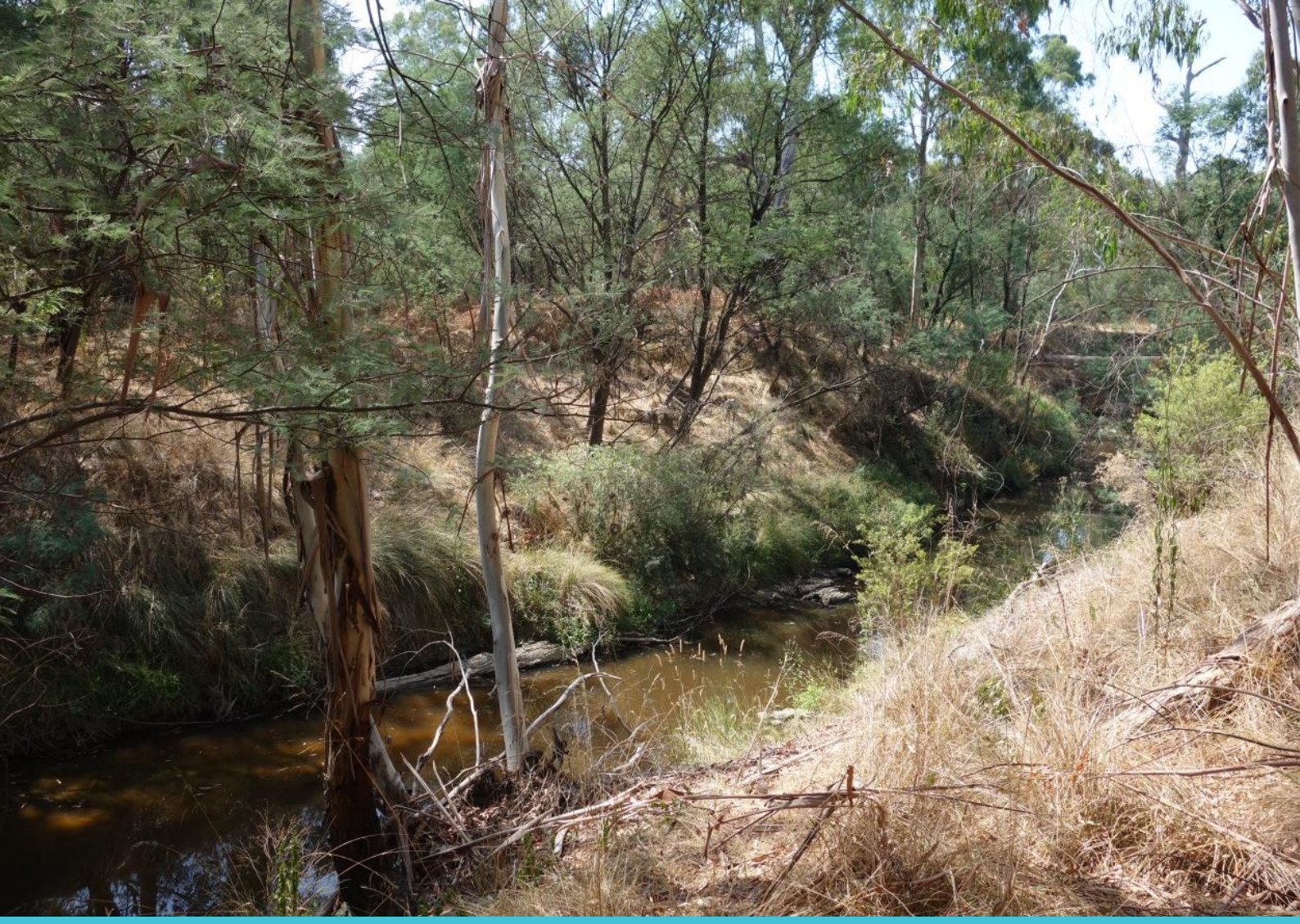

Diamond Creek

Local Management Plan 2016

Melbourne Water

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Summary of Rules in the Diamond Creek Local Management Plan

Rule 1: Cap on surface water allocation in Diamond Creek

1. Melbourne Water will:

    a. Put in place a total allocation cap for the Diamond Creek catchment at the existing level of allocation in 2015 – 1109.1ML
    b. Reduce the allocation cap by the volume of any allocation surrendered or transferred out of the Diamond Creek catchment until such time as the sustainable allocation cap of 826ML is reached.
    c. Put in place an allocation cap for winter-fill licences within the Diamond Creek catchment of 346ML.

2. Melbourne Water will not issue a licence under section 51(1)(a) or (ba) of the Act in the Diamond Creek Catchment that will cause any of the allocations caps described in (1) above to be exceeded.

Rule 2: Maintaining Environmental Flows

1. Melbourne Water will amend conditions on existing Section 51 licences to ban extraction of water from waterways in the Diamond Creek catchment when flows fall below the levels outlined in Appendix 1.

2. Melbourne Water will amend conditions on existing Section 51 licences to limit the maximum daily volume so that it is not greater than two per cent of the annual volume.

