POLICY TITLE | Legal Point of Discharge Policy
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POLICY TYPE | Management
DIRECTORATE | Planning and Development

1. Background

Regulation 610(2) of the Building Regulations 2006 (Vic) requires that a report of indicating the location of a point of discharge on an allotment (i.e. property) must be obtained in relation to an application for a building permit for carrying out building work that includes stormwater drainage. This report is more commonly referred to as a ‘legal point of discharge’ (LPD).

Typically an LPD issued by Council will provide the point at which a property must discharge, and, where along the Council stormwater system the property must connect and re-state private drainage requirements that form part of a planning permit.

Where a development of a site will cause the Council stormwater system to exceed its design capacity, the property owner will be required to upgrade Council assets. On occasion where such an upgrade provides an opportunity to mitigate flooding of surrounding properties, Council may require the scope of works be expanded. In such a case Council may contribute to the cost of additional works.

2. Purpose

The purpose of this policy and accompanying procedure manual is to provide clear guidelines on connecting a property to the Council stormwater system and is intended for use by Council officers, private developers and residents.

This policy provides a clear and concise set of standards to make it easier and fairer to property owners and developers when assessing the installation and/or modification of private stormwater drainage and connecting to the Council stormwater system.

3. Scope

This Policy covers the assessment of an LPD application for connecting to the Council stormwater system.

4. Definitions

**Barrel drain:** an underground Council drain located within the road or park reserve and provided for the purpose of draining runoff from both Council and private land.

**Easement:** a section of land that may be registered on the Certificate of Title that provides Council/service authority the right to enter a property for the purpose of maintaining, repairing, upgrading or installing services within the easement.
Impervious area: land cover (includes raised areas like roofs) that absorbs very little rainfall and causes runoff to enter the stormwater system.

Kerb and channel: extents of a road or paved area designed to contain and direct rainfall runoff towards an underground drain by way of raised edge (kerb) and depression (channel), i.e. the ‘gutter’.

Legal Point of Discharge (LPD): point at which a property is required to connect the private drainage system to the stormwater system.

On-site Detention (OSD) system: a system by where runoff from a property is collected, stored and slowly released so as to reduce the load on the stormwater system to which it discharges.

Overland flow path: during heavy rainfall a regular and clearly defined path of concentrated runoff not contained within the stormwater system.

Permissible Site Discharge (PSD): allowable post-development stormwater discharge from a site as specified by Council.

Right-of-Way: commonly referred to as a ‘laneway’, portion of land not within the road reserve that provides a common right to use as a means of access or travel. Ownership of a right-of-way may be with Council, adjacent property owners, or, a third party, and, may be identified on the Certificate(s) of Title or implied.

Runoff coefficient: a factor that determines the proportion of rainfall that becomes stormwater runoff (as opposed to permeating the contact surface).

Section 173 agreement: an agreement entered into by Council and a property owner under section 173 of the Planning and Environment Act 1987 (Vic) that is recorded on the Certificate of Title. The conditions of the agreement are to be maintained on the Title indefinitely regardless of change in property ownership.

Stormwater system: a public drainage system to which a private drain is required to discharge and may include pits, pipes, kerb and channels, swale drains, retarding basins, wetlands, WSUD and other items. The stormwater system is predominately owned and managed by Council except for large diameter drains and waterways (Melbourne Water), sections crossing arterial roads (VicRoads), and, sections crossing railways (VicTrack).

Time of concentration: time taken for stormwater runoff to travel from the most distant point within a catchment to a point of investigation. Typically used as part of the process to determine the capacity of a stormwater system for a given location.

Water Sensitive Urban Design (WSUD): range of measures that are designed to mitigate the environmental impacts caused by urbanisation.
5. **Responsibility**

**Technical Services**
- assess LPD applications and record on Council database
- provide advice on design parameters
- ensure LPD connections to the Council stormwater system are in accordance with the Policy and approval conditions

**Statutory Planning**
- assess new development applications in the context of stormwater systems in consultation with a Council Drainage Engineer
- assess drainage design against planning permit requirements including WSUD treatments

**Building, Health and Property Services**
- respond to breaches of the *Building Regulations 2006* (Vic) and in providing details of Council requirements to private building surveyor

6. **Legislation**

This policy has been developed with consideration to the following legislation:

- *Building Act 1993* (Vic)
- *Building Regulations 2006* (Vic)
- *Environment Protection Act 1970* (Vic)
- *Catchment and Land Protection Act 1994* (Vic)
- *Local Government Act 1989* (Vic)
- *Melbourne and Metropolitan Board of Works Act 1958* (Vic)
- *Planning and Environment Act 1987* (Vic)
- *Public Health & Wellbeing Act 2008* (Vic)
- *Road Management Act 2004* (Vic)
- *Subdivision Act 1988* (Vic)
- *Water Act 1989* (Vic)

7. **Policy**

It is Council policy that all new developments or significant extensions to an existing building connect to the existing Council stormwater system in a way that: maintains or reduces discharge from the property; maintains or reduces the environmental impact from urban runoff; and, the private stormwater system will be effective and practical to maintain over the life of system.

