

Water Act 1989

Olinda Creek

Water Supply Protection Area

Stream Flow Management Plan 2007



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Preface

Throughout Victoria Stream Flow Management Plans (SFMP) 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 March 2004 by a consultative committee established by the Minister for Water. The consultative committee, consisting of the following people, have developed this SFMP following extensive discussions, consideration of technical work, and in response to public submissions.

Olinda Creek Stream Flow Management Plan consultative committee members

Mr Rick Charylo	Licensed water user
Ms Marney Jones	Licensed water user
Ms Elizabeth Lithgow (Chair)	Licensed water user
Mr Clive Stone	Licensed water user
Mr Shayne Vanderklift	Licensed water user
Mr Jamie Ewert	Melbourne Water
Mr Tim Heenan	Environment Victoria

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

Olinda Creek Streamflow Management Plan ex officio observers

Ms Sanela Rikalo	Environment Protection Authority
Mr Ian Morgans	Port Phillip and Westernport Catchment Management Authority
Mr Bill O'Connor	Department of Sustainability and Environment
Mr Owen Gooding	Shire of Yarra Ranges
Ms Joanne Cooper	Yarra Valley Water
Ms Christine Hughes	Melbourne Water

Past ex officio observers of the consultative committee

Ms Simone Gunn	Melbourne Water
Mr Paul Bayley	Licensed water user
Mr Peter Brunt	Yarra Valley Water

This final Plan is prepared in two parts. The first part is the Explanatory Memorandum which provides the background for the development of the Plan and explains the reasons why the various recommendations have been made. The second part is the SFMP itself, which is written in a more legalistic way in line with the requirements of the *Water Act 1989*.



Glossary and Acronyms

All-year licence: A licence that allows harvesting of water from a waterway any time during the year.

Catchment dam: A dam that is not located on a waterway and which captures rainfall run-off from the catchment.

Cap: An upper limit placed on licence allocations.

Commercial use: Water used for irrigation of produce to sell and for industrial uses such as cooling or dairy washing

Dam-filling licences: Licences to fill on or off stream dams during the dam filling period. The licence is limited to the volume of the storage. Also known as winter fill licences.

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

Domestic and stock licence (D&S): A licence to take water from a waterway for use in, and around, a house or for watering of stock, but not for commercial purposes.

Environmental flow: A pattern of streamflows that maintains or improves aquatic ecosystems and their habitats by mimicking the size and timing of natural flows.

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

Natural flow: 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 onto the flows that are recorded at a stream gauge.

Macroinvertebrate: Animal species without a backbone that can be seen with the naked eye. Macroinvertebrates are commonly used as a measure of stream health.

Median: The middle number of a set of numbers, such that half the results are greater than the median and half are less than the median.

ML: Megalitre, one million litres. Approximately the size of an Olympic swimming pool.

Off-stream dam: A storage which is not located on a waterway but is filled with water pumped from a waterway.

On-stream dam: A storage that is located on a waterway.

Reliability of supply: A percentage chance of being able to fully obtain a volume of water in any year.

Sleeper licences: Licenses held but not utilised.

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

1 Background

1.1 What is a Stream Flow Management Plan?

The object of a Stream Flow Management Plan is to manage the water resources of the area in an equitable manner so as to ensure the long-term sustainability of those resources. It is developed by a committee that represents all relevant interests in the area.

A Stream Flow Management Plan defines the total amount of water in a catchment and describes how it will be shared between the environment and water users. In preparing a Plan, community involvement is necessary to ensure community needs are fully understood and that essential background knowledge is considered.

It aims to recognise the needs of licensed water users whilst maintaining or improving waterway health by protecting minimum flows for the environment.

1.2 Stream Flow Management Plans in the Yarra Basin

This Plan has been prepared as a part of Melbourne Water's program for managing priority catchments throughout the Yarra River basin. This program will see new plans developed for other priority tributary catchments in the basin, and existing plans reviewed as required.

2 Development of the Plan

2.1 How is a Stream Flow Management Plan developed?

A consultative committee consisting of Olinda Creek water users, Melbourne Water staff, representatives of environmental interests, Shire of Yarra Ranges and key government agencies has developed this Plan. A full list of members is given on page 3.

Using advice from numerous scientific and other studies (listed in the References section), the consultative committee identified improvements that could be made in the management of water licences and negotiated a series of recommendations that aim to both balance security for water users and maximise environmental gains.

2.2 Consultation and Information available during Plan development

The development of the Olinda Creek SFMP involved significant consultation to ensure that the rules are relevant to local stakeholders and conditions. Stakeholders have been informed and involved during the development of the SFMP through the following activities and communication.

- Water user survey and property visit
- Consultative committee membership – including local water users, relevant authorities, interest groups
- Consultative committee meetings
- Letters to licensed water users – describing the process and encouraging involvement
- Media releases
- An open day information session (during consultation phase)

The consultative committee published a draft Plan in September 2005 for the consideration of water users and the broader community. The consultative committee considered the issues raised by the community submissions and amended the Plan in response. A summary of the committee's response to the submissions is provided in Appendix 1.

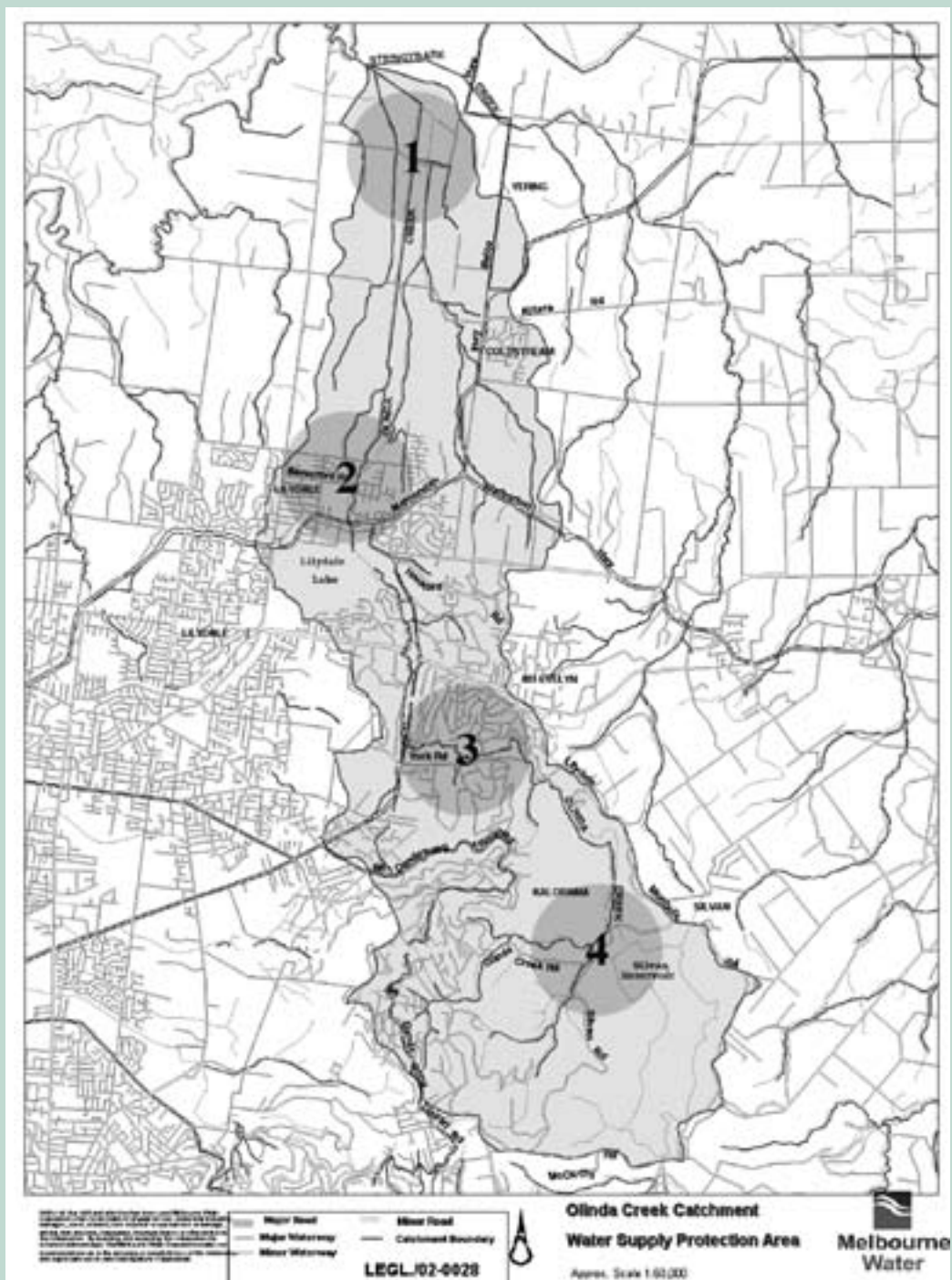
3 The Olinda Creek Catchment

3.1 The Water Supply Protection Area

This SFMP applies to the catchment of Olinda Creek. In accordance with the *Water Act 1989*, Section 27, Melbourne Water advertised the Water Supply Protection Area for Olinda Creek in August 2002. After reviewing public submissions, the Minister for Environment and Water declared the Olinda Creek catchment a Water Supply Protection Area in December 2002.

This Plan applies to the surface waters of the Water Supply Protection Area, which is shown in figure 1 below.

Figure 1 **Olinda Creek Water Supply Protection Area**



- 1. McIntyre Lane Site
- 3. York Road Gauge Site

- 2. Lilydale Sewerage Treatment Plant
- 4. Kalorama Site

3.2 Catchment Description

Olinda Creek is a tributary of the Yarra River, rising in the Dandenong Ranges, and flowing northward through the townships of Kalorama, Mt Evelyn, Lilydale, and the Coldstream district before flowing into the Yarra River. The catchment is approximately 82km² and supports a diverse range of native bird, reptile, macroinvertebrate and mammal species, several of which are threatened or endangered. Silvan Reservoir is situated in the upper catchment at Monbulk and supplies water to Melbourne's urban demand centre, and while it does not collect significant volumes of water from the Olinda Creek catchment, it provides a constant flow of 2ML/day to Olinda Creek.

The natural flow regime of Olinda Creek has been significantly altered, primarily by the diversion of water for irrigation and stock and domestic purposes.

The majority of water use in the Olinda catchment is in the middle and lower reaches, with the most common crops being pasture, vegetables, berries, orchards, flowers, viticulture and trees (SKM, 2004).