Rule 3: Trades and Transfers of surface water entitlements

1. Melbourne Water may approve a trade or transfer of a licence under section 62 of the Act provided that relevant matters under section 53 of Act have been considered and that the following conditions are satisfied:

    a. The issuing of the licence will not result in the allocation limits specified in Rule 1 being exceeded.

    b. For upstream trades/transfers:
        i. The trade/transfer is not upstream into the Upper Zone
        ii. The conditions on the licence are amended so that water may only be taken or collected during the winter-fill period

    c. For downstream trades/transfers:
        i. amend the conditions of the licence as necessary to ensure that water may only be taken or collected during the winter-fill period; or
        ii. require the volume of the licence to be reduced by 20%.

Rule 4: Install Meters and record meter readings

Melbourne Water will:

(i) Ensure that a flow meter is fitted to all operating licensed extraction points, associated with a licence to extract 5 ML or more of water a year under Section 51(1)(a) of the Water Act.

(ii) Ensure that a flow meter is fitted to all operating licensed extraction points, associated with a licence to extract less than 5 ML if Melbourne Water considers it beneficial.

(iii) Read each meter at least once annually for all-year licence holders and shortly after the beginning and end of the winter-fill period in every year for winter-fill licence holders.

Rule 5: Annual Reporting

Melbourne Water will by the 30th September of each year, prepare an Annual Report for the previous water year (1st July-30th June) which will include reporting of:

(i) Total Surface Water entitlements in the catchment;
(ii) Any trading and transfers of licences issued under Section 51 (1) (a) and (ba) to or from the Diamond Creek catchment
(iii) Metered surface water use in the catchment
(iv) Any periods when roster and restrictions were in place
(v) Any compliance and enforcement action taken
(vi) Flow monitoring data from Hurstbridge gauge

Melbourne Water will post the annual report on its website.

Rule 6: Review of the Plan

Melbourne Water will consider the need to for any amendments to the Plan as part of the Annual Report each year.

If any amendments are proposed that directly impact on the rights of access to water Melbourne Water will consult with the Advisory Group and surface water users in the catchment on the proposed changes to the Plan.

Acknowledgements

The development of this plan has relied on the guidance and feedback from the Diamond Creek Advisory group made up of water users, friends groups, Department of Environment, Land, Water and Planning (DELWP), Southern Rural Water (SRW), Local Government – Nillumbik Shire and Melbourne Water. The Advisory Group consisted of the following people:

Eric South (Diverter)
Barrie Tully (Diverter)
Graham Woods (Diverter)
Neil Roberts (Diverter)
Sue Dyet (Friends of Lower Eltham Park)
Jason Tesoriero (Southern Rural Water)
Phil Mitchell (Department of Environment, Land, Water and Planning)
Donna Stoddard (Nillumbik Shire Council)
Kirsty Merritt (Nillumbik Council)
Andrew Downing (Melbourne Water)
Cheryl Edwards (Melbourne Water)
Steve Hosking (Melbourne Water)

Melbourne Water would like to express its appreciation to the Advisory Group. Assistance and feedback has been invaluable to the development of this Local Management Plan and will ensure its success and implementation.

Disclaimer

Glossary

Act	The *Water Act 1989*
Allocation Cap (Diamond Creek)	The maximum volume of water licensed for extraction from the Diamond Creek catchment.
All-year Licence	A licence that allows harvesting of water from a waterway or dam any time during the year up to the licensed volume.
Ban Level (Trigger Level)	The volume of flow in a waterway measured in ML/day. When reached, licence holders must cease extracting or collecting water.
Catchment dam	A dam that is not located on a waterway, and which captures rainfall and runoff (overland flow) from the catchment. May also be filled by an extraction from a waterway (i.e. an off-stream dam)
Commercial Use	Water used for irrigation of produce to sell and other uses of a commercial nature, such as cooling or dairy washing.
Diamond Creek Catchment	This is the catchment area shown in Figure 1 of the Diamond Creek Local Management Plan 2016 and includes all waterways within the map extent.
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. The pattern may include a minimum environmental flow, freshes, bank-full and over-bank flows
Farm Dam Licence	This licence issued under section 51(1)(ba) of the Act allows to the taking of water from catchment dams that were historically utilised for irrigation. The difference between these licences and Farm Dam Registrations is that Farm Dam Licences can be traded and incur annual fees. Farm Dam Licences cannot be converted to Farm Dam Registrations
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 and stay with the property. Farm dam registrations can be converted into Farm Dam Licences
Licensed water user	Any person holding a current section 51 licence.
Lower Trading Zone	Means the area within the Diamond Creek catchment downstream of the confluence of Arthurs and Diamond Creeks

Low-flow period (Summer period)	The period of the year that is outside the Winter-fill period.
Maximum daily extraction	The maximum total volume of water that can be taken in any day by all licence holders combined or individually.
On-stream dam	A storage that is located on and filled by a waterway as determined under the Act. On-stream dams can be associated with winter-fill licences that are filled during the winter-fill period subject to bans and restrictions for use during any time of the year. On-stream dams associated with all year licences, can harvest water all year subject to bans and restrictions. For all licences, water must be passed downstream of the dam at all times that natural flow is occurring.
Reliability of supply	The likelihood of being able to extract the full volume of an individual licence holder's water volume in any one year. Usually measured in number of days of 'normal' supply (i.e. days not on ban).
Upper Trading Zone	Refers to the area within the Diamond Creek catchment upstream of the confluence of Arthurs and Diamond Creeks
Waterway	As described in the Act, a waterway is: • A river, creek, stream or watercourse; or natural channel in which water regularly flows, whether or not the flow is continuous; or • A channel formed wholly or partly by the alteration or relocation of a waterway described above; or • A lake, lagoon, swamp or marsh (other than water collected and contained in a private dam or a natural depression on private land).
Winter-fill period	The prescribed period during which licensees with winter-fill conditions on their licence may extract water from a waterway or allow an on-stream dam to fill. For the Diamond Creek catchment the winterfill period is from 1 July to 31 October.

