



DOCUMENT NAME	Stormwater Management Guidelines for Developments
RESPONSIBLE DIRECTORATE	Infrastructure
RESPONSIBLE OFFICER	Director Infrastructure
ADOPTION Date	12 December 2017
REVIEWED/MODIFIED	Date:
	Date:
REVIEW DUE	Date: 12 December 2019
LEGISLATION	Local Government Act 1995 Section 3.1
RELATED DOCUMENTS	CP/OPS-3660 Stormwater Management for Developments OD/OPS-4646 Stormwater Management for Developments Stormwater Management Assessment Application Form

PURPOSE:

These Guidelines are intended to provide assistance and direction for developers in planning for stormwater management for their proposed developments. The Guidelines also;

1. Clearly outline the circumstances in which the Shire will permit a connection to the Shire's drainage system.
2. State the design standards that the Shire will have regard to in assessing applications to connect to the drainage system; and
3. Outline the conditions which may be imposed on any approval to connect to the Shire drainage system.

DEFINITION:

AEP – means the Annual Exceedance Probability for the nominated event. Note; For the small catchments covered by these Guidelines the flood AEP can be taken to be equivalent to the rainfall AEP.

Approved – means approved by the CEO or the relevant Director.

Deemed to Comply Arrangements – means a stormwater management arrangement or design that meets the criteria set out in section 4 of these Guidelines.

Director - includes the Director and that Director's delegate authorised in writing for a specific purpose.

Satisfactory – means approved by the CEO or the relevant Director.

Shire – means the Shire of Wyndham East Kimberley.

WSUD – means Water Sensitive Urban Design.

GUIDELINES:

1. GENERAL

These guidelines are intended to provide assistance and direction for developers in planning for stormwater management for their proposed developments and apply to any new development application for any development within the Shire of Wyndham East Kimberley Local Government Area including;

- Residential/rural lots and subdivision developments (not applicable to building development on residential lots less than 600 m² in size),
- Agricultural development; and
- Industrial or commercial development.

Detention storages can be incorporated into the design of the development. For example, a detention storage could be incorporated in to driveways, car parks garden and grassed areas by designing them as low ares with an appropriate discharge pipe.

2. BACKGROUND

Development can lead to change in both the quantity and quality of water that is delivered to receiving waters. The built environment has many sources of pollutants that can contaminate stormwater as it passes through the catchment including metals, oils, petrol, organic debris, litter, silt and dust, fertilisers, animal waste, pesticides and detergents.

Within the Shire, high water table or soils that are largely clay in nature occur in certain areas. As a result, stormwater runoff attributed to development may exit the property due to the soils reduced capacity for infiltration. Traditionally, the Shire has permitted this stormwater to be discharged into the stormwater system.

Increases in housing density and infill development have increased demand from developers to have private stormwater disposed via The Shire's street drainage system.

The existing drainage system was designed several decades ago for different public expectation and a different development extent and density. Even with over capacity margins built into the system, there are increasing pressures on the Shire's drainage system and its ability to effectively drain developed areas during storm events.

There is also concern about the quality of stormwater discharging into the drainage system and into water bodies, such as the M1 Irrigation Channel and Lake Kununurra, particularly from industrial and commercial areas. Stormwater runoff from developed areas carry sediments and pollutants, such as nutrients and heavy metals. Unmanaged, the cumulative impact of these pollutants can result in considerable damage to the environment.

Additionally, the Shire seeks to properly manage stormwater run-off from new developments to:

- Avoid or minimise the risk of erosion caused by rainfall run-off from new impervious surfaces;
- Prevent sedimentation and turbidity of watercourses;
- Avoid overloading Council's stormwater drainage system;
- Minimise the risk of localised flooding caused by increased stormwater run-off from impervious surfaces in new developments.

To address these issues, The Shire requires all new development applications requesting connection to the Shire's stormwater system to be assessed against Sections 3 and 4 of these Guidelines.

3. DESIGN REQUIREMENTS

3.1. General Design Approach

The Shire will only approve applications to connect to the Shire's stormwater system, in the following circumstances:

- a) Development of lots less than or equal to 5 ha may adopt the deemed to comply arrangements specified in section 4 of these Guidelines.
- b) Development of lots greater than 5 ha require the submission to the Shire for approval of a stormwater management plan prepared and certified by a suitably qualified engineer.
- c) A satisfactory drainage proposal shall include:
 - Consideration of minor (0.2 AEP) and major (0.01 AEP) storm events.
 - Provision of detention storage volume equivalent to the 0.2 AEP event and a throttled discharge such that the 0.01 AEP event does not over top the detention storage.
 - Identify and include Water Sensitive Urban Design (WSUD) strategies where possible;
 - Consideration given to upstream and downstream catchments; and
 - Identification of necessary floodways (0.01 AEP flow paths) and any upgrades that may be required to existing infrastructure.
- d) Provision of a drainage plan which shall be provided to the Shire for approval prior to commencing any development.
- e) If the proposed connection to the Shire's stormwater system is required to service industrial or commercial development, any discharge to the Shire's system must comply with the *Environmental Protection Act 1986* and the *Unauthorised Discharge Regulations 2004*.

