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| Policy Number: | LPP 2 |
| Policy Type: | Local Planning Policy |
| Policy Name: | Stormwater Management and Connection |
| Policy Owner: | Chief Executive Officer |

AUTHORITY: *Planning and Development Act 2005*
Local Government Act 1995 Schedule 9.1.7
Shire of Nannup Local Planning Scheme No.4

POLICY BASIS

This is a local planning policy prepared under the *Planning and Development (Local Planning Schemes) Regulations 2015* (the Regulations) and the *Shire of Nannup Local Planning Scheme No. 4* (LPS4).

OBJECTIVES

The objectives of this policy are to:

1. Ensure that development is compatible with the design capacity of the existing local government stormwater system so as not increase the incidence of downstream flooding
2. Minimise maintenance issues with the local government's stormwater system caused by private connections and to provide a consistent standard.
3. Ensure that stormwater capture and conveyance within a development site is properly managed through the provision of drainage infrastructure to appropriate capacity and standard.
4. Ensure that stormwater capture and conveyance within a development site is provided so that stormwater does not constitute a potential hazard or nuisance to persons or property including adjoining property.
5. Ensure that on-site detention systems are designed and constructed to be compatible with other aspects of site planning.
6. Ensure that drainage works do not cause inconvenience or safety hazards to pedestrians or vehicular traffic.

DEFINITIONS

Definitions are as per the *Shire of Nannup Local Planning Scheme No.4* or as set out in *Better Urban Water Management*, the *Stormwater Management Manual for Western Australia* or *Decision Process for Stormwater Management in Western Australia*.

“**AEP**” means Annual Exceedance Probability event.

“**Bioretention**” means the process in which contaminants i.e. nutrients are removed from stormwater runoff through a treatment train consisting of option(s) such as chemical treatment, soil amendments and use of nutrient absorbing plants.

“**Detention/detain**” means the process of reducing the rate of off-site stormwater discharge by temporarily holding rainfall runoff, to the design AEP event, and then releasing it slowly to reduce the impact on downstream water bodies and to attenuate urban runoff peaks for flood protection of downstream areas.

“**Infiltration**” means the process by which water of the ground enters the soil.

“**Retention/retain**” means the process of preventing rainfall runoff from being discharged into receiving water bodies by holding it in a storage area. The water may then infiltrate into groundwater,

evaporate or be removed by evapotranspiration of vegetation. Retention systems are designed to prevent off - site discharges of surface water runoff up to the design AEP event. It is the difference between total precipitation and total runoff.

“**Runoff**” means the portion of rainfall on a drainage area or surface that is discharged from the drainage area to drainage.

“**Stormwater**” means all surface water runoff from rainfall, predominantly in urban and rural living catchments.

APPLICATION OF THIS POLICY

This policy applies throughout the municipality.

LINKS TO LOCAL PLANNING SCHEME AND OTHER DOCUMENTS

This policy should be read in conjunction with the *Shire of Nannup Local Planning Scheme No.4*, the *Shire of Nannup Local Planning Strategy*, the *National Construction Code (Building Code of Australia)*, *Residential Design Codes* and various Local Planning Policies.

POLICY PROVISIONS

1. Landowner’s responsibility to manage stormwater

Stormwater from buildings and surface water runoff is the responsibility of the landowner to effectively manage and to appropriately detain/retain stormwater on their property.

2. Detaining and retaining stormwater

All new subdivision/development within the municipality is required to detain stormwater on site and where possible retain stormwater. Where site conditions dictate, there may be a need to use appropriate bioretention to remove nutrients from stormwater runoff which may include soil amendments and use of nutrient absorbing plants.

The minimum design criteria is to detain stormwater on site for small rainfall events for the first 15mm of rainfall based on *Decision Process for Stormwater Management in Western Australia*.

The local government will, subject to the type, scale and location of the development also consider the suitability of stormwater management systems to provide serviceability, amenity and road safety during minor rainfall events. Similarly, the local government will consider flood protection (including outside of Special Control Area 3 – Flood Prone Land) for major rainfall events.