1. Introduction

1.1. Background

The aim of the Diamond Creek Local Management Plan (the Plan) is to provide surface water users in the catchment with a detailed system-specific surface water management framework. The Plan has been developed by Melbourne Water (MW) in consultation with an advisory group made of community members and surface water licence holders as well as relevant stakeholder and agency groups.

The Plan describes how MW will manage the taking of surface water licensed under section 51 of the Act, using powers delegated under the Act and in accordance with Victoria's *Ministerial Policies for Managing Take and Use Licences.*

On review of the SFMP, a number of amendments were recommended and in line with current Victorian policy, a local management plan was considered an appropriate management tool to manage licensed diversions in this catchment.

This plan manages surface water resources but does not manage groundwater diversions.

The purpose of the Plan is to:

- document the management objectives for the catchment
- explain to licence holders (and the broader community) the specific management objectives and arrangements for their water resource and the rules that apply to them as users of that resource
- clarify water sharing arrangements for all users and the environment, including environmental flow requirements
- document the limits, including the allocation cap, that apply to the system.

1.2. Management Objectives

Management objectives have been developed by considering the purpose of the Plan, taking into account the key environmental values of the catchment and where this Plan can influence to meet the overall objective of ensuring that the water resources of the Diamond Creek Catchment are managed in an equitable manner so as to ensure the long-term sustainability of the water resource.

The specific objectives agreed for the Plan are:

1. To ensure that stream flows match natural seasonal patterns
2. To meet the sustainable water allocation in the catchment
3. To ensure that stream flows are managed to meet the agreed minimum environmental flows (ban or trigger levels)
4. To ensure that the transfer of licences will not negatively impact on existing licensed water holders or the environment.

1.3. Diamond Creek Local Management Plan Area

Diamond Creek is a tributary of the Yarra River that starts at the southern edge of the Kinglake Plateau and flows through the King Lake National Park in a south-westerly direction into the Yarra past St Andrews, Hurstbridge, Diamond Creek and Eltham. The catchment is generally rural and is comprised of several tributaries including Running Creek and Arthurs Creek, as well as smaller tributaries such as Watery Gully Creek. This Plan applies only to the surface waters of the Diamond Creek catchment (Figure 1). It is noted that for the maintenance of base flows in the upper Diamond Creek catchment, the waterways rely on groundwater springs. Excessive extraction of groundwater may reduce these base flows.

Grazing and horticulture, principally orchards and viticulture, are the main land-uses within the catchment. A number of hobby farms also exist on the fringes of urban areas. The urban area downstream of Hurstbridge is expanding into the catchment around Diamond Creek, Eltham and Kangaroo Ground (SKM, 2008).