It is not Council policy to construct drainage to service a new development. At its discretion Council may consider partially contributing to the cost of a drain or establishing a Special Charges Scheme where each of the following conditions apply:
a “small developments” is proposed; a significant extension of the stormwater system is required; and, there is significant benefit to other properties.

8. Consultation

In developing this policy the following departments were consulted:

- Building, Health and Property Services
- City Planning
- Infrastructure Services
- Legislative Services and Support
- Operations Delivery
- Statutory Planning
- Technical Services

9. Related Documents

- Institute of Engineers, 1998, *Australian Rainfall and Runoff - A guide to Flood Estimation*
- Moonee Valley City Council, 2015, *Asset Protection Policy*
- Moonee Valley City Council, 2015, *Build Over Easement Policy*
- Moonee Valley City Council, 2012, *Drainage Design Checklist*
- Moonee Valley City Council, 2005, *Drainage Improvement Study*
- Moonee Valley City Council, 2015, *Planning Scheme*
- Moonee Valley City Council, 2008, *Standard Drawings*
- Moonee Valley City Council, 2006, *Stormwater Drainage Requirements for Development Works*
- Moonee Valley City Council, 2013, *Urban Design Manual*
- Moonee Valley City Council, 2011, *Water Strategy*
- Moonee Valley City Council, 2015, *Works within Municipal Road Reserve Policy*

For further information including the LPD application refer to the following Council website:
1 Overview of application process

For any new development requiring a building permit the developer must make an application to Council for a LPD. Once issued by Council the LPD provides the developer with instructions on where a property is to connect to Councils stormwater system.

If an application is incomplete or missing supporting information it cannot be assessed by Council and may result in delays. Should the developer require clarification on an LPD permit they should contact the issuing Council Engineer as soon as practical. Failure to seek clarification in a timely manner can result in a development later being delayed and additional costs being incurred.

Where a development causes a significant increase in runoff from pre-development levels a planning permit may require on-site treatment system and/or upgrade of the Council stormwater system to reduce the peak discharge on the stormwater systems. These additional requirements may include:

- construction of new drains with ownership to be transferred to Council
- designation of a new easement on a property
- installation of OSD

Where a planning permit requires on-site stormwater treatment, including WSUD, these requirements must be satisfied as well as those of the LPD permit.

Where a LPD requires a connection to the kerb and channel or barrel drain a Works within Municipal Road Reserve permit is then also required. This permit allows the developer to excavate within the road reserve and temporarily disturb Council assets (e.g. footpath). For further information refer to the Council Works within Municipal Road Reserve policy.

Once the property is connected to the Council stormwater system but before back filling of drainage works the developer must organise an inspection by a Council Developments Surveillance Officer. The Officer will assess the connection to ensure works are of an acceptable standard and that Council assets have not been damaged.
1.1. Design requirements by development size

Council will assess an LPD application based on the size of the development: small, large and commercial/industrial. The three development types and respective criteria are as follows:

<table>
<thead>
<tr>
<th>Development type</th>
<th>LPD Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Development</strong></td>
<td>• redevelopment of land with 1 or 2 dwellings</td>
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<tr>
<td></td>
<td>• extension to existing dwelling</td>
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<td></td>
<td>• building of a shed or other outhouse</td>
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<td></td>
<td>• large area of paving or concreting</td>
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<td></td>
<td>• small scale car-port and parking facilities</td>
</tr>
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<td></td>
<td>• residential developments where impervious area is unchanged or &lt;50% variation</td>
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<tr>
<td></td>
<td>• alterations to commercial developments where the impervious area is unchanged</td>
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<td></td>
<td>• existing connection type likely to be acceptable</td>
</tr>
<tr>
<td></td>
<td>• catchment analysis not necessary</td>
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<tr>
<td></td>
<td>• run-off levels can be easily assumed</td>
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<tr>
<td></td>
<td>• WSUD and water harvesting systems may be required</td>
</tr>
<tr>
<td></td>
<td>• may require upgrade to Council drain</td>
</tr>
<tr>
<td></td>
<td>• addition of planning permit requirements</td>
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<tr>
<td><strong>Large Development</strong></td>
<td>• redevelopment of land with 3 or more dwellings</td>
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<tr>
<td></td>
<td>• commercial developments where there is a variation of impervious area &gt; 50%</td>
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<tr>
<td></td>
<td>• replacement of existing commercial building with one covering no more land area</td>
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<td></td>
<td>• existing connection type likely to be unacceptable</td>
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<tr>
<td></td>
<td>• details of catchment and run-off levels required</td>
</tr>
<tr>
<td></td>
<td>• an OSD system will be required to keep peak flows at or below pre-existing</td>
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<tr>
<td></td>
<td>• WSUD and water harvesting systems are required</td>
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<td></td>
<td>• connection to large capacity Council drain required</td>
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<tr>
<td></td>
<td>• upgrade of Council drain may be required if the downstream drainage capacity is</td>
</tr>
<tr>
<td></td>
<td>• addition of planning permit requirements</td>
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<tr>
<td><strong>Commercial/Industrial Development</strong></td>
<td>• non-residential or multi-use developments</td>
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<tr>
<td></td>
<td>• multi-level developments</td>
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<td></td>
<td>• large site developments over more than one residential block creating &gt;95%</td>
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<tr>
<td></td>
<td>• all other developments not otherwise covered under small and large development</td>
</tr>
<tr>
<td></td>
<td>• existing connection type likely to be unacceptable</td>
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<tr>
<td></td>
<td>• additional requirements may be added as part of the planning permit</td>
</tr>
</tbody>
</table>
2 Small developments