The total post-development site runoff is to be no greater than the pre-development site runoff.

Surface drainage systems shall be designed to ensure that overflows, for minor or major rainfall events, do not present a hazard to people or cause damage to off-site property.

Stormwater flows, AEP events, time of concentration, and runoff coefficients shall be in accordance with the relevant Australian Standard and/or guidelines endorsed by Engineers Australia.

Rainfall intensity shall be in accordance with accepted guidelines or information relevant to the district. Attachment 1 sets out the rainfall intensity for Perth which will be applied in the Shire of Nannup until there is updated information relevant to the municipality.

Stormwater runoff from impermeable surfaces in developments shall be managed in any one or more of the following ways to the satisfaction of the local government:

- soakwells;
- stormwater detention basins;
- rainwater tanks;
- infiltration basins and infiltration trenches;
- diversion or catch drains across a slope to convey runoff at a non-erosive velocity and to divert runoff from upslope areas around the site of a disturbance or an area at risk of erosion;
- installation of barriers positioned so as to intercept runoff and sediment;
- installation of a sediment fences to reduce runoff velocities and cause the deposition of silt;
- swales;
- rain gardens;
- planting of continuous vegetated buffers; and
- any other method identified as being acceptable for controlling stormwater runoff to the satisfaction of the local government.

On-site stormwater detention storage areas must be located:

- in an appropriate location, generally in or near the lowest point of the site;
- so as to collect runoff from all roofed and impervious areas;
- clear of any surface flow path conveying stormwater runoff from adjoining land. If overland flow from adjoining properties will enter the detention system then this flow should address the 1% AEP pre-development flood regime for the catchment and conveyed by suitable means to bypass the detention system. Alternatively the detention system can be enlarged to cater for the additional catchment area;
- as part of the overall development scheme for the site;
- so that pedestrian movements will be clear of the top water level for minor rainfall events;
- on common property in the case of development within strata title schemes. Below ground storage can be provided under private courtyards provided that the surcharge point from the storage area and the primary means of access for maintenance is clearly provided from common property;
- to ensure that no upstream pits have grate levels lower than the detention top water level; and
- so that access to the system is readily available and not via any enclosed structures.

Detention/retention may be achieved in clay sites or where high groundwater exists by use of infiltration basins and infiltration trenches with associated trickle feed/outlets, appropriate fill and/or sub-soil drainage systems.

Vegetated basins for storing minor or major rainfall events should have batters no steeper than 1:6 and have operational water depth not exceeding 0.9 metre.

All above ground storage should generally be integrated into landscaping areas which are to be appropriately vegetated. The local government encourages appropriate native species.

3. Soakwells

Soakwells should be provided and maintained for impervious areas including car parks, driveways and roofs.

The collection points and soakwells should be located so as to minimise the amount of runoff entering the road reserve.

Soakwells should be provided at the minimum rate of storage to address the impervious area.

Runoff should be collected and conveyed in an above ground system with a grated overflow entry to the soakwell (enabling first flush sediments to settle out reducing maintenance needs of

soakwells).

If the soakwells have become inoperative, in the opinion of the local government, the property owner is to undertake such maintenance as directed.

Additional requirements are set out in Attachment 2.

4. Property drainage

All premises, with the exception of heritage-protected places, should be provided with gutters, downpipes or other associated drainage features to ensure effective stormwater disposal away from buildings and other impervious surfaces. Heritage-protected places should be provided with gutters and/or downpipes where they have historically been installed. Where historically there have been no gutters and/or downpipes, the Shire will not require their installation however alternative drainage measures should be implemented to ensure effective stormwater disposal away from buildings and other impervious surfaces.

Stormwater management systems should be designed to avoid the potential for erosion, damage or any other defects to the property or adjoining properties caused by stormwater. All stormwater systems should ensure that stormwater is adequately detained and ideally retained on the property for small rainfall events for the first 15mm of rainfall.

Where local government approval is required for property drainage systems, the local government will require details of the work proposed including the locations, size, grade and class of all pipes proposed, as well as the position of all pits, together with existing and proposed structures, trees, overland flow paths and existing and proposed impervious areas.