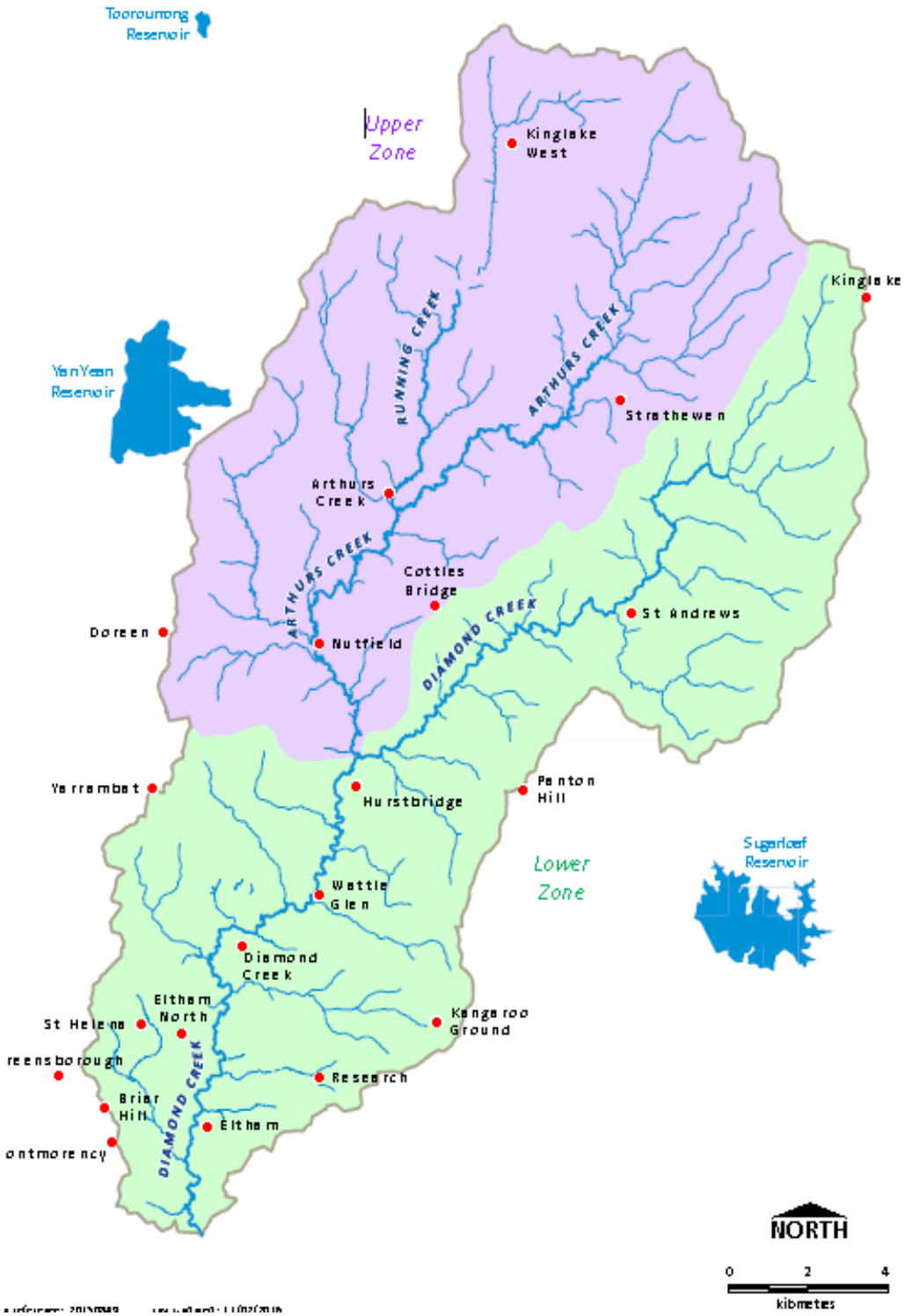

Figure 1: The Diamond Creek Local Management Area.

1.4. Environmental Values

Diamond Creek supports a diverse biological community of fish, vertebrates, invertebrates and streamside vegetation. The Diamond Creek river corridor connects the Kinglake National Park at the top of the catchment to the Yarra River.

Ten native fish species have been recorded in the Diamond Creek catchment (Zampatti and Lieschke, 1999, McGuckin, 2007). With the provision of the fishway at Dights Falls in the lower Yarra River in 2012, two additional species may now colonise Diamond Creek habitats in the future (Australian grayling, tupong).

Of the species recorded in the creek, Macquarie perch are listed is endangered in Victoria (DSE, 2003), endangered under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC), and is listed in Victoria under the *Flora and Fauna Guarantee Act* 1988 (FFG). While not having formal conservation ratings, river blackfish, common galaxias and spotted galaxias are listed as a priority species in Melbourne Water's Fish Habitat Management Strategy and form part of the ecological requirements in the SEPP for the Waters of the Yarra Catchment in Rural Eastern Waterways (State of Victoria, 1999).

Threatened vertebrates such as the Large Footed Myotis and the Broad-Shelled Tortoise may occur in the catchment as well as other species such as the Platypus and the Water Rat. These animals rely directly on the in-stream environment for their survival. Twelve frog species including the endangered and vulnerable species such as Bibrons toadlet, growling grass frog and southern toadlet.

Diverse macroinvertebrate populations and significant macroinvertebrate habitat are found in the upper catchment but decline downstream (Zampatti and Liescke, 1999, Melbourne Water, 2015). These aquatic invertebrates depend on flows to maintain their habitat. Animals higher in the food chain also rely on these aquatic invertebrates as a food source (eg. Platypus).

The stream banks of the lower reaches of Diamond Creek and Arthurs Creek have been cleared or filled with exotic plants and so have little natural habitat. However, the mid to upper reaches of the Creeks have more intact native vegetation and more complex instream habitat such as woody debris that provides opportunities for fish and macroinvertebrates to live Of the species of streamside flora found in the catchment, the Netted Brake and the Swamp Bush-Pea are rare in Victoria. Various landcare and other community groups have undertaken revegetation works in some of the smaller tributaries such as Watery Gully and along the main stem of Diamond Creek

1.5 Environmental Flows

Aquatic life adapts to the natural patterns of high and low stream flows to survive. Changes to these natural patterns may put existing aquatic life at risk. For example, stream flows are naturally low during droughts and so the aquatic life develops ways to survive occasional droughts. But if stream flows mimic drought conditions every year because of the extraction of water, then aquatic life may not be able to survive. The best way to protect the aquatic life is to mimic the natural patterns of stream flows.

A range of diversions including surface water extractions, domestic and stock use, groundwater bores and water harvested from farm dams can reduce streamflows. Melbourne Water's assessment has shown that diversions have changed the hydrology in the catchment in the following ways:

1. The long-term statistics indicate that the development of water resources within the catchment has decreased the median flow of Diamond Creek by between 44% and 64%.

2. Water resources development within the catchment has had the most profound effect on the median daily flows during the low flow season. The median daily flow has been reduced by up to 50% between January and April but the median daily flow has only been reduced by 10% over the winter months (Wealands et al, 2009).