3.2. Design Parameters

3.2.1. Storages

The development is to provide a detention storage volume equivalent to the critical 0.2 AEP rainfall depth, with a discharge rate that provides for the retention of the 0.01 AEP event without overtopping the detention storage.

For small catchments (less than or equal to 5 ha) C_d must be assumed to equal 1.0. This is based on an assumption of a saturated catchment.

The time of concentration (t_c) used for determining runoff must be to the satisfaction of the Shire.

The required free board for storages less than 300 m² in area may be reduced to 150 mm. The required free board for storages less than 900 m² in area may be reduced to 250 mm. The required free board for storages in excess of 900 m² in area shall not be less than 400 mm.

3.2.2. Point of Discharge

The invert level of any underground storage system must be such that flow under gravity alone into the Shire's adjacent street stormwater system is possible. The applicant must be able to demonstrate this as part of the design process.

The discharge outlet shall be sized to comply with section 3.2.1 above. The point of discharge into the Shire drainage system will be determined through consultation with the Shire. In some cases, an extension of the Shire drainage system may be required at the developer's cost and to the specification and satisfaction of the Shire.

3.3. Water Sensitive Urban Design

The Shire supports the principles of WSUD and the principles of Better Urban Water Management (WAPC 2008) and recommends they be adapted to suit the climatic and ground conditions of the region. All developers are to maintain surface and groundwater quality at pre-development levels and improve the quality of water leaving the developed area, if possible.

4. DEEMED TO COMPLY ARRANGEMENTS

The following deemed to comply arrangements applies to developments from 600 m² up to and including 5 ha in area.

Developments will be deemed to comply with the Stormwater Management for Developments Policy provided that; On site storage volumes are not be less than that specified in Table 1 and Figure 1, and discharge rates from storages at full capacity are not be more than that specified in Table 1 and Figure 1 for the applicable lot size.

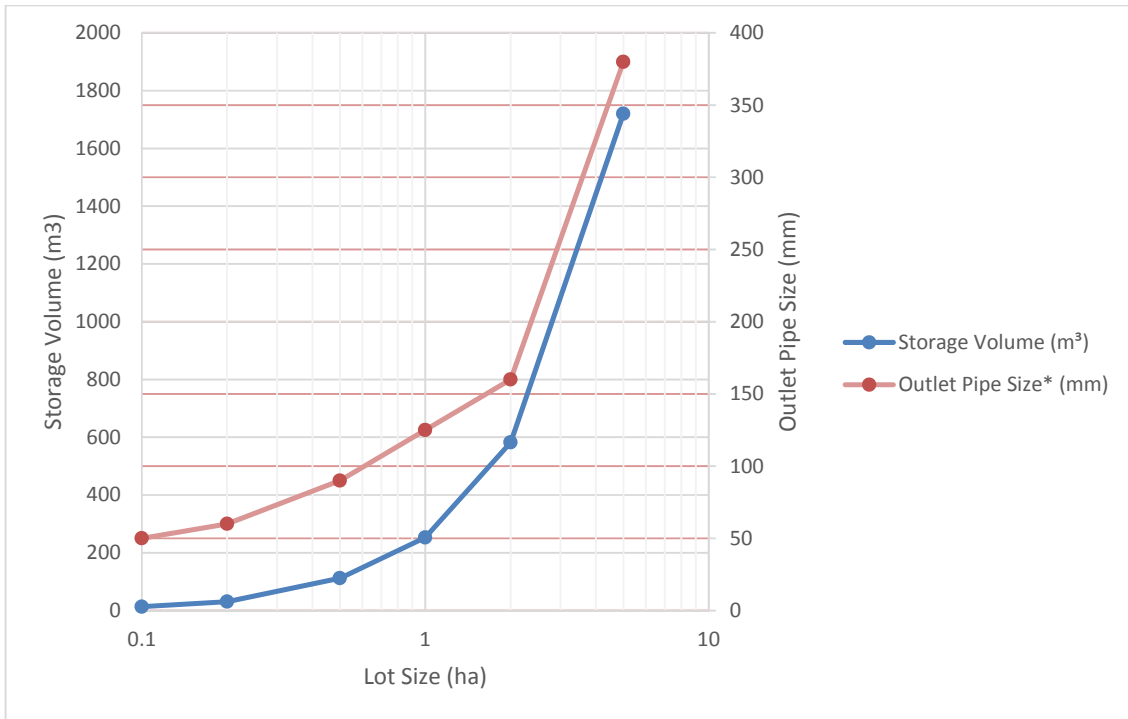
The required free board for storages large storages is 400 mm, for storages less than 900 m² in area, freeboard may be reduced to 250 mm and the required free board for storages less than 300 m² in area may be reduced to 150 mm.