5. Applying to the local government for connection to the stormwater system

Where stormwater cannot be retained on site, the local government will consider connections where justified by the proponent and where there is capacity in the stormwater system to manage peak flows.

Connection into the local government's stormwater system may be provided at the proponent's cost subject to approval of the local government.

Connections to the local government's stormwater system shall be approved in writing.

Connections to the local government's stormwater system should be in accordance with the requirements of Attachment 3.

6. Stormwater drainage plan

A Stormwater Drainage Plan is generally required for infiltration and conveyance systems seeking development approval. The Stormwater Drainage Plan must demonstrate the appropriateness of the proposed drainage system within the site and as relevant the proposed connection to the local government's stormwater system.

A Stormwater Drainage Plan must contain sufficient information to assess whether the proposed stormwater management system is feasible, both within the site and as relevant in its connection to the local government stormwater system, and will function as designed.

Where a Stormwater Drainage Plan is required by the local government, the plan should provide the information set out in Attachment 4 unless varied by the local government.

Nothing in this Policy prevents a proponent 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 local government and shall generally be carried out by a professional engineer experienced in drainage design.

The local government may, subject to the type, scale and location of the development require the applicant to submit a Water Management Plan to support a Development Application or other proposal based on DWER publications.

ADMINISTRATION

1. Matters to be Addressed Prior to Formally Lodging the Application

Proponents are encouraged to discuss stormwater management designs and systems that seek to vary Policy requirements with the Shire administration early on in the planning/design process and prior to the formal lodgement of any proposal or application.

2. Proposal or Application Requirements

The level of detail associated with addressing stormwater management will depend on what stage the proposal is at in the planning/development process (e.g. Local Water Management Strategy, Urban Water Management Plan or Stormwater Drainage Plan) along with the risks associated with the proposal, the land use, the site's location and the site's features.

3. Assessing the Proposal or Application

Where a proposal or application is made that does not comply with the requirements set out in this Policy, the proposal/application may be referred to adjoining/nearby landowners, State Government agencies or other stakeholders for comment. The local government may also seek advice from the community and other stakeholders depending on the risks associated with the proposal, the land use, the site's location and the site's features.

Proposals/applications will be assessed on a case by case basis subject to *Local Planning Scheme No. 4*, this Policy, other Local Planning Policies, *Residential Design Codes*, other State Planning Policies, relevant State Government publications on stormwater management, information provided by the proponent and any submissions received.

The Council may refuse its consent or grant its consent with or without conditions.

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| Related Policies | LPP 1 Cut & Fill and Retaining Walls LPP 8 Development in Flood Prone Land LPP 10 Car Parking and Vehicular Access |
| Related Procedures/Documents | 4 Decision process for stormwater management in Western Australia (DWER 2017) Stormwater management manual of Western Australia (DWER 2023) <i>Residential Design Codes – Volume 1 and 2</i> |
| Delegation Level | Chief Executive Officer or their Delegated Officer |
| Adopted | OM 22 April 2010 |
| Reviewed | OM 27 June 2024 |

Attachment 1 - Rainfall intensity for Perth (applies to the Shire of Nannup)

