

1. ENVIRONMENT AND NATURAL RESOURCES

LPP 1.1 STORMWATER DISCHARGE FROM BUILDING SITES

1. Introduction, background and purpose

Stormwater consists of rainfall runoff and any material (soluble or insoluble) mobilised in its path of flow. Contaminants and materials typically found in stormwater can cause ecological damage. Where surfaces are changed from natural vegetation or grass to hard surfaces, the peak flow and total flow from a site can change and result in scouring and other damage to watercourses.

This policy focuses only on the management of stormwater from private property and focuses primarily on detention to reduce the peak flows that result from rainwater falling on hard surfaces. This is important to ensure the local government stormwater drainage system can manage peak flows that could otherwise cause overloading and flooding and that where those flows subsequently discharge into watercourses the peak flows do not cause scouring and erosion.

This policy is intended to provide guidance to applicants who have a conditional planning or building approval requiring stormwater management.

2. Application of policy

This policy applies to all planning and building approvals that have a condition requiring stormwater management, may be used by applicants in developing proposals, and may be used by officers in providing advice on stormwater management matters.

3. Policy objectives

- 3.1 Identify typical design or detention requirements for developments on private property to ensure peak flows can be managed by the local government's stormwater drainage system.

4. Policy statement

4.1 Information requirements

Applicants should provide a Stormwater Drainage Plan showing the following information:

- (i) A table showing volume calculations, including lot area, impermeable area, minimum soak well volume required and additional volume required for high ground water or non-sandy soils.
- (ii) Plan of the site showing location, size and levels of soak wells, pipes and other drainage features.
- (iii) Where additional volume is required for high groundwater or non-sandy sites, calculations showing the additional storage volume and any levels necessary to ensure this is achieved. A sample Stormwater Drainage Plan is attached at Appendix C.
- (iv) Details of any proposed connections to the local government's drainage system.
- (v) Construction details for soak wells, other drainage structures and any proposed connections to the local government's drainage system.

4.2 General

The Department of Water's Decision Process for Stormwater Management in WA (DoE and SRT, 2005) requires that:

- (i) Generally, rainfall from 1 year average recurrence interval (ARI) events should be retained or detained on-site unless it can be clearly demonstrated that achievement of this objective is impractical due to site conditions.
- (ii) Generally, for detention systems, preserve the pre-development 1 year ARI peak discharge rate.
- (iii) Use best management practices (structural and non-structural) to treat water quality.

Soak wells should be provided that meet the Department of Water's criteria above. If the criteria result in soak wells smaller than identified in *Appendix A – Standard Requirements for Soak wells*, then Appendix A applies.

An overflow provision into the local government's system for any further stormwater run-off may be provided at the developer's cost subject to approval of the Executive Manager Technical Services.

Connections to the local government's stormwater drainage system should be in accordance with the requirements of *Appendix B – Standard requirements for Connection to the Shire's Stormwater Drainage System*.

4.3 Residential Development

- (i) Soak wells should be provided that meet the Department of Water's criteria above.
- (ii) Soak wells should be provided and maintained in all instances where the aggregate impervious area including roofs, car parks, driveways, carports and patios exceeds 250 square metres or where the lot size is less than 400m².
- (iii) Soak wells should be provided at the minimum rate of 1m³ of storage for each 65m² of impervious area in excess of 250m².
- (iv) A minimum additional 1m³ per 65m² of impervious area should be provided in areas of clayey or silty soils or in high groundwater table areas. The collection points and soak wells should be located so as to minimise the amount of run-off entering the road reserve.

4.3 Group Dwellings, Strata Lots, Commercial and Industrial Development

- (i) Soak wells should be provided that meet the Department of Water's criteria above.
- (ii) Stormwater run-off from all roofs, car parks, driveways and other impervious areas should be collected and disposed of into sufficient soak wells on site. Soak wells should be provided at the minimum rate of 1m³ of storage for each 65m² of impervious area.
- (ii) An additional minimum of 1m³ per 65m² of impervious area should be provided in areas of clayey or silty soils or in high groundwater table areas.

4.4 Large developments

Nothing in this policy prevents an applicant carrying out a Stormwater Drainage Plan that demonstrates drainage of the development by alternative means. Preparation of a

Stormwater Drainage Plan should be in accordance with a brief approved by the Executive Manager Technical Services and shall be carried out by a professional engineer experienced in drainage design. Recommendations of the Stormwater Drainage Plan are subject to approval by the Executive Manager Technical Services.

Adopted by Council: 27 January 2010

Appendix A -Standard Requirements for Soak wells

The following outlines minimum requirements for soak wells for new developments. The purpose of these requirements is to prevent increased stormwater run-off entering the local government drainage system causing overloading and flooding.

