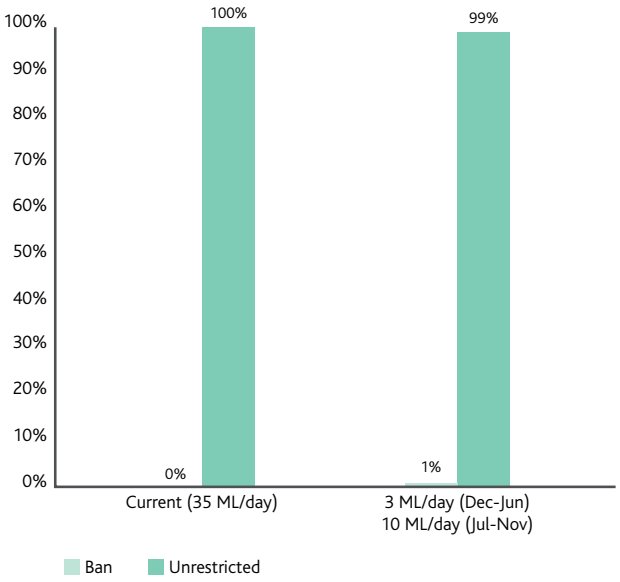


Table 12 – Days on Ban in the Don River in a Dry Year (2006-07) under the proposed trigger levels

	Low Flow (Dec - Jun)		High Flow (Jul - Nov)		All year	
	3 ML/day		10 ML/day			
Ban Days / %	98	54%	174	95%	272	75%
Unrestricted Days / %	84	46%	9	5%	93	25%

Figure 14 – A comparison of the availability of water for diversions under the current (35ML/d - Little Yarra River Gauge) and proposed trigger levels (Dec –Jun 3ML/day, Jul –Nov 10ML/ day – Don Gauge) in a wet year (1974-75).



From the graphs (Figure 12, Figure 13, Figure 14) it appears that under the proposed trigger levels Don River diverters would have the number of days it is possible to divert reduced under all scenarios. While this is true, changes in the timing of the diversion bans mean that more water is likely to be available in the low flow season when demand is greatest. The trigger levels for the Don River are different for the low-flow (3 ML/day Dec-Jun) and high-flow (10 ML/d Jul-Nov) seasons. The projected increase in the number of days on ban is almost all in the high flow season (Jul-Nov) when demand is very limited (see Table 11).

In the driest year on record (2006/07) and under the current cease to divert trigger (35 ML/d Little Yarra River Gauge), the Don River was on ban for 233 days (64%) over the whole year. An important point to note is that diverters would have been on ban for almost the entire low flow season (Dec-Jun) when demand is greatest. In the driest year on record (2006/07) and under the proposed cease to divert trigger (3ML/day Dec-Jun, 10ML/d Jul-Nov), the Don River would have been on ban for 272 days (75%) over the whole year.

However under the proposed triggers they would have only been on ban for 54% days in the low-flow season, when demand is highest. Thus while the overall number of days on ban would increase, the number of days on ban during the low flow period (Dec-Jun) would decrease substantially. Thus under the proposed trigger levels, in dry years Don diverters will have greater access to water during the low-flow season (Dec-Jun), when demand is highest and reduced access to water during the high-flow season (Jul-Nov) when demand is generally low. In both average and dry years, there is a reduction in the number of days it is possible for Don River diverters to divert water during the high-flow season (Jul-Nov), but no change in their ability to divert water during the low-flow season (Dec-Jun).

7 LICENCE TRANSFERS

Under the Act, no permanent transfer of a licence into or within a Water Supply Protection Area is possible until a draft management plan has been approved by the Minister. On approval of the management plan, transfer of licences is permitted consistent with the prescriptions of the Plan. The prescriptions should be consistent with the guidelines for licence transfers in the Policies for Managing Take and Use Licences (Vic Govt 2009).

Section 62 of the Act 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 provide 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 under Section 62(5) of the Act to consider any adverse effect that the transfer may have on existing users or on the environment.

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 actual farming activity continues without change.

Under this Plan, large diversion licence holders are encouraged to permanently trade all or part of their licence out of the Don River catchment. Don catchment supports high environmental values and has excellent stream health. Based on this, the consultative committee recommends reducing demand in the catchment over time to protect the health of the waterway. As such, no trades into the Don River catchment will be allowed for the duration of the Plan.

Within the Little Yarra catchment Slaty Creek is considered to be an area of high water demand. The current total allocation in Slaty Creek and tributaries is 196ML held under 22 Licences. This represents 41 percent of all diverters in Britannia Creek and Lower Little Yarra River catchment yet the Slaty catchment only comprises of 21% of the catchment area. Using REALM demand modelling in this catchment suggests a target cap of 130ML should be adopted to improve reliability for all water users including the environment.
The consultative committee recommends a target cap is set at 130ML to reduce allocations in the Slaty Creek catchment over time.

PRESCRIPTION 3: TRANSFERRING LICENCES

Section 32A(3)(d) of the Act allows for a management plan to prescribe conditions to which licences issued under section 51 to take and use surface water and transferred under section 62, are to be subject, including a condition relating to the maximum volume of water which may be taken and used under the transferred licence.

