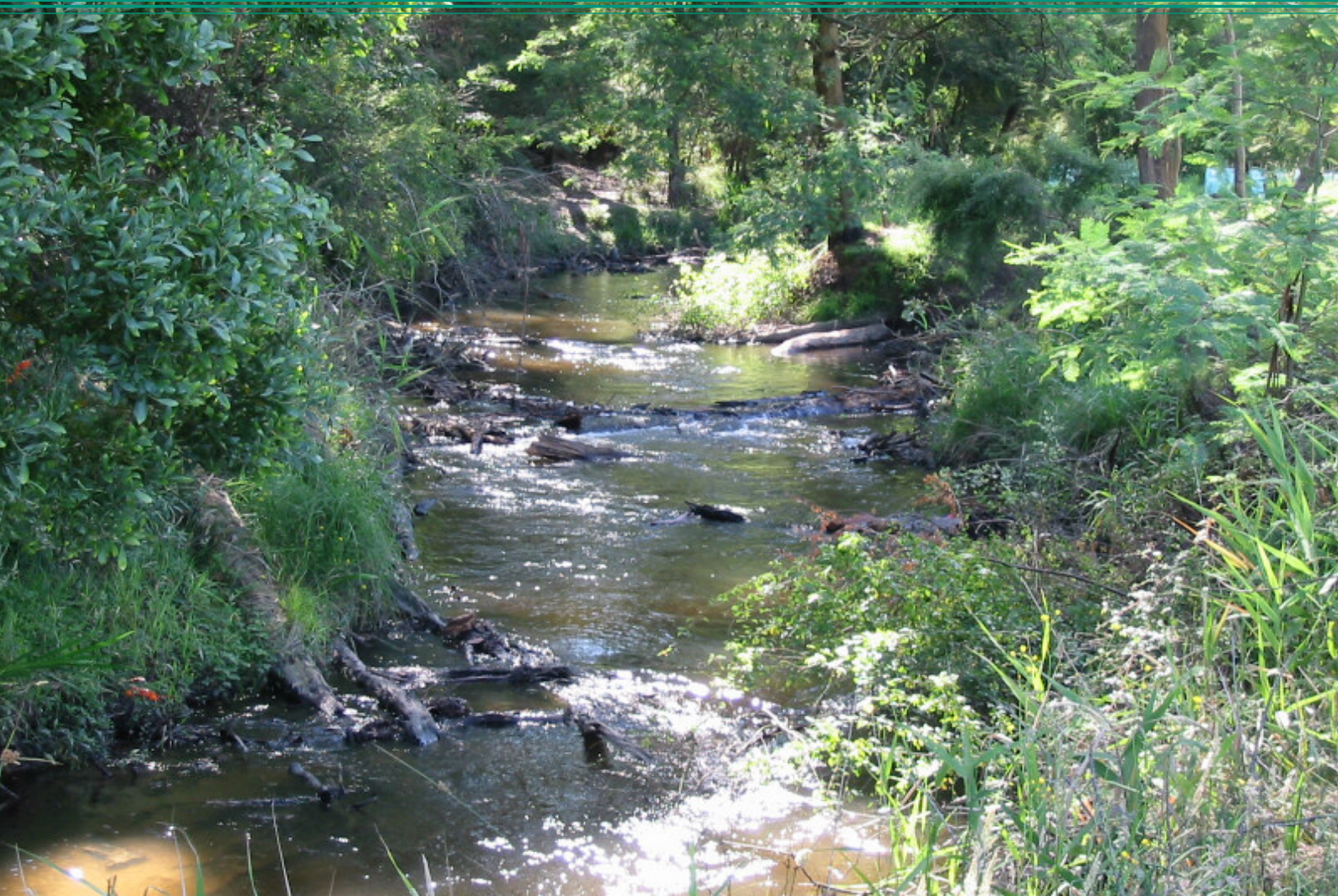


Little Yarra & Don Rivers Stream Flow Management Plan

A Background Paper for Committee Members



March 2009

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Introduction to Stream Flow Management Plans

The purpose of this background paper is to provide Committee Members with an understanding of what drives the Stream Flow Management Plan (SFMP) process and how the Little Yarra and Don Rivers SFMP will be developed. This paper covers water diversions, how these diversions affect the health of the waterway and environmental flows.

A number of Stream Flow Management Plans have already been completed elsewhere in the Yarra Catchment, such as Stringybark, Olinda and Hoddles Creeks. A number of the issues experienced during the development of these plans have been included in this paper as they may be relevant to and assist the committee in the development of the Little Yarra and Don Rivers SFMP.

1 Stream Flow Management Plans – What are they?

With the steady development of Victoria there has been a corresponding increase in the demand and competition for available water. In meeting these demands, the environment has sometimes been over looked and not given adequate consideration. Furthermore, the rights to water of existing users are often ill-defined making the security of water uncertain.

In 2004, the Victorian Government released its Our Water Our Future action plan that established Environmental Water Reserves, the legal share of water for the environment, for all Victorian rivers, streams and groundwater systems.

Through the 'Restoring Unregulated Rivers Initiative', the government aims to ensure flows in unregulated rivers, such as the Little Yarra and Don Catchment streams, are sustainably managed for all uses, including a share of water for the environment. This is to occur through the development of Stream Flow Management Plans. The Little Yarra and Don Rivers have been identified by the Victorian Government as priority flow stressed unregulated river systems requiring the preparation of a SFMP to balance the sharing of stream flows for all water users.

Melbourne Water has been delegated the responsibility by the Minister to licence the extraction of water from rivers and streams within the Yarra Basin. As a condition of the delegation authority Melbourne Water has the responsibility to develop Stream Flow Management Plans for priority waterways in its area of responsibility, which includes the Little Yarra and Don systems.

1.1 Aim of the Stream Flow Management Plan

Stream Flow Management Plans (SFMPs) are intended to create a balanced and sustainable sharing of the available resource between all stakeholders, whether licensed diverters, the environment, water based recreation uses or aesthetic enjoyment. Stream Flow Management Plans define rules and agreements that allow water to be transferred, provide greater certainty for new developments and introduce a clear understanding of flow sharing rules in times of drought. The specific aim of a Stream Flow Management Plan is set out in section 32A of the Water Act 1989:

'the water resources of the area are managed in an equitable manner so as to ensure the long-term sustainability of those resources'.

In summary, a Stream Flow Management Plan will:

- Protect the long-term sustainability of the waterway environment by reaching a balance between environmental water requirements, consumptive users' needs for water and any social and cultural values associated with the water;
- Clarify licence holder's legal access to water, licence conditions, trading rights and diversion limits;
- Introduce new rules with which to allow diversions to meet agreed management objectives;
- Manage stream flows to meet agreed environmental objectives.

The management plan process will more clearly define conditions around licence holders legal access to water. Reliability of supply will be specified and rules on licence transfers will be established. Variations to licence conditions may be made which may alter the periods during which water may be diverted.

In addition to the above, an SFMP may also refer to issues concerning riparian vegetation, river frontage management and catchment management issues (i.e. salinity or nutrient management), particularly if these issues contribute to the ability of a Stream Flow Management Plan to meet its management objectives.

1.2 The Stream Flow Management Plan Process

Stream Flow Management Plans are legal documents and so the process for developing a plan is set out in the Water Act 1989. Melbourne Water, as the licencing authority for the Little Yarra and Don Catchments, is primarily responsible for overall preparation, administration and enforcement of management plans.

The plans are developed by consultative committees appointed by the Minister for Water, made up of representatives of the major interests in the catchment.

