

Guidelines for stormwater harvesting on Melbourne Water drainage assets



Overview

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- ✓ Melbourne Water Guidelines for SWH diversion
 - Overview
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Stormwater Harvesting Scheme

Major Components



Definitions

- Urban stormwater - *“net increase in run off and decrease in groundwater recharge resulting from the introduction of impervious surfaces such as roofs and roads within urban development”*
- “Urban stormwater” is only available within the urban growth boundary
- Low flows in waterways are not considered urban stormwater - access to low flows could be restricted

Licensing

Harvest Source	Legislation	Responsibility
Melbourne Water drain, waterway or waterbody	Section 51, <i>Water Act</i> 1989	Melbourne Water
Council drain for domestic use – single property	Not applicable	Council approval only
Council drain for multi- residential or commercial use	Not applicable	Council approval only
Council wetland, lake or waterbody for other than domestic use (not supplied by roof runoff)	Section 51, <i>Water Act</i> 1989	Melbourne Water Council approval required
Private drain within private property	Not applicable	No licence required
Roof Runoff	Exempt from licensing requirements	Council approval may be required.

The harvesting of water from Melbourne Water's drains and waterways requires a licence under Section 51 of the *Water Act* 1989



Interim allocation rules

- If stormwater is flowing to the sea via a drain, all of the stormwater may be harvested
- If stormwater is flowing to a stream from an existing development, assume up to 50 per cent of existing stormwater can be harvested for consumptive use and 50 per cent is reserved for the environment. If there is a scheme to harvest more than 50 per cent of the resource a study is required to assess the implications for the environment
- If stormwater is generated from a new development, all of it is available for consumption with the aim of the development having no impact on catchment run-off



Wetlands allocation rules

- ✓ Stormwater harvesting directly from Melbourne water owned wetlands is not permitted as it would interfere with the Extended Detention Depth (EDD) and possibly Normal Water Level (NWL) of the wetland. In summary wetlands cannot be viewed as a storage asset for stormwater harvesting.
- ✓ Stormwater harvesting from the wetland outfall pit where it does not affect the EDD or NWL in the wetland is acceptable. The discharge from the outfall structure can be directed to an offline pump well with the necessary consideration for base flows to the 'receiving waters'.

Guidelines for Stormwater Harvesting on Melbourne Water assets

Design, Construction & maintenance of
diversion structures



RESULTS THROUGH EXPERIENCE

www.ivwater.com.au





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To assist stormwater harvesting proponents Melbourne Water has developed standard drawings and associated technical guidelines for the design, construction and maintenance of diversion structures for stormwater harvesting on Melbourne Water assets. The availability of these drawings and guidelines is expected to deliver the following benefits:

- To assist proponents and applicants in developing a suitable design likely to be supported by Melbourne Water
- To ensure that Melbourne Water's operational and environmental requirements are met and the outcome is therefore consistent with stormwater harvesting principles.





Functional requirements



- reliable diversion of designed flow rates and volumes and uniform diversion rate control
- min hydraulic impact on the existing drainage system
- automatic operation and reliable performance (e.g. no moving parts)
- minimal risk of blockage
- minimum maintenance requirements
- safe access for inspection, maintenance and cleaning
- allowance for flow calibration and metering
- structural integrity
- prescribed flow is being passed through (environmental and/or self-cleansing flows)
- ability to be isolated or shut off in case of maintenance requirement or pollution incident.

Assets ownership and delineation



Diversion structures (DS) for stormwater harvesting constructed on Melbourne Water (MWC) drainage assets must be constructed in accordance with Melbourne Water requirements. The Diversion structure once completed will become a MWC asset following the successful commissioning and defects liability/proofing by the proponent/contractor.

The scheme proponent / licence holder will be responsible for the offtake / diversion pipe and all other harvesting works components downstream of the Diversion structure.

Ongoing responsibility for the structure and maintenance will rest with Melbourne Water unless a separate maintenance agreement is entered into. Licensing fees may incorporate a maintenance fee to cover costs of ongoing inspections and maintenance or alternatively licence conditions may require the licensee to meet the direct costs of MW maintenance undertaken on the diversions structure.



Low flows and maintenance flows



For new diversion structures constructed on MW drainage assets, allowance should be made to pass low/base flows through the system both prior to and during times of flow diversion in order to avoid sediment deposition and ensure that an equitable balance between protecting critical instream flows and stormwater harvesting can be achieved.

The minimum self-cleansing velocities for the design of DS must be calculated on a case by case basis using the boundary shear stress approach ($\tau \geq 1.5 \text{ Pa}$).

To assist stormwater harvesting proponents MWC upon the receipt of an application and supporting technical data will determine the case - specific low flow threshold using the CSIRO's gridded rainfall-runoff predictions (AWAP). These flows will then be compared to the maintenance flow requirements estimate and in most cases – the largest number adopted as a minimum flow trigger for stormwater harvesting diversion.