Small developments include: one or two dwellings on-site (including existing); extensions; garages; sheds; and, carports.

2.1. Fall of land to front of property
Where the fall of the land is sufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground system and connect to one of the following Council assets.

2.1.1. Barrel drain
Where a Council barrel drain is located in front of the property and fall is sufficient, the private system must connect to the existing Council barrel drain or pit.

2.1.2. Kerb and channel
Where a barrel drain or drainage pit does not extend past the frontage, the property is to discharge directly to the kerb and channel.

2.1.3. General Requirements:
Connections to a barrel drain or kerb and channel must also meet the following requirements:

- The outlet from the development is to directly in front of the property
- The development is to have no more than one outlet to the Council stormwater system
- Where two dwellings are proposed on separate titles, with individual frontages (no common property) each dwellings is to discharge to the LPD via individual outlets
- Connections to the barrel drain or kerb and channel must be undertaken in accordance with Council Standard Drawings
- The property owner is responsible for all drainage upstream of the Council stormwater system including that part within the road reserve between the property and barrel drain/kerb and channel

2.2. Fall of land to the rear of property
Where the fall of the land is insufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground drainage system and connect to one of the following Council drainage assets.

2.2.1. Easement drain/right-of-way barrel drain
Where there is a Council drain within the easement or adjacent right-of-way private drainage must connect to this drain provided it is a minimum of 225mm in diameter.

2.2.2. Constructed right-of-way
Stormwater from within a property may discharge to the surface of a constructed right-of-way if necessary provided additional flows do not adversely impact downstream property. Draining to the surface of an unconstructed right-of-way will not be approved.
2.2.3. Dual pump system
A dual pump system designed in accordance with Australian Standard AS3500.3:2015 (Section 8) may be specified to discharge to a LPD in front of the property as described in Section 7. Dual pump systems will only be permitted where Technical Services department has:

- granted an exemption for constructing a barrel/easement drain on the grounds it is an unreasonable additional cost; and
- deemed satisfactory overflow provisions have been made to reduce the risk of flooding in the event of pump failure

Drainage plans prepared by an experienced Drainage Engineer together with calculations, indicating the pump specifications and location is to be provided to this department for approval.

The pump system is only considered an interim measure. Should an easement drain be constructed in future the owner will be required to contribute to the cost of the construction of this new drain.

Council will not be responsible for damage to the property or neighbouring properties in the event that the pump system fails to drain the property. The property owner may face liability for damage to neighbouring properties as a result of such failure.

**Dual pump systems will not be considered for any residential development exceeding 2 units. For 2 unit developments, each unit will be required to provide its own separate dual pump system and outlet configuration.**

2.2.4. Charged systems
Where there is minimal fall (typically less than 1m) from the front to the rear of a property, a charged system, as described in Section 8, may be utilised to discharge stormwater from the roofed area of the development, to a LPD in front of the property. A pressurised system utilises the head generated by sealed downpipes to elevate stormwater to the kerb and channel or Council barrel drain/drainage pit.

A rainwater tank is recommended in conjunction with a charged system, provided the overflow from the tank is connected to an approved point of discharge.

Surface grates cannot be used with a charged system. Alternative provisions must be made for runoff from ground level paved areas.

A drainage design details prepared by a Drainage Engineer together with calculations is to be provided to this department for approval.

2.2.5. Construction of a barrel drain
The developer may be required to construct a barrel drain within the road reserve, easement or right-of-way at their expense. Requirements for the construction of a barrel drain are detailed in Section 9.

2.2.6. Melbourne Water main drain
Where it is not feasible to connect to the Council stormwater system and the property is adjacent to a Melbourne Water drain or waterway it may be necessary to connect to
this system. Where a property is to connect to the Melbourne Water stormwater system their drainage requirements will need to be satisfied and an LPD application received by Melbourne Water. Where Melbourne Water is the responsible stormwater authority Council does not need to be contacted unless otherwise directed by Melbourne Water.