These consultative committees must develop recommendations on the best information that is available, making trade offs between environmental and water use interests in the process. These recommendations are then submitted to Government for approval, after which time they become a legal direction for Melbourne Water to allocate and administer licences issued under

the Water Act 1989. Consultative committees must prepare a draft management plan within 18 months after its appointment.

Adaptive management

The SFMPs are part of an adaptive management process and decisions must be made with the best available information on the environment and water users' needs. The effect of these decisions will be reviewed and fine tuned over time. It is not practical to wait for the absolute answer to prove our assumptions and so the consultative committee is selected for its ability to make challenging decisions.

The preparation of management plans is based on:

- Using the best available scientific information and water allocation and use modeling to determine the environmental water requirements and water availability for current and future consumptive uses;
- Reducing the ecological stress caused by the taking and using of stream flows during critical low flow periods;
- Establishing an Environmental Water Reserve;
- Estimating and minimising the impacts to the reliability of supply of existing users by the establishment of an Environmental Water Reserve;
- Recognising the socio-economic implications of establishing an Environmental Water Reserve; and
- Managing the risks to achieving the Environmental Water Reserve.

Key Participants in the Process

The Victorian Government

The Minister for Water has the responsibility for the Water Act 1989 and represents the Victorian Government in the management of water resources. The responsibility for licensing water extraction in the Little Yarra and Don Catchments has been delegated to Melbourne Water to administer on day by day basis, however major resource decisions such as those made in the Stream Flow Management Plan are still made by the Minister.

Melbourne Water

Melbourne Water issues and administers licences to construct dams and to harvest water in the Little Yarra and Don River catchments. Melbourne Water does this in accordance with the Water Act 1989 and the rules set out in an approved Stream Flow Management Plan.

Melbourne Water also facilitates the process of developing the Stream Flow Management Plan, organising the consultative committee, providing it with information on which to base its recommendations and then publishing these recommendations in a draft plan.

The consultative committee

The Minister appoints a consultative committee and instructs them to prepare a draft Stream Flow Management Plan to advise him in making water resource decisions.

The consultative committee must prepare its draft plan within 18 months and make this draft plan available to the community.

The consultative committee appointments represent the different interests in the catchment, including Melbourne Water, government, farmers, environmental and local government interests. The members are people who the Minister believes has knowledge or experience of the catchment and the issues that will be discussed. At least half of the members must be local farmers/landowners from within the catchment.

1.3 Key Steps in Developing a Stream Flow Management Plan

The key stages and activities in preparing a draft management plan are outlined in Figure 1.

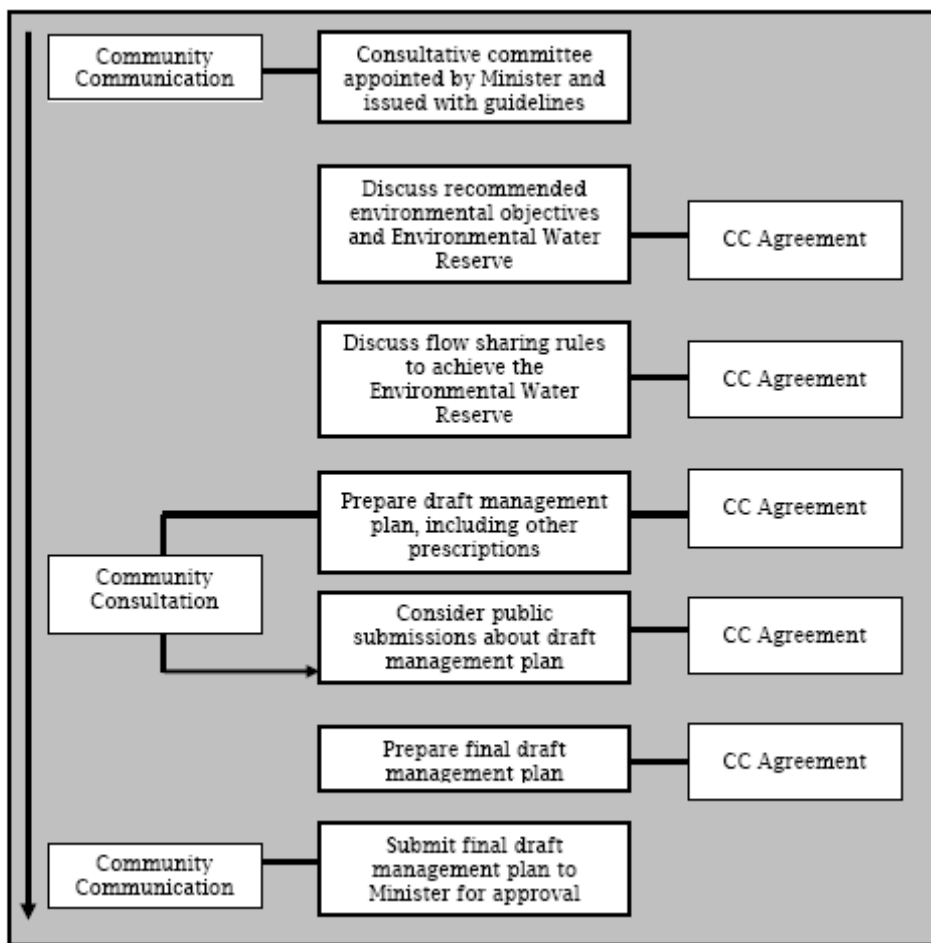


Figure 1 : The process for preparing a Stream Flow Management Plan

1. Developing Objectives

The objectives set the direction of the Stream Flow Management Plan. They set the outcomes that the consultative committee wants for the catchment. Trade offs between environmental and water use outcomes are usually made in the setting of the objectives so that the consultative committee has a shared goal to work towards.

The objectives must be compatible with both broader catchment management objectives set by the Victorian Government, and may include specific objectives for the environment, for water users or for cultural values. The objectives must:

- provide for environmental water requirements within an agreed time frame;
- provide an agreed security of supply of current licence holders; and
- ensure that development in the future occurs in an environmentally sustainable manner.

The wording of the objectives must clearly define outcomes that are measurable and meaningful.

2. Identifying and addressing issues in meeting the objectives

The consultative committee will investigate whether the catchment is currently meeting the objectives and if not, will identify where changes need to be made. This will be based on the best available information, even though this information may not always be perfect or complete and assumptions may need to be made. It is here that the input of the local water users is particularly valuable.

The consultative committee must take into account any other draft or approved management plan for the area when it is identifying its issues eg. Groundwater management plan.

3. Defining rules to accomplish objectives

A Stream Flow Management Plan may prescribe rules to meet its objectives relating to:

- requirements for metering, monitoring and accounting for water;
- requirements for the location, capacity and operation of private dams which are:
 - (i) not licensed; and
 - (ii) not for domestic and stock use.
- restrictions or prohibitions on the issue of water or dam construction licences;
- restrictions on the taking of surface water to ensure that:
 - (i) environmental flows are maintained; or
 - (ii) a maximum annual volume for the area is not exceeded.
- conditions relating to the protection of the environment, including the riverine and riparian environment;
- conditions to which water licences are to be subject;
- conditions on dam construction, provided they do not limit domestic and stock usage;
- conditions under which water licences can be transferred, including a condition relating to the maximum volume of water which may be taken and used under the transferred licence;
- the maximum volume of:
 - (i) each private dam on a particular lot in a plan of subdivision in the area concerned;
 - (ii) all private dams on every lot in a plan of subdivision in the area concerned.
- any matter relevant to the management plan's implementation;
- the total volume of water that may be taken by licence in the catchment each year.