Lillydale Lake

Lillydale Lake is primarily a 'wet' retarding basin constructed by Melbourne Water to protect downstream properties from the effect of major flooding. The lake averages approximately 1.5 metres deep, with a maximum depth of 3 metres. The presence of the lake on the floor of the basin has no impact on the capacity of the retarding basin to mitigate flooding. Two islands were constructed to reduce reach lengths and thus wave sizes to limit erosion.

In addition to the main lake, a series of wetlands were constructed to protect water quality in the lake. At the time of construction the Shire of Lillydale also created a park adjoining the lake, to maximise its enjoyment by the public.

Construction of the complex was completed in 1988 and was named Lillydale Lake to reflect the Shire of Lillydale's desire for the lake to be considered an asset for the entire shire, not just the township of Lillydale, hence the now odd spelling of Lillydale.

Lilydale Sewage Treatment Plant

Yarra Valley Water (YVW) operates the Lilydale Sewage Treatment Plant (STP) which discharges treated effluent to Olinda Creek below Lilydale. The STP discharges on average 6.7ML/day of treated effluent to the creek however this can range between 3.7 and 13.5ML/day depending on the time of year and rainfall within the STP's catchment.

YVW's operation of the STP is governed by an EPA Waste Discharge Licence. The licence details contaminant limits and monitoring requirements for the effluent discharged to Olinda Creek. This information is reported to the EPA annually.

In addition, YVW also undertakes water quality monitoring of Olinda Creek, upstream and downstream of the STP discharge. The current waterway monitoring study is due for completion in November 2005. The results of this study will be compared to the two previous studies undertaken in 2000 and 2003. As a result of the previous studies, sand filters were installed at Lilydale STP in 2004, to reduce the phosphorous load discharged into the creek.

The EPA's Waste Discharge Licence for Lilydale STP also requires that YVW "maximise reuse of effluent". Currently the Lilydale STP has no recycled water customers. YVW have previously undertaken reuse scheme studies and these have shown that although a potential market exists, customers' willingness to pay for the infrastructure and ultimate price of the water is currently the restricting factor. Should a recycled water scheme be developed in the future, the volume discharged from the STP to Olinda Creek would obviously decrease by the amount delivered to the customers.

The committee discussed the likelihood of recycled water being supplied to new customers and decided that this was unlikely to occur within the short term. Therefore it has been assumed that the current discharge will continue for at least the short term.

4 Water use within the catchment

4.1 Licensed water allocations

Licences are required to take and use water from a catchment and are issued and managed by Melbourne Water under the *Water Act 1989*. Licences in the Olinda Creek catchment are issued as:

- all-year pumping licences for Domestic and Stock or commercial irrigation for any month of the year, or
- off stream dam filling during the dam-filling period, or
- on-stream dam harvesting during the dam-filling period, or
- irrigation or commercial use farm dams.

Dam-filling licences are issued for the purposes of filling dams by pumping from the waterway during the high-flow period. Water stored in dams can be used at any time of the year, which provides a higher reliability of supply to water users.

Amendments to the *Water Act 1989* enabled a person to obtain a registration licence for water taken from a spring, soak or dam that was used for irrigation or commercial purposes in any year within a 10-year period prior to 4 April 2002.

Farm dams that were licensed or registered are permitted to take water in any month of the year in recognition of their operation prior to the changes to legislation. Landholders who registered their water use cannot transfer the water off their property. However a registration licence can be converted to a standard licence at any time. A standard licence incurs an annual fee and may be transferred.

New farm dams are required to be constructed to enable them to comply with licence conditions and restrictions.



4.2 Water use not requiring a licence

Water for domestic and stock use can be taken from a waterway without a licence, if the waterway flows through a person’s property or the waterway immediately borders a person’s property. If a crown frontage or property owned by someone else exists between a person’s land and the waterway, a licence for domestic and stock use is required.

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

In January 2005, there were 73 licences in the Olinda Creek catchment with a total allocation of 830.7ML per year (Table 1).

Table 1 Summary of licensed diversions at January 2005

	Dam-filling licences (ML)	All-year Domestic and Stock licences (ML)	Registered Farm Dams (ML)	Irrigation licences (ML)	Total licensed allocation (ML)
All-year	–	32	71.7	625	728.7
Dam-filling	102	–	–	–	102

4.3 Current licence management arrangements and current water use

Water may be diverted in accordance with licence conditions that typically specify an annual volume and an area. Licences have historically been managed to an irrigated area but are now managed to a metered volume. Meters have already been fitted to all major irrigation and commercial licences in the Olinda Creek catchment (licences greater than 5ML in volume).

Historically during drought periods, Melbourne Water used the Drought Response Plan for Diversifiers to protect minimum flows throughout the Yarra basin. Since 1997, the Drought Response Plan has set out to protect a minimum flow of 245ML/day in the Yarra River at Warrandyte. Water restrictions have historically been applied uniformly throughout the Yarra basin, regardless of the flow in individual catchments. Melbourne Water set specific restriction levels for the Olinda catchment as a part of the Drought Response Plan review in 2004. For Olinda Creek, catchment specific ban levels were set at 4.5ML/day in summer, and in winter the ban level is 6ML/day measured at the York Rd gauge, Mt Evelyn. (see Figure 1)

No new all-year licences have been issued in the Yarra basin for some time, except for the one time licensing and registration of existing farm dams in 2003/04, which occurred as a result of changes to the *Water Act 1989* that required these dams to become licensed.

The release of the Victorian Government’s *Our Water, Our Future* action plan in 2004 introduced a moratorium on the issue of any new entitlements within the Yarra basin, including the Olinda Creek catchment. The Yarra basin is considered by the Government to be fully allocated. An environmental water reserve for the Yarra basin will be set by capping the consumption of water in the catchment, however, the exact nature of the cap is yet to be determined. The moratorium on the issue of new water allocations applies until this environmental water reserve is implemented.

Water for new development can currently be purchased temporarily or permanently from other licence holders via the Transferable Water Entitlement process described in the *Water Act 1989*. These transfers are not affected by the moratorium. However a temporary limit has been placed on permanent trades until completion of this Plan.

Stream flows are currently monitored at York Road (Melways 120 A3). Stream flows are monitored continuously.



5 Determining Environmental Flows

5.1 Stream flow in Olinda Creek

A hydrologic model was developed to represent the flows and diversions in the catchment, and to assess the impacts on water user reliability of supply under several flow scenarios (SKM, 2002). The model incorporates available stream flow data from the York Rd gauge as well as the old gauge at the old cheese factory. These flows were extended to cover the period 1965-2000 using rainfall records. Stream flows were also estimated for other points in the catchment over the same period. This hydrologic modelling allowed the change between natural conditions and those currently in the catchment to be estimated.

It should be noted that the most recent five year dry period has not been captured in the model. Figures 2 & 3 show the average flows that occur throughout the year and shows that the 'wet' months are clearly July to October, with flows declining during the remaining months. The average annual flow (based on the period 1965 to 2000) is approximately 20,600ML, of which the Lilydale sewage treatment plant contributes around 13% (SKM, 2002). The whiskers on these charts show the hydrologic 90th and 10th percentile daily flows for each month. The 90th percentile represents the daily flow for which 90% of flows are higher. This is a low flow. The 10th percentile flow is exceeded on 10% of days. This is a high flow.

Figure 2 Average daily flow each month in Olinda Creek at York Rd, Mt Evelyn.

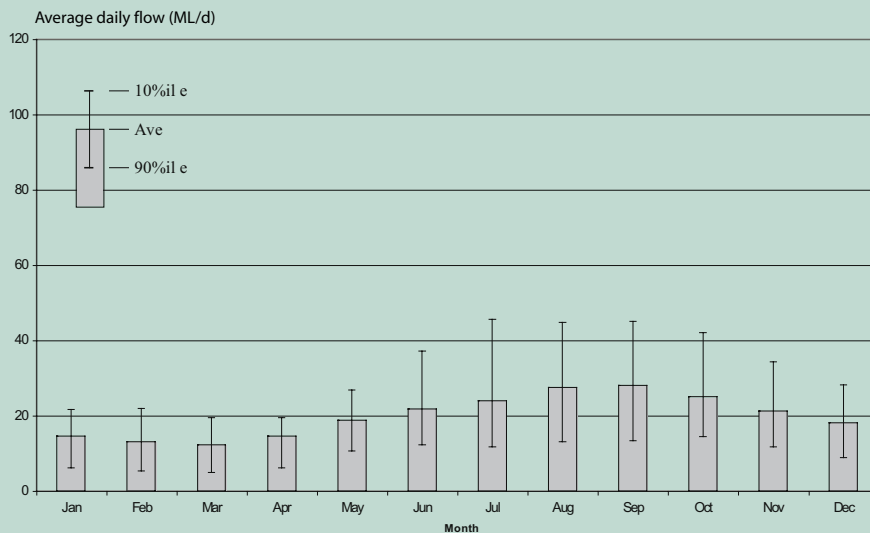
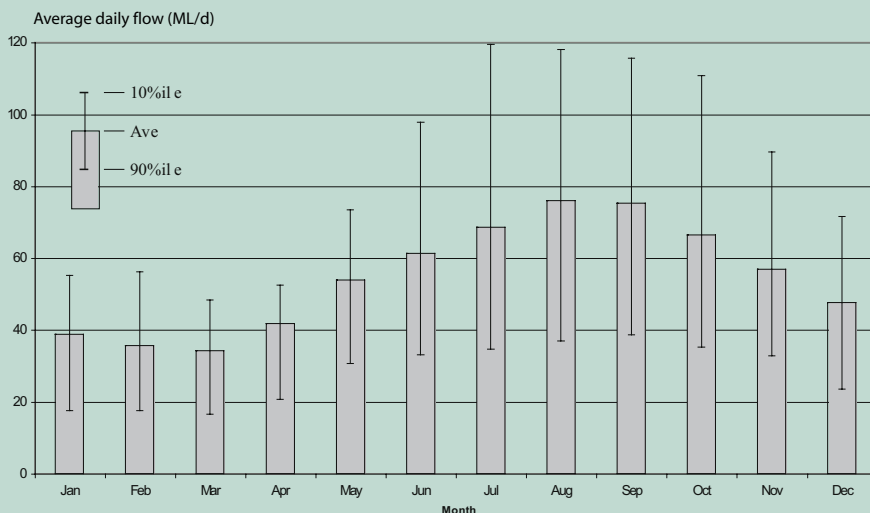


Figure 3 Average daily flows each month at the Olinda Creek outlet



5.2 Current flows compared to natural flows

The modelling has found that current practices in the Olinda Creek catchment have resulted in a significant reduction in flows from the natural conditions in the middle of the catchment, however the discharges from the STP have resulted in an increase in flows from the natural conditions in the lower reaches of the creek. Table 2 shows the change to high, median and low flows with current user demands (ie- the current level of irrigation activity).