To ensure the long-term sustainability of the water resource whilst protecting the values in the catchment, an Environmental Flows study was undertaken. Table 1 outlines the environmental flow requirements for the lower Diamond Creek

Table 1: The Environmental Flow recommendations are listed for Lower Diamond Creek (Wealands et al., 2009)

River		Lower Diamond Creek		**Reach**		Lower Diamond
Compliance Point		Diamond Creek at Hurstbridge		**Gauge number**		229 619
flow					**Rationale**	
Period	**Flow Component**	**Magnitude**	**Frequency**	**Duration**	**Objectives**	**Controlling criteria and discussion**
Dec -Jun	Low flow	2.5 ML/d or natural	Continuous	Continuous	**D-V1b**, D-G5, D-F1, D-F2, D-M1a, **D-M2**	10 cm depth over run/riffles.
Dec - May	Low flow fresh	16 ML/d	3 / period or natural	5 days or natural	D-V2, D-G1, D-G5, D-F3, **D-F4**, **D-F5**, D-F7, D-M3, D-M5	0.2 m depth over shallowest run for localised large fish movement
Jul - Nov	High flow	10 ML/d or natural	Continuous	Continuous	D-V3, D-G3, D-F1, D-F2, **D-F12**, D-M1b, D-M2	Regional scale movement between freshwater and estuary for migratory species
Jun – Nov	High flow fresh	50 ML/d	3 / period or natural	3 days or natural	**D-V4**, D-G1, D-G4, D-G6, D-F6, D-F7, D-F8, D-F9, D-F10, D-F11, D-M4, D-M6	Inundation of low inchannel benches to maintain condition of instream aquatics
Jun – Nov	High flow fresh	300 ML/d	1 / period or natural	2 days or natural	**D-V4**, D-G1, D-G4, D-G6, D-F6, D-F7, D-F8, D-F9, D-F10, D-F11, D-M4, D-M6	Inundation of mid channel benches to provide organic material regularly to stream during winter.
Any	Bankfull	1200 ML/d	1 / 2 years or natural	1 day or natural	**D-V5, D-V6, D-G2, D-M7**	Defined morphologically

The flow recommendations in the table are considered the minimum flows to protect the values in the whole Diamond Creek catchment. Hurstbridge was selected as the representative site for compliance based on this recommendation.

2. Surface Water Use

2.1 Licensed Water Entitlements

In the Diamond Creek catchment, there is currently 1109.1 ML of water allocated for diversion each year. This water is taken under licences issued under section 51 of the Act and in accordance with the *Ministerial Policies for Managing Take and Use Licences*. A licence allows water to be taken from a waterway or dam up to the volume and for the purpose specified in licence.

Section 51 licences generally fall into one of the following categories:

All-year licences: A licence issued with conditions that allow pumping from a waterway, or harvesting water in a dam, during any month of the year up to the licensed volume.

Dam-filling (winterfill) licences: A licence issued with conditions that allow filling of an on or off stream dam during the dam-filling period, typically by pumping from a waterway into a dam or collecting water in the dam onstream.

Farm dam licence: This licence allows a person to take water from **catchment dams** that were historically utilised for **irrigation**. The difference between these licences and **farm dam registrations** is that farm dam licences can be traded and incur annual fees. Farm dam licences cannot be converted to farm dam registrations.

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 and transfer with the property. Farm dam registrations can be converted into farm dam licences.

Table 2 below summarises the licenced water entitlements in the Diamond Creek catchment as at June, 2015. More detailed information can be located in the Victorian Water Register.

Table 2: Licence number and volume by licence type

All Year Licence		**Winterfill Licence**		**Farm Dam Registration**		**Farm Dam Licence**		**TOTAL**	
No.	**Vol.**	**No.**	**Vol.**	**No.**	**Vol.**	**No.**	**Vol.**	**No.**	**Vol.**
13	367ML	7	275ML	58	445.1ML	2	22ML	80	1109.1

2.2 Other Water Use

Water can also be taken for domestic and stock use without a licence if a person owns land with direct frontage to a waterway, if the waterway flows through a person's property, or if rainfall run-off is collected in a dam and not used for commercial irrigation. As this use is not licensed, water used can only be estimated. Accessing water for these purposes is a well-recognised private right for all landholders and does not require a licence as detailed in section 8 of the Act.

In 2013, Melbourne Water conducted a study into unlicensed water use in the Diamond Creek catchment. The purpose of the study was to estimate how much water is being accessed for domestic and stock use. The study found that domestic and stock use in the Diamond Creek catchment is approximately 790 ML/year. Most of the domestic and stock supply comes from dams. Evaporative loss from these dams forms a large part of the total un-licensed use of water in the catchment (RMCG, 2013).

