ON-SITE STORMWATER DETENTION

Originated Date:	Adopted 24 June 2019 (min. ref. 178/19)
Amended Date/s:	Amended 19 February 2024 (min. ref. 24/070)
Applicable Legislation:	*Urban Drainage Act 2013* Australian Rainfall and Runoff 2019 State Stormwater Strategy 2010 AS3500.3:2003 Plumbing and Drainage Tasmanian Stormwater Policy Guidance and Standards for Development 2021
Objective	To ensure that stormwater runoff generated by new developments does not adversely impact downstream properties.
Administration	Community and Development
Review Cycle/Date:	Next review 2028.

1. PURPOSE

This policy details the safeguards enforced by Council to ensure that stormwater runoff generated by new developments does not adversely impact downstream and surrounding properties for all storm events up to and including the 100-year Average Recurrence Interval (1% Annual Exceedance Probability) event.

2. DEFINITIONS

Annual Exceedance Probability (AEP)	The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.
Average Recurrence Interval (ARI)	The average or expected time period 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.
Catchment	The land area draining to a point of interest.
Council	Means Northern Midlands Council established in accordance with the *Local Government Act 1993*
Councillors	Means the individuals holding the office of a member of Northern Midlands Council
Council officer	Means the General Manager and staff of Council appointed by the General Manager.
Discharge	Rate of flow of stormwater expressed in unit volume per unit time (litres per second).
Drainage System	Comprises all components of stormwater infrastructure from the legal point of stormwater discharge to the receiving water body. Includes both constructed assets (pipes, culverts, overland flow paths, roadways, kerb and gutters) and natural assets (waterways and creeks).
On-site Stormwater Detention (OSD)	Temporary storage and controlled discharge of stormwater runoff intended to reduce the peak flow from a site.
Overland Flow	The surface flow of stormwater runoff that occurs when the volume of runoff exceeds the capacity of the piped drainage system.
Permissible Site Discharge (PSD)	The Permissible Site Discharge (PSD) is the maximum allowable post-development discharge from a site for the selected discharge design storm and is estimated on the basis that flows in the downstream stormwater drainage system will not be increased.

Runoff	The portion of rainfall that does not infiltrate into the soil, resulting in the presence of surface water.

3. APPLICATION

This policy applies to:

- All commercial, industrial and special use (e.g. community, educational, recreational) buildings or structures
- Multiple dwellings, and where
- The existing drainage system is unable to accommodate an increase in stormwater discharge from the site.

Refurbishment of existing buildings and hardstand which does not increase the impervious area of the site is exempt from this policy.

There may be instances where Council will specify alternative requirements based on identified local conditions.

4. CONTEXT

Australian Rainfall and Runoff 2019 and *Australian Standard AS3500.3:2021 Plumbing and Drainage* establish that stormwater runoff in all storm events up to and including the 1% AEP storm event must be conveyed safely and not present a hazard to people, vehicles, or cause significant damage to property.

Council has a responsibility under the *Urban Drainage Act 2013* to ensure that new developments within urban areas do not adversely impact on the performance of the local stormwater drainage system or cause an unreasonable flow of water on to downstream or surrounding properties.

This will be achieved by ensuring, where necessary, that on-site stormwater detention systems are incorporated into intensely developed sites to reduce the peak flow of stormwater from the site. The on-site detention system reduces the peak flow by temporarily storing stormwater runoff within the development site while discharging to the Council drainage system at a controlled rate.

The need for an on-site stormwater detention system will be assessed by Council upon receipt of a planning or plumbing application. The installation of an on-site stormwater detention system will be enforced as a planning permit condition, a plumbing permit condition, and/or as a direction from Council as the Stormwater Service Provider.

5. EXCEPTIONS

Council may consider waiving a requirement for on-site stormwater detention where:

- The downstream drainage system has been upgraded to accommodate the increase in runoff from the site for all storm events up to and including the 1% AEP event; or
- Where the natural overland flow path is to the road or to an area Council deems as low risk (i.e. not to a developed/developable neighbouring property) Council may only require the 20 year ARI (5% AEP) storm to be detained

6. DESIGN OBJECTIVES

The on-site stormwater detention system must:

- Restrict the rate of stormwater discharge to the permissible rate of discharge during the design storm event specified by Council~~;~~
- Provide sufficient storage to ensure peak flow rates at any point within the downstream drainage system do not increase as a result of the development during the design storm event specified by Council (up to and including the 1% AEP), unless the downstream drainage system has been designed to accommodate an increase in stormwater discharge from the site;

- Drain within 72 hours to ensure the storage volume is available for a subsequent storm event.

