POLICY TITLE | Drainage Investigations Policy  
POLICY TYPE | Management  
DIRECTORATE | Planning and Development

1. Background

Moonee Valley City Council is responsible for providing adequate drainage infrastructure throughout the municipality to ensure that under normal conditions stormwater does not adversely impact the municipality and are appropriately channelled to avoid damage to public or private property. To meet this responsibility Council provides and maintains a network of over 540 kilometres of underground drains and 21,000 pits.

Managing this stormwater system is a critical role of Council. Many of these drains were installed decades ago using different construction methods under different land use conditions and different standards. From time to time, these assets fail and Council is required to undertake investigations into why this has occurred and provide a reasonable course of action in order to ensure that future flooding is minimised. The creation of this policy is a direct response to the needs associated with flooding and potential damage to public and private property alike and aims to provide adequate response to these concerns by outlining how and when Council will investigate flooding issues.

2. Purpose

The purpose of this policy and accompanying procedure manual is to provide clear guidelines when investigating flooding or complaints related to the Council stormwater system for the intended use by Council officers.

This policy provides a method of prioritising flood issues which pose a hazard or risk to the community. It sets out where flood investigation is required and where minor inundation is tolerated by Council without need to investigate.

3. Scope

This policy covers the stormwater system maintained by Council including roadways, kerbs and channels, underground drains, pits, swale drains, gross pollutant traps, wetlands, rain gardens and other designated drainage infrastructure.

This policy does not cover private drainage which is the responsibility of the property owner. Examples relating to private drainage include surface runoff from one private property to another, inadequate drainage or flooding from within the property, where a property is directly served by the Melbourne Water stormwater system, failure to have the property connect to a legal point of discharge and many other circumstances that do not involve the operation of the Council stormwater system. Under such circumstances a resolution needs to be agreed upon by the affected property owner.
This policy also does not cover large capacity stormwater infrastructure (including all waterways) which are the responsibility of Melbourne Water. Melbourne Water is generally responsible for the installation and maintenance of the stormwater system for catchments with an area greater than 60ha.

4. Definitions

**Annual Exceedence Probability (AEP):** the likelihood of occurrence of a flood of a given size in any one year, for example there is an estimated 1 in 100 chance that a 1% AEP flood event will occur in any given year. The AEP is independent of previous events and although unlikely more than one low probability event may still occur in the same year.

**Easement:** a section of land that may be registered on the Certificate of Title that provides a service authority has right to enter a property, for the purpose of maintaining, repairing or upgrading its services that are located within the easement.

**Kerb and channel (K&C):** 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.

**Overland flow path:** a clearly define of path of concentrated surface runoff not contained within the stormwater system.

**Private drain:** a drain designed to directly service a private property. A private drain is the responsibility of the property owner/s and may be located entirely, or in part, within a private property, easement or Council reserve so as to be able to connect to the stormwater system.

**Stormwater system:** the system to which a private drain is required to discharge and may include pits, pipes, kerb and channels, swale drains, retarding basins, wetlands, water sensitive urban design (WSUD) and other items largely operated by Council. Sections of the stormwater system not operated by Council may include large drains and waterways that are the responsibility of Melbourne Water and short sections crossing roads and rail owned by VicRoads and VicTrack.

**Surcharging:** uncontrolled discharge from the stormwater system (typically a pit) either due to the system being blocked or the design capacity being exceeded.

**Swale drain:** a linear depression along an open space designed to convey stormwater in a controlled manner, sometimes referred to as a spoon drain.

**Underground drainage:** system of pits and pipes for purposes of collecting and conveying stormwater to outfall locations.
5. Responsibilities

Technical Services
- investigate complaints where flooding is occurring due to failure or lack of Council stormwater assets
- assess on-site stormwater system
- assess and design treatments for flood-prone areas (under-capacity, reconstruction etc.)
- manage construction treatments aimed at resolving identified flooding issues
- refer of designed solutions to capital works process where the cost of solutions is outside the scope of the Council operating budget
- monitor impacts of extreme weather events on the Council stormwater system
- issue proceedings to recover costs associated with damage to Council assets where identified

Infrastructure Services
- maintain current stormwater assets, including proactive and reactive clearing of pipes, pits and channels
- provide advice on likely cause of damage to Council infrastructure
- perform minor construction and repair of stormwater assets
- deliver new stormwater infrastructure