3.1 Melbourne Water must refuse an application made under 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.

3.2 Melbourne Water may approve an application made under section 62(3) of the Act to permanently transfer a licence into or within the Little Yarra River catchment provided that:

(a) The limits referred to in Prescription 1 are not exceeded; and

(b) Any licence traded into the Little Yarra River catchment is converted to winter-fill; and

(c) All licences traded upstream are converted to winter-fill; and

(d) All licences traded downstream within the catchment retain their volume and take period; and

(e) Any licence traded into or within the Slaty Creek sub-catchment is subject to the total licence allocation in the Slaty Creek sub-catchment not exceeding 130 ML.

3.3 Melbourne Water may approve an application made under Section 62(3) of the Act to permanently transfer a licence within the Don River catchment provided that:

(a) The limits referred to in Prescription 1 are not exceeded; and

(b) For all-year licences traded upstream, the applicant provides a flow assessment, using the FLOWS method, which indicates there is no impact to other diverters or the environment as a consequence of the transfer; and

(c) Licences traded downstream retain their volume and take period.

3.4 No trades will be permitted into the Don catchment for the duration of this plan.

3.5 Melbourne Water may grant an application made under section 62(3) to temporarily transfer a licence for up to 1 year, provided the application meets the relevant prescriptions 3.1-3.4.

8 RESTRICTIONS AND PROHIBITIONS ON THE ISSUE OF LICENCES

Restrictions and/or prohibitions are proposed for section 51 licences to take and use water and for section 67 licences to construct works.

Prescriptions relating to the licences to take and use water granted under section 51 of the Act:

- Prescription 1 – Prohibitions on Granting New licences,
- Prescription 2 – Rostering and Restrictions,
- Prescription 3 – Transferring licences, and
- Prescription 6 – Licence Conditions. Prescriptions relating to the licences to construct works granted under section 67 of the Act:
- Prescription 5 – New dams, aesthetic dams and dams on Subdivisions

9 METERING AND ACCOUNTING FOR WATER

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

Melbourne Water must read all-year licence meters annually. Melbourne Water must read dam-filling (winter-fill) licence meters before 1 July and after 30 November in both the Little Yarra River and Don River catchments. Metering is also covered below under Prescription 4 – Metering and monitoring.

10 MONITORING PROGRAM

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, macro-invertebrate, fish and geomorphological studies.

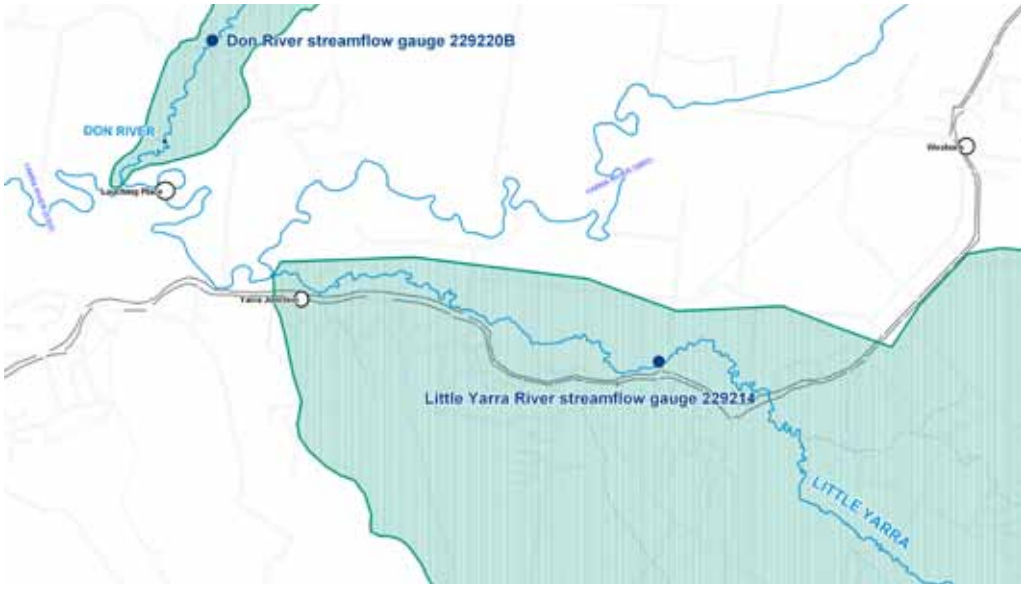
Information on the health of the Don and Little Yarra Rivers will be incorporated into existing Melbourne Water programs. Data collected by metering and stream flow gauging will also be an integral part of the monitoring program. The monitoring program should collect data to:

- 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.

There are two stream flow gauges located in the Little Yarra and Don Catchments. The Little Yarra River gauge (229214) is located at Lowes Road near the Warburton Highway. The Don River gauge (229220B) is located at Dalry Road, Launching Place and was installed in September 2011 (Figure 15).

Figure 15 – Little Yarra River Lowes Road Stream flow Gauge (229214) and Don River Dalry Road Stream flow gauge (229220B)



The data collected from the Don River gauge will be used for compliance and to inform other projects. Melbourne Water will fund ongoing maintenance and associated renewal costs of the gauge. For both gauges licence holders contribute to the ongoing cost through payment of their diversion licence fees.

PRESCRIPTION 4: METERING AND MONITORING

Section 32A(3)(a) of the Act allows management plans to prescribe requirements for metering and monitoring.