Melbourne Water may require the construction of a barrel drain to the nearest Council stormwater drain.

2.2.7. Drainage rights agreement

In some steeper locations where underground drainage was originally lacking and dual pumps were not available a property may have in place a ‘drainage rights agreement’. A drainage rights agreement is where an upstream property accesses the Council stormwater system by way of a private drain through a downstream property with the agreement from both property owners.

Although a low up-front cost solution, drainage rights agreements pose a risk to both the upstream and downstream property owners. For the upstream property owner, should the downstream property owner decide to withdraw from the agreement then a new drainage system will need to be installed. This often occurs when the downstream property is developed and usually requires the downstream property to install a pump and sump pit in an awkward location and at short notice. For the downstream property owner, failure of the system may lead to flooding of their home or restrict their options when extending an existing dwelling.

A drainage rights agreement exists between property owners and does not involve Council nor can it compel a property owner to enter such an agreement. Where a drainage rights agreement may benefit an upstream property owner the downstream property owner is not obliged to enter such an agreement, and, is not obliged to maintain an existing agreement.

For the above reason Council does not encourage property owners to enter a drainage rights agreements. However where the agreement is pursuant to the Water Act 1989 (Vic) it must be recognised when assessing an LPD application. Where this is the case the LPD application must include copies of the Certificate of Titles with the agreement included on both titles.
3 Large developments

Large developments include: three or more dwellings on one property; or, multi-level apartment buildings.

3.1. Fall of land to front of property
Where the fall of the land is sufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground system and connect to one of the following Council assets.

3.1.1. Barrel drain
Where a Council barrel drain is located in front of the property and fall is sufficient, the private system must connect to the existing Council barrel drain or pit via an OSD system as outlined in Section 6.

3.1.2. Kerb and channel
Where a barrel drain or drainage pit does not extend past the frontage, the property is to discharge directly to the kerb and channel via an OSD system as outlined in Section 6 of this policy provided that:

- The potential for the developer to construct a barrel drain within the road reserve has been assessed by Council, and is deemed not feasible.

3.2. Fall of land to rear of property
Where the fall of the land is insufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground drainage system and connect to one of the following Council drainage assets.

3.2.1. Easement drain/right-of-way barrel drain
Where there is a Council drain within the easement, adjacent reserve or right-of-way private drainage must connect to this drain provided it is a minimum of 225mm in diameter and via an OSD system as outlined in Section 6.

3.2.2. Construction of an easement drain/barrel drain
Where a suitable easement drain does not exist (minimum 225mm diameter), the developer may be required to construct a barrel drain within the road reserve, easement or right-of-way at the expense of the developer. Requirements for the construction of a barrel drain are detailed in Section 9.

A barrel drain may be constructed within an adjoining reserve subject to approval from the relevant authority vested with ownership of the reserve. If an easement is required the developer will also be required to pay the costs incurred for creation of this easement.

3.2.3. Melbourne Water main drain
Where it is not feasible to connect to the Council stormwater system and the property is adjacent to a Melbourne Water drain or waterway it may be necessary to connect to this system. Where a property is to connect to the Melbourne Water stormwater system their drainage requirements will need to be satisfied and an LPD application received
by Melbourne Water. Where Melbourne Water is the responsible stormwater authority Council does not need to be contacted unless otherwise directed by Melbourne Water.

Melbourne Water may require the construction of a barrel drain to the nearest Council stormwater drain.

3.2.4. **Dual pump systems**

Dual pump systems for developments consisting of three or more residential dwellings are generally not permitted.
4 Commercial and Industrial Developments

This section refers to the required stormwater drainage provisions for Commercial or Industrial Developments on one property.

4.1. Fall of land to front of property
Where the fall of the land is sufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground system and connect to one of the following Council assets.

4.1.1. Council barrel drain
Where a Council barrel drain is located in front of the property and fall is sufficient, the private system must connect to the existing Council barrel drain or pit via an OSD system as outlined in Section 6.

A drainage design details prepared by a Drainage Engineer together with calculations is to be provided to the Technical Services department for approval.

4.1.2. Construction of barrel drain within road reserve
Where a suitable easement drain does not exist (minimum 225mm diameter), the developer may be required to construct a barrel drain within the road reserve, easement or right-of-way at the expense of the developer. Requirements for the construction of a barrel drain are detailed in Section 9.

A barrel drain may be constructed within an adjoining reserve subject to approval from the relevant authority vested with ownership of the reserve. If an easement is required the developer will also be required to pay the costs incurred for creation of this easement.

4.2. Fall of land to rear of property
Where the fall of the land is insufficient to facilitate drainage towards the front of the property all private drainage from the development is to drain via an underground drainage system and connect to one of the following Council drainage assets.

4.2.1. Council easement drain
Where a barrel drain/drainage pit is situated within an easement, right of way or adjacent reserve all stormwater must discharge directly to the barrel drain/drainage pit and via an OSD system as outlined in Section 6.