4. Preparing a Draft Plan

The consultative committee's recommendations are compiled into a draft plan that is released for public comment. The consultative committee may amend the draft plan in response to constructive feedback that is received.

5. Approval of the final draft plan

The final draft Stream Flow Management Plan will be submitted to Government for approval. The Minister may approve the plan and must present the approved management plan to each House of Parliament.

On the approval of a draft management plan, every current and future licence issued in the catchment becomes subject to the rules within the plan. The approved plan is then binding on every person, including every public statutory body.

The draft management plan is not a list of recommendations - it is a plan that introduces prescriptions (rules) about the management of licences in the Protection Area. However, depending on the rules within the plan, some prescriptions may not come into effect immediately but may be implemented over time.

1.4 Issues to Consider in Developing a Stream Flow Management Plan

In developing its recommendations the Consultative Committee should consider:

Impacts on water users and the environment

- assessment of the impact of meeting environmental flows on reliability of supply under conditions of existing water use and under full licence entitlement (ie all licences in the catchment are being fully used);
- assessment of impact of the growth in water diversions;
- assessment of the impact of all water diversions, including direct diversions, diversions from dams, domestic and stock use and groundwater extraction;
- assessment of the potential impact of both on-stream and off-stream dams on summer/autumn low flows if inflows to the dams are not passed;
- assessment of the impact of rostering and restriction rules on reliability of supply of licences and low flows;
- assessment of the benefits of diverting water during winter time instead of summer time as a way of reducing pressure on low summer flows.

Recommended environmental flows

The environment should be recognised as a valid "user" of water in the catchment, and as such deserves its share of the total water resource. Any reduction in flows from those that would have occurred naturally will increase the risk of environmental harm.

The environment's share of water is usually protected in Stream Flow Management Plan by:

- an environmental flow made up of a minimum daily flow and protection for medium flow peaks (flushes) caused by rainfall; and

- a cap on the total amount of water that can be extracted each year.

Environmental flows for the catchment have been recommended by surveying key sites along a waterway to measure water depths, velocities and presence of logs and other habitat for fish at various flows. The assessment of fish habitat assumes that both fish and other aquatic species will be sustained if a minimum amount of habitat is available.

Groundwater development/usage impacts

Southern Rural Water manages groundwater diversions in the area and develops management plans similar to Stream Flow Management Plans for groundwater resources. Due to the importance of groundwater/surface water interaction (groundwater discharge commonly supplies waterway base flows), consideration may be given to linking the recommendations of groundwater management plans to the Stream Flow Management Plan. This would be particularly relevant in areas where groundwater discharge is a significant component of summer base flows.

A Groundwater Management Plan is not currently being developed for the Little Yarra and Don Catchments.

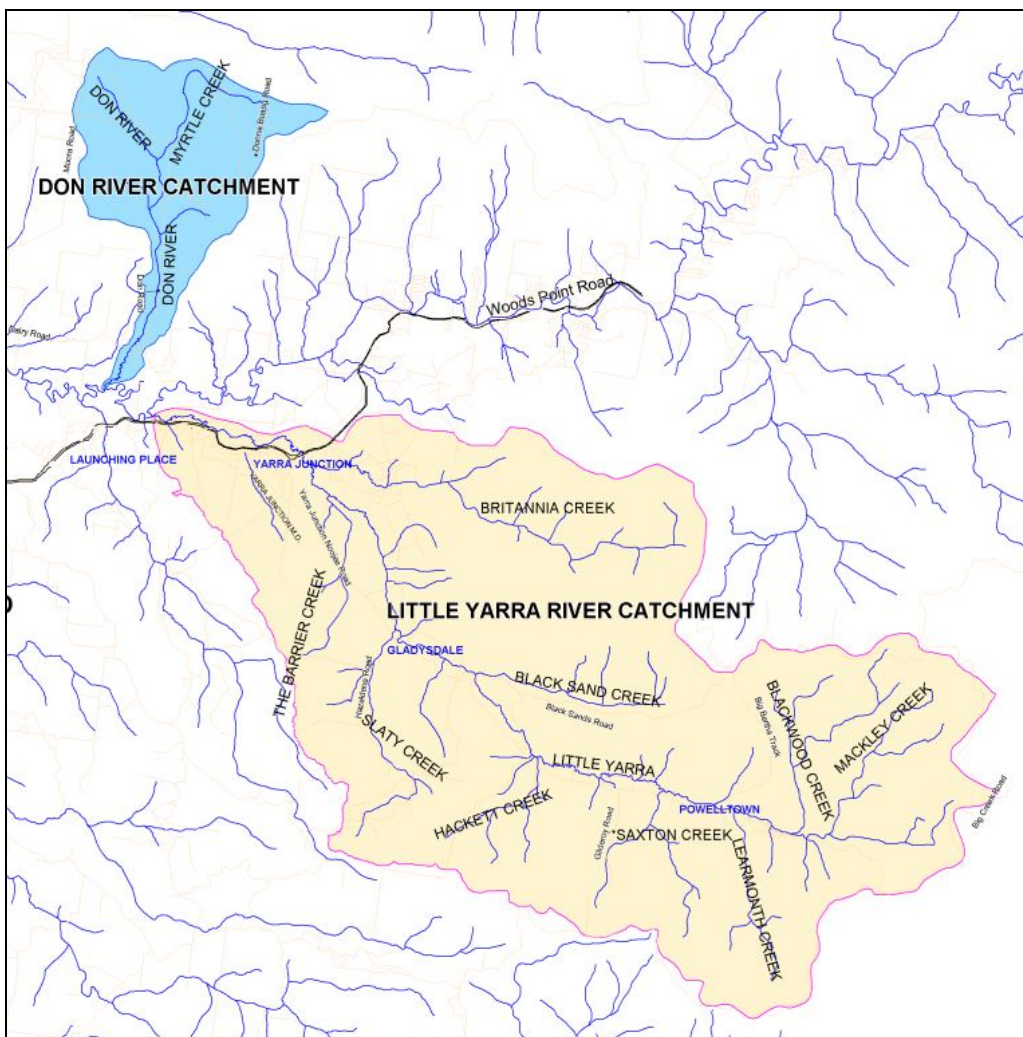


Figure 2 : Map of the Little Yarra and Don Water Supply Protection Area

The Little Yarra & Don Catchments

2 Catchment Description & Condition

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 154km².

The Don River rises near Panton Gap on Mt Toole-Be-Wong. The river flows south and joins the Yarra River near Don Road in Launching Place. The Don River catchment is approximately 22km².

Much of the catchments of the Little Yarra and Don Rivers are characterised by moderate to steep slope gradients and high rainfall (1000-1400 mm per annum) and both streams maintain permanent flows throughout the year. As a consequence, a large proportion of both catchments could not be selected for agriculture and remains in a comparatively unmodified condition. Only 13% of the Don catchment and 23% of the Little Yarra catchment have been cleared and most of the balance remains in public ownership and is used for timber extraction, recreation and nature conservation.

The uncleared upper regions of the catchments are predominantly tall eucalypt forests. Here both rivers are confined to narrow valleys with little or no valley development. In restricted fire protected valleys, Cool Temperate Rainforest may also occur in association with these tall forests.

Clearing for intensive agricultural pursuits have taken place where slope gradients are moderate to low in the middle and lower reaches of both rivers. The cleared areas of both valleys are closely settled with a preponderance of small holdings and 'hobby farms'.

In the Little Yarra catchment there is a relatively narrow strip of cleared land along the river between Powelltown and Three Bridges. Below Three Bridges, the wider valley is mostly cleared for a variety of agricultural uses, including orchards, vineyards, vegetables and grazing.