4.1 Melbourne Water must:

(a) Meter all licences over 5 ML, excluding registration licences,

(b) Read meters and store metering information, and

(c) Read meters at the start and end of each licence period.

4.2 Melbourne Water must:

(a) Continuously record and store information on the flows at the Little Yarra River gauge (229214) and Don River gauge (229220B),

(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 (b) or (c).

11 PRIVATE DAMS

There are a number of private dams throughout both the Little Yarra River and Don River catchments. There are several different types of dams in the two catchments:

- On-stream dams,
- Off-stream dams,
- Registered and licensed catchment dams, and
- Unregistered and unlicensed catchment dams, including aesthetic dams.

In a 2002 study, it was found that as a result of existing catchment dam development in the Little Yarra catchment, dry spells are lasting significantly longer than they would have naturally (Egis 2002).

ON-STREAM DAMS

There are a number of on-stream dams in the Little Yarra River catchment, including a 2000ML private dam on Saxton Creek (Egis 2002). 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 waterways. Therefore no new dams on waterways will be permitted.

The definition of a waterway is included in the Act and by convention is applied to any drainage line with a catchment above it of 60 hectares or greater.

A licence is required to harvest water for commercial or irrigation purposes in a dam, regardless of whether it is on or off a waterway. However under this Plan, no new dams on waterways may be licensed as the environmental impacts are too great.

OFF-STREAM DAMS

This Plan seeks to encourage existing licensed diverters to construct off-stream dams in suitable areas away from waterways. This is being encouraged in an attempt to reduce the demand during the low-flow summer months, when the rivers are under most stress. By building off-stream dams existing diverters can convert to winter-fill licences from all-year licences and fill their dam up over the high flow period instead. Diverters who change to winter-fill are also likely to increase their reliability of supply. The consultative committee supports existing diverters changing from all-year licences to winter-fill licences through building appropriately positioned (i.e. not on a waterway or significant drainage line) off-stream storage. Melbourne Water is working with the Shire of Yarra Ranges to try and support where appropriate, the building of off-stream dams for existing licensees changing to winter-fill licences. The Shire of Yarra Ranges will consider catchment and stream health when assessing applications for the construction of appropriately located off-stream storages.

REGISTERED AND LICENSED CATCHMENT DAMS

A catchment dam is one which predominantly harvests water from rainfall runoff events from other than a defined waterway. Dams were registered and licences 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. Any new catchment dams for irrigation or commercial use are required to purchase an equivalent volume of water from an existing licence holder. All new catchment dams will be licensed as winter fill (see Schedule 1) and will require some sort of diversion mechanism around the dam to avoid harvesting water outside of the winter fill take period.

Table 13 – Farm Dam Numbers and Volumes in the Little Yarra River and Don River catchments

	Little Yarra River		Don River	
	Number of Licences	Volume of Licences (ML/year)	Number of Licences	Volume of Licences (ML/year)
Farm Dam Licence	1	5	0	0
Farm Dam Registration	15	216	1	1

Derived from Melbourne Water Diversions Database - Correct as at 20.07.10

All of the dams in the above table are currently being or have been used for irrigation. Note that registered farm dams are not subject to the prescriptions in this Plan.

UNREGISTERED AND UNLICENSED CATCHMENT DAMS, INCLUDING AESTHETIC DAMS

There are also a number of catchment dams in both the Little Yarra River and Don River that are not registered or licensed. The total number and volume of unlicensed catchment dams within the Little Yarra River was found to be 158 dams with an approximate volume of 351ML (Egis 2002).

It is estimated that these unlicensed dams have reduced the annual flow by approximately 700ML (1.4% of annual stream-flow) (Egis 2002). Catchment dams have the greatest impact on stream-flow over the dry summer months.

During January and February, catchment dams typically harvest over 100ML per month, dropping down to less than 30ML from June to August (Egis 2002).

Existing 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.

This Plan bans the construction of any new aesthetic dams (see prescription 5) to be built in the catchments.

DAMS ON SUBDIVISIONS

The subdivision of rural land may increase the number of dams, particularly domestic and stock dams, throughout the catchment. The Act enables a management Plan to limit the maximum volume of water retained in private dams on lots in a subdivision.

Melbourne Water will liaise with the Shire of Yarra Ranges to encourage the Shire to have regard to these prescriptions of the Plan when considering applications to subdivide land in the Little Yarra and Don River Catchments Water Supply Protection Areas.

PRESCRIPTION 5: NEW DAMS, AESTHETIC DAMS AND DAMS ON SUBDIVISIONS

Section 32A(3)(d) of the Act allows for a management plan to prescribe prohibitions on the issue of licences under section 67. Section 32A(3)(c) of the Act allows for a management plan to prescribe the requirements for the location, capacity and operation of private dams which are – (i) not licensed under section 51, and (ii) not for domestic and stock use. Section 32(3)(n) of the Act allows for a management plan to prescribe the maximum volume of water that may be retained – (i) in each private dam on a particular lot in a plan of subdivision in the area concerned; or (ii) in all private dams in every lot in a plan of subdivision in the area concerned. 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 must not issue any licence under section 67 of the Act to construct a dam on a waterway.

5.2 The total volume of water that can be retained in domestic and stock dams on subdivided lots must not exceed the greater of:

(a) Those dams that were there before the Plan; or

(b) A volume that is reasonable to meet the domestic and stock water needs of the land prior to subdivision, calculated in accordance with approved guidelines.