Drainage design details prepared by a Drainage Engineer together with calculations is to be provided to the Technical Services department for approval.

4.2.2. Construction of easement drain
Where a suitable drain does not exist (minimum 225mm diameter), the developer will be required to construct a barrel drain within the road reserve, easement or right-of-way at the expense of the developer. Requirements for the construction of a barrel drain are detailed in Section 9.

A barrel drain may be constructed within an adjoining reserve subject to approval from the relevant authority vested with ownership of the reserve. If an easement is required
the developer will also be required to pay the costs incurred for creation of this easement.
5 Basement Drainage

The following section considers the stormwater drainage options for developments proposing basement garages.

5.1. Fall of land to front of property
Where the existing fall of the land is sufficient to facilitate drainage towards the front, the proposed drainage layout for the basement ramp is to be separate from that of the rest of the site.

All stormwater drainage from the roofed area and hard standing areas at existing ground level, is to drain to the approved point of discharge as described in Sections 2.1 and 3.1.

Runoff generated from the basement ramp is to be collected by a grated trench (minimum width 300mm) located at the garage entrance and discharge, by way of a pump system, to an approved point of discharge. A minimum wet well storage of 1m$^3$ is to be provided for pump systems discharging stormwater from a basement ramp only. The pump system should be designed to handle a 1 in 100 ARI storm for the contributing paved area.

Council will not be responsible for damage to the property or neighbouring properties in the event that the pump system fails the property owner may face liability for damage to neighbouring properties as a result of such failure.

5.2. Fall of land to rear of property
Where the existing fall of a property is insufficient to allow for drainage to the front the following requirements will apply:

- A semi-mountable kerb (as per Council Standard Drawings) is to be constructed along the interface between the existing road pavement and vehicle crossing.

- Where necessary the stormwater drainage layout for the basement ramp is to be kept isolated as outlined in Section 5.1. The drainage layout for the remainder of the development is to be designed in accordance with Section 2.2 and Section 3.2.

- Where a dual pump system has been permitted to drain the rest of the site this system can be utilised to also drain the entrance ramp. In such a case the pump system must be designed as described in Section 7.

- Where a dual pump system drains an entire site, is located within the basement and gravity overflow is not practical a backup battery power supply must be provided. Specifications of the backup pump are to be provided to Council for approval along with drainage designs prepared by a suitably experienced Drainage Engineer. Furthermore, a Pump Disclaimer is to be registered on Certificate of Title by means of a Section 173 Agreement. All costs associated with registering of this disclaimer (below) on Certificate of Title, are to be borne solely by the developer.
Pump Disclaimer:

Moonee Valley City Council will not be responsible for any damage to the property or neighbouring properties in the event that the pump system fails due to mechanical failure, exceedence of maximum design rainfall or otherwise. Property owner/s may face liability for any damage to neighbouring properties as a result of such failure.

5.3. Sites located in Melbourne Water SBO or LSIO

Where a site is within a Special Building Overlay (SBO) or Land Subject to Inundation Overlay (LSIO) development approval is first required from Melbourne Water. SBOs and LSIOs are based on identified flood prone areas and require any development within them to be built above the 1 in 100 year flood level. For this reason Melbourne Water is unlikely to approve any proposed basement within an SBO or LSIO.
6 On-Site Detention Systems

6.1. Why an OSD system is required
The increasing development within the municipality is putting additional pressure on the Council stormwater system. In particular the increase in impervious areas (roofs, paving, etc.) is increasing both the volume and rate of stormwater runoff entering the stormwater system. The consequences of this additional runoff include:

- more severe and frequent local flooding
- increases in peak flow rates to drains and waterways
- additional volumes of water entering drains and waterways
- extra pollutants entering waterways, affecting stream stability, stream health and habitat

In response Council has adopted the principles of OSD system to mitigate these effects.

Developments that result in increased impervious areas require the design and construction of an underground OSD system to control the runoff from the site. In essence, there should be no increase in the rate of stormwater runoff from a site entering the Council stormwater system as a result of increased development.

6.2. OSD system principles
An OSD system is used to reduce the impacts of site development on receiving drains and waterways. The OSD system works by controlling peak flow rates from sites, by temporarily storing runoff from a site and releasing it at a controlled rate, to the Council stormwater system. The key elements of an OSD system are:

- collection system (e.g. gutters, downpipes, pits and pipes)
- storage volume (e.g. including pipes, pits and tanks)
- flow control device (e.g. baffle pit with orifice)