Table 2 Natural and Current flows in the Olinda system

	York Rd			Catchment Outlet		
	Natural Monthly Flow (ML/month)	Current Monthly Flow (ML/month)	% Reduction in Flow	Natural Monthly Flow (ML/month)	Current Monthly Flow (ML/month)	% Increase in Flow
Low Flows ¹	377.3	347.3	8.0	856.2	1001.6	17.0
Median Flows ²	544	514	5.4	1246	1434	15.1
High Flows ³	1124	1094	2.6	2686	2908	8.2

1. Low flows are those flows that are exceeded 80% of the time (ie the flow is at least this much 80% of the time). These are the common flows that exist even during dry periods and on which the creek must survive during dry times.
2. Median flows are those that occur 50% of the time (ie half of recorded flows are greater than this and half are smaller). These are usually larger flows that stay within the banks and which periodically flush the creek.
3. High flows are those exceeded 10% of the time. These are rare flows, like floods that break the banks of the creek, rejuvenating floodplains and maintaining the creek's course.

Current flows in this table are those modelled using a hydrological model as discussed above to extend the record from the stream flow gauges. The effects of current water use practices are included in the current flow figures. Natural flows are also based on modelling, and represent the flows that would have occurred if there were no irrigation occurring in the catchment.

5.3 Environmental values

The upper reaches of Olinda Creek support a diverse range of fish, macroinvertebrates, reptiles, amphibians and flora. Four native and six exotic species of fish were recorded in the catchment (Close and Koster 2001). The native species River Blackfish, Mountain Galaxias, Short-finned Eel and Common Galaxias are predominant in the upper reaches, however the exotic fish species are prevalent in the middle and lower reaches of Olinda Creek. The installation of the Dight's Falls fishway on the Yarra River could result in the re-colonisation of the Olinda Creek with Australian Grayling. Lillydale Lake however, does pose a barrier to further migration of fish species into the upper reach of the catchment. Other smaller barriers also exist such as the weir at York Road gauge.

Macroinvertebrate species in the upper Olinda Creek catchment are diverse, however their population densities are moderate to low. This trend reverses in the lower catchment where species diversity declines but populations increase. Several threatened macroinvertebrate species have been observed in the catchment, including the locally significant Dandenong freshwater amphipod that is listed under the *Flora and Fauna Guarantee Act 1988* that protects rare and threatened species in Victoria. This is found in the upper reaches of Olinda Creek.

Threatened reptile and amphibian species have been recorded in the Olinda Creek catchment. The warty bell-frog more commonly known as the growling grass frog, and the swamp skink both rely on vegetation in or around the waterway for survival, and riparian areas often provide the only suitable habitat.

Olinda Creek supports a healthy, growing population of platypus, one of the most important populations in the eastern metropolitan region (Williams, Serena and McQualter 2005). More than 60 individual platypus (32 male, 28 female) have been found during surveys since 1996, and up to 30 platypus currently use the creek. Platypus are particularly abundant in the catchment above Lillydale Lake, and in the lower section of the Creek below McIntyre Lane. In early 1999, Melbourne Water created a new wetland downstream from Hull Road (approximately two kilometres upstream of Lillydale). This was designed to include platypus habitat and platypus are currently utilising this site. Habitat requirements for platypus include overhanging native riparian vegetation, snags, stable banks and cobble/pebble substrate as well as riffle areas in stream to forage for food.

5.4 Minimum Environmental flows

The Freshwater Ecology section of the Department of Sustainability and Environment undertook a study to identify the minimum environmental flow requirements of the Olinda Creek catchment (Close and Koster, 2001). These fish biologists set objectives to apply specifically to the management of streamflows in Olinda Creek.

Table 3 **Recommended environmental management objectives in Olinda Creek (Close and Koster 2001)**

Environmental Management Objective
Maintain appropriate minimum environmental flow over the low flow period
Provide appropriate flushing flows and high flow regimes that provide suitable conditions for migration and spawning of native fish species and essential geophysical processes such as channel scouring and silt removal
Maintain water quality in accordance with SEPP (Waters of Victoria) – Schedule 7 Waters of the Yarra Catchment (EPA 1999), including provision of summer flushing flow
Ensure that dam-filling diversions are set at a level that does not impact on essential biological and geomorphological processes
Maintain and/or restore diversity and complexity of in-stream habitat (e.g. woody debris)
Maintain and/or enhance diversity of aquatic fauna species and encourage re-colonisation of Olinda creek by migratory species

Minimum environmental flows were recommended for Olinda Creek based on the expert assessment of the area of wetted habitat (eg submerged logs and undercut stream banks) available to fish and macroinvertebrates at a range of observed stream flows. Minimum environmental flows were recommended at each of the sites at which a habitat assessment was performed to meet the environmental objectives shown in Table 3.

A precautionary approach has been applied in recommending these environmental flows. For low flow conditions it was not possible to extend the relationship between habitat availability and streamflow beyond the range observed during the site inspections. The recommendation of environmental flows is therefore difficult, and for most locations the recommended flow is close to the lowest stream flow measured during the habitat surveys. Refer to Figure 1 for site locations.

Table 4 **Recommended minimum environmental flows (for the non-winter months) in Olinda Creek (Close and Koster, 2001)**

Minimum environmental flow recommendations for Olinda Creek	
Location	Environmental Flow (ML/day)
1. Olinda Creek at Kalorama	2
2. Olinda Creek at York Rd	6
3. Olinda Creek at McIntyre Lane	15

Close and Koster (2001) did not make any recommendations for minimum flows over the winter months. Instead, environmental flows during winter are taken from the Department of Sustainability and Environment's Sustainable Diversion Limits package, (NRE 2004). This package provides recommendations for minimum flows over the months of July to October, based on an analysis of stream flow data in the catchment. When calculating the minimum flow, it aims to keep the post diversion flow regime within the upper and lower limits of the natural flow regime, acknowledging that this variation is quite large (Nathan *et al*, 2002). The Sustainable Diversion Limit has been designed to be environmentally conservative (ie a very low risk to the environment) and to be used as a rapid method if no other alternatives exist. The Sustainable Diversion Limit package recommends a minimum flow of 12ML/day be maintained at Mt Evelyn and 16.6ML/day at the catchment outlet.

The analysis of the impact of current diversion practices on the streamflow in Olinda Creek compared to natural conditions (see section 5.2) shows that the conditions in the lower part of the catchment are significantly different to those in the upper reaches of Olinda Creek. Modelling showed that diverters in the lower catchment would be substantially disadvantaged if they were managed at the York Rd gauge, as opposed to meeting the environmental flow recommendations at McIntyre Lane.

The committee therefore recommend that for the purposes of licence management and environmental flow compliance that the diverters be managed in two separate groups, with the division being at Lillydale Lake. Diverters upstream of this point will be managed to the minimum environmental flows outlined above, and diverters below this point will be managed to a second set of minimum environmental flow requirements at McIntyre Lane.

The committee recommends a new streamflow gauge be installed in the lower reaches of Olinda Creek in the vicinity of McIntyre Lane in order for the environmental flow requirements to be monitored and licences managed for the lower Olinda Creek catchment.

Recommendation 1

The consultative committee recommends that diverters be managed in two groups.

- (1) *Diverters upstream of Lillydale Lake will be managed to minimum environmental flows at York Rd*
- (2) *Diverters downstream of Lillydale Lake will be managed to minimum environmental flows near McIntyre Lane*

Recommendation 2

The consultative committee recommends that a new gauge be installed to monitor flows in the lower catchment. It is recommended that this gauge be installed in the vicinity of McIntyre Lane.

5.5 Issues associated with implementing Minimum Environmental Flows

Modelling was used to assess the impact on diverters of implementing the environmental flow recommendations. Water users in the catchment are currently managed at 4.5ML/day at the York Rd gauge in summer, and 6ML/day in the dam-filling period. The impact of implementing a 6ML/day environmental flow in summer and 12ML/day in winter was considered to be significant, particularly if all licences in the catchment were to be used. Table 5 below shows a comparison of the number of days on ban for each of the environmental flow options discussed, with the current level of irrigation demand on Olinda Creek. This is based on an analysis of the stream flow data from the hydrological model. The table shows the impacts of increased environmental flows during the current drought when reliability of supply is acknowledged to be worse than in other years.

The bans analysis under the Close and Koster 2001 recommendations for environmental flows at York Rd also showed that on occasion the bans could be in place for continuous periods of over 50 days. The committee suggested that this may impact too highly on diverters, and to offset the significant impact of an increased minimum flow the environmental flow remain at the current level of 4.5ML/day during the driest period of the year (Jan-Mar), and revert to the recommended 6ML/day for the remainder of the summer period (Nov-Dec and Apr-June). (This is shown as the Committee Recommendation in Table 5).

Table 5 **Number of days per year that bans would apply based on environmental flow options at York Rd based on current level of demand**

Environmental Flow Option ML/day	Summer Winter	1998	1999	2000	2001	2002	2003	2004
Days on Ban								
Current Situation	4.5	100	0	0	22	15	74	61
	6	0	0	41	0	1	0	0
Expert Recommendation	6	105	10	75	60	93	96	103
	12	40	0	6	48	110	33	7
Committee Recommendation	4.5/6	102	3	50	22	59	83	71
	12	40	0	6	48	110	33	7

The committee recommendation for minimum environmental flows at York Rd provide a slightly more reliable supply than the expert recommendations, without substantially compromising environmental values in Olinda Creek. It is acknowledged that this is less than the full recommended environmental flow. The Minister for Water's guidelines to the committee state that the recommended environmental flow must be implemented no longer than 5 years after the Plan is completed. The consultative committee should re-consider the full environmental flow recommendation when the Plan is reviewed after five years. In doing so, the committee acknowledges that the recommended environmental flow of 6ML/day is the current target flow.