Operations Delivery
- ensure kerb and channel is appropriately maintained (street sweeping, clearing debris)
- undertake seasonal works (leaf clearing in autumn etc.) to reduce debris load in stormwater system
- maintain swale drains and other formal drainage paths in Council parks and reserves
- ensure adequate drainage is considered as part of park and reserves planning and maintenance strategies
- resolve uncontrolled overland flow with parks that may affect private properties
- maintain Council WSUD treatments

Building, Health and Property Services
- deal with enquiries related to extreme failure of private drainage systems where issues may be classified as a nuisance to a property owner. Generally this will require that a nuisance is, or is liable to be, dangerous to health or offensive and may include:¹
  - saturated soil which may be destabilising foundations
  - uncontrolled overland flow which may cause sewer to overflow
  - water ponding for extended periods and causing health concerns

¹ Part 6, Sect 58 of the Public Health & Wellbeing Act, 2008
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)
- Water Act 1989 (Vic)

7. Policy
It is Council policy to investigate serious flooding of areas serviced by the Council stormwater system and report to affected property owners the findings of the investigation. An investigation will serve to provide reason for the flooding and may include proposed mitigation options or explanation of why mitigations may not be practical.

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

8. Related Documents

- Department of the Environment, 2009, Evaluating Options for Water Sensitive Urban Design – A National Guide
- 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, 2007, Drainage Management Plan
- Moonee Valley City Council, 2015, Legal Point of Discharge Policy
• Moonee Valley City Council, 2013, Road Management Plan
• Moonee Valley City Council, 2006, Stormwater Drainage Requirements for Development Works
• Moonee Valley City Council, 2012, Street Tree Planting Strategy
• Moonee Valley City Council, 2013, Urban Design Manual
• Moonee Valley City Council, 2014, Water Sensitive Urban Design Guidelines
• Moonee Valley City Council, 2011, Water Strategy

For further information refer to the following Council website:
1 Background

1.1 What is stormwater run-off?
Stormwater run-off is rainfall which is not stored by natural means (e.g. permeating soil, absorbed by vegetation, etc.) and otherwise collects and increases to the point where discernable overland flow or channelised flow occurs.

It is generally overland flow which poses the greatest risk to safety and property risk and it is the responsibility of Council to reduce this risk to reasonable levels by way of stormwater management.

1.2 History
Within Greater Melbourne the approach to stormwater management has changed gradually since settlement in response to needs and legal requirements. Initially where housing density was sufficiently high, open drains with street culverts served a formal function with informal drainage serving other areas. Gradually where this arrangement posed sufficient health risk or inadequate flood protection, hand dug bricked lined drains were installed underground. A notable early example of this is the horse-shoe drain still serving Elizabeth Street, Melbourne.

Gradually, with increasing availability of mechanised excavation, mass production of reinforced concrete pipes and rising community expectation, underground drainage became the norm for high density areas and increasing by the 60's and 70's to low density new development areas.

However, throughout this period capacity of the stormwater system was either not fully considered or poorly understood. By current standards much of the earlier installed drainage provides insufficient capacity to protect properties from flooding during larger rainfall events. More recently stormwater quality has also been identified as a critical issue that has long been neglected. In response to these ongoing issues and an increase runoff with new developments of 3 or more units, runoff is now required to be captured and its delivery to the Council stormwater system delayed by way of on-site detention systems. This approach reduces the peak load on the stormwater system including the downstream rivers and creeks.

There are many properties within the municipality which do not have formal connections to the stormwater system as required since 1994. Council has limited ability to influence the manner in which a property owner manages the stormwater on site. It can only direct changes to private stormwater connections by including requirements on the planning permits for new developments to ensure best practice stormwater management. Such planning requirements are placed on the developer and the property owner. These form part of an approved planning or building permit requiring a Legal Point of Discharge. Generally this will be for buildings developed post 1994.
Figure 1: History of water and sewage management in Greater Melbourne (Melbourne Water)
1.3 Who manages stormwater?
Managing stormwater is complex due the high number of land managers within the municipality. Land managers within Moonee Valley include Council, Melbourne Water, Parks Victoria and property owners.

Melbourne Water is generally responsible for larger drains, waterways and catchments larger than 60 hectares and has responsibilities under the Water Act 1989 (Vic) to protect these waterways. It places requirements on up-stream property owners (including councils) ensure that run-off from these locations has minimal negative impact on these waterways.