Once this limit is reached no additional water can be retained in additional domestic and stock dams

5.3 Melbourne Water must not issue any licence under section 67 to construct an aesthetic dam.

5.4 For the purpose of clause 5.3., a dam is:

(a) deemed to be for aesthetic purposes if it is constructed after the commencement of this plan and is used for recreational purposes; but

(b) not deemed to be aesthetic if it is:

(i) constructed or used for domestic and stock and is a reasonable size for its intended use; or

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

12 LICENCE CONDITIONS

LICENSED WATER ALLOCATIONS

Under section 51 of the Act, a licence is generally required to take and use water. In the Little Yarra and Don catchments licences are issued and managed by Melbourne Water.

- All-year licences are issued with the 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 dam licences or registrations (Table 5).
- Dam-filling (winter-fill) licences are issued with conditions that allow filling of dams during the dam-filling period (1 July to 30 November), 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.

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 rivers 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. This Plan comes into effect upon approval by the Minister (see section 15), except for changes to licence conditions (schedule 1) which come into effect four months after the Minister's approval.

PRESCRIPTION 6: LICENCE CONDITIONS

Section 32A(3)(k) of the Act allows for a management plan to prescribe conditions to which licences are issued under section 51 are to be subject.

6.1 A licence granted under section 51 of the Act is subject to each condition set out in Schedule 1 – Licence Conditions, in relation to that licence's purpose. This includes restrictions on the taking of water in order to maintain minimum environmental flows in summer and winter as specified under licence conditions 1.2, 1.4, 1.5 & 1.6 of Schedule 1.

13 ANNUAL REPORT

COMPLIANCE AND REPORTING

The 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 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.

In accordance with section 32C of the Act, Melbourne Water is required to prepare an annual report on the implementation of the Plan.

The report will be provided to the Minister on or before 30 September in each year. It will be made available to the public for inspection free of charge at the Melbourne Water offices and on the Internet. A notice will also be published in a local newspaper advising of the availability of the report at the time of its release.

PRESCRIPTION 7: ANNUAL REPORTING

Section 32C of the Act requires that the authority that has the duty of administering and enforcing an approved management plan must prepare a report of its activities in relation to the plan.

7.1 As part of the annual report, Melbourne Water should undertake an assessment of the following matters:

(a) Changes to the level and type of development within the area including:
(i) The extent of water usage resulting from transfers
(ii) Location and impact of new take and use licences

(b) Water usage information

(c) The effectiveness of management prescriptions in meeting the objectives of the Plan including:
(i) Metering,
(ii) Flow monitoring,
(iii) Restrictions and rosters

(d) Including the details and findings of any relevant complementary works or studies (e.g. environmental studies) being undertaken in the catchments.

(e) Any difficulties associated with, and progress towards, meeting environmental flows specified in the Plan.

REVIEW OF THE PLAN

Melbourne Water must review the implementation and objectives 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 relevant information and consultation with all stakeholders. The Act provides for the constitution and convening of a consultative committee to advise the Minister on any proposed amendment and the process to be followed by the Minister before approving it. The review of the Plan may reconsider the total limit on allocations.

PRESCRIPTION 8: REVIEW OF PLAN

Section 32A(3)(o) of the Act allows for a management plan to prescribe any matter relevant to the object of the management plan or its implementation.

8.1 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) Assess the effectiveness of management prescriptions in meeting each of the objectives of the Plan, as per Section 4 of this Plan.

(c) Propose any consequential amendment (if any) to the Minister.

14 COMMENTS BY THE CONSULTATIVE COMMITTEE

FLOW GAUGE FOR DON RIVER

The consultative committee requested that a flow gauge be installed on the Don River, so that the Don River environmental flows can be monitored and implemented independently. The Little Yarra River flow gauge (229214) was used to monitor and implement flows for both rivers. This situation is less than ideal, as there is the real possibility of stream flows being below the cease to divert trigger in the Don River, but diverters still being able to divert, as the flow is still above the cease to divert trigger in the Little Yarra River.

The Little Yarra and Don Rivers Environmental Flow Technical Panel suggested that a new gauging station should be located downstream of the majority of diversions in the valley, but upstream of any possible influence of high flows from the Yarra River. No definitive recommendation on a location for the gauge was made, but the Environmental Flows technical panel suggested that the general location should be around Dalry Road (LYDEFTP 2004a).

Based on this recommendation, Melbourne Water and the Department of Sustainability and Environment have installed a new gauge on the Don River at Dalry Rd (229220B). This gauge was commissioned in September 2011 and will be used for implementation of licence conditions in the Don River catchment upon commencement of the plan.

GROUNDWATER

It is likely, given the relatively moderate topographic relief and deeply weathered bedrock in the middle and lower sections of the Little Yarra and Don Catchments, that the basin has significant ground water resources (LYDEFTP 2004b).

The Don River drains an area of high and reliable rainfall (1000mm per year), and maintains permanent flows throughout the year with a base flow provided by groundwater inputs (LYDEFTP 2004b).

In a water resources report of the area, it was estimated that 73% of the stream-flow in the Little Yarra River is supplied by groundwater (SKM 2004). It is highly probable that excessive ground water extractions would have a significant impact on seasonal base flows, and spring or ground water dependent communities (LYDEFTP 2004b).

