Title	**STORMWATER RUN OFF MANAGEMENT POLICY**
Council Resolution	Item 11 (6 June 2016) as per Council Minutes
Responsible Directorate	City Services & Infrastructure
Due for Review	5 June 2020
Strategic Plan Reference	3.1 Create liveable built environments and sustainably manage our natural and built environments.
ECM	Council Policies

PURPOSE

This policy defines the approach and measures adopted by Council to ensure that stormwater runoff generated by new developments does not exacerbate flooding to the extent that properties downstream are adversely affected.

SCOPE

This policy applies to:

- Any development that increases a property's calculated runoff co-efficient (calculated in accordance with the latest edition of Australian Rainfall and Runoff) to above 0.55 for the entire site. This includes sites where an existing structure is being demolished and the site is being redeveloped.

It does not apply to:

- Retrospective assessment of existing approved developments.
- Single structures classified as 10a under the Building Code of Australia with a combined roof area of 36 m^2 or less, except where combined with other development.
- A one-off extension involving impervious surfaces less than 36 m^2.
- Application where it can be demonstrated to the satisfaction of Council's Hydraulics Engineer, if the total catchment containing the site were developed to its full potential, while maintaining the existing infrastructure (including waterways), stormwater detention on the subject site would not be of benefit in reducing adverse flooding impacts on downstream roads, properties and open waterways. The Applicant must model the total catchment containing the site at its full development potential, while maintaining the existing public stormwater system. It is anticipated that this exemption may apply at the lower end of major catchments where delayed release of runoff may not assist in reducing peak flow.
- Development where a material or financial contribution to the satisfaction of Council's Hydraulics Engineer is provided by the developer to upgrade the downstream reticulation system to cater for 5% AEP events and the overall stormwater system to cater for 1% AEP events.
- Development which is able to discharge stormwater directly into the Derwent River.

STATUTORY REQUIREMENTS

Acts	• *Urban Drainage Act 2013* • *Building Act 2000*
Regulations	• *Plumbing Regulations 2014*
Australian/International Standards	• Australian Rainfall and Runoff (www.arr.org.au) • Australian Standard AS/NZS 3500.3:2003 Plumbing and Drainage

DEFINITIONS

Annual exceedance probability (AEP)	• The probability of exceedance of a given discharge within a period of one year
Average recurrence interval (ARI)	• The average or expected value of period between the exceedance of a given discharge
Developer	• An owner of a property undergoing development or a person(s) authorised to act on behalf of a property owner
On-site stormwater detention (OSD)	• Storage with controlled discharge of stormwater runoff, designed to reduce the peak flow from a site resulting from a storm event
Runoff	• The portion of rainfall that does not infiltrate into the soil, resulting in the presence of surface water
Stormwater system	• A drainage system designed to drain excess rain and ground water, including underground reticulation systems and above ground overland flow paths
Suitably Qualified Person	• A professional engineer currently practising with relevant CPEng, NPER or accreditation under the Scheme for the Accreditation of Building Practitioners in Tasmania with an appropriate level of professional indemnity and public liability insurance
Site Storage Requirement (SSR)	• The minimum storage volume that is needed to temporarily store and offset the excess stormwater run-off due to the development
Water Sensitive Urban Design (WSUD)	• A land planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal

STORMWATER RUN OFF MANAGEMENT POLICY

POLICY APPLICATION:

1. The maximum allowed peak runoff set by the Council is equivalent to the calculated runoff resulting from an assumed runoff coefficient for the entire site of 0.55.

2. Subject to the application of this policy as defined in the policy scope above, properties that exceed the maximum allowed peak runoff must have Onsite Stormwater Detention (OSD) designed by a suitably qualified person and approved by Council.

3. An OSD proposal must be submitted with the Plumbing Permit Application. The system proposed to retain the required runoff storage volume shall be detailed in an engineering design for assessment and approval by the Council.

4. Council's Development Engineer may condition the planning permit requiring the OSD and corresponding maintenance scheme to be included in the plumbing application, and to be designed, constructed and maintained to the satisfaction of Council's Plumbing Surveyor.

5. Any required OSD must cater for the difference between the allowable site discharge and the anticipated maximum discharge over the period of the design storm, and the OSD shall be designed to cater for 5% AEP storm events, and ensure that the development does not detrimentally impact on downstream properties in the event of a 1% AEP storm.

6. Water Sensitive Urban Design (WSUD) elements are encouraged and peak flow rate offset may be given depending on the effectiveness of the WSUD elements. If rainwater tank systems are proposed for a large development, some on-site stormwater detention offset may be given, at the discretion of the Council's Plumbing Surveyor.