Council is responsible for maintaining its own stormwater system and to cater for calculated storm flows and ensuring private properties are adequately protected against these flood levels. Where drainage serves to drain runoff from an arterial road/freeway, railway track or CityLink these assets are the respective responsibility of VicRoads, VicTrack and CityLink. Further, where a Council asset is located within the reserve of another authority (e.g. a VicRoads arterial road) the relevant authority must approve access before Council can perform any maintenance or upgrades.

Individual property owners are responsible for the management of private drainage such as guttering and downpipes, agricultural drains, stormwater drains, rainwater tanks, on-site detention systems and connection to the Council stormwater system.
2 Drainage Improvement Study
This document prepared in 2005 addresses:

- design standards
- management of flood prone areas
- developer contributions
- long term construction plans
- a detailed analysis of the Council stormwater system

This document has given Council a better understanding of the stormwater system capacity as well as location of potential deficiencies, maintenance responsibilities and future planning.

While the document can provide this framework, it cannot fully plan for changes to the stormwater system over time including new developments, damage and unforeseen requirements. It is these issues which this policy aims to pick up on and provide guidance for Council officers in resolving these issues.

3 Council stormwater standards
Council has an installed system of pits, pipes and channels which are designed to cater for common volumes of stormwater which are encountered across the municipality. Historically, Council standards has required a 20% AEP design capacity however more recently, Council has begun to install new sections and upgrades to cater for a 10% AEP event.¹

Where a greenfield development is undertaken, consideration for a 1% AEP must be provided either through controlled overland flow or other means. Piping of a 1% AEP is required where this provision cannot be catered for.

In general this design level and local conditions have resulted in a minimum installed pipe of 225 mm diameter or greater. However there are many locations which have smaller diameter pipes and pipes which are not made of modern construction materials.

Consistent with Council Drainage Requirement for New Developments, where an investigation shows that a pipe section has failed, it must be replaced to meet Council requirements:

- trafficable areas: RCP (RRJ) or FRC (RRJ) with a minimum 300mm dia.
- non-trafficable areas: uPVC, FRC (RRJ), RCP (RRJ) with a min 225 mm dia.

Further details on drainage requirements is provided to developers via the above document.

¹ Average Recurrence Interval (ARI): The average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration. It is implicit in this definition that the periods between exceedances are generally random. (Bureau of Meteorology, http://www.bom.gov.au/water/awid/id-704.shtml)
4 General intervention levels
The Council Road Management Plan sets out an inspection regime for all of the assets which exist within the road reserve. This document is however limited to ensuring that these assets do not pose a risk to pedestrians and other road users. While actions such as re-setting a bluestone channel may result in improved efficiency of the stormwater system, ensuring the hydraulic efficiency of the stormwater system is not one of its functions. That is why this policy:

- defines tolerable inundation due to rainfall based on minimal risk to safety or property
- gives priority to areas identified as at risk of flooding but outside of flood overlays
- provides that Council will seek to allocate costs to persons responsible for damage to the Council stormwater system
- provides that the property owner is responsible for maintaining property connections to Council stormwater system

The Infrastructure Services department provides an annual clearance program of pipes and pits within business areas of the municipality and some of the lower lying pit locations which have been identified as problem areas by the Drainage Improvement Study. Flooding in commercial/business/industrial areas would provide a significant inconvenience and potential loss of income and as such Council provides an increased level of maintenance for these areas. Similarly, identified low points pose a greater potential risk and in response these locations are proactively cleaned to reduce this risk. Other pipes and pits can be inspected and cleared on an “as needs” basis.

In general, minor and moderate flooding which does not pose a risk to safety or property is tolerated by Council for the short term. The Drainage Improvement Study has identified many of these locations and provides recommended improvements which are subject to funding through the capital works process.

Where flooding does pose a significant risk, Council undertakes proactive maintenance and upgrades through the capital works program. Consistent with Council maintenance of pipes and pits, drainage issues have been divided into intervention levels which in turn prioritises resources.
### Table 1: Maintenance Response to Flooding

#### Minor Flooding (Temporary Pooling) (Low Risk)

**Attributes**
- generally only occurs for brief periods after high intensity rain
- may cause minor nuisance, quick to clear (less than 15 mins)
- no damage to property
- flooding / pooling restricted to the road reserve

**Response**
- pits, pipes and kerb in affected area inspected and cleared as appropriate
- street sweeping of debris collecting which may be causing issue