OUTPUT IFD TABLE
Rainfall Intensity (mm/hr) for Perth

| Duration | Average Recurrence Interval (Years) | | | | | | | |
|----------|-------------------------------------|-------|--------|--------|--------|--------|--------|--------|
| | 1 | 2 | 5 | 10 | 20 | 50 | 100 | 500 |
| 5m | 59.35 | 78.17 | 102.62 | 119.02 | 142.65 | 177.59 | 207.44 | 290.89 |
| 6 | 55.19 | 72.60 | 95.01 | 110.00 | 131.62 | 163.54 | 190.77 | 266.70 |
| 7 | 51.74 | 67.99 | 88.74 | 102.57 | 122.56 | 152.02 | 177.10 | 246.93 |
| 8 | 48.82 | 64.08 | 83.44 | 96.31 | 114.92 | 142.32 | 165.62 | 230.37 |
| 9 | 46.30 | 60.72 | 78.88 | 90.92 | 108.37 | 134.01 | 155.79 | 216.21 |
| 10 | 44.09 | 57.77 | 74.90 | 86.23 | 102.66 | 126.78 | 147.25 | 203.94 |
| 11 | 42.13 | 55.16 | 71.38 | 82.08 | 97.63 | 120.42 | 139.74 | 193.17 |
| 12 | 40.38 | 52.83 | 68.24 | 78.39 | 93.15 | 114.76 | 133.07 | 183.63 |
| 13 | 38.81 | 50.73 | 65.42 | 75.08 | 89.13 | 109.70 | 127.10 | 175.09 |
| 14 | 37.38 | 48.83 | 62.87 | 72.08 | 85.50 | 105.13 | 121.71 | 167.41 |
| 15 | 36.07 | 47.10 | 60.55 | 69.36 | 82.21 | 100.97 | 116.82 | 160.45 |
| 16 | 34.88 | 45.51 | 58.42 | 66.87 | 79.19 | 97.18 | 112.37 | 154.11 |
| 17 | 33.77 | 44.04 | 56.47 | 64.58 | 76.43 | 93.71 | 108.28 | 148.31 |
| 18 | 32.75 | 42.69 | 54.66 | 62.46 | 73.87 | 90.50 | 104.52 | 142.97 |
| 20 | 30.93 | 40.26 | 51.43 | 58.69 | 69.32 | 84.79 | 97.81 | 133.48 |
| 25 | 27.27 | 35.43 | 45.02 | 51.21 | 60.32 | 73.53 | 84.62 | 114.87 |
| 30 | 24.52 | 31.80 | 40.22 | 45.63 | 53.62 | 65.17 | 74.85 | 101.16 |
| 35 | 22.36 | 28.95 | 36.47 | 41.28 | 48.41 | 58.70 | 67.29 | 90.59 |
| 40 | 20.61 | 26.64 | 33.45 | 37.79 | 44.23 | 53.51 | 61.25 | 82.18 |
| 45 | 19.15 | 24.73 | 30.96 | 34.90 | 40.79 | 49.25 | 56.29 | 75.30 |
| 50 | 17.93 | 23.11 | 28.86 | 32.48 | 37.90 | 45.68 | 52.15 | 69.56 |
| 55 | 16.87 | 21.73 | 27.06 | 30.42 | 35.44 | 42.65 | 48.63 | 64.70 |
| 60 | 15.96 | 20.53 | 25.51 | 28.63 | 33.32 | 40.03 | 45.60 | 60.53 |
| 75 | 13.85 | 17.80 | 22.06 | 24.72 | 28.73 | 34.47 | 39.21 | 51.92 |
| 90 | 12.32 | 15.82 | 19.56 | 21.89 | 25.42 | 30.45 | 34.60 | 45.73 |
| 2.0h | 10.21 | 13.09 | 16.14 | 18.03 | 20.89 | 24.97 | 28.34 | 37.32 |
| 3 | 7.82 | 10.00 | 12.27 | 13.67 | 15.80 | 18.82 | 21.32 | 27.94 |
| 4 | 6.46 | 8.25 | 10.09 | 11.22 | 12.94 | 15.39 | 17.40 | 22.73 |
| 5 | 5.57 | 7.11 | 8.67 | 9.62 | 11.09 | 13.16 | 14.87 | 19.37 |
| 6 | 4.94 | 6.30 | 7.66 | 8.49 | 9.78 | 11.59 | 13.07 | 17.00 |
| 8 | 4.09 | 5.20 | 6.31 | 6.98 | 8.02 | 9.48 | 10.68 | 13.84 |
| 10 | 3.53 | 4.49 | 5.43 | 5.99 | 6.87 | 8.12 | 9.13 | 11.80 |
| 12 | 3.13 | 3.98 | 4.80 | 5.29 | 6.06 | 7.15 | 8.04 | 10.36 |
| 14 | 2.83 | 3.60 | 4.36 | 4.82 | 5.53 | 6.54 | 7.36 | 9.52 |
| 16 | 2.59 | 3.30 | 4.01 | 4.44 | 5.11 | 6.05 | 6.82 | 8.85 |
| 18 | 2.40 | 3.06 | 3.72 | 4.13 | 4.76 | 5.64 | 6.37 | 8.29 |
| 20 | 2.24 | 2.86 | 3.49 | 3.87 | 4.46 | 5.30 | 5.99 | 7.82 |
| 22 | 2.10 | 2.68 | 3.28 | 3.65 | 4.21 | 5.01 | 5.67 | 7.41 |
| 24 | 1.98 | 2.53 | 3.11 | 3.46 | 4.00 | 4.76 | 5.39 | 7.06 |
| 36 | 1.50 | 1.93 | 2.39 | 2.67 | 3.10 | 3.72 | 4.23 | 5.59 |
| 48 | 1.22 | 1.57 | 1.96 | 2.21 | 2.57 | 3.10 | 3.53 | 4.71 |
| 60 | 1.03 | 1.33 | 1.67 | 1.89 | 2.21 | 2.67 | 3.05 | 4.09 |
| 72 | 0.89 | 1.16 | 1.46 | 1.65 | 1.94 | 2.35 | 2.69 | 3.62 |