The lower section of the Don River valley has also been cleared for a variety of agricultural uses (similar to those in the Little Yarra catchment). Both catchments are unregulated and as such do not have any major irrigation or water supply reservoirs located on the rivers.

2.1 Environmental Values – Little Yarra River

2.1.1 Fish

Seven species of native fish were found during surveys from 2001 to 2003. These include: Australian Smelt (*Retropinna semoni*); Short-finned Eel (*Anguilla australis*); Mountain Galaxias (*Galaxias olidus*); Pouched Lamprey (*Geotria australis*); River Blackfish (*Gadopsis marmoratus*); Short Headed Lamprey (*Mordacia mordax*); and Southern Pygmy Perch (*Nannoperca australis*).

Three species of introduced fish were identified: Brown Trout (*Salmo trutta*); Rainbow Trout (*Oncorhynchus mykiss*); and Roach (*Rutilus rutilus*)

2.1.2 Animals

Platypus have been recorded throughout the Little Yarra River from Yarra Junction to Guilderoy. Nine species of frogs have been recorded, or are likely to occur within the Little Yarra catchment.

2.1.3 Macroinvertebrates

The following macroinvertebrate families, mayfly, stonefly and caddisfly are found along the Little Yarra River.

2.1.4 Vegetation

Between Powelltown and Gladysdale there are sections of uncleared fertile terraces and the river banks support tall Riparian Forest, typically dominated by Manna Gum (*Eucalyptus viminalis*). Riparian Forest is tolerant of and potentially dependent on seasonal, short duration flooding. Environmental weeds are a common component of Riparian Forest, particularly in fragmented and disturbed areas such as this.

Just downstream of Gladysdale to the confluence with the Yarra the nature of the river and associated vegetation changes gradually. Minor floodplains are now prevalent. In addition, clearing of the native vegetation on the adjoining slopes is extensive.

Several flood and/or groundwater dependant vegetation types (or Ecological Vegetation Classes – EVCs) have been recorded in this section of the river. Riparian Forest typically remains along the river bank levees and higher terraces. The extensive and increasingly poorly drained floodplains support a range of EVCs associated with these conditions – including Riparian Scrub (typically dominated by Scented Paperbark (*Melaleuca squarrosa*)), Swampy Riparian Complex and Damp Heathy Woodland.

Across most of southern Victoria these EVCs have been extensively cleared and the land subsequently drained for agricultural development. Significant remnants (each of these EVCs would be considered threatened in a regional and State context) persist in the lower reach of the Little Yarra River.

2.2 Environmental Values – Don River

2.2.1 Fish

A survey in 2006 identified three native fish species were identified, Short-finned Eel, Mountain Galaxias and River Blackfish, as well as one exotic species, Brown Trout. A number of Central Highlands Spiny Cray (*Euastacus woiwuru*) were also found in Myrtle Creek.

2.2.2 Animals

No information on water dependent vertebrates is available for the Don River.

2.2.3 Macroinvertebrates

The following macroinvertebrate families, mayfly, stonefly and caddisfly are found along the Don River.

2.2.4 Vegetation

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 bank levees and higher terraces with Riparian Scrub, Swampy Riparian Complex and Damp Heathy Woodland on poorly drained parts of the floodplains.

2.3 Why do a Stream Flow Management Plan for the Little Yarra and Don Rivers?

The large volume of water allocated from the Little Yarra and Don catchments compared to the average monthly flows creates competition for available flows and increases stress on the environment.

Over-allocation of water reduces security of supply and once that happens, relying upon a regular supply - whether you are a farmer, a household, or the environment-becomes increasingly risky. A Stream Flow Management Plan assists in managing water for all uses including the environment and clearly defines any opportunities and requirements for new water developments.

In addition, the stream supports a number of significant flora and fauna species. These environmental values need to be protected, in part by protecting a share of stream flows for the environment.

3 Flows & Diversions in the Little Yarra & Don Rivers

3.1 Hydrology

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.

Gauged data for the Don River is only available from January 1967 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.

The mean annual flow in Little Yarra River is around 43,000 ML/year, while the Don River is around 4,700 ML/year (over period 1963-2007). However, on a monthly basis, the stream flows for both rivers are highly variable, with the highest flows in July to October (inclusive) for Little Yarra River and August to November (inclusive) for the Don River (see Figure 3 and Figure 4). The current winter fill, or dam filling, period for both catchments is currently May to November.

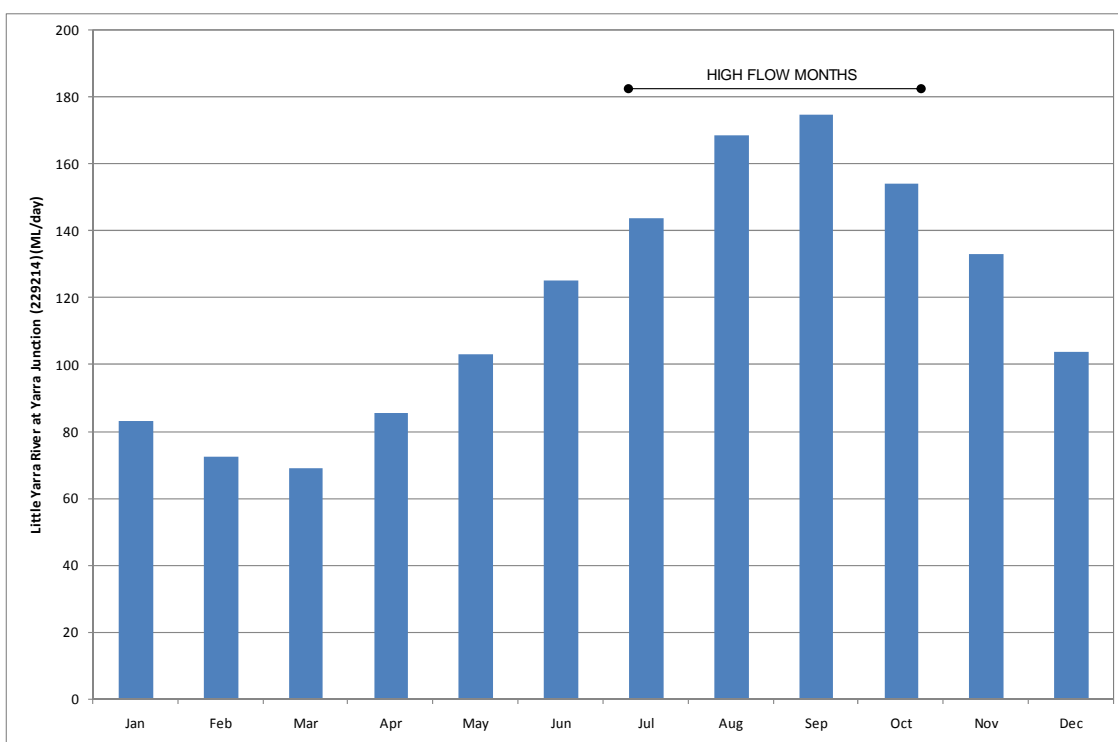


Figure 3 : Average daily flows for each month in Little Yarra River at Yarra Junction (Gauge 229214) from May 1963 to December 2007