6.3. OSD system design parameters
The two calculations required for the design of an OSD system are as follows:

i) Permissible Site Discharge (PSD)
The PSD is an approximation of pre-development levels discharge from a site in order to maintain the existing stormwater system capacity and reduce the occurrence of the system reaching capacity and surcharging. Most Council drains in residential areas were designed for a 1 in 5 year flow and so the PSD approximates the runoff generated from the pre-developed site for the same event.
Using the Rational Method Formula the PSD is calculated as follows:

\[
\text{PSD (litres/s)} = \frac{C_5 \times I_{C5} \times A}{3600}
\]

where:

\[
C_5 = 5 \text{ yr runoff coefficient} \\
= 0.95 \times [F_{\text{imp}} \times 0.9 + (1-F_{\text{imp}}) \times 0.143]
\]

\[
F_{\text{imp}} = \text{fraction impervious for pre-developed site}
\]

\[
I = \text{rainfall intensity}
\]

\[
T_{C5} = \text{time of concentration for a 5 yr ARI event}
\]

\[
A = \text{site area (m}^2\text{)}
\]

The storm duration – and consequently, the rainfall intensity – used to calculate the PSD will be equal to that of the Time of Concentration (Tc) of the catchment.

ii) Site Storage Requirement (SSR)

The SSR is calculated as the maximum stored volume for a 10 year ARI storm. Typically standard storm durations for catchments within Moonee Valley range between 6 minutes and 2 hours and so will need to be investigated to determine the maximum SSR. The calculations may be undertaken either by applying Boyd’s Method for peak flood estimation (Outlined in Australian Rainfall & Runoff Section 7.5.6) or by using a software such as OSD4.

6.4. OSD system design requirements

Generally an OSD system will consist of a flow control device, and a combination of underground storage pipes and/or pits. The site storage is to be free draining, pipes are to be laid at a gradient no flatter than 1 in 200 and the outlet is to be designed to minimise the risk of blockage. All OSD systems must have a trash grate located immediately upstream of the orifice.

OSD systems must be accessible for maintenance, and, without being a ‘confined space’. This can be achieved by ensuring the storage system is not too deep and by providing sufficient pit dimensions to facilitate access. As a minimum pits should have an internal dimension of 600mm x 600mm.

The maximum water level in the OSD system must be a minimum of 300mm below the habitable floor levels, and, private drainage must not be located within the road reserve or easement except for a single 100mm uPVC connection to the Council stormwater system.

Drainage design details prepared by a Drainage Engineer together with calculations is to be provided to the Technical Services department for approval.
6.5. Rainwater tanks for OSD system
As an alternative to underground storage an above ground rainwater tanks (RWT) may be used as an acceptable means of OSD. A RWT used for OSD must be fitted with both a control orifice and overflow outlet with the volume (or “freeboard”) between the two outlets being equal to or greater than the SSR.

Should multiple RWTs be used for OSD the combined discharge from the tanks should be set at less than 75% of the PSD. Once the respective PSD for each tank is determined the control orifice can be sized. The total head in each tank required for the orifice calculation is the vertical distance from the overflow invert, to the midpoint of the control orifice. The control orifice must have a minimum diameter of 30mm and is assumed to have coefficient of 0.65.

The volume below the control orifice is intended to store rainwater as per the intended use of a rainwater tank, i.e. water recycling. In terms of calculating the SSR this volume is assumed to be full and not serve as OSD. The volume below the control orifice must not be included in the SSR.

6.6. Above ground OSD within commercial/industrial properties
Above ground OSD systems for commercial and industrial developments may only be approved for sites where insufficient fall to the Council stormwater system prevents a below ground OSD from being effective. The developer will be required to contact a Council Drainage Engineer for advice on a suitable location and arrangement. An OSD system should be located to minimise the risk of flooding of neighbouring properties, and, designed to restrict the maximum depth of water stored above ground to 250mm.

To ensure the above ground OSD system is not compromised over time change of ownership the property owner will need to enter a section 173 Agreement with Council and have the system recorded on the Certificate of Title.

6.7. Maintenance of the OSD system
An OSD system must be installed and maintained in accordance with Australian Standards 2015, Plumbing & Drainage – Part 3: Stormwater Drainage AS3500.3.7.10:2015. The property owner or body corporate is responsible for the future operation, maintenance and replacement of the OSD system including the outlet to the LPD.

OSD disclaimer:
Moonee Valley City Council will not be responsible for any damage to the property or neighbouring properties in the event that the OSD system fails due to lack of maintenance or modification to the approved design. Property owner/s may face liability for any damage to neighbouring properties as a result of such failure.
6.8. OSD system exemptions

Council may waive the requirement for an OSD system under certain circumstances and each site will be considered individually. Reasons for Council making an exemption for installing an OSD system may include:

- sites located in the lower reaches of a Melbourne Water catchment
- no increase in impervious site area between the pre- and post-developed site and sufficient capacity in the existing downstream stormwater system

In situations where a Council has deemed a site to be exempt from OSD requirements the developer will still be required to meet Planning Scheme requirements for WSUD as outlined in Section 10.