Attachment 2 – Standard Requirements for Soakwells and On-site Detention

The following outlines minimum requirements for soakwells and on-site detention for new developments. The purpose of these requirements is to prevent increased stormwater runoff entering the local government stormwater system causing overloading and flooding.

The local government will have regard to rainfall intensity which will be in accordance with accepted guidelines or information relevant to the district.

Residential

1. Where there is no available stormwater system to connect to, proponents will generally need to provide 1 m³ of on-site storage for every 100m² of impervious surface, which is the total of all roofs, paving and driveways. As a guide a 900 x 900 soakwell will hold about 0.5m³.
2. Where a stormwater connection system is available, the landowner is required to provide a silt trap on the property side of the connection point (*see diagram below*).
3. Gutters and downpipes need an overflow relief in the event of a blockage in the stormwater system. The gutter may be designed to prevent flooding, and downpipes should not be directly connected to the stormwater pipes below ground, without some means of escape.
4. Sub soil drains are required to be connected to the stormwater disposal system. These pipes need to work efficiently for the structural integrity of dwellings, so maintenance is essential.
5. Paving around the dwelling should be a minimum 50mm below the house or building floor level and slope down a minimum 25mm in the first metre away from the building. Some paving areas may also need to be connected to a drainage system, depending on the landscape.
6. Driveways that fall towards the street need to have a stormwater grate at the edge of the property to catch the run off.

Commercial (includes retail, industry and tourist developments)

1. Commercial developments need to manage stormwater on site. Because of the generally large areas of impervious surface, the design of the system will usually need to be slowly released to the street system where available, through a slow release silt trap. The design would usually require a professional consultant or engineer.
2. All storm water pipes from private property that have been approved to discharge into the local government stormwater drainage system must be connected via a storm water grate as detailed below:

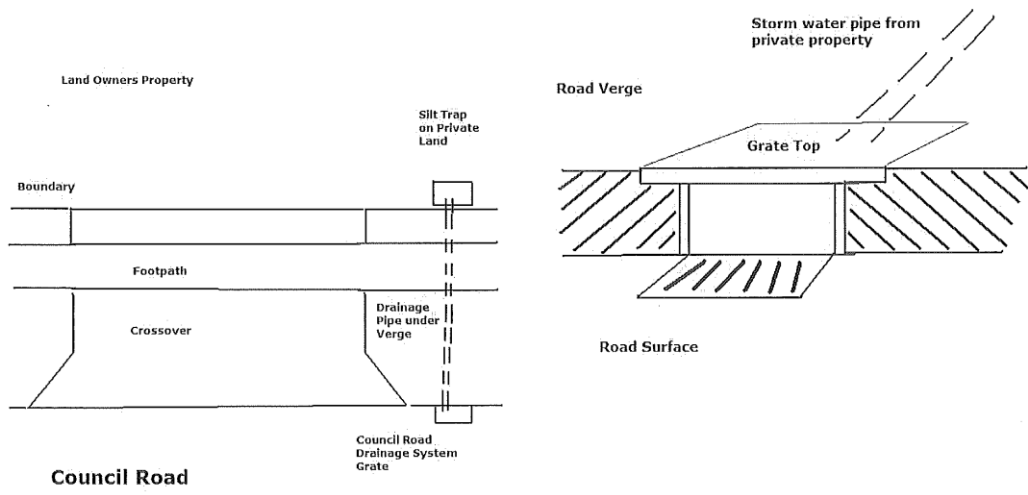
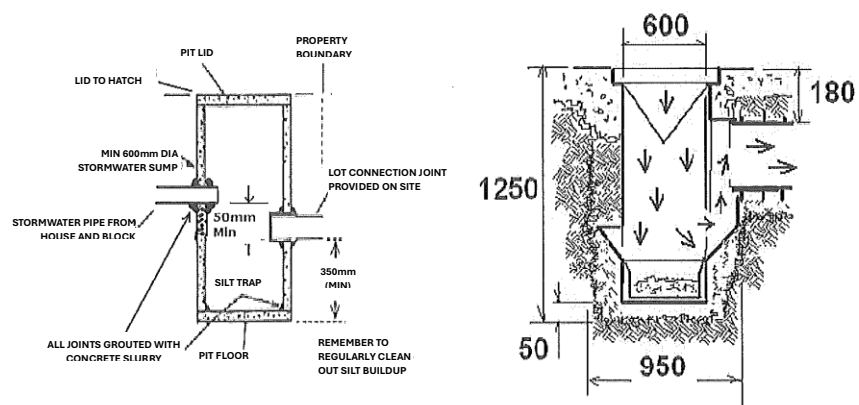


Diagram 2: Residential Silt Trap

Commercial Pollutant Arrestor Pit



Attachment 3 – Standard Requirements for Connection to the Local Government’s Stormwater System

All drainage works connecting to the local government stormwater system (open or piped) must be designed and constructed so that:

- stormwater flows are controlled to recognised best practice limits;
- stormwater infrastructure will withstand expected traffic loads; and
- stormwater infrastructure will not impede other uses of public land (e.g. access to adjoining properties, other service authority etc.).

The piped property drainage system is to capture and convey to a lawful point of discharge stormwater runoff from the following areas of the development site:

- impervious areas including roofs, paved areas and driveways;
- areas subject to changes to natural ground level including cut or filled areas; and
- areas where the natural or pre-development overland flow regime is disrupted to the potential detriment of an adjoining property.

Carrying out of the development must not introduce, impede or divert stormwater runoff in such a manner as to increase the rate or concentration of stormwater flow across a boundary onto adjoining private property. Any proposed flow onto adjoining properties is only permissible where an easement is secured and if it can be managed so as to not exceed pre-development flow rates and concentrations.

Piped systems shall meet the minimum pipe diameter, cover and gradient criteria specified in the current relevant Australian Standard. Such systems shall be designed so that any overflows will not pond against, or enter into buildings.

Unless otherwise agreed to by the local government, the following is to be designed, constructed and suitably maintained:

- a throttled direct lot connection;
- a 100mm diameter pipe;
- at the inlet a 90° elbow with an open ended perforated riser should be used (enabling discharge flows to mimic pre-development flows);
- a silt trap must be included at the entry point with access for maintenance;
- connections to piped minor conveyance systems must be to or in close proximity to a manhole in the minor conveyance system to facilitate maintenance; and
- if no manhole exists in close proximity the proponent is responsible for installing a manhole to local government specifications.

Drainage connections may be to an inlet pit/well liner or pipeline in the street verge. They may also be made to an open ‘Vee’ drain or to a properly shaped gap in the kerb line. Connections can also be made to a drainage reserve or easement through private property provided the requisite approvals are acquired.