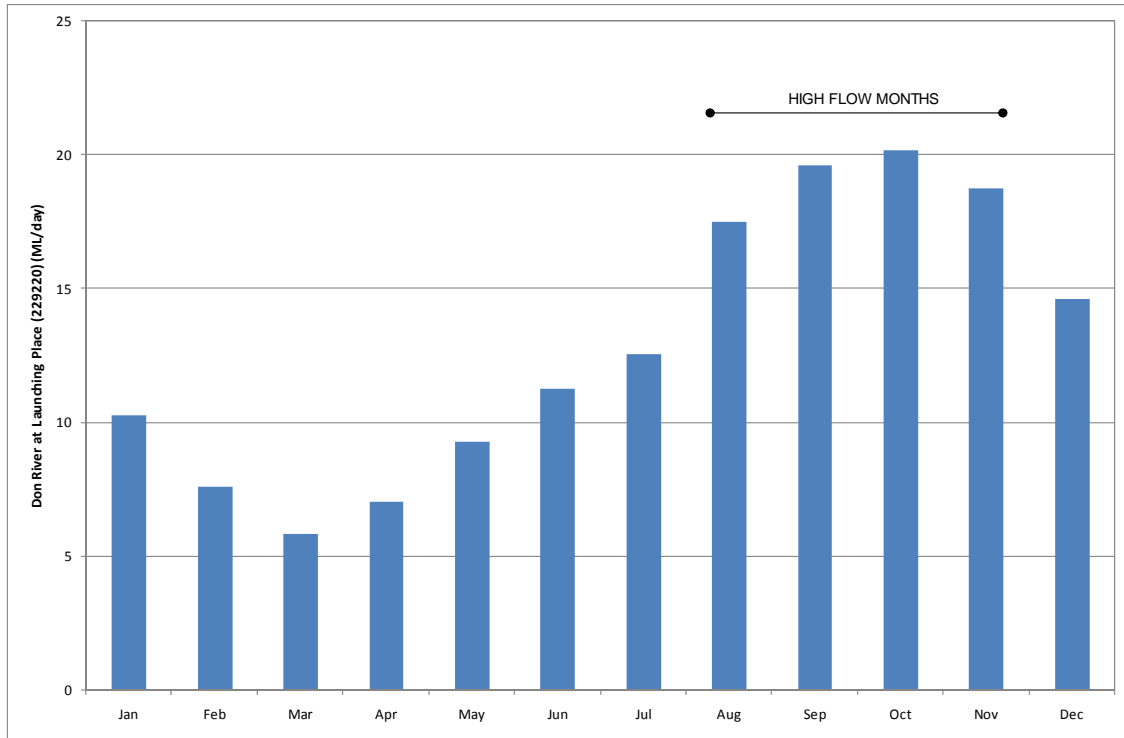


Figure 4 : Average daily flows for each month in Don River at Launching Place (Gauge 229220) from May 1963 to December 2007

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 September or October.

The following charts show the longer term annual flow behaviour and indicate a reduction in the average annual flow over the past ten years for both rivers.

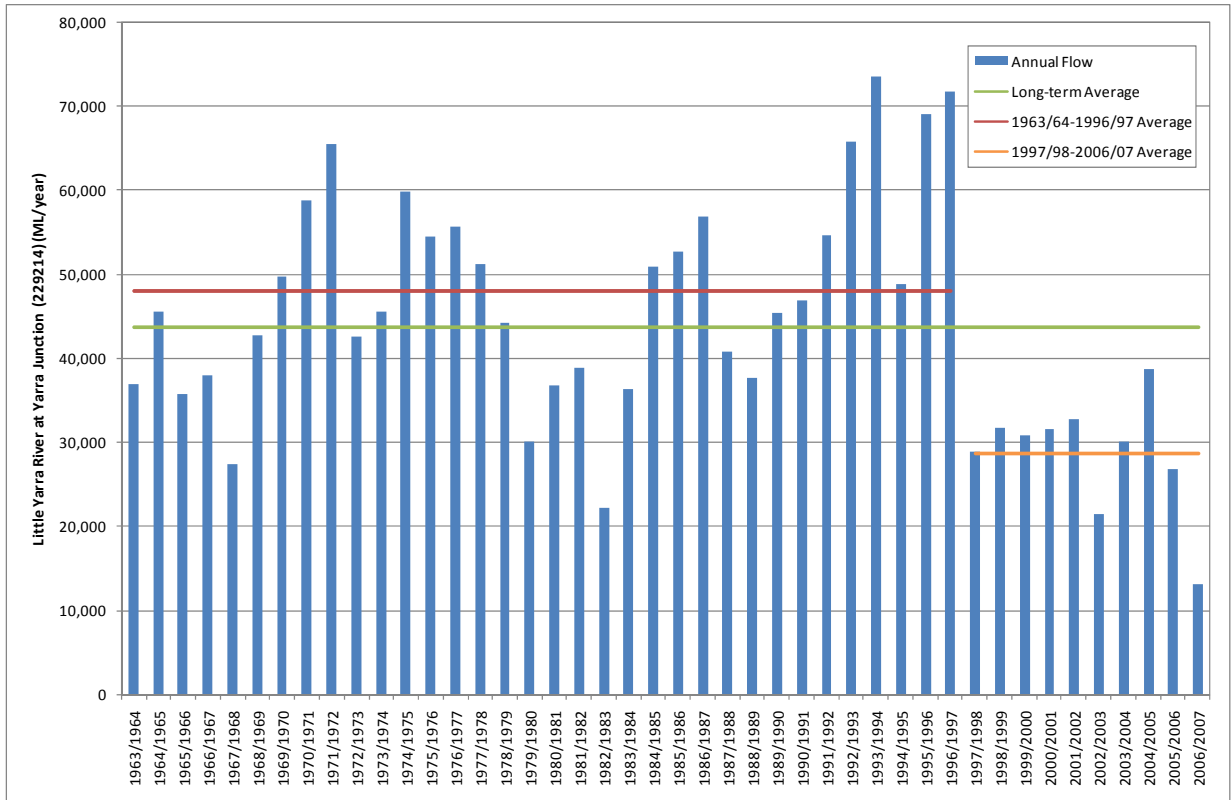


Figure 5 : Annual flows in Little Yarra River at Yarra Junction (Gauge 229214) from 1963/64 to 2006/07