The committee expressed concerns regarding the validity of the environmental flow recommendations for the lower catchment in terms of supporting fish habitat and movement. The 15ML/day minimum flow recommendation was based upon the lowest observed flow in that section of the creek and the committee's view is that a lower flow could still meet the agreed environmental objectives for the creek. To validate this a site survey was conducted to provide detailed cross sections of Olinda Creek at McIntyre Lane where the original environmental assessment was made. A computer model (PC Convey, a Melbourne Water model) was then used to determine the depths of water that would be expected in the creek at several different flows. Table 6 and Figures 4-5 below show the results of the survey.

Table 6 **Cross Sectional depths in lower Olinda Creek**

		2ML/d	6ML/d	10ML/d	15ML/d
Cross Section 1 upstream of McIntyre Lane	Max Depth (m)	0.09	0.19	0.26	0.31
	Average Depth (m)	0.07	0.14	0.19	0.22
Cross Section 2 downstream of McIntyre Lane	Max Depth (m)	0.12	0.2	0.25	0.29
	Average Depth (m)	0.06	0.1	0.12	0.14

Figure 4 **Cross Section 1 showing depths at various flows**

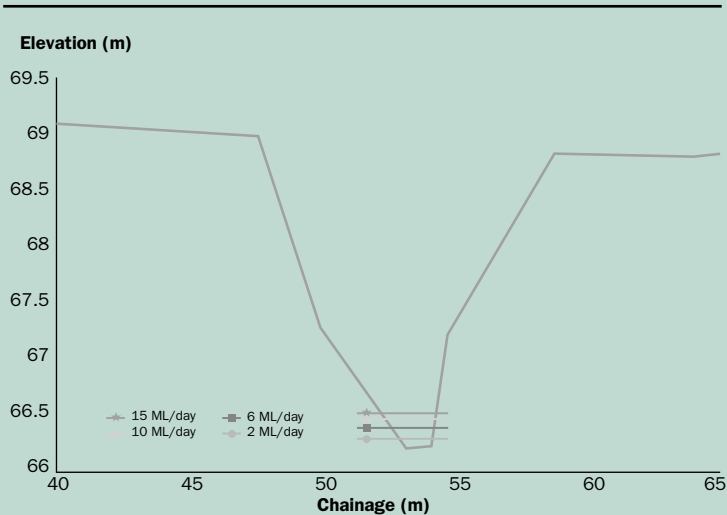
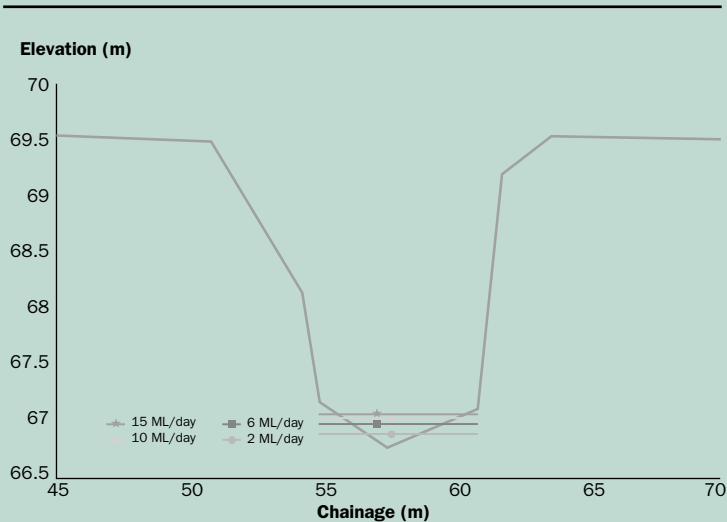


Figure 5 **Cross Section 2 showing depths at various flows**



Close and Koster (2001) in their environmental flow recommendations suggested the habitat requirements for fish are:

- 0.1m depth for movement and 0.2m depth for habitat for juvenile River Blackfish or small-bodied fish; and
- 0.2m depth for movement and 0.4m depth for habitat for adult River Blackfish.

These survey and depth modelling results show that even at the full recommended flows of 15ML/day, the 0.4m depth requirement for Blackfish is not attained. The 0.2m depth for movement and juvenile Blackfish habitat appears to be met by a flow between 10-15ML/day. The nature of Olinda Creek in the lower section is more conducive to fish movement than habitat for Blackfish, and indeed Blackfish only exist in the upper catchment (Close and Koster 2001). This would suggest that the depth for movement is potentially a more important criteria than the depth for habitat in Olinda Creek if Blackfish are used as an objective. Taking this into account, it appears that while minimum flows for Blackfish habitat are not met at 15ML/day, the depth criteria for small-bodied fish habitat and Blackfish movement are met at around 12ML/day. The committee therefore recommends that the agreed ecological objectives for the lower Olinda Creek are small fish habitat, juvenile Blackfish habitat and adult Blackfish movement. These objectives will be met if the minimum environmental flow during the summer period is set at 12ML/day in the lower Olinda Creek. The impact of this level of environmental flow on the diverters ability to pump water was established through a bans analysis, summarised in Table 7 below.

Table 7 Number of days per year that bans would apply based on environmental flow options in the lower catchment

Environmental Flow Option ML/day	Summer	1998	1999	2000	2001	2002	2003	2004
	Winter							
	Days on Ban							
Current Situation	4.5	100	0	41	22	15	74	61
(Diverters managed at York Rd)	6	0	0	0	0	1	0	0
Expert Recommendation	15	36	6	44	23	19	72	41
	16.6	0	0	0	0	9	0	0
Committee Recommendation	12	13	0	0	0	0	16	0
	16.6	0	0	0	0	9	0	0

The committee is prepared to recognise the needs of the environment at low flows by implementing rosters amongst water users once flows in the lower catchment fall below the original minimum environmental flow recommendation of 15ML/day.

On this basis, the Plan recommends that the following environmental flows be implemented for the first five years of the Plan's life:

Table 8 Recommended environmental flows for first 5 years

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Upper catchment	4.5	4.5	4.5	6	6	6	12	12	12	12	6	6
Lower catchment	12	12	12	12	12	12	16.6	16.6	16.6	16.6	12	12

The committee noted that the impact of these environmental flows, especially in the lower catchment, would change if the discharge from the Yarra Valley Water sewerage treatment plant reduces. The future of this discharge is unknown, and Yarra Valley Water is governed by the conditions of its EPA Victoria licences. Therefore no guarantees are given regarding the long-term future of the discharge.

5.6 Flushing Flows

The Environmental Flow assessment for the Olinda Creek (Close and Koster, 2001) recommended environmental management objectives (see Table 3) that included a recommendation to provide appropriate flushing flows. Flushing flows are one of the aspects of a flow regime that should be preserved to maintain ecological processes which cannot be achieved by simply providing the minimum flow as discussed in section 5.4.

Flushing flows provide suitable conditions for migration and spawning of native fish species, they remove silt, deliver woody debris and coarse organic matter to the creek, they provide inundation to nursery areas for juvenile fish, and provide fresh water to mix and improve the water quality in stagnant pools during low flow periods.

It is important to protect the first flushing flows following an extreme low flow period. This will be achieved in the Plan by requiring water users to refrain from pumping until the seven-day average streamflow rises back above the minimum flow level prior to the ban being lifted. This will allow the flushing flow to pass through the creek and the ecological processes to take place before any pumping is allowed.

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

Recommendation 3.

- (a) *The consultative committee recommends minimum environmental flows for diverters upstream of Lillydale Lake in the upper catchment of 4.5ML/day in Jan-Mar, 12.0ML/day in Jul-Oct, and 6.0ML/day in the intervening months until the Plan is reviewed.*
- (b) *After the Plan is reviewed, minimum environmental flows in Jan-Mar in the upper catchment will be reviewed.*
- (c) *The consultative committee recommends minimum environmental flows for diverters downstream of Lillydale Lake in the lower catchment of 12.0ML/day in Nov-Jun and 16.6ML/day in Jul-Oct. The committee recommends that these be considered the full environmental water requirements for the lower Olinda Creek.*
- (d) *Bans on taking water will be introduced when flows fall below these instantaneous levels and bans will be removed when the seven-day average flows rise above these levels.*

6 What the Plan contains

6.1 Object of the Plan

The Act States:

“The object of a management plan is to make sure that the water resources of the relevant water supply protection area are managed in an equitable manner and so as to ensure the long-term sustainability of those resources.”

In addition to this general objective, the committee has identified further objectives specific for the Olinda Catchment SFMP:

Table 9 **Proposed SFMP objectives**

Proposed Objective	Measure
Stream flows match natural seasonal patterns	Minimum daily stream flows each month within range of natural monthly minimums.
	Licence conditions on water access match periods when stream flows are available.
Water management rules that are clear and fixed in the short term but adaptable to long term change	Water users’ rights and licence conditions agreed in an approved Stream Flow Management Plan for five years.
	Plan review process and date set and met.
Water availability and access clearly defined.	Water licences consistent with stream flow management plan.
	Cap on maximum water allocation specified.
Trading rules and opportunities specified to encourage water licence trading	Trading rules available to water users and Olinda Creek included in Victorian water trading markets.

The Plan objectives and targets are consistent with broad objectives set for the catchment by the Victorian Government and the Port Phillip and Westernport Catchment Management Authority including the State Environment Protection Policy, (Waters of Victoria) Schedule F7 (Waters of the Yarra Catchment) 1999, and the Port Phillip and Westernport Regional Catchment Strategy 2002, and the Port Phillip and Westernport Regional River Health Strategy.

Table 10 Agreed Ecological objectives

Maintain appropriate minimum environmental flow over the low flow period
Provide appropriate flushing flows and high flow regimes that provide suitable conditions for migration and spawning of native fish species and essential geophysical processes such as channel scouring and silt removal
Maintain water quality in accordance with SEPP (Waters of Victoria) – Schedule 7 Waters of the Yarra Catchment (EPA 1999), including provision of summer flushing flow
Ensure that dam-filling diversions are set at a level that does not impact on essential biological and geomorphological processes
Maintain and/or restore diversity and complexity of in-stream habitat (e.g. woody debris)
Maintain and/or enhance diversity of aquatic fauna species and encourage re-colonisation of the lower Olinda Creek (below Lillydale Lake) by migratory species. Specifically, to: Maintain habitat and passage for Blackfish and smaller bodied fish in the upper catchment; maintain habitat and passage for smaller bodied fish and passage for adult Blackfish in the lower catchment.