The on-site stormwater detention system should:

- Be integrated into the design of the development so that adequate storage areas are included in the initial stages of the site design.

7. DESIGN GUIDELINES

- Based on the size of the site and the proposed proportion impervious surfaces Council will provide the permissible site discharge (PSD) of the total development (refer to Table 1).
- The required detention volume for developments where the overland flow path is to the road, and/or to an area Council agrees is low risk, can then be inferred from Table 1. This volume is applicable only where single detention storage volume controls the entire site. Alternatively, modelling may be undertaken in accordance with methods described Australian Rainfall and Runoff 2019 Book 9 Chapter 6 to determine the required detention volume.
- For developments which do not grade to the road or a dedicated overland flow path, the 1% AEP storm event shall be detained with a PSD as per Table 1. Where the entire site drains to a single detention volume, the detention volume may be calculated as the peak volume from a range of storm durations using methods such as the Boyd or Culp methods or STORMupdated. Alternatively, modelling may be undertaken in accordance with methods described Australian Rainfall and Runoff 2019 Book 9 Chapter 6 to determine the required detention volume.
- For complicated detention arrangements, i.e. where detention is being provided within a number of separate storages and/or connections, the arrangement must be proven to achieve the permissible site discharge from the entire site, in accordance with modelling methods described Australian Rainfall and Runoff 2019 Book 9 Chapter 6. Council require evidence of how the individual elements and entire system behaves during the duration of the design rainfall events.
- In all situations calculations and/or modelling must be presented to Council which show the PSD is not exceeded.
- Design of the detention system must be undertaken by an accredited engineer eligible for membership of Institute of Engineers Australia or equivalent.

8. MAINTENANCE REQUIREMENTS

The property owner is responsible for the operation and maintenance of the on-site stormwater detention system. Where the on-site stormwater detention system is located on common property within a multi-dwelling site, the body corporate is responsible for the operation, maintenance and replacement of the system.

Stormwater detention systems should be designed and installed in accordance with AS3500.3 and be covered by an Operation and Maintenance plan.

The clearing of below ground storage facilities should be conducted in accordance with the requirements and risk control measures specified in *AS2865-2009 Confined Spaces*.

9. RECORD KEEPING

Council will keep a register of onsite detention systems for auditing and compliance purposes.

10. REVIEW

The next review of this document is scheduled for completion by 30 June 2028.

TABLE 1: PERMISSIBLE SITE DISCHARGE (L/S) AND MINIMUM 1:20 ARI (5% AEP) DETENTION VOLUME (M3)

Lot size (m^2)	Permissible Site Discharge (PSD) (L/s)	Fraction Impervious					
		50%	60%	70%	80%	90%	100%
100	0.88	0.2	0.3	0.4	0.5	0.6	0.7
200	1.76	0.4	0.6	0.8	1.0	1.2	1.4
300	2.64	0.6	0.9	1.1	1.4	1.8	2.1
400	3.52	0.8	1.1	1.5	1.9	2.3	2.8
500	4.39	1.0	1.4	1.9	2.4	2.9	3.5
600	5.27	1.2	1.7	2.3	2.9	3.5	4.2
700	6.15	1.4	2.0	2.7	3.3	4.1	4.9
800	7.03	1.6	2.3	3.0	3.8	4.7	5.6
900	7.91	1.8	2.6	3.4	4.3	5.3	6.3
1000	8.79	2.0	2.9	3.8	4.8	5.8	7.0
1100	9.67	2.2	3.2	4.2	5.3	6.4	7.7
1200	10.55	2.4	3.4	4.5	5.7	7.0	8.4
1300	11.42	2.6	3.7	4.9	6.2	7.6	9.1
1400	12.30	2.8	4.0	5.3	6.7	8.2	9.8
1500	13.18	3.1	4.3	5.7	7.2	8.8	10.5
2000	17.58	4.1	5.7	7.6	9.6	11.7	13.9
2500	21.97	5.1	7.2	9.5	11.9	14.6	17.4
3000	26.36	6.1	8.6	11.4	14.3	17.5	20.9
3500	30.76	7.1	10.0	13.2	16.7	20.4	24.4
4000	35.15	8.1	11.5	15.1	19.1	23.4	27.9
4500	39.55	9.1	12.9	17.0	21.5	26.3	31.3
5000	43.94	10.2	14.3	18.9	23.9	29.2	34.8
5500	48.33	11.2	15.7	20.8	26.3	32.1	38.3
6000	52.73	12.2	17.2	22.7	28.7	35.0	41.8