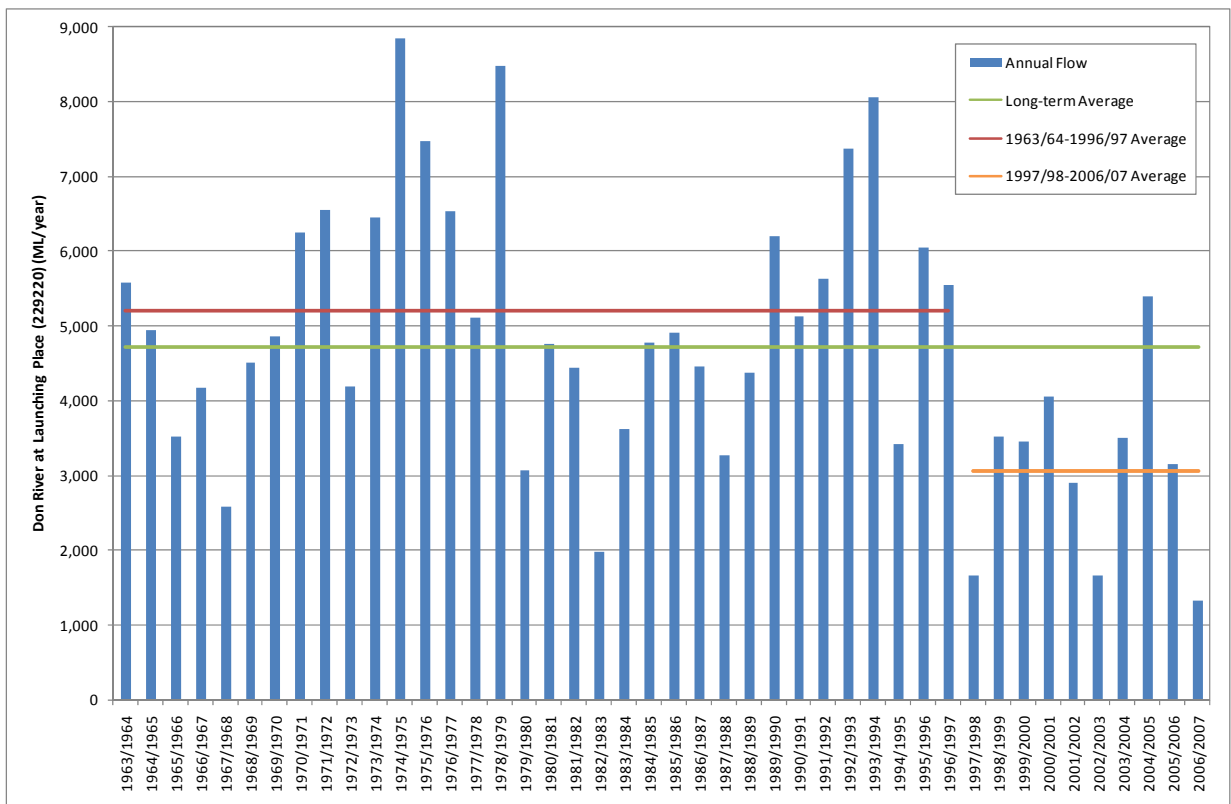


Figure 6 : Annual flows in Don River at Launching Place from 1963/64 to 2006/07

The following figures represent the variation in flows between 'dry', 'wet' and 'average' years in the Little Yarra and Don Rivers. Representative years have been chosen and graphed together to illustrate this variation.

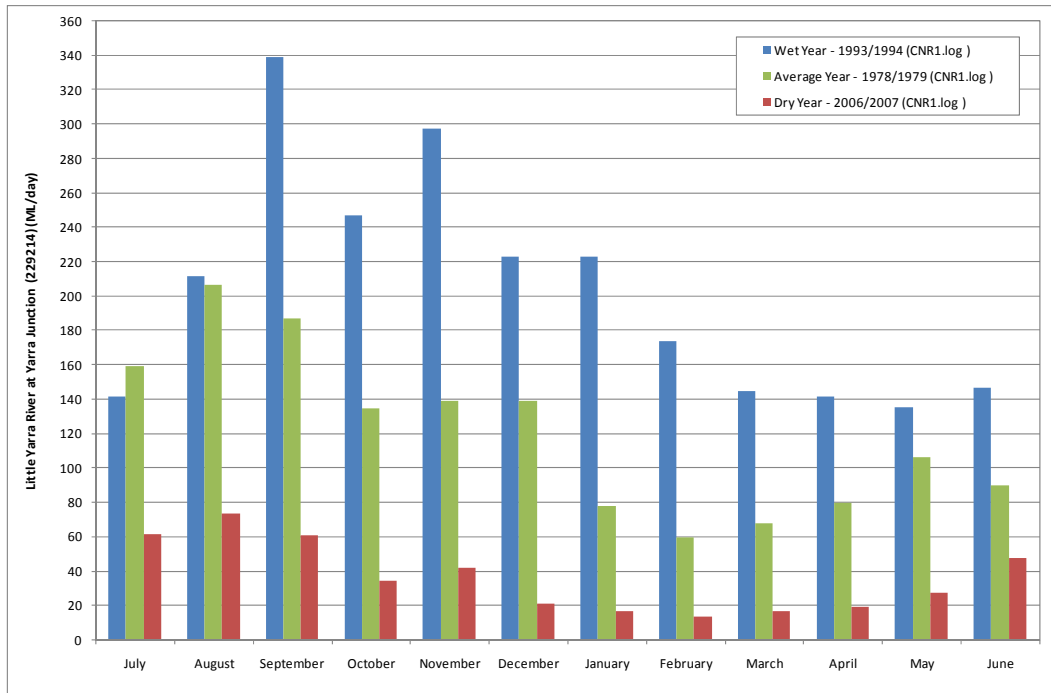


Figure 7 : Hydrograph of average daily flows per month in the Little Yarra River at Yarra Junction Gauge (229214) for a selected wet year, average year and dry year

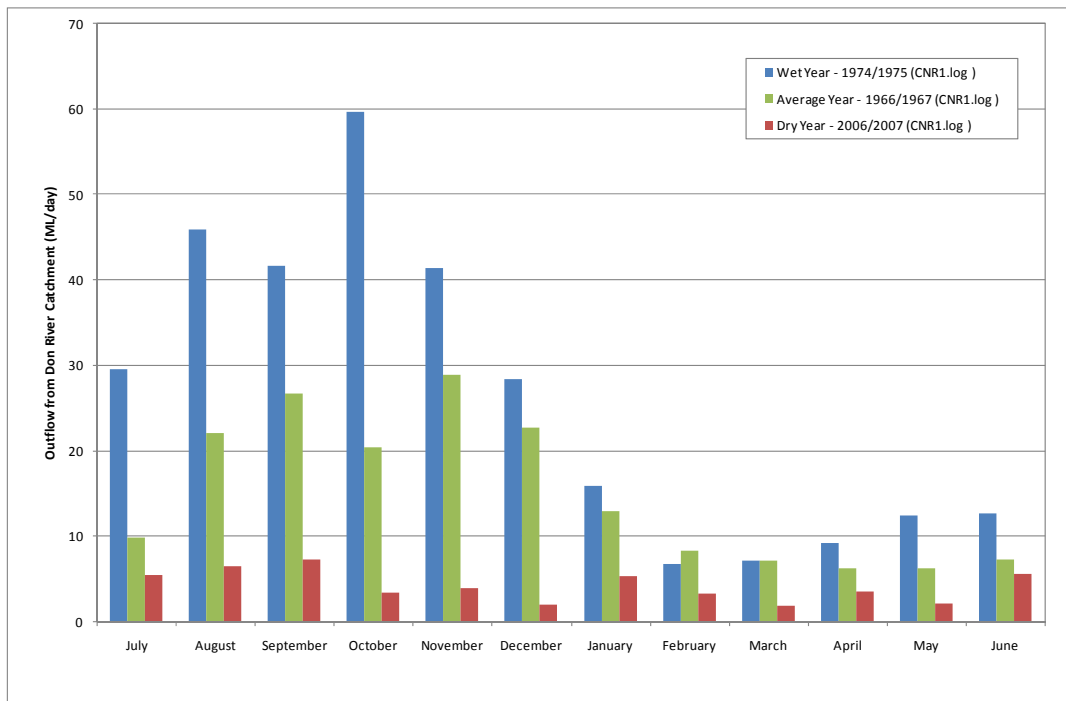


Figure 8 : Hydrograph of average daily flows per month at the outlet of the Don River catchment for a selected wet year, average year and dry year.

The region is dominated by winter rainfall, however most irrigation occurs over the summer season. Therefore the impact of irrigation on stream flows in the catchment is greatest in summer.

All consumptive water use, whether through direct pumping from the river or captured in farm dams prior to rainfall runoff reaching the river, changes what flows down our rivers. In unregulated catchments, understanding the timing and duration of this use, and its influences on stream flows, is crucial to understanding the affect this has on the various environmental assets that rely on the river.

3.2 Licensing of Water Allocations

Melbourne Water is responsible for the management of surface water diversions within the Little Yarra and Don River catchments. (Groundwater extractions within the catchments are managed by Southern Rural Water).