Given this information the consultative committee was quite concerned about groundwater usage in both the Little Yarra and Don catchments. While the guidelines provided to the consultative committee did not allow them to make specific prescriptions about groundwater usage and licensing, they put forward the following points:

(i) The consultative committee supports the continuation of the precautionary approach taken by Southern Rural Water to groundwater applications in the Little Yarra River and Don catchments, and

(ii) The consultative committee recommends that groundwater levels in the Little Yarra River and Don catchments be monitored to ensure sustainable use of the resource.

(iii) It is recommended that existing commercial groundwater extraction licences are carefully considered upon renewal, to ensure that they are sustainable.

EDUCATION OF USERS

The consultative committee recommends Melbourne Water continue to communicate updates and information and explore the possibility of organizing community meetings so as to better educate water users and the whole community of the catchments, especially domestic and stock users.

The consultative committee recommends that Melbourne Water work with other stakeholders (i.e. Yarra Ranges Shire Council) to carry out an education campaign in the Little Yarra River and Don River catchments to help the community, including domestic and stock users, become more aware of their impact on the local waterways.

RIPARIAN VEGETATION

The consultative committee identifies the need to continue to maintain and improve riparian vegetation to aid water quality and habitat creation.

The consultative committee encourages Melbourne Water to keep working with local landholders to remove weeds (i.e. willows), fence stream frontages to exclude livestock and undertake revegetation.

LOGGING IN THE LITTLE YARRA CATCHMENT

The consultative committee supports the current research being carried out in the area and encourages any ongoing research into the relationship between regrowth forest and surface water yields. Under the current legal framework it is not possible for the consultative committee to make a prescription requiring logging activities to purchase temporary water licences to offset any net loss.

There are several investigations and strategies which are currently looking into the impact of land-use on water yields and/or the impact of logging on water yields. In accordance with the requirements of the National Water Initiative, work is underway to develop a framework to account for and manage the impacts of land use change on water resources.

Options to improve water management to include unaccounted water use are also being explored in the Western Region and Gippsland Region Sustainable Water Strategies. The aim is to manage risks to water resources where required, without imposing significant costs or preventing regional growth in areas that are not stressed. Options range from collaborative approaches to a comprehensive licensing regime covering all water use (see Draft WRSWS, Chapter 6, Accounting for all significant water uses).

Any review of this Plan should consider the impact of land-use (including logging) in the Little Yarra and Don catchments on stream-flow and make prescriptions with regard to this, where it is possible to do so and deemed necessary.

DOMESTIC AND STOCK USE IN THE CATCHMENT

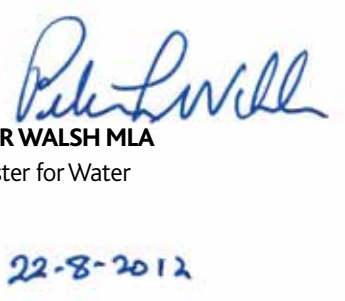
The consultative committee recommends that further work is undertaken to understand and quantify domestic and stock use in the Little Yarra and Don catchments. Once there is a greater understanding of the impact of domestic and stock use, an education program should be carried out, so that domestic and stock licence holders have a greater understanding of the impacts that their water diversions have.

OTHER INFLUENCES ON SURFACE WATER

The consultative committee acknowledges the impact that climate change is predicted to have on south-eastern Australia. With predictions including a drier climate, larger storm events, more frequent fires and the reduction in water yield.

15 APPROVAL

I, Peter Walsh, Minister administering the *Water Act 1989*, approve this Plan in accordance with section 32A(6) of the *Water Act 1989*.



PETER WALSH MLA
Minister for Water

Date 22-8-2012

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GLOSSARY AND TERMS

"Act" means the Water Act 1989 (Vic)

"Catchment Dam" means a dam which predominantly harvests water from rainfall runoff other than from a defined waterway.

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

"Dam-filling period" means the period as prescribed in the plan and comprises of 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 flow events.

"EVC" means Ecological Vegetation Class.

"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 stream flow 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.

"Melbourne Water" means Melbourne Water Corporation.

"Minister" means the Minister administering the Water Act 1989.

"ML" means megalitre; one million litres.

"Natural flow" means the 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 into 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.

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

"SEPP" means State Environment Protection Policy.

"Sleeper licence" means a licence that is not currently utilised by the licence holder.

"The consultative committee" means the Little Yarra and Don Rivers Consultative Committee.

"The Plan" means the Little Yarra and Don Rivers Stream Flow Management Plan.

"Waterway" has the same meaning as that defined in the Water Act 1989.

"Water Supply Protection Area" An area declared by the Minister to be protected under Section 27(1) of the Water Act 1989.

SCHEDULE 1
LICENCE CONDITIONS

1. Licence to take and use water from a waterway for any purpose: [Section 51(1)(a)]

   1.1 Standard state-wide licensing conditions apply, in addition to those conditions list below.

   1.2 A licensee within the Little Yarra River catchment must not take any water from a waterway when the 7-day rolling average stream flow at the Little Yarra River Stream flow Gauge at Lowes Road (Site ID 229214) is 39ML per day or less, at any time.

   1.3 A licensee within the Little Yarra River catchment must not take water, except in accordance with the rostering and restriction provision set out in the Melbourne Water Drought Response Plan for Licensed Water Users, when the 7-day average stream flow at Little Yarra River Stream flow Gauge at Lowes Road (Site ID 229214) is 60ML per day or less at any time.