Soak wells should be provided for all residential development where the aggregate impervious area including

- (i) Roofs, driveways, carports, patios, paved areas and car parks is in excess of 250m² or where the lot size is less than 400m² and for all commercial and industrial development where direct connection to the local government's drainage system is not available.
- (ii) Storage should be provided at a minimum rate of 1m³ of storage for every 65m² of impervious area in areas of sandy soil without high groundwater. In case of residential development soak wells should be provided where the impervious area is in excess of 250m².
- (iii) Storage should be provided at a minimum rate of 2m³ of storage for every 65m² of impervious area where there is high groundwater or soils are not free draining.
- (iv) The first 1m³ per 65m² of storage to be provided in a soak well or approved equivalent. The second 1m³ per 65m² may be provided in soak wells or above ground in basins, swales or within car parking areas.
- (v) Collection points should be located to minimise runoff entering the road reserve.
- (vi) Drainage plans should be submitted to the Shire's Building Department including:
 - a) Existing ground levels or contours.
 - b) Proposed location and levels of roofs, driveways, parking and other paved or sealed areas.
 - c) Details of soak wells including depth, diameter, location and construction detail.
 - d) Location, size and level of pipes.
 - e) Detail of any proposed connections to the local government's drainage system including size, level and location.

(Note: For requirements for connection to the local government's drainage system, refer "Standard Requirements for Connection to the Shire's Stormwater Drainage System")
 - f) Additional information for high groundwater sites (typically sites where winter ground water table is within 0.5m below base of soak wells), namely assumed winter groundwater level, location of subsoil drainage, and levels of crossovers, car parks and building floor levels for areas utilised for above ground storage for the second 1m³ per 65m².

The volumes and areas served by standard sized soak wells is summarised in the following table:

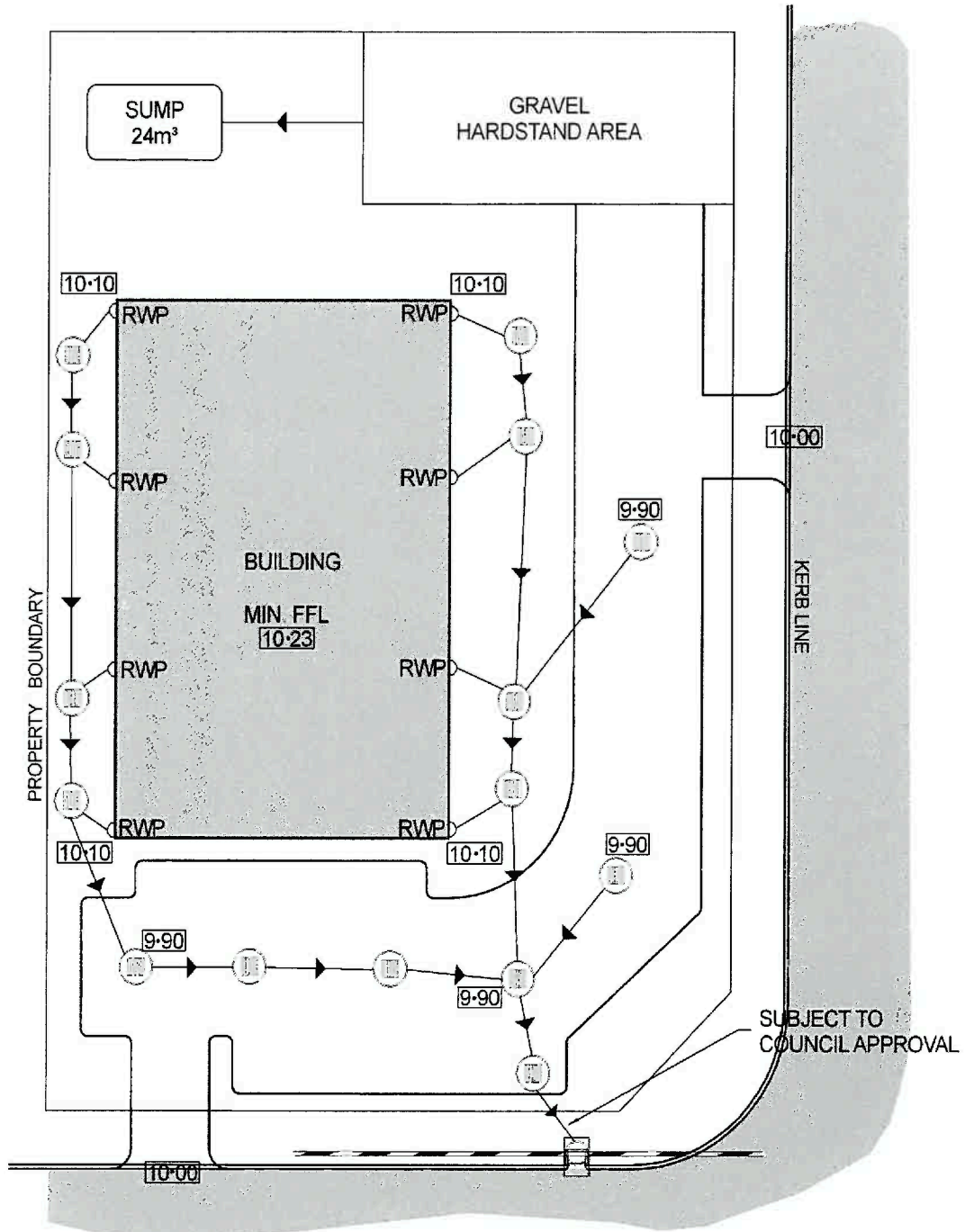
Soakwell size Diameter (m) x depth (m)	Storage Volume	Area served	
		2m ³ per 65m ²	Area served - sandy areas 1m ³ per 65m ²
Ø 1.8m x 1.8m	4.6m ³	150 m ²	300 m ²
Ø 1.8m x 1.2m	3.0m ³	100 m ²	200 m ²
Ø 1.5m x 1.2m	2.1 m ³	70 m ²	140 m ²
Ø 1.2m x 1.2m	1.4 m ³	45 m ²	90 m ²
Ø 1.2m x 0.9m	1.0 m ³	35 m ²	70 m ²
Ø 0.9m x 0.6m	0.4 m ³	12 m ²	25 m ²