A commercial or industrial development may also be exempt from installation of an OSD system where both the following conditions apply:

- there is no increase in impervious from pre- to post-development; and,
- the Council stormwater system downstream of the connection has a greater than 1 in 10 year capacity
7 Dual pump systems

7.1. When a dual pump system is acceptable
Where a property is not serviced by a nearby Council drain the developer will normally be required to extend the Council stormwater system to the property. However, where the Technical Services department has determined that the construction of a new drain is not feasible a dual pump system may instead be considered.

Dual pump systems will only be approved where suitable provision of a high level overflow can be included to facilitate drainage in the event of pump failure. The high level overflow from the sump is to be a minimum of 100mm in diameter and connect to a suitable location approved by the Technical Services department. Overflows may connect to existing Council drains or pits, the kerb and channel in the road reserve or constructed right-of-ways.

A dual pump system must be installed and maintained in accordance with Australian Standards 2015, *Plumbing & Drainage – Part 3: Stormwater Drainage* AS3500.3.8:2015. Where provision of overflow is not practical a disclaimer is to be registered on the Certificate of Title by means of a Section 173 Agreement. The disclaimer is as is as follows:

**Pump disclaimer:**

*Moonee Valley City Council will not be responsible for any damage to the property or neighbouring properties in the event that the pump system fails due to mechanical failure, exceedence of maximum design rainfall or otherwise. Property owner/s may face liability for any damage to neighbouring properties as a result of such failure.*

*In the event that the property owner installs a dual pump system this would be considered as an interim measure only and any easement drain constructed in the future would require contribution to the cost of the construction of an easement drain.*

7.2. Dual pump design requirements
Design of dual pump systems for the purposes of stormwater discharge is to be undertaken in accordance with AS3500.3:2015 (Section 8). Where pump systems are to be utilised for a development, designs and calculations are to be prepared by a suitably experienced Drainage Engineer. The developer is to provide: plans and sections detailing the pump location, discharge and overflow arrangement; specifications for the pump and wet well; and, calculations showing the design meets AS3500 and Council requirements.
Calculations are to include:

i) **Permissible Site Discharge**
   The PSD is calculated using the Rational Method Formula:

   \[
   \text{PSD (litres/s)} = \frac{C_5 \times I_c^5 \times A}{3600}
   \]

   where:
   - \(C_5\) = 5 yr runoff coefficient
     \(= 0.95 \times [F_{\text{imp}} \times 0.9 + (1-F_{\text{imp}}) \times 0.143]\)
   - \(F_{\text{imp}}\) = fraction impervious for pre-developed site
   - \(I\) = rainfall intensity
   - \(T_c^5\) = time of concentration for a 5 yr ARI event
   - \(A\) = site area (m\(^2\))

   The minimum allowable PSD for a dual pump system is 10l/s. Each pump in a dual pump arrangement, is to have an operating capacity equal to the calculated PSD.

ii) **Wet Well Volume**
   The wet well volume is defined as the available storage volume in the pump sump between high and low operating levels for the pumps. The wet well volume is the greater of the total runoff volume generated from the site during the 2 hour, 10 Year ARI storm minus the total discharge of the pump system in 30 minutes but not less than 3m\(^3\). Alternatively:

   \[
   \text{Wet Well Volume (m}^3\text{)} = \frac{V_{10\text{yr/120min}} - V_{PC_{30min}}}{3600}
   \]
   
   and

   \[
   \text{Wet Well Volume (m}^3\text{)} > 3m^3
   \]

   where:
   - \(V_{10\text{yr/120min}}\) = volume of runoff from a 1 in10 yr/2hr storm event
   - \(V_{PC_{30min}}\) = volume of pump discharge over a 30min period
A schematic section of a typical wet well can be seen below.

In addition to the above the following requirements also apply:

- discharge to the kerb and channel must be via an isolation pit (min. 450mm x 450mm) located within the property boundary and discharge by way of gravity to the kerb and channel
- the wet well overflow outlet must be 100mm above the high level alarm level to minimise the risk of property damage in the event of pump failure
- where the wet well is located at the lower end of a property all grates are to be above the overflow outlet
- where the wet well cannot practically be located at the low end of the property all inlets are to be fitted with non-return valves so that in the event of pump failure there is no surcharging from open grates

7.3. Basement pump requirements
Where a pump is intended to only serve runoff generated from a basement ramp only the wet well volume is to be equal to the total runoff generated from the contributing area (ramp only) over the duration of the 100 year 2 hour storm event.

A trench grate is to be located at the foot of the basement ramp with a minimum width of 300mm.
7.4. Pump ownership and maintenance
The property owner is to be responsible for the future operation, maintenance and replacement of the dual pump system including the outlet to the LPD.
8 Charged systems

8.1. What is a charged system?
Pressurised or "charged" systems are preferred where the LPD is above the property surface. A charged system utilises pressure head generated by difference in height from the top of the downpipes or rainwater tank to the outlet at the Council stormwater system. A charged system is a cheaper and more reliable alternative than a dual pump systems which can be susceptible to mechanical or power failure.