   1.4 A licensee in the Don River catchment must not take any water from a waterway when the 7-day rolling average stream flow at the Don River Stream flow gauge at Dalry Road (Site ID 229220B) is:

      a) 3 ML per day or less at any time between 1 December and 30 June

      b) 10 ML per day or less at any time between 1 July and 30 November

   1.5 The take period for winter-fill dam licences will be as follows:

      Little Yarra River – 1st July to 30th November.

      Don River – 1st July to 30th November.

   1.6 The licensee must comply with any roster or restriction prepared and implemented by Melbourne Water under the Melbourne Water Drought Response Plan for Licensed Water Users and/or under Prescription 2 of the Little Yarra and Don Rivers Water Supply Protection Areas Stream Flow Management Plan.

Note: These conditions are additional to, or replace, existing licence conditions where appropriate in accordance with *Policies for Managing Take and Use Licences*, September 2009, issued by the Minister for Water.

APPENDIX 1

The Plan has been completed following appropriate community consultation on a draft and necessary changes being made.

The following table provides a summary of the community consultation submissions and the response by the consultative committee. There were other submissions received that wished to remain anonymous and are not displayed here but were considered by the consultative committee.

Prescription	Respondent	Comment	Consultative committee comment
1	Grace Venuto	Agree	Noted
1	Powelltown Sawmills	Agree	Noted
1	Andrew Seegar	Agree	Noted
1	Environment Victoria	We support Prescription 1 on maintaining the current cap on diversions in the two catchments and the prohibition of trade into the Don catchment.	Noted
1	DSE	Request consultative committee reconsiders the appropriateness of entitlement caps given alternative modelling information of reliability of supply in winter and potential for future development.	The consultative committee acknowledges the results presented by DSE and SKM and accept there is potential future development in the Little Yarra and Don catchments. The consultative committee believe there is an existing ability to develop under current allocations through trading. This is to be reviewed in five years to assess if this is adequate to support the level of development experienced throughout the duration of the plan.
2	Geoffrey Cochrane	Strongly disagree	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
2	Grace Venuto	Agree	Noted
2	Powelltown Sawmills	Disagree – Our sawmill must keep the logs under water sprinklers at all times or will crack which costs the company thousands of dollars each day	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
2	Andrew Seegar	Agree	Noted
2	Environment Victoria	The draft Plan fails to implement the minimum environmental flow recommendation of 42 ML/day for the Little Yarra. This is despite the fact that setting the minimum flow at 42 ML/day would have no detrimental effect on irrigator reliability in all but the driest years, and even then it would only increase time spent on bans by one percent (Figure 10, p23). Instead of immediately implementing a minimum flow of 39 ML/day and then reviewing the situation in 5 years, as envisaged in the draft Plan, the 5 year period of the SFMP could be used to progressively the 42 ML/day recommendation.	The consultative committee considered progressively implementing the ban level to 42ML/day. The consultative committee considered the impact on diverters with an addition 1% of the year on ban and resulting increase in duration of consecutive days without access to water. Based on this the consultative committee recommended that the plan review should consider implementing the 42ML/day.

Prescription	Respondent	Comment	Consultative committee comment
3	Geoffrey Cochrane	Disagree	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
3	Grace Venuto	Agree	Noted
3	Powelltown Sawmills	Disagree – we purchase the water licence when there were no restrictions on use and transfer based our commercial decision on these factors	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
3	Andrew Seegar	Disagree	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
4	Grace Venuto	Strongly Disagree	The metering and monitoring recommendation is consistent with current Melbourne Water practice.
4	Andrew Seegar	Agree	Noted
5	Geoffrey Cochrane	Agree	Noted
5	Grace Venuto	Agree	Noted
5	Powelltown Sawmills	Agree	Noted
5	Andrew Seegar	Agree	Noted
6	Geoffrey Cochrane	Schedule 1 Strongly disagree Going back to late 1960s when the flow in the Little Yarra was at an all time low flow - the authority allowed a few hours a week of pumping for farmers The 39ML ban trigger or event the existing 35 ban trigger gives little or no pumping for farmers during summer in drought summers. Your charter states sharing water between all users, the 39 ml/d ban trigger gives no consideration to farmers A small pumping allowance when flows are below 39ml would be much fairer.	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
6	Grace Venuto	"Depending on existing licence conditions where appropriate"	The committee agrees this is not clear in the plan. The committee has amended the plan to refer to Policies for Managing Take and Use Licences, September 2009, issued by the Minister for Water which outlines general licence conditions.
6	Powelltown Sawmills	Disagree – as mentioned previously any restriction to access of our water will have a significant economic detriment to the company	The committee considered the needs of all water users, including economic, social and environmental factors and after robust debate determined this was an appropriate balance between all water users. The decision was consistent with the objectives of the plan.
7	Geoffrey Cochrane	Agree	Noted
7	Grace Venuto	Agree	Noted
7	Andrew Seegar	Agree	Noted
8	Geoffrey Cochrane	Agree	Noted
8	Grace Venuto	Agree	Noted
8	Andrew Seegar	Agree	Noted