Melbourne Water has also assessed the impact of farm dams on streamflows throughout the region. This assessment included licensed and un-licensed farm dams. The results showed that:

- Farm dam density per square kilometre in the Diamond catchment varies from medium (6-12ML/km^2) to relatively high (12-25 ML/km^2) compared to the state average of between 1 – 10ML/km^2 (SKM, 2004).
- The total volume of domestic and stock dams (un-licensed) is approximately 2,693 ML. This represents a significant increase (264%) over the last decade as a previous estimate found the volume of water held in stock and domestic dams to be 740 ML in the year 2000 (RMCG, 2013)
- Stock and domestic water use varies between 787 – 2510ML per year which equates to approximately 10% of mean annual flow and this is impact is more pronounced in summer (SKM, 2012, RMCG, 2013)

2.3 Groundwater

In the Upper Diamond Creek, the geology is made up of sandstones and siltstones that form the Great Dividing Range. This 'basement' rock has many fractures and rainfall seeps through the fractures, to form springs which then provide base-flow to the waterways. The fractured rock aquifer is an important source of domestic and stock supply for household water in Kinglake and Flowerdale. Excessive groundwater extraction in these areas can have impacts on surface-water flows. Natural events, such as bushfires can also have an impact on surface-water flows. The destruction of

trees and plants in bushfires causes an increase in discharge to waterways as a result of the reduction in evapotranspiration from the vegetation (GHD 2012).

If groundwater extraction approaches unsustainable limits, a groundwater management plan is usually developed to define allocations and rules for groundwater users. Southern Rural Water is the water authority that manages groundwater in this catchment. Surface water users want to emphasise the importance of managing both groundwater and surface water resources together. If a groundwater management plan was developed in this catchment, Melbourne Water would emphasise the importance of taking the current surface water management arrangements in place into any decision making process.

3. Surface Water Management

3.1 Allocation

The Sustainable Water allocation for the catchment was determined by taking into account minimum environmental flows to meet the Plan's objectives and existing licence holders water allocation at 80% reliability of supply. This represents the volume that can supply a diverter's full licence allocation in 8 out of 10 years. The allocation was determined to be 826 ML per year. This is less than the current allocation in the catchment (see Section 2.1). The current allocation of 1109.1 ML was set as the actual allocation cap for the catchment and 826 ML was set to be the Sustainable Allocation (or target Allocation). Trading and transfer rules have been set in this plan in order to meet the sustainable allocation (see Section 3.4). In addition, some licences may be cancelled, surrendered or transferred out of the catchment. If this happens, the limit on all-year licences will be decreased by the amount cancelled, surrendered or transferred licences.

The wetter months of the year are typically July to November in this catchment as described in the 2009 Environmental Flows Study (Wealands et al., 2009). As per the statewide Take and Use Policies, anyone with a winterfill licence is able to take water during the months from 1st July to 31st October, in addition to all-year licence holders. The sustainable allocation for the winterfill period has been calculated at 346 ML and is set as the winterfill allocation cap.

Rule 1: Cap on surface water allocation in Diamond Creek

1. Melbourne Water will:

    a. Put in place a total allocation cap for the Diamond Creek catchment at the existing level of allocation in 2015 – 1109.1ML
    b. Reduce the allocation cap by the volume of any allocation surrendered or transferred out of the Diamond Creek catchment until such time as the sustainable allocation cap of 826ML is reached.
    c. Put in place an allocation cap for winter-fill licences within the Diamond Creek catchment of 346ML.

2. Melbourne Water will not issue a licence under section 51(1)(a) or (ba) of the Act in the Diamond Creek Catchment that will cause any of the allocations caps described in (1) above to be exceeded.

3.2 Environmental Flows

The implementation of minimum environmental flows will be achieved through amending the existing flow triggers that bans access to extract water. The minimum flows are based on the recommended environmental flows from the 2009 environmental flows study (Wealands et al., 2009). The minimum flows are the same as the recommended flows with the exception of the month of November where the minimum flow (6 ML/d) has been set below the recommended flow (10 ML/d). This was considered an appropriate transition minimum flow trigger between winter and summer. An environmental risk assessment was undertaken which concluded that using the lower flow trigger was not expected to result in an increased risk to environmental values (Jacobs 2014).

To assist in achieving the minimum environmental flows on a daily basis, a maximum daily volume will be set so that no greater than two percent of the annual volume can be taken.

Rule 2: Maintaining Environmental Flows

1. Melbourne Water will amend conditions on existing Section 51 licences to ban extraction of water from waterways in the Diamond Creek catchment when flows fall below the levels outlined in Appendix 1.

2. Melbourne Water will amend conditions on existing Section 51 licences to limit the maximum daily volume so that it is not greater than two per cent of the annual volume.

The status of environmental flows for the catchment along with the streamflow data will be posted and updated daily on the Melbourne Water website at www.melbournewater.com.au/diverters and available by calling Melbourne Water on 131 722. The website will communicate the applicable status of bans, status of restriction if applicable, current catchment warning level, daily stream-flow and 7-day average stream-flow. The call centre will communicate the status of bans and restrictions only.

3.3 Restrictions/rosters

Melbourne Water may, from time to time, prepare and implement rosters or restrictions or other arrangements for taking and using water, in accordance with the principles specified in Melbourne Water Drought Response Plan for Licensed Water Users.

3.4 Surface Water Licences

New Licences

The current allocation in the Diamond Creek catchment is acknowledged to be above the sustainable allocation (see section 3.1). This plan desires to reduce the allocation to provide 80% reliability of supply to existing licence holders whilst meeting the minimum environmental flows.

Trades and Transfers

As no more new licences are being issued in the Diamond Creek catchment, licence transfers are the only mechanism to obtain water and promote water use efficiency by establishing a market to sell unused entitlements and provide access to water.

However, transfers also have the potential to increase the overall water use, as unused licences become active.