6.2 Administration and Enforcement

Melbourne Water has the duty of enforcing and administering this Plan.

It is responsible for ensuring that:

- The metering and monitoring program is undertaken;
- Licence holders comply with rosters, restrictions and licence conditions;
- Licences are issued with the appropriate licence conditions; and
- Illegal water use does not occur.

6.3 Prohibitions on granting new licences

In 2004 the Victorian Government released its *Our Water, Our Future* action plan (DSE, 2004). This action plan set a policy on stressed rivers such as the Yarra River that are considered fully allocated. The Government set a moratorium on the issue of new entitlements anywhere within the basin, including the Olinda Creek catchment, until an environmental water reserve is determined. This Plan recommends a maximum volume of water rights (licences) that may be allocated for use within the catchments.

While this policy prohibits the maximum volume taken within the Yarra Basin from increasing it still allows a re-distribution of the rights. In other words, the locations where the water is taken may change so long as the total volume is not exceeded. In this way, the right to take and use water can be bought and sold between irrigators and transferred around the Yarra basin. The only limit to this is a condition that the water can only be taken at the new location without impacting upon the environment or existing users. This section outlines the maximum volumes that can be taken within the Olinda catchment, subject to the trading rules outlined in this Plan (section 6.4).

All-year licence allocation limit

Under Melbourne Water policy, no new all-year diversion licences have been issued in the Yarra River Basin for many years. The policy was put in place to protect waterways within the Yarra River system from further stress during the summer/autumn low flow period. The Plan is consistent with the Government’s policies in its *Our Water, Our Future* action plan and effectively caps further allocations during the low flow period. All-year licences can, however, be transferred subject to the prescriptions in the Plan and normal licensing considerations.

In future new low consumptive licences (domestic, stock) will only be issued as dam-filling licences and adequate storage will be required to ensure people have sufficient water for use during the summer time.

A new all-year licence will only be issued when a water user surrenders an existing registration licence to obtain a standard all-year licence.



All licences, other than registration licences, are issued for a period of 12 months, and reissued annually. In 2006, current volume of all year licences in Olinda Creek was 728.7ML (including farm dams). The full environmental flow recommendations are 6ML/day in summer and 12ML/day in winter. To establish a sustainable allocation volume for all-year licences which takes into account these environmental flow requirements, the hydrologic modelling work previously undertaken by SKM was used. The model was run with these environmental flows and at full level of development (all licences assumed to be fully active). The reliability of the licences was then calculated.

The chart in Figure 6 shows the demand and the volume able to be supplied in each year from 1965 to 2004, and also shows the volume which is able to be supplied in 80% of years (horizontal line). The modelling showed that the volume of water that Olinda Creek can supply 80% of the time after the environmental water is provided is 388ML. This volume gives an indication of the amount of water that could reliably be taken in eight out of ten years. An 80% reliability is considered a reasonable benchmark for acceptable reliability for a licence in an unregulated river.

In 2007, 43ML of all-year irrigation licences were surrendered, bringing the total allocation of licences in Olinda Creek down to 787.7ML (refer to Appendix 2 for more details). This Plan sets the allocation volume for all year licences at current volume of 685.7ML (including all irrigation, domestic and stock and registration licences). The long term target for all-year licences is 388ML. As licences are traded they will shift to dam-filling licences and gradually reduce the all-year allocation down to this target cap (see section 6.4).

Recommendation 4.

- (a) The committee recommends an allocation limit on all-year licence allocations. The allocation limit (cap) will be 685.7ML.
- (b) The long term target for a sustainable all-year licence cap is 388ML.

Figure 6 **Supply and Demand in Olinda Creek**



Dam-filling licence allocation limit

The Plan amends the dam-filling period from May to October to June to November inclusive to align with the actual high flow period. Dam-filling licences can harvest and store water during the high flow months for use throughout the year. These licences will be amended accordingly.

The allocation limit for the dam-filling period has been set at 574ML. This volume has been determined during the Sustainable Diversion Limit project for 1600 catchments across Victoria.

The Sustainable Diversion Limit (SDL) defines the volume of water that can be extracted over the dam-filling period of July to October before there is an unacceptable threat to the environment (NRE 2004). It assumes that the environmental flows set in section 5.5 are implemented. It is also based on a similar 80% reliability of licences. The existing all-year licence holders could increase their reliability of supply by obtaining a dam-filling licence and constructing an off-stream storage.

The allocation limit will aim to allow a relatively high reliability of supply whilst also protecting in-stream values and processes during the dam-filling period. The reliability is further increased by allowing the volume to be diverted over six months instead of four, thus reducing the impact that a series of dry days will have on the ability to extract the full volume.

Recommendation 5

The committee recommends that the dam-filling (high flow) period is 1 June – 30 November.

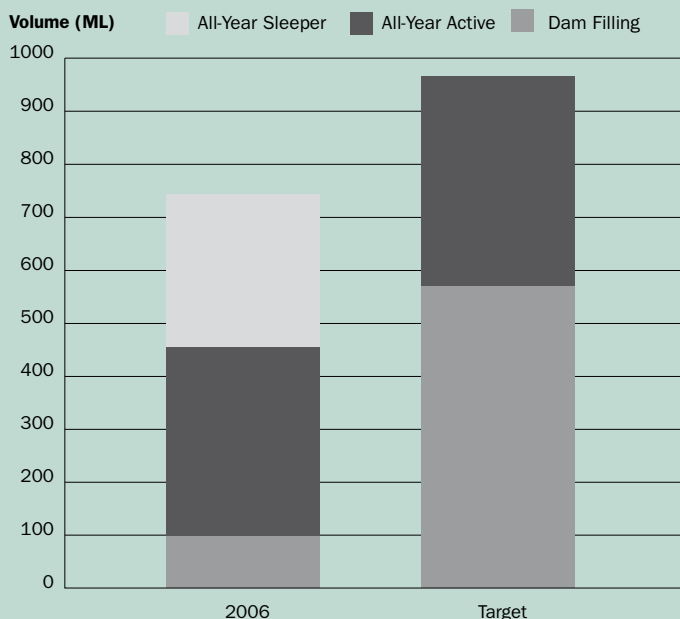
Recommendation 6

The committee recommends an allocation limit on dam-filling licence allocations. The cap will be equal to the SDL volume of 574ML.

Summary of Allocation Limits

Figure 7 shows a comparison of the current and target allocation limits recommended by this Plan. It highlights the proposed shift in licence distribution from a majority of all-year licences to a higher proportion of dam-filling licences. This represents a more sustainable situation for the future, without compromising the current arrangements for active all-year licence holders. The following section (6.4 Trading Licences) describes the manner in which this will be achieved.

Figure 7 2006 and target allocation limits



6.4 Trading Licences

The *Water Act, 1989*, allows licences to be transferred following approval by Melbourne Water of an application. Licences can be transferred on the sale of the property to which the licence relates but they can also be transferred to the owners of other land within the Yarra catchment. Licences can be transferred permanently or temporarily.

Water transfers promote water use efficiency and will result in farmers moving water over time to its highest value use. It provides access to water in areas where no new licences are being issued. However, water transfers also have the potential to increase the overall water use within the Protection Area, as unused licences become active. After the commencement of this Plan, all licences will be required to convert to dam-filling licences upon trade, including unused (sleeper) licences. See section 6.5 for further information regarding unused licences.

Under this Plan, rules relating to a change in licence conditions on transfer of licences from one location to another have been established to ensure that additional development can occur without adversely affecting existing users or the environment. These changes in licence conditions are primarily the adjustment from an all-year licence to a dam-filling licence upon trade.

When considering an application to transfer a licence, Melbourne Water is required under the *Water Act 1989* to have regard to any adverse effect that the allocation or use of water may have on existing users or on the environment.

The issues considered in developing specific transfer rules for Olinda Creek included:

- The need to keep the rules simple;
- Recognising the allocation cap and the potential for this cap to become over-allocated through transfers, and encouraging a shift to dam-filling licences;
- Protecting reliability of supply when licences are transferred, particularly considering the high volume of sleeper licences within the catchment and their potential to impact on existing users' reliability of supply upon trade;
- Equity in trading: between the environment and extractive water users and between licence holders; and
- Catchment hydrological characteristics.

Transfers can only occur if there is an allocation available within the licence allocation limit.

Other transfer rules include:

- The maximum volume of a transferred licence will be determined by Melbourne Water after considering the water available at the new location, and the water needs of existing licence holders and the environment at that location;
- Melbourne Water will require all licences which are permanently traded within the Olinda Creek catchment to shift to dam-filling licence conditions;
- 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;
- An application to transfer a licence will not be approved if it results in one individual or entity holding licences for more than 100ML in total.
- An application to transfer an all-year licence to an all-year licence at another location will be subject to a 20% reduction in allocation volume. This is in line with Government Policy and State Management Rules.

Recommendation 7

The committee recommends that licences shift to dam-filling conditions upon permanent trade.

Recommendation 8

The committee recommends that 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 for the same purpose may not need to have its conditions changed.

Recommendation 9

The committee recommends that the maximum volume of licences to be held by one individual or entity is 100ML.

Recommendation 10

The committee recommends that the volume of an all-year licence transferred to an all-year licence at a new location be subject to a 20% reduction on trade, until the target all-year licence cap of 388ML is reached.

6.5 Unused or “Sleeper” Licences

It is estimated from a diverter survey in 2000 (Farview Consulting, 2000), that in the Olinda Creek catchment approximately 277ML of the 728.7ML of all-year licences are inactive. If through trade these licences become active, there will potentially be more demand for water in the catchment than can sustainably be supplied and diverters would suffer more frequent bans on water use.

Modelling discussed in section 6.3 *Dam-filling allocation limit* shows that there is a significant volume of water available in the high flow period for diverters who choose to construct a dam. The committee recommend that to minimise the risk of over-allocation in the summer period that after the commencement of this Plan, all licences which are currently unused (sleeper licences) will be required to convert to dam-filling licences upon permanent trade, until the dam filling limit (574ML) is reached.

Recommendation 11

The committee recommends that all unused licences shift to dam-filling conditions upon permanent trade, until the dam filling allocation limit is reached.

6.6 New Dams

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 the Plan, no new dams on waterways will be permitted, as the environmental impacts are too great.

Recommendation 12

The committee recommends that no new dams be built on waterways.

6.7 Rostering

During periods of low stream flow, rosters for water extraction can be used at any time throughout the year to share available flows or to protect environmental flows.