#### Moderate Flooding (Medium Risk)

**Attributes**
- occurs after light rainfall
- water pooling remains for an extended period of time (1 – 5 hours)
- water collecting in low points containing rubbish, sediments, and other debris
- minor risk to property, superficial damage
- significantly impinge on the trafficable area of the roadway / footpath and restrict access
- minor risk of insurance claims resulting
- flooding may enter on private properties but is restricted to depths less than 150mm, is reflected in Councils flood mapping, and does not restrict access to the property

**Response**
- pits, pipes and kerbs in affected area inspected and cleared as appropriate
- traffic management installed (Water Over Road signs and bollards as appropriate)
- detailed investigation of cause undertaken (camera drains, survey stormwater system)
- minor remedial works completed (replace collapsed drains, repair misalignment)
- repair or install additional entry pits

#### Significant Flooding (High Risk)

**Attributes**
- occurs after most rainfall events
- water does not clear without attention (pumping, clearing pits etc.)
- significant risk of inundation of properties or damage to assets
- significant risk to road users or pedestrians
- overland flow rate exceeds 4 m/sec (Drainage Improvement Guidelines)
- where Depth x Velocity product exceeds 0.35 (MW Safety Design Guidelines)
- significant financial risk due to likely damage to property and risks to road users
- Depth in excess of 150mm, significantly restricts access to private property, exceeds flood mapping predictions

**Response**
- immediate road closures in affected area
- immediate clearing of pit and pipes as is appropriate
- sand bagging and pumping of properties
- emergency works to clear flooding areas, to improve capacity or bypass underperforming assets
- detailed investigation and design of solutions, expedited funding of works to mitigate risk
4.1 Failure of private drainage assets
It is the responsibility of the property owner to maintain adequate connections to the stormwater system without adversely impacting on the condition or operation of the system. The extent of responsibility is outlined in the diagram below.

![Diagram of typical arrangement for connecting to the Council stormwater system](image)

Council has a number of standard drawings which give specifics on connecting to the stormwater system. All connections are consistent with Australian Standard AS/NZS 3500.3:2003.

These requirements partially state that connections into the Council stormwater system must be gravity fed once outside the property line to avoid surcharging Council drains through these connections onto private land. As a result of the maintenance of the stormwater system undertaken by Council and the inherent design of the system, it is very unlikely that surcharging of Council drains into private land will occur. Blockages of private stormwater connections are by far the most common reason for surcharging of these private systems.

4.2 Private property run-off affecting another private property
Many older properties which exist have no specific requirement placed on them through building permits to obtain and connect to a Legal Point of Discharge. These properties may therefore be prone to generating uncontrolled overland flow of stormwater.

Conditions associated with these properties are:
- generally built prior to 1994 where a legal point of discharge was not been required
- no Legal Point of Discharge applied to the building
- may have an installed infiltration (rubble) pit which has become silted up, or may discharge onto the ground or into an unconstructed right-of-way
Where stormwater is generated on private property and flows onto another private property, Council does not have authority to compel works to be undertaken by the owner to rectify the situation unless there is a serious risk to health or property.

Where properties have a constructed and connected (via a legal point of discharge) stormwater system the Building, Health and Property Services department has some limited powers to ensure that this system works as designed and is connected appropriately.

Where issues arising from overland flow generated from a neighbouring property arise, they will require communication between neighbours in order to seek a compromised outcome. The Dispute Settlement Centre of Victoria (http://www.disputes.vic.gov.au/) can assist with neighbours who have difficulty negotiating an outcome.

### 4.3 Stormwater nuisance flows

Council receives a number of complaints each year regarding stormwater run-off and overland flow from private land causing a nuisance to an adjoining or downstream property.

In certain circumstances, Council may have the power under the *Public Health and Wellbeing Act 2008* (Vic) to require the person creating the nuisance to take reasonable steps to ensure the nuisance ceases. Sometimes, Council has the power to require the owner or occupier to take certain steps. In the case of stormwater this may include connection to the stormwater system.