- (vii) Provisions for overflow into the local government's drainage system is subject to the approval of the Executive Manager Technical Services (refer to Standard Requirements for Connection to the Shire's Stormwater System).

Appendix B – Standard Requirements for Connection to the Shire’s Stormwater Drainage System

- (i) Connections to the local government’s stormwater system shall be approved in writing.
- (ii) Overflow connections from soak wells should be made from the final soak well of the private drainage system. A trapped manhole should be placed at the boundary of the lot prior to entering the local government’s system.
- (iii) All connections should have a trapped manhole placed at the boundary of the lot prior to entering the Shire’s system. Connections should be fitted with a non-return valve to prevent surcharging from the local government’s stormwater system.
- (iv) All connections should have a provision for an overflow. Overflows should be located to allow stormwater to flow overland to the street without entering buildings.
- (v) Connections should only be made to manholes. No direct connections to pipes should be permitted. Where a new manhole is required, it should be approved by the Executive Manager Technical Services and constructed at the applicants cost.
- (vi) Connections may be constructed by the applicant or by the local government at the applicant’s cost. Contact for construction of connections is the Technical Services Department.
- (vii) Where the applicant makes connections, the applicant is required to have a road-opening permit prior to commencing work and to comply with requirements for works in road reserves. A Traffic Management Plan may be required in this circumstance.
- (viii) Connections should be smoothly and neatly grouted.
- (ix) Maintenance of connections is the responsibility of the applicant. The Shire of Collie accepts no responsibility for any maintenance costs or damages arising through lack of maintenance of the connection, backflow prevention or overflow provisions.
- (x) The local government may require pollution control facilities to be installed to remove sediments, rubbish and oils prior to connecting to the Shire’s stormwater system. Pollution control is required on connections from car parks and paved areas in commercial, industrial, light industry and mixed business areas. Pollution control facilities and devices should be selected and designed to suit the site and should be approved by the Manager Technical Services
- (xi) Subdivision of lot classified less than an Class “A” must be provided with a drainage connection point for each lot.
- (xii) The drainage connection should be 90mm overflow.

Appendix C – Example Stormwater Drainage Plan



NOTES:
 PIPES CONNECTING SOAKWELLS TO BE MIN. Ø100mm
 TYPICAL DETAILS OF SOAKWELLS TO BE PROVIDED
 IF COUNCIL PIT UNAVAILABLE FOR A CONNECTION, NEW
 MANHOLE TO BE CONSTRUCTED TO COUNCIL SPECS
 CALCULATIONS TO BE BASED ON 1m³ FOR EVERY 65m²

SOAKWELL STORAGE CAPACITY:
 Ø1800 x Ø1800 = 4.6m³
 Ø1500 x Ø1500 = 2.1m³

STORMWATER DRAINAGE GUIDE (TYPICAL)	
SCALE: DO NOT SCALE	
DATE: DRN 4-05-04	
DRG No: SOD 139-04	
DRN: FINE	
APPROVED: LAURIE BLURTON	Shire of