In protecting the environmental flows, Melbourne Water may give water users advance notice of decreasing stream flows and impending bans, and consequently introduce rosters or restrictions.

The arrangements will involve the setting of trigger flow levels that will activate various stages of the roster or restrictions. Rosters for diversions will be developed with the input of licenced water users, and imposed during the summer period when the flows at the York Rd streamflow gauging station fall below 6ML/day during Jan-Mar or when the proposed McIntyre Lane streamflow gauging station falls below 15ML/day. The specific arrangements will be negotiated at the time with the affected licence holders.

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

Recommendation 13

The committee recommends that rosters be implemented once flows at York Rd fall below 6ML/day, or flows at McIntyre Lane fall below 15ML/day, between 1 January and 31 March.

6.8 Metering

Effective water resource management relies upon information about water usage patterns and volumes. This information can be collected by metering extractions. Melbourne Water must install meters to measure any water that is taken under licences greater than 5ML. Meters have already been fitted to many licensee’s pumps in Olinda Creek.

Registration licences do not pay an annual fee and so there is no opportunity to recover the cost of meters from these licence holders. These licences may continue to be monitored using the area-based condition that describes a maximum area on which water can be applied until such time that meters can be practically fitted. Meters should firstly be installed on registered dams greater than 10ML in volume or those for which the licensee wishes to exceed their licensed area.

Melbourne Water must read all-year licence meters annually and read dam-filling licence meters at the beginning and end of the dam-filling period each year.

6.9 Maintaining Environmental Flows

The obligation for protecting the environmental flows is twofold. Licensees have an obligation as a condition of their licence to protect environmental flows (Schedule 3), while Melbourne Water has an obligation to ensure, to the best of its ability, that the licensees fulfil these licence conditions (Clause 16). Melbourne Water provides daily flow updates on its web page (www.melbournewater.com.au) as well as its customer service centre (131 722). These flow updates detail the status of bans and restrictions in each catchment across the Yarra basin. Irrigators must check the status of their catchment prior to pumping each day.

Melbourne Water must do its best to ensure that the extraction of water by licence holders does not cause flows in Olinda Creek to drop below these environmental flows. This will generally be achieved with rosters or the implementation of bans on the taking of water in extreme circumstances (discussed in Clause 11).



6.10 Licence Conditions

With the approval of this Plan the conditions of licences will be amended to ensure they reflect the requirements of the Plan.

Schedule 3 outlines the conditions that must be placed on all relevant licences. The conditions are specific to each licence type and will be applied on renewal of licences or granting of new licences.

6.11 Streamflow monitoring program

The Plan requires Melbourne Water to review recommendations for a new gauge proposed for the lower end of the catchment near McIntyre Lane, and maintain the York Rd gauge.

6.12 Dams on subdivisions

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

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

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

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

Melbourne Water will liaise with the Shire of Yarra Ranges to encourage the Council to have regard to this prescription of the Plan when considering applications to subdivide land in the Protection Area.

6.13 Reporting

In accordance with section 32C of the *Water Act 1989*, Melbourne Water is required to prepare an annual report on the implementation of the Plan.

As part of the annual report, Melbourne Water will make an assessment of the following matters:

- changes to the level and type of development within the area including:
 - the extent of water usage resulting from transfers
 - location and impact of new take and use licences
- water usage information
- the effectiveness of management prescriptions in meeting the objectives of the Plan including:
 - metering,
 - flow monitoring,
 - restrictions and rosters

- any difficulties associated with, and progress towards, meeting environmental flows specified in the Plan.

The report will be provided to the Minister and the Port Phillip and Westernport Catchment Management Authority 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.

6.14 Monitoring the effects of the Plan

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

Melbourne Water currently monitors stream health across the Yarra Basin by undertaking water quality, macroinvertebrate, fish and geomorphological studies. The State Environment Protection Policy (Waters of the Yarra catchment) outlines monitoring requirements and goals for river health and water quality. The Victorian River Health Strategy further recommends monitoring and rehabilitation activities be undertaken by Melbourne Water.

Information on the stream health of Olinda Creek will be incorporated into existing Melbourne Water programs. Data collected by metering and stream flow gauging will also be an integral part of the monitoring program.

Within twelve months of the approval of the Plan, Melbourne Water will develop a monitoring program to enable evaluation of the implementation of the Plan.

The monitoring should collect data to:

- assess in stream environmental health, and
- assess whether the Plan is protecting the environmental flows as hoped.

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

6.15 Review of the Plan

The Plan must be reviewed against its objectives after five years. Any amendment will require a review of all information and consultation with all stakeholders. The *Water Act 1989* provides for the constitution and convening of a consultative committee to develop any proposed amendment and the process to be followed by the Minister before approving it. The committee recommends a specific review of environmental flows. The 6ML/day summer flow must be reconsidered. The committee also recommends a review of the Plan if the current discharges from the Lilydale STP cease.

The review of the Plan may reconsider the total cap on allocations. If the cap is increased beyond the level recommended in this Plan, a separate licence for the environment should be created to protect the 43ML surrendered as part of Stream Flow Tender.

Insert new Appendix 2 (as shown below) after Appendix 1.

7 Other Matters that are relevant to river health but fall outside of this Plan

The consultative committee has expressed concern regarding a number of other matters during the SFMP development. This includes the degradation of banks and streamside zones, the lack of riparian vegetation, in-stream vegetation, and the existence of barriers to fish migration within Olinda Creek. The Port Phillip and Westernport River Health Strategy also lists these issues as risks to the health of the creek (Melbourne Water and Port Phillip and Westernport CMA 2004). High priority fish barriers include Lillydale Lake and a concrete weir at the York Rd gauging station.

The Melbourne Water River Health Program activities for the next five years (Melbourne Water and Port Phillip and Westernport CMA 2004) include stream frontage management to address weeds and stock access and revegetation and protecting and improving social values, along with the development and implementation of this SFMP. The consultative committee supports the activities outlined in the strategy.

8 References

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- Melbourne Water and Port Phillip and Westernport CMA, 2004, *Port Phillip and Westernport Regional River Health Strategy – Draft for consultation*, Melbourne Water.
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9 Appendix 1

Consultative Committee responses to community submissions on the draft SFMP

Summary

All licenced water users were provided with a copy of the draft Plan, along with a feedback form. Melbourne Water received three feedback forms in response to the call for public comments on the draft. Detailed submissions were also received from the Department of Sustainability and Environment, the Mt Evelyn Environmental Protection and Progress Association, and the EPA Victoria.

The water users that provided submissions through the feedback forms in general agreed with the recommendations made in the draft Plan. Exceptions were one water users who disagreed with Recommendation 7 - all licences become dam-filling upon trade, however no reason was given. One water user disagreed with Recommendation 10 - unused licences become dam-filling upon permanent trade, but again no reason was given.

The committee has provided the following responses to specific comments and issues raised in the submissions.

Recommendation	Community / Stakeholder Comments	Consultative Committee Response
1. That diverters be managed in two groups (a) Diverters upstream of Lillydale Lake will be managed to minimum environmental flows at York Rd (b) Diverters downstream of Lillydale Lake will be managed to minimum environmental flows near McIntyre Lane.	Believe in equitable sharing of the water resource and consequently support this recommendation	Noted
2. That a new gauge be installed to monitor flows in the lower catchment. It is recommended that this gauge be installed in the vicinity of McIntyre Lane.	Believe in equitable sharing of the water resource and consequently support this recommendation	Noted
3. (a) Minimum environmental flows for diverters in the upper catchment for the first five years of 4.5ML/day in Jan-Mar, 12.0ML/day in Jul-Oct, and 6.0ML/day in the intervening months until 30 June 2010 (b) After 1 July 2010, minimum environmental flows in Jan-Mar of 6ML/day in the upper catchment. (c) Minimum environmental flows for diverters in the lower catchment of 12.0 ML/day in Nov-Jun and 16.6ML/day in Jul-Oct.	Given that scientific studies have advised a minimum summer environmental flow should be no less than 6ML, it is felt that delaying this target to 2010 places significant risks on an already stressed ecosystem. At a minimum a staged increase to 6ML over the next five years.	Noted. The committee took into account the requirements of the licenced water users and the scientific environmental flow needs in developing the Plan. The committee feel that they have negotiated to achieve a balanced outcome for the five year Plan.
7. The committee recommends that all licences become dam-filling licences upon trade (i.e. winter-fill licences).	Consider, as a complementary mechanism for reducing all-year licence volumes, allowing all-year licence to all-year licence trade downstream, subject to a reduction in volume (eg 20% reduction as for MDBC) upon trade.	Agree. An additional recommendation has been included.
	Consideration should be given to short term leasing. A short-term lease should be able to remain as the original licence. ie if commercial, should be allowed to be leased as commercial.	Agree. Text in the SFMP has been amended accordingly
	What happens to licence conditions if licences are traded into the Olinda Creek Catchment	Licences traded into the Olinda Creek catchment must become dam-filling licences until the target all-year cap is reached.

Recommendation	Community / Stakeholder Comments	Consultative Committee Response
12. That rosters be implemented once flows at York Rd fall below 6ML/day, or flows at McIntyre Lane fall below 15ML/day between 1 January and 31 March.	Between November and June as well?	The committee considered this point, and felt that as the “full” environmental flows are being recommended for these months that further rostering was not warranted.
	As the flows in the lower Olinda are based on a model, would it not be better to put the flow meter in and measure what the real flows are before setting the limits?	The committee noted this point. It was felt that the modelled flow data is the best available at the time of developing the Plan, and any differences between the modelled flow and recorded flow which emerge during the five year life of the Plan will be addressed at the five year review.
Additional comment - Dam-filling licence allocation limit	A reserve should be set aside in the winter-fill allocation cap for licences converting from all-year licences.	The committee felt that this was not necessary as trades would not be permitted into the catchment until the target caps have been reached.
Additional comment - Unused or “sleeper” licences	Consider recommendation that, if unused licences are not used within three years, then conditions be altered to dam-filling	Noted. The committee felt that this disadvantages some water users, and does not encourage water users to investigate alternative water supplies
Additional comment - Metering	Melbourne Water to complete its metering program consistent with timelines in the Metering Program MoU Implementation Program	Agreed
Additional comment - Stream Flow Monitoring Program	To be included after Clause 13.3 (a): Make all flow data publicly available, or as requested by the Minister	Agree. Text included
Additional comment - Dams on subdivisions	Need a recommendation regarding dams on subdivision (c.f. Clause 20 Diamond Creek SFMP)	The committee agree. An additional recommendation has been included and the legal Plan amended accordingly
Additional comment	The technical information on the environmental flow requirements of Olinda Creek needs to be upgraded within five years, using the FLOWS method or the endorsed environmental water requirement assessment method that is current at that time.	The committee agrees that an environmental flow study using best available methodologies should be undertaken prior to the five year review of the Plan.
Additional comment	Could consideration be given to the topping up of dams if in the summer period we have excess rain and the creek levels are well above normal levels?	Noted. This is a State Government policy decision and outside the scope of the SFMP
Additional comment - Fish passage	The barriers of Lillydale Lake and York Rd weir may render the Dight’s Falls fishway useless in enabling fish migration and colonisation. Mitigation of this risk should be investigated	Noted. The SFMP can only address issues related to flow. While the committee recognise that fish passage is important, it is outside the scope of the SFMP

9 Appendix 2

Stream Flow Tender

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

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

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

Outcomes in Olinda Creek

Twenty-one bids were received in Olinda Creek, and of these, 9 bidders were successful. This resulted in:

- Surrender of 43 ML of licence volume; and
- 48ML of licence volume (6 licences) that will be managed in accordance with the licence conditions specified in the Stream Flow Management Plan.