Table 1: Storage and Outlet Sizing

0.2 AEP Storage Requirements				
Lot Size (ha)	Critical Storm Duration (min)	Storage Volume (m ³)	Outlet Pipe Size* (mm)	Max. Discharge (m ³ /s)
0.1	5	13.3	50	0.004
0.2	6	30.6	60	0.006
0.5	10	112	90	0.018
1	12	253	125	0.040
2	15	582	160	0.079

5	20	1720	380	0.447
---	----	------	-----	-------

Figure 1: Storage and Outlet Sizing



5. ASSESSMENT APPLICATION PROCEDURE

Applicants wishing to connect to the Shire's drainage system are required to complete the Stormwater Management Assessment Application Form.

Developments are subject to Shire approval of a comprehensive stormwater management and drainage plan which is required prior to the commencement of works. Other than for developments meeting the Deemed to Comply Arrangements, the design is to be carried out and certified by a suitably qualified engineer. Plans and specifications for the system must be to the Shire's satisfaction.

The drainage plan is to detail sizes and types of all materials, invert levels, pit levels (top and bottom), design AEPs, site detention capacity and outlet capacity and grades of all pipes.

Where there is an existing manhole, gully or side entry pit within the verge and within the extent of the frontage of the property, a connection may be made directly to that structure (provided levels are suitable).

Where the Shire has no drainage infrastructure accessible from the property the Shire may extend the Shire's network or provide a receiving structure at the developers cost.

5.1. Property Owner/Developer Responsibility

The owner of the land is required to maintain the detention and drainage system in good working order.

The owner of the land is required to place a notification under section 70A of the *Transfer of Land Act 1893* to be placed on the Certificate(s) of Title advising of the stormwater detention system installation, the restrictions, drainage limitations and the requirement for the current and future property owners to maintain the detention and drainage system in good working order.

All works associated with connecting the internal system to the street drainage system are to be carried out by the property owner. Prior to backfilling of trenches, the works are to be inspected and approved by the Shire.

A Permit to Undertake Works on Public Land must be obtained from the Shire prior to the commencement of works within the road reserve.

5.2. Maintenance

Regular maintenance of any on-site detention system is required to keep the system fully functioning and is the responsibility of the property owner. The required maintenance schedule and drawings will identify the key components of the system, their locations and will provide instructions to ensure that ongoing maintenance is carried out as required, including cleaning of outlets, accumulated debris from screens and removal of sediment from the base of the detention storage.

5.3. Other Texts

The Local Government Guidelines for Subdivisional Development by the Institute of Public Works Engineers Australia (Guidelines for Subdivision) are considered to be the minimum standard for subdivision development and are to be read in conjunction with this document and other policies and legislation relevant to agencies associated with subdivisional approvals.

Better Urban Water Management (WAPC 2008) and Water Sensitive Urban Design (WSUD) were developed to facilitate better management of urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning system and should also be considered in association with the Local Government Guidelines for Subdivisional Development during the development process within the Shire.

5.4. Applicants are advised:

In the event of a severe flooding event, the Shire of Wyndham East Kimberley drainage system may not have sufficient capacity to manage the stormwater from the subject lot. It is therefore essential that property owners make necessary enquires to obtain suitable and adequate private insurance coverage for such events.

It is an offence under the *Environmental Protection Act 1986 (WA)* to discharge contaminants or discharge waste that will cause harm to the environment. Applicants are responsible for ensuring that they do not allow any contaminants to enter the retention system as overflow discharged water from the subject lot may subsequently enter the M1 drainage channel or Lake Kununurra.