In the Diamond Creek catchment there will be two trading zones – Upper Zone above the confluence of Arthurs and Diamond Creek and a Lower zone, below the confluence of Arthurs and Diamond Creek. Different trading rules apply in each zone.

Rule 3: Trades and Transfers of surface water entitlements

1. Melbourne Water may approve a trade or transfer of a licence under section 62 of the Act provided that relevant matters under section 53 of Act have been considered and that the following conditions are satisfied:

    a. The issuing of the licence will not result in the allocation limits specified in Rule 1 being exceeded.

    b. For upstream trades/transfers:
        i. The trade/transfer is not upstream into the Upper Zone
        ii. The conditions on the licence are amended so that water may only be taken or collected during the winter-fill period

    c. For downstream trades/transfers:
        i. amend the conditions of the licence as necessary to ensure that water may only be taken or collected during the winter-fill period; or
        ii. require the volume of the licence to be reduced by 20%.

New Dams

The Act defines a private dam as "anything in which by means of an excavation, a bank, a barrier or other works water is collected, stored or concentrated but **does not** include:

a) anything owned or operated by a public statutory body; or
b) any works of an Authority or a licensee; or
c) a channel, drain or pipe; or
d) a bore."

Recent studies of numerous catchments across South-East Australia regarding the impact of farm dams on stream flows show that:

- the dams constructed to date have reduced stream flows;
- dams increase the frequency and length of periods of low and zero stream flow;
- building more dams would continue to reduce stream flows;
- for each ML of dam, annual stream flows are reduced by 1 to 3 ML due to evaporation and other losses; and
- the annual loss due to evaporation accounts for 10-20 per cent of dam volume in the wetter more humid areas of the state and up to 70 per cent of dam volume in drier areas.

All new aesthetic, stock and domestic dams and any dam (aesthetic, stock and domestic) that is altered needs to be registered with Melbourne Water unless on a property greater than 8 hectares or not in a rural living zone, green wedge zone or residential zone as defined in Victorian Planning Provisions. However they may require approval from the relevant council.

3.5 Running Creek Reservoir Operations

Running Creek Reservoir is a 200ML storage dam on the upper reaches of Running Creek managed by Melbourne Water and is not currently used for any water supply purpose. Although there are currently no plans to utilise the reservoir, its future may be re-considered at any time. A flow release of approximately 2 ML/day from the reservoir is made each day throughout the year to supplement, or provide flows down the system. This water is not released for water harvesting by water users.

These releases are considered highly beneficial to waterway health in Running Creek even though it would have historically ceased flowing during summer. Therefore taking into account the river health priorities for the water, releases from the reservoir will continue according an agreed release schedule with Melbourne Water Storage Operators (detailed in Appendix 2).

The use of the water in the storage may change or the storage itself may be removed at any time. The nominated environmental flow releases should continue until such time as Melbourne Water's plans for the storage change.

4. Monitoring Program

Monitoring, evaluation and reporting are vital for ongoing improvement in water resource management. The results allow adaptive management and input into the future review of management actions.

4.1 Surface Water Flows

In the Diamond catchment, surface water flows are monitored daily at Arthurs Creek, Hurstbridge and Eltham. For compliance to meet the minimum environmental flows in this plan, Hurstbridge will be the compliance gauge. Flow data will be posted and updated daily on the Melbourne Water website at www.melbournewater.com.au/diverters and is available by calling Melbourne Water on 131 722.

Melbourne Water must:

a) continuously record flows at the Hurstbridge gauging station, and
b) periodically inspect the condition of the Hurstbridge gauging station;
c) maintain the Hurstbridge gauging station in good condition;
d) keep a record of each inspection and all work undertaken under paragraph (a) or (b).

4.2 Meter Readings

Effective water resource management relies upon information about water usage patterns and volumes. This information will be collected by metering extractions. Melbourne Water will install meters to measure any water that is taken under licence. Meters are not required for licences less than 5ML in volume or for licences that are inactive but where Melbourne Water consider it beneficial, meters may be installed for licences under 5ML. Most licences have already been metered. Melbourne Water must read all-year licence meters annually and read dam-filling licence meters at the start and end of the dam-filling period each year.

Melbourne Water has installed some smart meters within the catchment. The meters have data loggers linked via communications, allowing the data to be downloaded in the office and the information viewed over a secure web link. The information will be stored in the Victorian Water Register database to assist with reporting on usage and compliance.

Rule 4: Install Meters and record meter readings

Melbourne Water will:

(i) Ensure that a flow meter is fitted to all operating licenced extraction points, associated with a licence to extract 5 ML or more of water a year under Section 51(1)(a) of the Water Act.

(ii) Ensure that a flow meter is fitted to all operating licenced extraction points, associated with a licence to extract less than 5 ML if Melbourne Water considers it beneficial.

(iii) Read each meter at least once annually for all-year licence holders and shortly after the beginning and end of the winter-fill period in every year for winter-fill licence holders.

5. Implementation

5.1 Annual Reporting

Melbourne Water will report on the implementation of Diamond Creek Local Management Plan each year. The report will include information on total entitlements issued, metered water use, trades and transfers and mean daily flow at Hurstbridge gauge each year. A copy will be available to the public on the Melbourne Water website.

All monitoring information will be stored at Melbourne Water's applicable databases. All streamflows are recorded daily and available to view on Melbourne Water's website as detailed in Section 4.1.