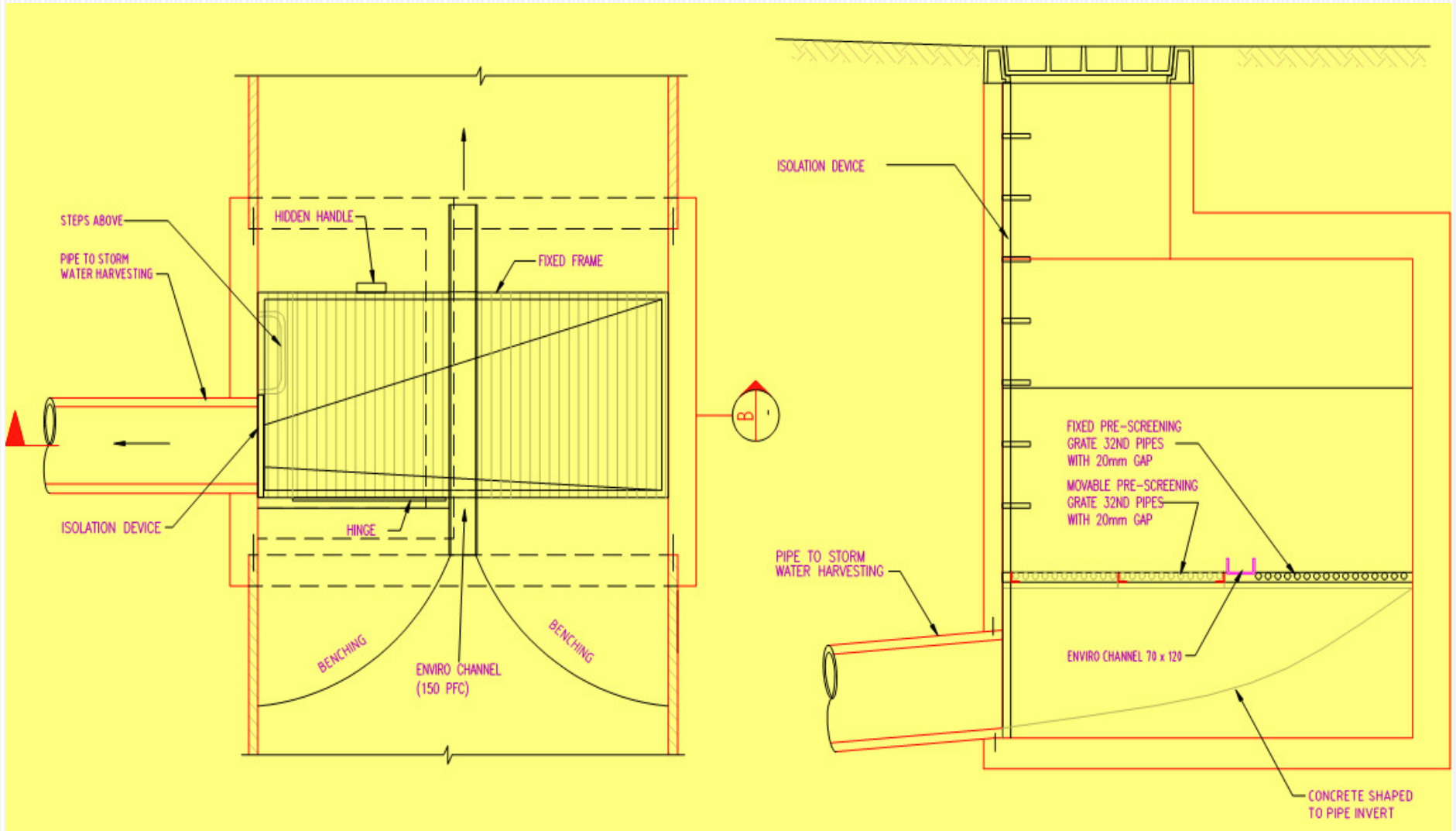


Quantifying base flow

- MWC in partnership with Melbourne University has sourced gridded rainfall-runoff data to predict regional low-flow hydrology in the Port Phillip and Westernport region
- These predictions provide an estimate of pre-development low-flows in urban streams which can be used to derive catchment-specific passing flow thresholds for stormwater harvesting in urban areas
- MWC will use these predictions to determine a low-flow threshold for each application
- Any urban related flow diversion scheme will only be allowed to divert water in excess of these modelled low-flows



Design Examples



RESULTS THROUGH EXPERIENCE

www.ivwater.com.au

As constructed



Way forward

- Guidelines location

[http://www.melbournewater.com.au/Planning-and-building/Forms-guidelines-and-standard-drawings/Documents/Technical_guidelines - stormwater harvesting.pdf](http://www.melbournewater.com.au/Planning-and-building/Forms-guidelines-and-standard-drawings/Documents/Technical_guidelines_-_stormwater_harvesting.pdf)

- Industry engagement & participation

- Use of guidelines



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Questions



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