8.2. Charged system design requirements
For the charged system to be approved and an LPD to be issued the following requirements must be satisfied:

- a drainage plan prepared by an experienced Drainage Engineer and meeting the Council Drainage Design Checklist is to be provided including:
  - a site plan clearly showing catchment areas, flow direction in gutters, and location and sizes of all downpipes, pipes, pits and discharge point is to be submitted
  - longitudinal section of the charged system showing gutter levels, cleaning eye pit levels with soak pit dimensions and capacity, isolation pit at boundary with invert and surface levels, discharge point, pipe sizes, capacities and design flows in each section
  - capacity calculations for gutters, downpipes and pipes
- the system must only service a single dwelling with multi-unit developments having a separate system for each dwelling
- the system must not have any surface grates at ground level that would allow surcharging
- paved areas that cannot be serviced by a charged system (e.g. driveways and courtyards) should slope towards road reserve or be constructed of a suitable permeable material
- outlet from the charged system must discharge to an isolation pit located within the property boundary and with sufficient fall to be able to discharge to the LPD by way of gravity
- a minimum of 1.8m between the roof gutters and the front boundary of the site.
- to allow for maintenance a cleaning eye pit fitted with a screw cap located at the low point of the system (see Figure 2)
8.3. Charged ownership and maintenance

The property owner is to be responsible for the future operation, maintenance and replacement of the charged system including the cleaning eye pit and outlet to the LPD.
9 Construction of barrel/easement drain

9.1. Barrel and easement drain construction requirements
Where an existing barrel/easement drain does not extend to the front or easement of a property, or, is of insufficient capacity a developer will be required to extend or replace the existing stormwater system.

For small developments where the cost of constructing a barrel or easement drain may be disproportionate the developer may seek an exemption from Council’s Technical Services department. If an exemption is granted the private drainage system will typically require a dual pump system (refer to Section 2.2.3) but other solutions may also apply.

Design drawings are to be prepared by a suitably experienced Drainage Engineer, meet the Design Requirements outlined in Section 9.2, and should be submitted to the Technical Services department for approval. Once approved, the construction of the new drain is to be undertaken in accordance with the approved design and overseen by the Development Surveillance Officer. Once constructed to a satisfactory standard ownership and responsibility of the drain will be transferred to Council.

9.2. Barrel and easement drainage design requirements
For Council to approve a proposed barrel or easement drain all design drawings must satisfy Council Standard Design Drawings and Drainage Design Checklist, including the following:

- show feature and level survey over the area of the proposed drainage alignment
- show a pit schedule with pit dimensions, depths, surface level, floor levels, pit type, lid type, inlet and outlet dimensions, invert levels and depths
- show long sections pipe dimensions, grades, pipe material, existing and design surface levels, upstream and downstream invert levels, chainage, and, hydraulic grade line (HGL)
- show the location of all services in the plan and long sections
- show approval from all affected service authorities for the construction of the drain
- show drains constructed within a road reserve will have a minimum of 300mm diameter RCP-RRJ Class 2 pipe with 600mm cover
- show drains constructed within an easement will have a minimum of 300mm in diameter and constructed of RCP, FRC or UPVC with a minimum of 400mm cover
- show a minimum grade of 1 in 250 (1 in 100 preferred) for all drains
- drawings to be provided to the Technical Service department as either A1 or A2 drawings at a standard scale and in PDF digital format
9.3. Barrel/easement drain ownership and maintenance
Once constructed to a satisfactory standard all drains and associated pits within Council the road reserve or easement ownership and maintenance responsibility will be transferred to Council. All private drainage including any section within the road reserve will remain the responsibility of the property owner.

9.4. As constructed drawings
Upon completion the developer is to provide “as-constructed” drawings of the drain for addition to the Council Drawing Register.
10 WSUD requirements

As consistent with the Council commitments outlined under the Planning Scheme - clause 22.03 the property owner may, as a condition of the planning permit, need to demonstrate compliance with best practice objectives for stormwater pollutant removal. Clause 22.03 of the Planning Scheme requires but is not limited to:

- planning applications to demonstrate treatment of suspended solids, total phosphorus and total nitrogen that meet best practices as described in the *Urban Stormwater Best Practice Environmental Management Guidelines* (Victoria Stormwater Committee)
- the use of stormwater treatment measures that improves the quality and reduces the flow of water discharged to waterways
- measures to prevent litter being carried off-site
- the promotion of vegetation on buildings where practical to manage the quality and quantity of stormwater

For a complete list of WSUD requirements refer to the Moonee Valley Planning Scheme – Clause 22.03.

Note: The drainage design components discussed earlier may work in tandem with WSUD treatments however the primary function of each system must not be compromised. The developer must show both the requirements of the planning permit as relates to clause 22.03 and the LPD permit are satisfied once the site is developed.