As a result, the recommended cap on licence volume in the catchment is 685.7ML on all-year licences. Reducing the recommended cap ensures that the surrendered licence volume remains in Olinda Creek for the environment.

All successful bids will result in change to licence conditions (either reduced licence volume or changed conditions of access) on licence renewal on 1 July 2008. All other licence holders will change their licence conditions on 1 July 2012 (as stated in Schedule 3 of the Stream Flow Management Plan).

Environmental outcomes in Olinda Creek

Stream Flow Tender increased environmental flows in Olinda Creek. The improvement in flows is approximately 56% of the benefit that will be achieved by the full implementation of the Stream Flow Management Plan, which will occur in 2012.

OLINDA CREEK STREAM FLOW MANAGEMENT PLAN 2007

1. INTERPRETATION

1.1 Definitions

The following definitions apply in this Plan.

“Act” means the *Water Act 1989*.

“all-year licence” means a licence issued under section 51(1)(a) or (ba) or 51(1A) of the Act to take and use water either:

- (a) from a waterway; or
- (b) from a dam, spring or soak during an all-year period.

“all-year period” means the period between 1 January and 31 December in any year.

“average stream flow” means the mean daily stream flow.

“dam-filling licence” means a licence issued under section 51(1)(a) or (ba) of the Act to take water from a waterway or dam during a dam-filling period.

“dam-filling period” means the period between 1 June and 30 November in any year.

“lower catchment” means the portion of Olinda Creek catchment which is below Lillydale Lake.

“McIntyre Lane gauging station” means the stream gauging station proposed to be located on Olinda Creek near McIntyre Lane.

“Melbourne Water” means Melbourne Water Corporation.

“Minister” means the Minister administering the Act.

“Olinda Creek Water Supply Protection Area” means the area referred to in clause 4.

“Protection Area” means the Olinda Creek Water Supply Protection Area.

“registration licence” means a licence issued under section 51(1A) of the Act.

“upper catchment” means the portion of Olinda Creek catchment which is above Lillydale Lake

“York Rd gauging station” means the stream gauging station no 229690 located on Olinda Creek.

1.2 Rules for interpreting this Plan

Headings are for convenience only and do not affect interpretation. The following rules also apply in interpreting this Plan, except where the context makes it clear that a rule is not intended to apply.

- (a) Expressions defined in the Act have the same meaning as in the Act.

Note: Section 3(1) of the Act defines “dam”, “person”, “registration licence” and “waterway”.

- (b) A reference to:

- (i) legislation (including subordinate legislation) is to that legislation as amended, re-enacted or replaced, and includes any subordinate legislation issued under it;
- (ii) a document or agreement, or a provision of a document or agreement, is to that document, agreement or provision as amended, supplemented, replaced or novated;
- (iii) a reference to a person includes a permitted substitute or a permitted assign of that person and that person’s employees, officers, agents and contractors;
- (iv) anything (including a right, obligation or concept) includes each part of it.

- (c) A singular word includes the plural, and vice versa.

- (d) If a word is defined, another part of speech has a corresponding meaning.

- (e) If an example is given of anything (including a right, obligation or concept) such as by saying it includes something else, the example does not limit the scope of that thing.

2. AUTHORISING PROVISION

This Plan is approved by the Minister under section 32A of the Act.

3. COMMENCEMENT

This Plan commences on the day on which the Minister approves it.

4. WATER SUPPLY PROTECTION AREA

The boundaries of the Protection Area:

- (a) were declared by the Minister by Order under section 27 of the Act on December 30 2002; and
- (b) are set out in Schedule 1; and
- (c) may be inspected on Plan No. LEGL./02-0028 at the office of Land Information Centre, Department of Sustainability and Environment.

5. SURFACE WATERS

This Plan applies to the surface waters of the Protection Area.

6. OBJECT OF THE PLAN

- 6.1 The general object of this Plan prescribed by section 32A(1) of the Act is “to make sure that the water resources of the “Protection Area” are managed in an equitable manner and so as to ensure the long-term sustainability of those resources”.
- 6.2 For the purpose of achieving that general object, Melbourne Water must have regard to specific objectives proposed by the Olinda Creek Stream Flow Management Plan Consultative Committee that are set out in Schedule 2.

7. ADMINISTRATION AND ENFORCEMENT

Melbourne Water has the duty of enforcing and administering this Plan.

8. PROHIBITIONS ON GRANTING NEW LICENCES

Melbourne Water must refuse an application under section 51(1)(a) or (ba) of the Act in the Protection Area if, in its opinion, the approval of the application will or may cause:

- (a) the total volume of water taken in any year under an all year licence to exceed 685.7ML; or
- (b) the total volume of water taken in any year under a dam-filling licence to exceed 574ML.

Note 1: Section 51A of the Act allows a person to surrender a registration licence and apply for a licence under section 51(1)(a) or (ba) of the Act. and Melbourne Water must within 14 days issue a licence for the same annual volume as the registration licence.

9. TRANSFERRING LICENCES

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

- 9.1 Melbourne Water must refuse an application under section 62(3) of the Act to transfer a licence if, in its opinion, the approval of the application will or may cause the limits referred to in Clause 8 to be exceeded.
- 9.2 In approving an application under section 62(3) of the Act to permanently transfer a licence, Melbourne Water must amend the conditions to which the licence is subject to restrict water diversions to within the dam-filling period subject to 9.3.
- 9.3 In deciding whether to amend, delete or add to the conditions to which a licence is subject when it is transferred, Melbourne Water may have regard to whether the location at which water is taken or collected will, or will not, change.
- 9.4 If approving an application to permanently transfer a licence to take and use water into or within the Protection Area, Melbourne Water may either amend the conditions of that licence to ensure that water may only be taken or collected during the dam-filling period, or require that the volume of the licence be reduced by 20%.
- 9.5 In approving an application under section 62(3) of the Act to transfer a licence, Melbourne Water must refuse any application if the total volume of water held by the receiving party will exceed 100ML.

10. NEW DAMS

After the commencement of this Plan, Melbourne Water must not issue any licence under section 67 of the Act to construct a dam on a waterway within the Protection Area.

11. ROSTERS

- 11.1 Melbourne Water may, from time to time, prepare and implement rosters or other arrangements for taking and using water, in accordance with the principles specified in clause 11.3.
- 11.2 Melbourne Water must implement rosters if stream flows fall:
- (a) Between 6ML/day and 4.5ML/day between 1 January and 31 March inclusive in the upper catchment; and
 - (b) Between 15ML/day and 12ML/day between 1 January and 31 March inclusive in the lower catchment.
- 11.3 In developing rosters or restrictions, Melbourne Water must have regard to the need to:
- (a) maintain flows above the minimum levels specified under licence condition 1.1 of Schedule 3; and
 - (b) limit the number of days upon which licensees are unable to take water because of the effect of licence condition 1.1 of Schedule 3; and
 - (c) take account of:

- (i) the relative requirements of different crops and other uses of land for water; and
- (ii) differences between types of licence, maximum volumes which may be taken under licences, and pumping capacities; and
- (iii) the need for all licensees to have fair and reasonable access to available water, given the matters referred to in sub-paragraphs (i) and (ii);

- 11.4 Melbourne Water may specify a maximum volume or percentage of allocation of water that a licensee may take or use on any rostered day (or lesser roster period).
- 11.5 Melbourne Water must ensure that each licensee has an up to date copy of any roster that is developed.

12. LICENCE CONDITIONS

For the purposes of section 32A(12) of the Act, a licence granted under section 51(1)(a) or (ba) of the Act for a purpose specified in Schedule 3 is subject to each condition set out in that Schedule, in relation to that purpose.

13. STREAM FLOW MONITORING PROGRAM

- 13.1 After the commencement of the Plan, Melbourne Water must, as soon as practicable, review the committee recommendations for a new gauging location in the lower catchment, and propose a new location of a gauging station to enable continuous recording of flows in lower Olinda Creek.
- 13.2 Melbourne Water must implement the recommendations of the review referred to in sub-clause 13.1
- 13.3 Melbourne Water must:
- (a) continuously record flows at the York Rd gauge and any gauging station installed as a result of the review referred to in sub-clause 13.1; and
 - (b) periodically inspect the condition of these gauging stations; and
 - (c) maintain these gauging stations in good condition; and
 - (d) keep a record of each inspection and all work undertaken under paragraph (b) and (c)
 - (e) make all flow data publicly available, or as requested by the Minister.

14. INSTALLING METERS

- 14.1 After the commencement of this Plan, Melbourne Water must, as soon as practicable, ensure that a flow meter is installed to measure water taken for irrigation or commercial purposes under any licence which has been or is thereafter granted within the Protection Area under section 51(1)(a) or (ba) or 51(1A) of the Act.
- 14.2 Melbourne Water must:
- (a) periodically inspect the condition of each flow meter installed under sub clause 14.1; and
 - (b) maintain each flow meter in good condition; and
 - (c) replace any damaged flow meter; and
 - (d) keep a record of all work done under paragraph (b) and (c).