The Yarra River catchment is capped at current allocation levels and no new water allocations are available. This cap applies to the Little Yarra and Don River catchments also and the only way to obtain a new or increased entitlement is through water trading downstream or at a local level. All other trades where water is transferred upstream or across-catchment requires the licence to be considered on a winter fill basis only (i.e. water is available for extraction during the high flow winter months to be pumped in to an offstream storage dam for summer usage). Any new licence, or Transferable Water Entitlement application, is assessed to consider potential impacts to existing licensed diverters and the environment.

3.2.1 Who needs a licence?

Most people wishing to take water from a waterway or dam for a purpose other than domestic and stock use will need a licence. Domestic and stock use from a waterway may also require a licence, depending on the circumstances as described under certain sections of the Water Act 1989.

3.3 Types of Licences

Under the Water Act 1989, licences are required to take and use water from a waterway or farm dam. A Diversion Licence allows you to take and use water from a waterway or dam up to the amount and for the purpose specified on the licence.

3.3.1 Purpose

Licences can be used for a range of purposes:

Domestic and Stock

Water that can be used for household purposes including watering of pet animals, cattle or other stock and irrigation of a kitchen garden, but does not include use for dairies, piggeries, feed lots, poultry or any other intensive or commercial uses.

Irrigation

Water can be used for any irrigation purpose as well as for any domestic and stock, dairy, poultry farm and other general non-irrigation farm use on the nominated property.

On-stream or off-stream Dam Filling

Licence which will contain winter fill licence conditions as described below (Section 3.3.3) that can be used for filling of an on-stream or off-stream dam for later irrigation use.

Industrial/Commercial

Licences to take and use water generally for industry and non-irrigation commercial uses.

Non-consumptive

Water can be used for a non-consumptive purpose and returned to the waterway such as for power generation or aquaculture.

3.3.2 Types of licences

There are three types of licences:

1. *Standard Take and Use Diversion Licence*

This licence allows you to take and use water from a waterway or dam up to the amount and for the purpose (see above) specified on the licence.

2. *Farm Dam Licence*

This licence allows you to take water from catchment dams that were historically utilised for irrigation. The difference between these licences and Dam Registrations is that Farm Dam Licences can be traded and incur annual fees.

3. *Farm Dam Registration*

This covers catchment dams that were historically utilised for irrigation or commercial purposes prior to the Water (Irrigation Farm Dams) Act 2002. They are granted in perpetuity.

3.3.3 Licence Conditions

A water licence can have conditions on the timing of access to water:

All year Licences

A licence that allows taking of water from a waterway any time during the licence year.

Winter Fill Licences

A winter fill Diversion Licence is a licence used in conjunction with a dam and which contains a condition restricting the period during which water can be taken from the waterway under the licence (termed the winter fill period). The winter fill period is commonly the high flow period during which time water may be pumped into the dam for later use during the irrigation period or summer usage. Historically, the winter fill period is from the 1 May to 30 October or as defined in a Stream Flow Management Plan or under local management rules.

Dam – Off-stream: A dam that is not constructed across a river, creek, stream, watercourse or waterway but is licensed to take water diverted, or pumped, from one of these sources.

Dam – On-stream: A dam constructed on, in or across a river, creek, stream, watercourse or waterway and licensed to take water from that source.

3.3.4 Private Rights to Water

Some properties have rights to domestic and stock water without need of a licence. Section 8(1) of the Water Act 1989 provides that a person has a right to take water, free of charge, for that person's domestic and stock use from a waterway to which that person has access-

- (a) by a public road or public reserve; or
- (b) because that person occupies the land on which the water flows or occurs; or
- (c) in the case of a waterway, because that person occupies land adjacent to it and the bed and banks of the waterway have remained the property of the Crown by virtue of section 385 of the **Land Act 1958** or any corresponding previous enactment.

Section 11 of the Water Act extinguishes some of these rights upon subdivision of a property and to protect waterways from inappropriate pumping under Section 8(1), Section 8(8) of the Act also states that 'This section does not authorise any act or omission that may—

- (a) cause any water to be polluted; or
- (b) obstruct the flow of any water in a waterway; or
- (c) erode or otherwise damage the surrounds of any waterway.'

Consequently the right can only be exercised where sufficient flows exist within the stream to enable pumping to occur without works or other interference taking place within the waterway itself.

3.4 Water Allocation and Use in Little Yarra & Don Catchments

Water in the Little Yarra and Don Catchment is currently used under licence for a variety of domestic and agricultural purposes, including orchards, vineyards, vegetables, market gardens, flowers, dairy, grazing and town water supply.

The number of licence holders in each river catchment and their allocated volume is presented in the tables below.

3.4.1 Little Yarra River

Table 1 shows the 'active' and 'sleeper', or inactive, private diverter licences in the Little Yarra River catchment. There are 85 active licences in the Little Yarra River catchment with a total annual licence volume of 881 ML/year.

Table 1 : Current private diverter licences in the Little Yarra River catchment (March 2009)

| Purpose | Number of Active Licences | Volume of Active Licences (ML/year) | Total Number of licences (inc. inactive) | Total Volume of Licences (inc. inactive) (ML/year) |
|------------------------------|---------------------------|-------------------------------------|--|--|
| Commercial | 2 | 16 | 3 | 90 |
| Commercial Bottling | 0 | 0 | 1 | 7 |
| Domestic & Stock | 44 | 90 | 44 | 90 |
| Domestic, Stock & Irrigation | 5 | 20 | 6 | 24 |
| Industrial | 2 | 107 | 2 | 107 |
| Irrigation | 14 | 232 | 25 | 389 |
| Off-Stream Dam Filling | 5 | 95 | 6 | 96 |
| On-Stream Dam Filling | 12 | 158 | 15 | 180 |
| Town Water Supply | 1 | 163 | 1 | 163 |
| Grand Total | 85 | 881 | 103 | 1146 |

3.4.2 Don River

Table 2 shows the active private diverter licences in the Don River catchment based on the 2006 Survey. There are 17 active licences in the Don River catchment with a total annual licence volume of 150 ML/year. There are no inactive licences currently being held in the Don River catchment.

Table 2 : Current private diverter licences in the Don River catchment (March 2009)

| Purpose | Number of Active Licences | Volume of Active Licences (ML/year) |
|------------------------------|---------------------------|-------------------------------------|
| Domestic & Stock | 9 | 18 |
| Domestic, Stock & Irrigation | 4 | 27 |
| Irrigation | 3 | 104 |
| Power Generation | 1 | 1 |
| Grand Total | 17 | 150 |

There is currently limited knowledge of water use in the catchment. Metering of all active irrigation and commercial surface water use licences 5ML and above has been introduced. This will enable users to operate within their licence conditions and entitlements and provide water resource managers with a better knowledge of water use impacts on the environment.

3.4.3 Farm Dams

Farm dams are used to store water for both stock and domestic use and irrigation. The number and volume of registered or licensed farm dams in the Little Yarra and Don River catchments are given in Table 3. All of these dams are or have been used for irrigation.

Table 3 : Number and volume of farm dams in the Little Yarra 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 |

There are also a number of farm dams in the catchments used for stock and domestic purposes that are not registered or licensed. From an aerial photograph survey it is estimated that there are approximately another 130 farm dams within the Little Yarra catchment and another 30 farm dams in the Don catchment.

3.5 Drought Management

Melbourne Water's Drought Response Plan specifies minimum flows in the Little Yarra and Don catchments through existing water sharing arrangements. These arrangements mean that, during periods of reduced flow, licences are managed using a staged approach with the introduction of restrictions (reduced hours of pumping and rosters) followed by bans if flows decline further.