7. Maintenance of the OSD is the sole responsibility of the owner(s) of the property.

8. Design Requirements to be submitted with OSD Proposal:

    a. Detailed hydraulic designs must be submitted in accordance with the Australian Rainfall and Runoff (AR&R) to achieve a peak discharge rate for the site equivalent to or less than an assumed runoff coefficient for the entire site of 0.55.

    b. For the purposes of calculating the peak runoff, a runoff coefficient of 0.9 shall be used for impervious areas and a coefficient of 0.4 shall be used for pervious areas.

    c. The impervious rates for calculating runoff from various surface are specified below:

        i. Roofs, driveways and carports, and other impervious hard standing areas will be considered to be 100% impervious for drainage calculation purposes;
        ii. Driveways constructed with gravel or "grass-crete" or pervious pavers will be considered to be 80 % impervious for drainage calculation purposes;
        iii. Courtyards and paths paved with pervious pavers and proper subsurface drainage system constructed underneath will be considered to be 25 % impervious for drainage calculation purposes; and
        iv. Unroofed decks constructed with open timber decking will also be considered to be 25% impervious for the overall runoff coefficient calculation purposes.

    d. Localised rainfall intensity data obtained from the Bureau of Meteorology Intensity Frequency and Duration (IFD) charts for the region shall be used for the peak flow calculation.

    e. The time of concentration (Tc) for both pre- and post- development scenarios shall be calculated respectively as described in the Australian Rainfall and Runoff (AR&R), and used for determining the rainfall intensity in 5% AEP events and 1% AEP events.

    f. The Site Storage Requirement (SSR) shall be determined in accordance with the critical storm duration of the entire catchment calculated by a suitably qualified person, unless specified otherwise by the Council's Hydraulics Engineer.

    g. The following three (3) main elements shall be included in the OSD system design:

        i. Temporary storage: this may consist of an open surface pond/tank or underground tank. It is designed to contain the excess volume of stormwater resulting from limits on the peak discharge flow rate.

ii. Discharge Control Pit: a flow control pit and litter and sediment removal component must be included in the OSD design. The outlet/orifice shall be a minimum internal diameter or width of at least 25 mm and protected by an approved mesh screen. An overflow structure must be designed to cater for flows exceeding the capacity of the OSD. The overflow structure must direct excess flows in a manner so as to minimise any detrimental effects on property downstream.

iii. Maintenance Scheme: a maintenance schedule/plan for the OSD must be submitted to the Council with the OSD engineering design. The cleaning of below ground storage facilities should be conducted in accordance with the requirements and risk control measures specified in AS2865-2009 Confined Spaces.

9. Cash In-Lieu Alternative

It is acknowledged that, for very small scale developments, the construction of onsite detention elements may not be the most efficient and effective way to manage incremental increases in run off. In these instances and subject to the approval of Council's Hydraulics Engineer, payment of cash-in-lieu rather than the provision of an OSD by the developer may be appropriate.

The payment of cash in-lieu for non-provision of an OSD shall only apply for developments for which onsite detention is otherwise required under this policy, however, the calculated total detention volume under this policy required is less than $1m^3$.

In these circumstances and subject to the approval of Council's Hydraulics Engineer, a cash in-lieu amount of $3,500 (inclusive of GST) must be paid to the Council by the Developer, prior to the issuing of a Plumbing Permit. The amount collected from the developers will be used for public stormwater system upgrade and extension in the future by the Council.

BACKGROUND

The Southern Tasmania Regional Land Use Strategy has identified the need, over 25 years, for infill development of 5,300 more dwellings in the Glenorchy local government area. There will also be increased commercial and other developments to service these residences. These developments invariably lead to more stormwater runoff and higher peak flows discharged to downstream public stormwater systems during storm events, due to increased impervious ground cover such as roofs, carparks, driveways and walkways.

This increased stormwater runoff will exacerbate existing public stormwater system capacity issues during storm events. Most of the older parts of the GCC stormwater system are unlikely to meet the modern design standard which requires that the reticulation system is designed to deal with a twenty year ARI (Annual Recurrence Interval) or 5% AEP rainfall events. In addition, the overall stormwater system, including designated overland flow path shall accommodate the one hundred year ARI or 1% AEP events. The effects of climate change are expected to increase the frequency of storm events, so that our stormwater systems are likely to be at, or over capacity, more frequently than has been the case in the past.

Council has a responsibility under the Urban Drainage Act to provide adequate drainage services and to ensure that new developments do not adversely impact on the performance of public stormwater systems or cause flooding of downstream properties.

The extra runoff generated by infill development and increased impervious surface areas, adds to the peak load on the public stormwater infrastructure and can cause flooding when the system is overwhelmed during particularly intense storms.

Increasing the capacity of the existing stormwater infrastructure is often impractical in established urban areas, due to the fact that much of the existing system is located on private property in close proximity to residential dwellings and commercial developments. Replacing existing pipes with larger capacity pipes or formalising designated overland flow paths can be prohibitively expensive on such a large scale. A far more cost effective method of dealing with increasing peak loads on the existing public stormwater system is to prevent the system being overwhelmed, by reducing the peak amount of runoff from newly developed impervious areas such as rooftops and carparks during the storm itself.

It is acknowledged industry-wide that spreading the stormwater load over a longer period can reduce the peak flow discharged into downstream public stormwater systems, and this reduction can be achieved by On Site Detention (OSD). OSD involves delaying or restricting the amount of water that leaves a site during a storm event by temporarily storing a portion of the water that has fallen on the property slowing its release into the downstream stormwater system. Over a city block this can amount to many kilolitres of water.

This policy supersedes a previous Council Policy (No. 28-4) which was endorsed by Council on 27 August 2012.