Minor infrequent overland flows, minor ponding or dampness due to stormwater is unlikely to be remedied through this provision.
4.4 Pooling of water in public spaces:
Council manages many areas of public space. The response from Council to drainage problems in public locations depends largely on the use, flooding risk and corresponding use of the land. The following table outlines common responses from Council when dealing with flooding in public spaces:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Location</th>
<th>Flood Level</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial / Business</td>
<td>Footpath</td>
<td>Low</td>
<td>Street sweeping and vacuum blockages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium</td>
<td>Site investigation to determine reasons for flooding. Refer maintenance required to Depot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Consider emergency works to clear blockages. Ensure water does not enter shops</td>
</tr>
<tr>
<td>Roadway</td>
<td>Low</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>Street sweeping and vacuum blockages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Site investigation to determine reasons for flooding. Refer maintenance required to Depot</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>Footpath</td>
<td>Low</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
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<td>High</td>
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</tr>
</tbody>
</table>

4.5 Overland flow paths
These areas may exist within a road way, open drain within a right-of-way, across public land via a swale or spoon drain and from time to time through easements which may exist on private land. Council has mapped the indicative location of overland flow paths and in most circumstances has protected them from being obstructed without approval from a Council Drainage Engineer by refusing a BOE approval.²

Overland flow paths are commonly blocked by fencing installed over them, landscaping undertaken, levelling works during development and siting of buildings or other impediments where water is intended to flow.

Where the blockage of an overland flow path is contributing to the poor performance of the stormwater system, Council may require the property owner to undertake remedial works to restore the overland flow path to adequate capacity. Expenses will be incurred by the property owner.

² Moonee Valley City Council, Build Over Easement Policy (2015)
Where the property owner is unwilling or unable to undertake the necessary works, Council may arrange to enter onto the property to complete works. This may result in costs and penalties being apportioned to the owner of the property.

4.6 Damage by service authority/contractor
Damage to underground assets due to excessive loads being placed on them at the surface, as well as by excavation without appropriate checks, is reasonably common. Council has procedures in place such as requiring permits to be taken out prior to undertaking excavations within the road reserve and avoiding heavy loads such as vehicles or materials being placed on the nature strip.

Despite this, damage still occurs from time to time. Where this damage is identified and it can be attributed to a contractor or service authority undertaking works within the road reserve, all costs associated with repairing the asset including costs associated with emergency works may be passed onto the contractor.

4.7 Failure of Council assets
Council stormwater assets are generally designed to have an operational life expectancy of 80 to 100 years. Issues such as increased traffic loads, invasion of an underground drain by tree roots and changes to soil conditions due to long periods of wet or dry weather can cause pipes to block, move out of alignment and degrade quicker than expected.

Where a Council asset fails, action will be taken to repair that asset as soon as is practical, to remove any associated risk and ensure that a similar issue does not occur again. Such action may include:

- removing street trees or installation of root barriers to reduce the likelihood of blockages
- installation of trafficable covers or pavements to protect assets
- installation of bollards or road treatments to ensure that underground assets are not adversely impacted

4.8 Special Building Overlays (SBO) & Land Subject to Inundation Overlays (LSIO)
SBOs and LSIOs are contained in the Council Planning Scheme and are based on flood modelling and mapping undertaken by Melbourne Water. Properties within these overlays are estimated to be affected by flooding a minimum of a 1% AEP, though many of these properties may experience more frequent flooding.

LSIOs indicate the 1% AEP flood extent of a waterway. LSIOs are a significant consideration during the approvals process should a new development be located near a waterway. LSIOs are managed by Melbourne Water and issues associated with flooding of these areas and other Melbourne Water stormwater system will be referred to them.

SBOs as a general rule indicate the 1% AEP flood extent for an area other than along a waterway. SBOs are also a significant consideration during the approvals process should a new development be located within one of these overlays. Areas within a SBO may be affected by nearby surcharging of the stormwater system or overland flow paths during a significant storm events. It is in these areas that flooding is most likely
to occur. When either low or moderate impact flooding occurs, it will not be given priority over other capital works within the municipality.

Where unexpected upstream impacts such as development or changes to the stormwater system may increase the risk to properties in these areas, a higher priority may be given to funding works which will eliminate or greatly reduce overland flows in these locations.

Note: LSIOs and SBOs have been created for the purpose of assisting with the approvals process and identifying areas in the vicinity of Melbourne Water assets prone to flooding. They are not definitive flood extents for the entire municipality, i.e. many areas prone to flooding are not within a LSIO or SBO.

4.9 Drainage to unconstructed right-of-ways

Council does not allow new connection of private drains to unconstructed right-of-ways or other areas which are a part the formal stormwater system. There are however many such connections throughout the municipality which cause considerable issues in creating ponding and saturated soil.

Where this occurs on a property which existed prior to the requirements for a Legal Point of Discharge (generally pre-1994) and it is not causing a significant detriment, there is no recourse for Council as the connection was likely to have been approved according to the standard of the governing authority at that time.