15. READING METERS

Melbourne Water must:

- (a) read each meter referred to in sub-clause 14.1 at least:
 - (i) once in every year in the case of an all year licence; and
 - (ii) shortly after the beginning and end of the dam-filling period in every year, in the case of a dam filling licence; and
- (b) record, for each meter:
 - (i) the reading obtained; and
 - (ii) the number of the relevant licence; and
 - (iii) the date on which the meter is read; and
 - (iv) any information about the accuracy of the meter which Melbourne Water considers relevant; and
- (c) if a meter becomes defective, registers incorrectly or is removed for any reason, estimate the correct registration in any of the following ways:
 - (i) by comparison with the quantity of water taken under similar conditions during some other period; or
 - (ii) by comparison with the quantity of water taken after the meter has been restored to proper order; or
 - (iii) by comparison with the registration of a substitute meter used temporarily in place of the defective meter; or

(iv) by applying a correction factor if the meter is found to have a consistent error of registration.

16. MAINTAINING ENVIRONMENTAL FLOWS

16.1 For the purpose of this clause, a licensee is the holder of a licence issued under section 51(1)(a) of the Act for any purpose other than domestic and stock use.

16.2 Melbourne Water must do its best to ensure that licensees comply with licence condition 1.1 referred to in Schedule 3.

17. DAMS ON SUBDIVISIONS

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

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

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

18. REPORTING

Melbourne Water must re report on its activities in carrying out its duties in relation to this Plan in each financial year and:

(a) give the report to the Minister and the Port Phillip and Westernport Catchment Management Authority by 30 September in each year; and

(b) make a copy available for public inspection at its offices.

19. MONITORING THE EFFECTS OF THE PLAN

19.1 Within 12 months after the commencement of this Plan, Melbourne Water must propose to the Minister a program to monitor the implementation of the Plan.

19.2 A program proposed under sub-clause 19.1 must include arrangements to monitor:

(a) the effects of the Plan on the reliability of supply to licensees within the Protection Area; and

(b) the ability of the provisions to maintain environmental flows set out in Schedule 3; and

(c) in-stream environmental indicators within the Protection Area; and

(d) indicators against which Melbourne Water's performance in implementing this Plan can be measured.

19.3 The Minister may:

(a) approve a plan proposed under sub-clause 19.1; or

(b) approve that plan, subject to amendments made by the Minister; or

(c) refuse to approve the plan.

19.4 Melbourne Water must implement a plan in the form approved by the Minister under sub clause 19.3.

20. REVIEW OF PLAN

Melbourne Water must:

(a) review the operation of this Plan:

(i) not more than 5 years after it commences; and

(ii) thereafter, at intervals of no more than 5 years; and

(b) propose any consequential amendment (if any) to the Minister.

Note: Sections 29, 31 and 32G of the Act provide for the constitution and convening of a consultative committee to develop any proposed amendment and the process to be followed by the Minister before approving it

21. APPROVAL

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

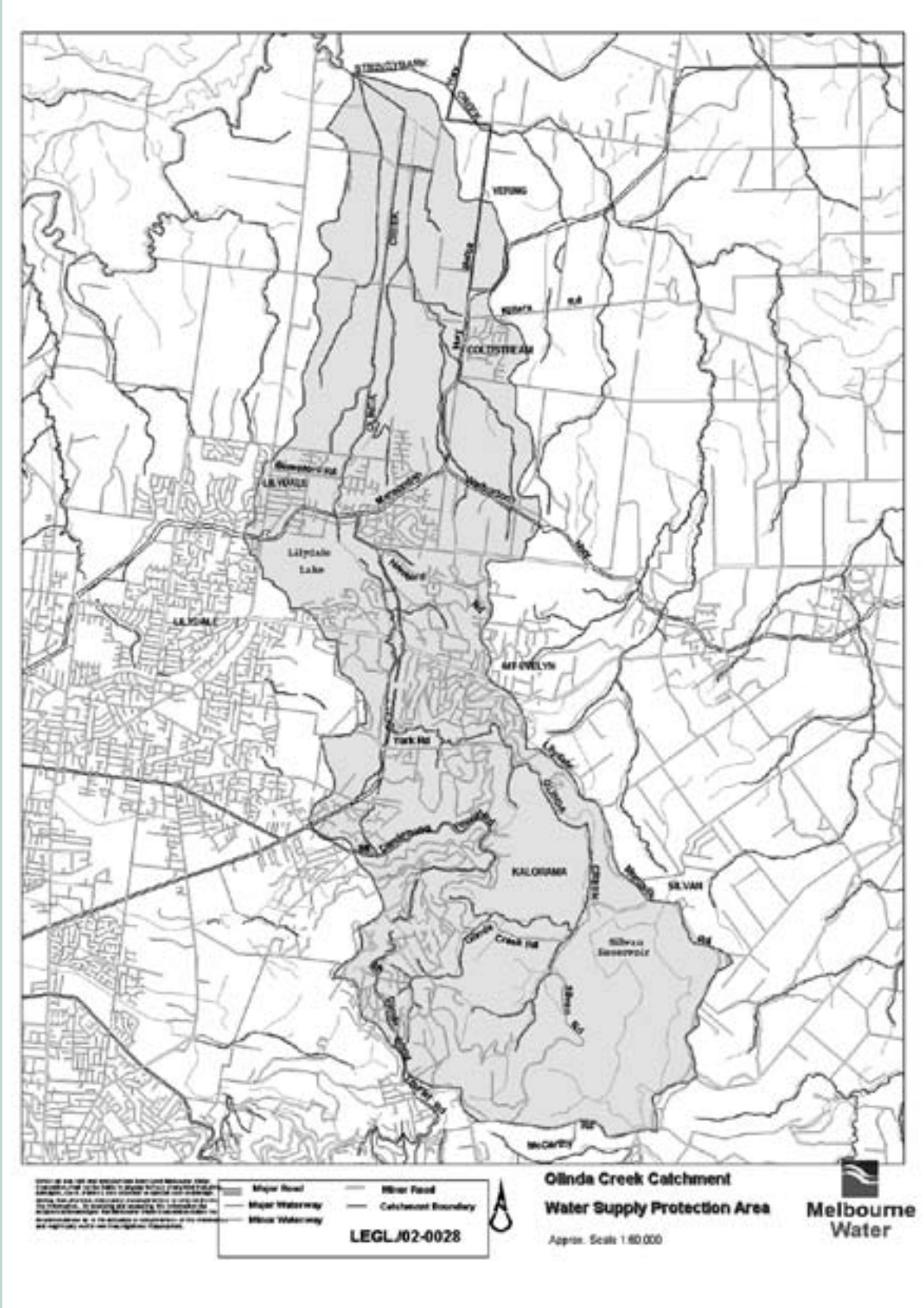

TIM HOLDING MP

Minister for Water

Date 

SCHEDULE 1

OLINDA CREEK WATER SUPPLY PROTECTION AREA



SCHEDULE 2

SPECIFIC OBJECTIVES PROPOSED BY THE OLINDA CREEK CONSULTATIVE COMMITTEE

- a) Stream flows that match natural seasonal flow patterns.
- b) Water management rules that are clear and fixed in the short term but adaptable to long term change.
- c) Water availability and access clearly defined.
- d) Trading rules and opportunities specified to encourage water licence trading.

Agreed Ecological objectives (adapted from Close & Koster (2001))

Maintain appropriate minimum environmental flow over the low flow period

Provide appropriate flushing flows and high flow regimes that provide suitable conditions for migration and spawning of native fish species and essential geophysical processes such as channel scouring and silt removal

Maintain water quality in accordance with SEPP (Waters of Victoria) – Schedule 7 Waters of the Yarra Catchment (EPA 1999), including provision of summer flushing flow

Ensure that dam-filling diversions are set at a level that does not impact on essential biological and geomorphological processes

Maintain and/or restore diversity and complexity of in-stream habitat (e.g. woody debris)

Maintain and/or enhance diversity of aquatic fauna species and encourage re-colonisation of the lower Olinda Creek (*below Lillydale Lake*) by migratory species. Specifically, to: Maintain habitat and passage for Blackfish and smaller bodied fish in the upper catchment; maintain habitat and passage for smaller bodied fish and passage for adult Blackfish in the lower catchment.

For more explanation regarding these agreed ecological objectives, please refer to Close and Koster (2001).

SCHEDULE 3

LICENCE CONDITIONS

1. **Licence to take and use water from a waterway for any purpose:** *{section 51(1)(a)}*
 - 1.1 From 1 July 2012, the Licencee must not:
 - (a) take any water from a waterway within the upper catchment when the streamflow at York Road gauging station:
 - (i) is 4.5ML/day or less, at any time between 1 January and 31 March; or
 - (ii) is 6ML/day or less at any time between 1 November and 31 December or 1 April and 30 June; or
 - (iii) is 12ML/day or less at any time between 1 July and 31 October.
 - (b) take any water from a waterway within the lower catchment when the streamflow at the proposed McIntyre Lane gauging station:
 - (i) is 12ML/day or less, at any time between 1 November and 30 June; or
 - (ii) is 16.6ML/day or less, any time between 1 July and 31 October.
 - (c) after any event referred to in subparagraph (a) or (b), resume taking water from a waterway until the seven-day average stream flow at the relevant gauging station rises above the stream flow referred to in 1.1(a) or (b).
 - 1.2 The Licensee must comply with any rostering or other arrangements prepared and implemented by Melbourne Water under clause 11 of the Olinda Creek Water Supply Protection Area Stream Flow Management Plan.

Note: Notwithstanding clause 1.1, where the Licensee was a successful participant in Stream Flow Tender, the Licensee must comply with their new licence conditions, as stated on their agreement with Melbourne Water, from 1 July 2008.
2. **Licence to take water from a waterway to fill a dam:** *{section 51(1)(a)}*

The Licensee must not take or collect water from a waterway to fill a dam, whether the dam is built on or off a waterway, between 1 December and 31 May in the following year.
3. **Licence to use water from a dam constructed after the commencement of Olinda Creek Water Supply Protection Area Streamflow Management Plan:** *{section 51(1)(ba)}*

The Licensee must not allow water (other than rain water supplied to a dam from the roof of a building, or a bore or for use other than domestic and stock use) to collect in the dam between 1 December and 31 May in the following year.
4. **Licence to take and use water transferred into or within the Protection Area:** *{section 62(3A),62(6)(b)}*

The Licensee must not take any water from a waterway between 1 December and 31 May in the following year.
5. **Licence for a purpose referred to in section 51(1)(a) or (ba)**

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

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



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