POLICY NO:	CP/OPS - 3660	
POLICY	Stormwater Management for Developments	
RESPONSIBLE DIRECTORATE	Infrastructure	
RESPONSIBLE OFFICER	Director Infrastructure	
COUNCIL ADOPTION	Date: 28 November 2017	Resolution No: 28/11/2017-117850
REVIEWED/MODIFIED	Date:	Resolution No:
	Date:	Resolution No:
REVIEW DUE	Date: November 2020	
LEGISLATION	Local Government Act 1995 Section 3.1	
RELEVANT DELEGATIONS	Delegation 58 Stormwater Management for Developments	
RELATED DOCUMENTS	Organisational Directive: OD/OPS-4646 Stormwater Management for Developments Stormwater Management Assessment Application Form Stormwater Management Guidelines for Developers	

PURPOSE

This Policy provides guidance for stormwater management for developments within the Shire of Wyndham East Kimberley.

DEFINITION

AEP – means the Annual Exceedance Probability for the nominated event. Note; For the small catchments covered by this Policy the flood AEP can be taken to be equivalent to the rainfall AEP.

Shire – means the Shire of Wyndham East Kimberly.

WSUD – means Water Sensitive Urban Design.

BACKGROUND

Common practice for larger developments in the Shire has followed the practice of many southern Shires by requiring the retention and disposal on site of runoff from the 0.2 Annual Exceedance Probability (AEP) storm. The Shire is of the view that this requirement imposes an unreasonable cost burden on developers and does not provide the best stormwater management outcome for the Shire.

The existing drainage system was designed several decades ago for different public expectations and a different development extent and density. Additional capacity margins were built into the system but the increasing pressures on the Shires drainage system and its ability to effectively drain developed areas during storm events does not meet current standards. This policy seeks to address the deficiency.

POLICY OBJECTIVES

To ensure that stormwater run-off from new developments is properly managed to:

1. Avoid or minimise the risk of erosion caused by rainfall run-off from new impervious surfaces;

2. Prevent sedimentation and turbidity of watercourses;
3. Avoid overloading Council's stormwater drainage system;
4. Minimise the risk of localised flooding caused by increased stormwater run-off from impervious surfaces in new developments.

POLICY STATEMENTS

1. The Council supports the principles of WSUD and the principles of Better Urban Water Management and recommends they be adapted and applied within the Shire.
2. All new development applications within the Shire must provide stormwater detention storage volume equivalent to the 0.2 AEP rainfall depth for the entire development lot.
3. A low flow discharge point may be provided from the bottom of the detention storage and connected via a gravity system to the Shire's stormwater system.
4. The low flow discharge rate from the detention storage shall be such that the detention storage retains runoff from the 0.01 AEP event for the development (assuming a coefficient of runoff of 1.0).
5. For new development applications, the owner of the land is required to place a notification under section 70A of the Transfer of Land Act 1893 to be placed on the Certificate(s) of Title advising of the stormwater detention system installation, the restrictions, drainage limitations and the requirement for the current and future property owners to maintain the detention and drainage system in good working order.
6. Delegated authority to vary the requirements of this policy for residential developments on Lots of less than 600 m² in area may be found in the delegations register.

EXPLANATORY NOTES

Development can lead to change in both the quantity and quality of water that is delivered to the Shire's stormwater system. Traditionally, the Shire has required stormwater to be contained and disposed of within the development for events up to 0.2 AEP, with larger flows discharging to the Shire's stormwater system.

Within the Shire there are many areas where there is a high water table or soils that are largely clay in nature where onsite disposal is problematic. This Policy seeks to provide a more cost effective alternative to on site disposal of stormwater for developers while improving the overall performance of stormwater management within the Shire.

APPLICATION:

This Policy applies to any new development within the Shire of Wyndham East Kimberley.

RISKS:

RISK: Inability to deliver levels of service expected by the community.

CONTROL: Current budget and service levels.

RISK: Damage to private and public property, facilities and health from flooding events

CONTROL: Pre wet season drainage maintenance.

Development and implementation of a Kununurra old residential and industrial drainage strategy.



PO Box 614 Kununurra 6743
20 Coolibah Drive
KUNUNURRA

Koolama Street WYNDHAM

T | 9168 4100
F | 9168 1798
E | mail@swek.wa.gov.au
W | www.swek.wa.gov.au

Stormwater Management Assessment Application Form

1. APPLICANT

Full name/Business name			
Postal address			
Street address			
Home phone		Work phone	
Mobile Number			
Email			

2. DEVELOPMENT DETAILS

Address			
Development Type	<input type="checkbox"/> 1-2 Dwellings	<input type="checkbox"/> 3 or more Dwellings	<input type="checkbox"/> Commercial
	<input type="checkbox"/> Industrial	<input type="checkbox"/> Other	
Site Area	m ²	Paved Area (including graveled areas)	m ²
Building Area	m ²	Unpaved Area (including gardens and unimproved areas)	m ²

3. DRAINAGE DETAILS

Requested Discharge into Council Drainage System (litres/second):	
Detail of existing connection (if any):	