Where a newer property exists which may have made an illegal connection into this area and has otherwise been provided with a Legal Point of Discharge, the Building, Health and Property Services department may have recourse through the property owner to ensure that all stormwater connections are made through the LPD.

5 Location confirmation drainage assets

Council, through its drainage inspection process, requires private contractors installing drains or connecting into Councils stormwater system to obtain a Drainage Inspection Permit in order to have the connection or construction supervised by Council to ensure it is installed to standard. These inspections can be undertaken at minimal cost to those undertaking the work.

Where installation or connections are undertaken without an inspection Council needs to ensure that all works which have been undertaken meet these standards. All costs associated with confirming the location and suitability of the works are borne by those responsible for undertaking the work.

Confirmation of a stormwater connection:

Connection point to the drain / kerb to be exposed via 1 x 1m trench

- positive grade to connection point from property boundary to be demonstrated

Confirmation of constructed drains:

- undertake an “as constructed” survey of the pits and pits including levels
- exposing the drain at 15 m intervals using 1 x 1 m test holes
- CCTV of the entire length of the drain to be provided to confirm joints are aligned and in tact
5.1 Investigations to provide offset and depth of Council stormwater assets
Property owners, service authorities and private contractors often require the exact location of services underground when planning for a new development. The exact location of underground drains is required to ensure that clearances between services is provided and also that consideration be given to the asset when buildings are being designed to ensure their loads will not influence the drain.

By submitting a Stormwater Asset Details application (with payment), a Council Drainage Engineer will be able to give an indication of the depths, offsets, pit locations, pipe diameters and construction details. This is always on the proviso that the exact location is determined on site.

6 Extent of investigations
As has been previously identified it is not within the budget of Council or physically practical given the current level of development within the municipality to completely eradicate situations of water ponding or minor (low risk) flooding during storms.

Council will not undertake drainage investigations or drainage projects to:

- improve aesthetics
- perform maintenance or repair on stream or swale drain that exists on private property
- perform maintenance or repair on closed system on private property that exists solely to drain that property
- retain runoff within private property
- deal with water that flows from one private property to another, underground springs or wetlands
- alleviate flooding in close proximity to a floodplain
- alleviate water standing in a ditch or yard
- correct drainage problems caused by landscaping, swimming pools, or roof gutter problems
- correct drainage problems caused by infrequent major storm events greater than a 10% AEP
- eradicate mosquitoes
- pipe road side ditches to make mowing easier
7 Drainage investigation checklist
The following table outlines the responsibilities of various land and asset managers. Council Officers should ensure that consideration is given to each point to ensure the thoroughness of the investigation:

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has flooding been caused by a storm event in excess of the 20% AEP</td>
<td>Stormwater system generally designed to cater for flows lower than this level, may extend to 10% AEP for newer areas</td>
</tr>
<tr>
<td>Is the property subject to an LSIO or SBO?</td>
<td>Works other than maintenance in these areas are not programmed where known flood levels are not exceeded</td>
</tr>
<tr>
<td>Does the property have a LPD?</td>
<td>Property owner to ensure connection is clear and operating</td>
</tr>
<tr>
<td>Is the property affected by a VicRoads or Melbourne Water maintained drain?</td>
<td>Refer enquiry to managing authority</td>
</tr>
<tr>
<td>Is the property affected by only minor flooding levels?</td>
<td>Refer to drainage intervention levels</td>
</tr>
<tr>
<td>Does the property owner undertaken an investigation to ensure private drainage system and connection is operating effectively?</td>
<td>Advise resident of possible action – including no action for minor flooding</td>
</tr>
<tr>
<td>Is the property in a known low point according to the Drainage Improvement Study?</td>
<td>Assess document for extent of flooding identified and capital works which are programmed</td>
</tr>
<tr>
<td>Is the stormwater system in the area built to Council standards?</td>
<td>Ensure new privately built drains have been inspected and built to standards</td>
</tr>
<tr>
<td>Are there nuisance issues associated with flooding (overflowing sewer, flooding septic tanks)</td>
<td>Refer to Building, Health and Property Services department for advice where flooding is, or is liable to be dangerous to health or offensive</td>
</tr>
<tr>
<td>Is there damage to Council assets due to recent works (private building, water or gas main renewal, road reconstruction etc.)?</td>
<td>Assess recently issued Works Within Municipal Road Reserve permits in the area</td>
</tr>
</tbody>
</table>