Any drainage pipe connecting from private property into a local government controlled piped drainage system will require the installation of a manhole/silt trap to be situated and built within the private property prior to connection into the local government’s system, to stop any silt or debris from entering the pipeline system.

The local government shall allow a private drain pipe connection to be cut into the existing kerbing of a street to allow the water to drain down the kerb face if the pipe is of a small diameter (approximately 90mm) and the connection makes use of a standard commercial shaped drainage fitting to match the kerb profile.

Overflow connections from soakwells should be made from the final soakwell 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.

All connections should have a trapped manhole placed at the boundary of the lot prior to entering the local government's stormwater system. Connections should be fitted with a non-return valve to prevent surcharging from the local government's stormwater system.

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.

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 local government and constructed at the proponents cost.

Connections may be constructed by the proponent or by the local government at the proponent's cost. The contact for construction of connections is the Shire's Works Manager.

Where the proponent makes connections, the proponent 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.

Connections should be smoothly and neatly grouted.

Maintenance of connections is the responsibility of the landowner. The local government accepts no responsibility for any maintenance costs or damages arising through lack of maintenance of the connection, backflow prevention or overflow provisions.

The local government may require pollution control facilities to be installed to remove sediments, rubbish and oils prior to connecting to the local government'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 local government.

There are various other services on the road reserve, e.g. power, water supply, sewer, telephone cables etc. Whoever installs the private drainage connection is totally responsible for checking the location of these services and for any liability if damage is done to them.

The local government is not responsible for damage done to private drainage pipes on street verges by other groups, individuals or service authorities.

If the drainage plumber or builder declines to make good any lack in meeting local government's requirements, then local government shall retain the bond and use its own staff to complete the works.

All maintenance of the silt trap is the landowner's responsibility and the local government will not accept any liability for any damage or failure of the silt trap.

Attachment 4 - Stormwater Drainage Plan

The Stormwater Drainage Plan is to be in accordance with the Policy to include plans, diagrams and information showing:

- the proposed method of stormwater disposal and sufficient design level information to demonstrate that the proposed system will drain;
- plan of the site showing location, size and levels of soakwells, pipes and other drainage features;
- any constraints such as trees, services, structures and easements that may affect the viability of the drainage or on-site detention/retention system;
- existing ground levels or contours;
- proposed location and levels of roofs, driveways, parking and other paved or sealed areas;
- detail of any proposed connections to the local government's drainage system including size, level and location;
- a table showing volume calculations, including lot area, impermeable area, minimum soakwell volume required; and
- construction details for soakwells, other stormwater structures and any proposed connections to the local government's stormwater system.

The local government may also require the following information, as applicable:

- detailed engineering drawings;
- location, layout and dimensions for all stormwater management structures and measures;
- all information and specifications necessary to enable the stormwater management system to be constructed in accordance with the design intent, and to enable a "works as executed" plan to be prepared;
- existing and proposed finished surface contours at relevant intervals (i.e. 0.1 metre for flat sites to 1.0 metre for sloping sites) and spot levels;
- proposed and existing building locations and floor levels;
- street levels including gutter and kerb heights and levels;
- proposed infiltration measures (e.g. soakage trenches, swales, landscaping, permeable pavements, etc.);
- proposed discharge points to the local government stormwater system (show levels at these locations);
- any surface flow paths or flood-affected areas;
- vertical information sufficient to assess the impact of runoff from adjacent properties and demonstration that existing surface flows on adjacent properties will not be altered as a result of the proposed development;
- location, extent, depth, volume and maximum storage level of each on-site detention storage;
- location and details of each discharge control device;
- orifice plate dimensions and centreline levels;
- pit locations, dimensions and levels (surface and invert) and pipe inverts and grades;
- location and levels of internal drainage system;
- levels and locations of the discharge points for each storage;
- cross sections through storages, orifice pits and tanks as necessary;
- structural details (including reinforcing where applicable);
- a maintenance schedule that clearly and simply sets out the routine maintenance; and
- justification that the proposed design measures will not cause adverse stormwater impacts on adjoining properties.