The trigger gauge for both the Little Yarra and Don catchments is on the Little Yarra River at Yarra Junction (229214), as there is no active gauge on the Don River. The triggers are the same for low-flow (1 Nov to 30 Jun) and high-flow (1 Jul to 31 Oct) periods. The restriction and ban triggers are 60 ML/day and 35 ML/day respectively all year round.

In recent years, low stream flows have meant that licensed water users in the Little Yarra and Don catchments have had reduced access to water. In 2007/08, licensed water users in the Little Yarra and Don catchments were on bans for a total of 180 days and restrictions for a further 126 days, so had normal access to water for only 60 days (16% of the year). Bans or restrictions were in place for the majority of the peak irrigation demand period of December to March.

In 2006/07, bans were in place for a total of 174 days and restrictions for a further 18 days, leaving 173 days (47% of the year) of normal access.

Potential Issues for Discussion

4 Issues & Outcomes Experienced in Other Stream Flow Management Plans

The aim of the Stream Flow Management Plan is to maintain and recognise the existing licensed rights to water within the catchment whilst aiming to maintain and improve waterway health through the implementation of environmental flows. Importantly, the SFMP will result in a framework of rules with which to manage the Little Yarra and Don River systems to enable the meeting of agreed water management objectives. These rules will be incorporated into specific policies and procedures for the Little Yarra and Don River systems.

As a number of Stream Flow Management Plan's have been developed in the Yarra Catchment and elsewhere in the State, the following have been included as issues/outcomes commonly experienced during the development of a SFMP.

4.1 Environmental Flows

Flow Sharing

Appropriate flow sharing rules will be determined through consultation between key stakeholders.

Rosters

Restrictions/rosters are a means of equitably sharing the available water resource between all licensed diverters, and the environment, during periods of low stream flow. Rosters are generally based on a deemed depth of watering (40mm per hectare per week for pasture irrigation) across the individual licensed areas.

Streamgauging/Monitoring

In order to achieve the specified flow sharing arrangements, and to maximise use of the available water, existing stream flow gauging may require review/upgrading.

4.2 Licensing

Annual Licences

Annual Licences will have been reissued to reflect the Stream Flow Management Plan recommendations concerning trading rules, area constraint removal, etc.

Annual Licence Allocation Cap.

Stream Flow Management Plan's are normally developed due to inadequate flow sharing arrangements, as most existing licences have been granted to allow direct pumping from a waterway for irrigation purposes during the low flow summer period November – May inclusive. Accordingly, Annual or Summer Volume Licence caps have been set as new/or additional allocations would affect the level of security of existing licences and potentially stress the waterway further. The introduction of caps ensures security of supply to existing users and avoids potential detrimental affects to waterway health. In most systems it is expected that these caps will be equal to current licensed volume and extraction conditions.

Winter Fill Allocation Cap

Due to no further summer extractions being available other than through the transferable Water Entitlements process, and in accordance with agreed Stream Flow Management Plan outcomes, existing licensed diverters may increase security of supply through the provision of winter fill licensing and offstream storage, where water is deemed available. The Winter Fill Cap typically defines the appropriate high flow months and the associated volume/cap/environmental flows that may be extracted from the system. This also applies to, and allows for, new developments.

Low Consumptive Use Licences

Low consumptive use licences refer to those used for domestic, stock, aquaculture and other miscellaneous purposes. Total consumption is less than or equal to 2 ML/yr. Given the nature of these licences and the expectation that very few new licences would be issued, these licences are not usually subject to environmental flow recommendations in a Stream Flow Management Plan. However the scope for multiple low consumptive use licences to become a significant water user does need to be considered and addressed if an issue, especially in relation to conflicting urban and rural pressures.

4.3 Water Trading

Water trading is intended to:

- facilitate the transfer of water to the highest value use;
- promote efficiency;
- delay investment in new infrastructure
- protect security of supply of existing users; and
- protect environmental flow provisions.

Water trading is likely to increase the overall water use as those licences currently unused (sleeper licences) become active. This will reduce the security of supply of existing users and may have detrimental effects on the environment and the management of environmental flow targets, particularly when water is traded upstream. Water traded downstream will not reduce security unless the water is not being utilised (sleeper licences). Trading water upstream may impact on security, depending on where the water is traded from and to.

Rules need to be introduced into the Stream Flow Management Plan to ensure consistency between the requirements of the transferable water entitlement process within the *Water Act 1989* and those of the local system.

4.4 Monitoring and Compliance

Melbourne Water are obliged to monitor and ensure environmental flows are maintained. Melbourne Water must submit an Annual Report to the Minister each year on the operation of the Stream Flow Management Plan. The following matters shall be reported in the annual report of Melbourne Water:

- the annual volumes of water diverted from the stream under Licence within Stream Flow Management Plan boundaries;
- meeting of designated environmental flow requirements as stipulated in the Stream Flow Management Plan;
- details of any management problems relating to low flow periods, i.e. the extent of rostering;
- details of Tradeable Water Entitlements;
- water sales volumes;
- the implementation of the metering program; and
- any amendments to the Stream Flow Management Plan.

Note: the above has been a recommendation of all Stream Flow Management Plan's developed to date

Licence conditions shall be enforced in accordance with Melbourne Water/Rural Water Authority policy and delegated functions of the *Water Act 1989*.

4.5 Reviewing the Plan

The project group may agree that a review, after say 5 years, would be appropriate to ensure the rules are satisfying the stream management objectives.

It is expected that the rules within a Stream Flow Management Plan may need to be amended if the management objectives are not being met or a stakeholder raises a particular concern. Amendments to the plan may be time consuming with the outcomes potentially affecting other stakeholders. Therefore, any stakeholder wishing to amend the Stream Flow Management Plan must provide supporting information on the need for the amendment. Stakeholders will need to be notified and consulted regarding proposed changes. Amendments to a Stream Flow Management Plan would require a full review of all information and changes need to be agreed to by all parties, with the amended plan forwarded to the Minister for endorsement.

Note: the above has been a recommendation of all Stream Flow Management Plan's developed to date.

4.6 Other Issues for Consideration

Catchment Dam Impacts

Consideration maybe required regarding the impacts of the construction of general catchment dams on overall stream flow yield, and therefore security of supply to diverters.

Groundwater Development/Usage Impacts

Rural Water Authorities are required to manage Groundwater diversions in a similar manner to surfacewater diversions and are required to develop Management Plans similar to Stream Flow Management Plan's where varying groundwater zones are overallocated/stressed. Due to the importance of groundwater/surfacewater interaction (groundwater discharge supply river baseflows), consideration may be required as to linking the development of Groundwater Management Plans in areas where groundwater discharge is a significant component of summer base flows.

List of Common Terms

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 and runoff from the catchment.

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

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 stream flows that maintains or improves aquatic ecosystems and their habitats by mimicking the size and timing of natural flows.

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.

Off-stream dam - A storage which is not located on a waterway as determined under the *Water Act 1989* definition, but is filled with water pumped from a waterway.

On-stream dam - A storage that is located on a waterway as determined under the *Water Act 1989*.

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.

Summer licence - Also known as an All-year licence (see above).

Transferable Water Entitlement - The temporary or permanent transfer of an existing licence to a new licensee, either in whole or in part.

Winter fill licences - Licences to fill off stream storages by direct pumping during the winter fill period. The permit is limited to the volume of the storage. No limit is placed on the area that may be irrigated from the off stream storage.

Winter fill period - The wetter months of the year when flows are high enough to allow additional water to be harvested over and above extraction by annual licence holders.