Prescription	Respondent	Comment	Consultative committee comment
All Prescriptions	HEALESVILLE ENVIRONMENT WATCH INC	HEWI generally agrees with all recommendations within Prescriptions 1-6 as environmentally responsible and we strongly agree with P7 & 8 to provide future safeguards as the effects of climate change are manifested as forecast by current modelling	Noted
All Prescriptions	David Peterson	Agree with all prescriptions	Noted
Further Recommendations	Environment Victoria	Environment Victoria notes the committee's comments (p34-5) on logging and on stock and domestic use in the catchment and supports their recommendations. Regrowth following logging and stock and domestic use both have significant impacts on stream flows and affect both the environment and the reliability of supply for other users. The Stream Flow Management Plan will be limited in its effectiveness while these significant water uses remain outside its scope.	Noted
Further recommendation – Don Gauge	Environment Victoria	We also support the request for a stream flow gauge for the Don and the implementation of the environmental flow recommendations for that river	Noted – Gauge installed in September 2011.
Further recommendation – Groundwater	Environment Victoria	We endorse the concerns expressed by the Committee on groundwater use in the Little Yarra and Don catchments	Noted
Further recommendation - Groundwater	Sue Hoffman	The recommendations relating to licences and conditions for users of Surface Water seem to be appropriate, given the lack of real data on which to base such recommendations. However, the omission of any reference to similar regulation of Groundwater Extraction is puzzling. I was surprised to find that I had to read 34 pages before any acknowledgement that there is an inter-relationship between Groundwater and Surface Water in this catchment. This inter-relationship is widely recognized within the Water Industry and the health of one has impacts on the other. (see the brief attachment 'Hydrologic Cycle') Any Stream Flow Management Plan is flawed unless both systems are fully understood and taken into consideration. It is well known that the Don River is fed by springs at various points. There has been no study of the extent of their contribution to the overall flows. There is a commercial extraction facility taking water from these sources. Monitoring of its activity, or its impacts on the Don River has not occurred. There is therefore no data regarding the extent of this extraction, or its impact on the river flows, and this Catchment Management plan makes no concrete recommendations which will ensure that such monitoring is put in place. What SPECIFIC measures will be implemented to monitor the Groundwater levels? Who will take responsibility to ensure that this monitoring actually occurs? Unless actual data is collected, how will any assessment be made as to whether the extraction licence should be renewed? Anecdotal evidence has overwhelmingly shown that the extraction of the groundwater DOES have an impact on the flows in the Don River – especially during periods of low flow. Hard evidence, based on actual monitoring is essential to ensure that every aspect of the health of the Don River is included in any Streamflow Management plan. A specific groundwater monitoring program in place. Recommencement of monitoring of flows in the Don River.	Noted. Groundwater is outside the committee's terms of reference as the Little Yarra and Don Water Supply Protection Area relates to the management of surface water only.

Prescription	Respondent	Comment	Consultative committee comment
Further recommendation - Groundwater	Brian Feim	While commending its intentions, I believe the integrity of a final plan (Little Yarra and Don Rivers Water Supply Protection Area Stream Flow Management Plan 2011) will be severely compromised if the role of Groundwater is not thoroughly investigated and recommendations and/ or prescriptions incorporated into the final Plan. Drawing the Ministers attention to:- Section 14.: Comments by the consultative committee (Page 34 of draft plan) The consultative committee recognises the importance of the role of Groundwater and expresses its concern. The committee puts forward three points : - Current licences, the future renewal of these licences and monitoring. I share the concerns of the committee. At the suggested 73% contribution to Stream Flow, Groundwater is the major parameter, It therefore needs to be thoroughly investigated and understood to determine its capacity to provide protection for our water supply Given the topography of the Don River catchment area, the contribution of Groundwater to Stream Flow in this river could be greater than 73% (as suggested for the Little Yarra catchment). Further In conditions of extreme dryness and periods of little or no rainfall (1982 and 2008/9) Groundwater contribution to Stream Flow could approach 100%. (See below**) I feel a successful plan cannot be implemented without all relevant data being considered With such a significant contribution to stream flow , Groundwater cannot be ignored in the proposed plan. If the plan were to be adopted in this form , it would not provide effective Stream Flow protection. A holistic approach to the catchment areas is essential. I would trust that the Minister receiving the draft report and its submissions would request Groundwater studies be undertaken and the concerns of the committee be addressed and any recommendations / prescriptions incorporated into the final draft. **Observation from the author – Yarra Valley resident for 60 yrs January 2009 – The Don River at the Dalry Road bridge. Looking down onto the riverbed, The rocks on the riverbed were damp. No audible sound of water and no stream flow was visible.	Noted. Groundwater is outside the committee's terms of reference as the Little Yarra and Don Water Supply Protection Area relates to the management of surface water only.
General Comment	Elizabeth Jacka	There have only been limited faunal surveys of the Don catchment, and the report acknowledges the anecdotal evidence that platypus occur in the area. However, other species may also exist and go unrecorded. I suggest the last line on page 10 should refer to future surveys confirming the presence of platypus 'and other species'.	Noted. Plan amended
General Comment	Elizabeth Jacka	On page 12, I believe the report should refer to 'estimated' flows in the Don River. The current wording of the report could give the misleading impression that the flows referred to are measured flows, rather than modelled flows.	Noted. Plan amended
General Comment	Elizabeth Jacka	Also on page 12, I believe that there should a paragraph under Figure 7 commenting that there is currently significant under use of licensed allocations in the catchment. For example, metered water use in 2007-08 was only 0.9% of the total allocation and I believe that this low use is largely due to land use in the valley rather than the application of bans. I believe the land use and low use of allocations is a special feature of the Don River catchment. The paragraph could also comment that the current under use of allocations in the catchment may provide an opportunity to reduce the total allocation in the catchment through trading licences out of the catchment. And that Melbourne Water is encouraging large diversion licence holders in the catchment to trade all or part of their licence out of the catchment. This paragraph could also be included on page 19 – perhaps as part of the second paragraph on the Don River.	Noted. Plan amended