Rule 5: Annual Reporting

Melbourne Water will by the 30th September of each year, prepare an Annual Report for the previous water year (1st July-30th June) which will include reporting of:

(i) Total Surface Water entitlements in the catchment;
(ii) Any trading and transfers of licenses issued under Section 51 (1) (a) and (b) to or from the Diamond Creek catchment
(iii) Metered surface water use in the catchment
(iv) Any periods when roster and restrictions were in place
(v) Any compliance and enforcement action taken
(vi) Flow monitoring data from Hurstbridge gauge

Melbourne Water will post the annual report on its website.

5.2 Review of the Plan

Over time this Plan will need to be changed in response to any statewide policy changes to surface water resource management and as any management improvements are identified or entitlements and rules are changed or updated in the system.

Each year, in the preparation of the annual report, Melbourne Water will consider the need to make an amendment to the Plan. Any significant changes must be based on sound technical understanding of the issues and will be subject to consultation.

Rule 6: Review of the Plan

Melbourne Water will consider the need to for any amendments to the Plan as part of the Annual Report each year.

If any amendments are proposed that directly impact on the rights of access to water Melbourne Water will consult with the Advisory Group and surface water users in the catchment on the proposed changes to the Plan.

6. References

GHD (2012) Upper Diamond Creek Groundwater/Surface Water Investigation. A report for Melbourne Water.

MW (2003-2012) Annual reports for Diamond Creek Supply Protection Area Stream Flow Management Plan 2003.

Jacobs (2014) Diamond Creek Flow Risk assessment. Report prepared for Melbourne Water, September 2014.

RMCG (2013) Stock and Domestic Water Use Estimate: High-level approach Diamonds and Hoddles Catchments, report prepared for Melbourne Water, RMCG, July 2013.

SKM (2009) Diamond Creek Water Resource Modelling. Report prepared for Melbourne Water.

SKM (2004) *Estimating available water in catchments using sustainable diversion limits, the estimation of farm dam number and volume of the State of Victoria*, Final 1, 23/03/2004, report prepared for the Department of Sustainability and Environment

SKM (2012) Estimating farm dam impacts in un-modelled catchments. Report prepared for Melbourne Water, December 2012.

Victorian Water Register: http://waterregister.vic.gov.au/

Wealands, A. Zavadil, E., Vietz, G., Doeg, T., & Cook, D. (2009) Determination of environmental flow requirements for the Diamond Creek catchment. Recommendations Report prepared by Alluvium Consulting for Melbourne Water.

Melbourne Water (2013) Healthy waterways strategy. Document prepared for Melbourne Water.

Melbourne Water (2015). Diamond Creek Factsheet

Appendix 1

LICENCE CONDITIONS

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

1.1 The Licensee must not take any water from a waterway when the seven day rolling average stream flow at Hurstbridge gauging station (Site ID 229612) is:

a) 2.5 ML per day or less, at any time between 1 December and 30 June in the following year; or

b) 10 ML per day or less, at any time between 1 July and 31 October in any year; or

c) 6 ML per day or less, at any time between 1 November and 30 November

1.2 The Licence holder must comply with any roster or restriction prepared and implemented by Melbourne Water as set out in the Melbourne Water Drought Response Plan for Licensed Water Users.

1.3 The Licensee must in order to determine their entitlement to take water from a waterway, check the restriction or ban status within their catchment before taking water under their licence, either by calling 131 722 or at the website www.melbournewater.com.au/diverters.

2. Licence to take water from a waterway to fill an off stream dam under winter-fill conditions:

2.1 Unless otherwise directed by the Authority, water may only be taken from the waterway during the period from 1 July to 31 October.

3. Licence to take and use water from an on-stream dam under winter-fill conditions:

3.1 Unless otherwise directed by the Authority, water may only be harvested into the on-waterway dam during the period from 1 July to 31 October; at all other times, the entire stream flow must be passed downstream of the dam.

3.2 Bypass mechanisms must be installed and maintained in good working order to ensure that outside the take period, none of the natural flow in the waterway is harvested into the dam.

3.3 The licence holder must, at all times that there is natural inflow into the on-waterway storage, maintain a flow in the waterway downstream of the storage, to the satisfaction of the Authority.

4. Licence to take and use water from a catchment dam under winter-fill conditions:

4.1 Unless otherwise directed by the Authority, water may only be harvested into the catchment dam during the period from 1 July to 31 October; at all other times, the entire run-off must be passed around the dam.

4.2 Bypass mechanisms must be installed and maintained in good working order to ensure that no run-off is harvested outside the take period.

Appendix 2

Whenever Running Creek Reservoir contains water available for release, Melbourne Water must release water according to the following rules:

a) Release 2ML a day from 1st September to 30th June in the following year.

b) From 1st July until 31st August in any year, the flow releases will occur based on the levels in the reservoir detailed in the table below:

Release Volume (ML/d)	**Gauge Height of Reservoir (mAHD)**	**Volume in Reservoir (ML)**	**% capacity of Reservoir**
5	7 or above	152.8	78.08
4	6.9 – 6.0	152.7-120.1	78.0-61.3
3	5.9- 4.5	120 – 77.3	61.2- 39.7
1-2	4.4 or below	77.2	39.6