Prescription	Respondent	Comment	Consultative committee comment
General Comment	Elizabeth Jacka	On page 34 in relation to groundwater, the first paragraph only refers to the geology of the Little Yarra catchment, and the fact that excessive groundwater extractions could have a significant impact on seasonal base flows in the river. I seem to remember a comment that Page 2 similar geological conditions are likely to occur throughout the entire region and that the Don River could be similarly impacted by excessive groundwater extraction – as one would expect. I think that there should be some reference in the paragraph that similar conditions are likely to occur on the Don catchment.	Noted. Plan amended
General Comment	Elizabeth Jacka	One concern with the SFMP is that there has been significant reliance on estimates, rather than on hard facts, in relation to the Don River catchment: • There has not been a gauge on the river since 1987 and stream flows in the river have therefore had to be estimated through creation of a rainfall-runoff model. Page 10 the report refers to average rainfall in the catchment of 1000mm per year, which is presumably the data used in the rainfall-runoff modelling. I am not sure where this rainfall information has come from, but I assume this has also been modelled from rainfall data outside the Don Valley. My husband and I have lived in the Don Valley since June 2000 - that is, during a period that has been significantly drier than normal. We have kept accurate records of rainfall during the past 10 years and our readings show that average rainfall over that period has been 1107mm. This highlights the problem associated with use of modelled data. • Furthermore, current flows in the Don River are modelled on the total volume of diversion licences in the catchment. Whilst I understand why this has been done, this approach fails to give an accurate picture of what is actually occurring in the catchment, given the number of sleepers and the very significant under use of licensed allocated diversions. Both of the above matters lend support for installation of a gauge on the Don River in order to obtain accurate information in relation to flows in the river. I suggest that when the SFMP is forwarded to Minister Walsh for approval, the accompanying letter once again request that a gauge be installed on the river and that the current lack of accurate information be referred to in support of that request	Noted – Gauge installed in September 2011.
General Comment	VRFish	The Victorian Recreational Fishing Peak Body (VRFish) is happy with the direction of this plan and endorses its identified actions. VRFish is supportive of increasing the potential of summer storm flushes that are currently prevented by dams. We see that any additional waters returned to the river systems are necessary to ensure biodiversity. However, we query how Melbourne Water will differentiate between stock dams and recreational (aesthetic) dams? VRFish would like to thank Melbourne Water for the opportunity to provide input via Anthony Urban through the development process.	Noted Melbourne Water will be guided by the Notes for Aesthetic dams which provides guidance on dam sizes allowed for domestic and stock use.

APPENDIX 2
TECHNICAL AUDIT PANEL – SUMMARY OF REVIEW
(MCMAHON ET AL 2011).

TAP considers that the background material provided to the Little Yarra and Don Rivers Stream Flow Management Plan Consultative Committee regarding environmental values and flow requirements and the hydrology of the two rivers (given the paucity of gauge data) was of good quality and a suitable basis on which to draft Stream Flow Management Plans, noting the provision for review in five years.

The draft SFMP provides a clear assessment of the effect of flow recommendations on access to surface water by diverters for a range of flow rules and in 'wet', 'average', and 'dry' years in terms of the predicted number of days of 'unrestricted', 'restricted', and zero access to water during Summer (low-flow), Winter (high-flow) and transitional periods. The methods and assumptions are transparent.

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There has been no formal risk assessment (e.g. Standards Australia) in regard to environmental values. For the most part the Consultative Committee retained the flow recommendations suggested by the Environmental Flows Technical Panel which, it could be assumed, make adequate provision for minimising environmental risk. In two instances the Consultative Committee have chosen a shortfall from these recommendations in formulating the SFMP. For the Little Yarra one minimum flow requirement has been changed (from 42ML/day to 39ML/day). The effect of this on the EFTP environmental requirements (for blackfish) have been assessed (method not reported) but the risk that this poses to the blackfish population, and hence the ecological objectives, has not. The second change from EFTP recommendations, a 7-day rolling average minimum flow of 3 ML/day in the Don instead of an 'instantaneous' minimum of 3 ML/day is potentially a greater threat to environmental values (in riffle communities) the risk of which needs to be assessed. Any potential increase in the likelihood of zero-flow events – that were not envisaged in the EFTP recommendations – represents an unquantified increase in ecological risk.

As with environmental and hydrological expertise, the preparation of SFMPs may benefit from specialist ecological risk assessment support were it made available to Consultative Committees.

Implementation of final flow recommendations in the Don is dependent on the installation of a flow gauge. It is intended that data from this gauge (inter alia) be used to reassess the SFMP at the 5-year review. This is a limited time-window within which to collect the necessary hydrological and ecological data for an effective review.

At that time, if not as part of the current SFMP, TAP recommend that an analysis of future changes due to climate change be completed.

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