



WARRINGAH
COUNCIL

**Stormwater Drainage from Low Level
Properties Technical Specification**

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1 General

To manage overland flow, nuisance flooding and groundwater related damage caused by low level properties to adjacent downstream properties during storm events.

To manage the impact of stormwater runoff on Council's stormwater drainage infrastructure as a result of any Development on a low level property and ensure low level properties drain to their natural downstream catchment.

To provide guidance for owners of properties when submitting a Development Application to determine the appropriate drainage system where the property falls (naturally) away from the street.

2 Requirements

This Specification applies to all types of developments and land uses where these properties fall naturally away from the street and cannot connect to a Council drainage system. The requirement for stormwater disposal is dependent on the type of proposed development or proposed land use for the property.

For Zone R2 Low Density Residential Dwelling Houses, the property owner or developer is required to manage stormwater drainage according to the sequence of steps as outlined in sections 2.1 and 2.2 of this Specification.

For all land use excluding Zone R2 Low Density Residential Dwelling Houses, the property owner or developer is required to manage stormwater drainage in accordance with section 2.3 of this Specification.

Council is to be satisfied that all avenues of the first or preceding step have been exhaustively investigated and considers these avenues to be impractical or unviable, prior to consenting the property owner or developer to progress to the next step.

2.1 Zone R2 Low Density Residential Dwelling House (for alteration and additions to existing dwelling houses) where an onsite stormwater detention is not required

A Development Application for a Zone R2 Low Density Residential Dwelling House where an on-site stormwater detention system is not required for the low level property, will require stormwater disposal from the site in accordance with the following steps:

STEP 1

Connection of stormwater to the existing stormwater disposal system will be permitted under the following circumstances:

- i. Connection into an inter-allotment stormwater pipeline or Council's stormwater pipeline subject to the drainage pipeline having sufficient capacity and the property owner having formal drainage easement(s) created over the above pipeline within the downstream property(s) or,
- ii. Existing drainage system was previously approved by Council and,
- iii. There are no valid objections of overland flow and groundwater related damage and the associated inconvenience from downstream property owners.

STEP 2

Where the means of disposal in Step 1 are not available, the use of an on-site absorption system will be permitted subject to the following:

- i. The on-site absorption system is designed by a suitably experienced and qualified civil engineer and,
- ii. The on-site absorption system will not have an adverse impact upon adjoining and/or downstream properties by the direction or concentration of stormwater on those properties and,
- iii. Soil absorption characteristics and other physical constraints indicate the on-site absorption system is appropriate for the property (refer Attachment 2 – On-site Absorption Design Guidelines)
- iv. The on-site absorption system shall require the creation of a Positive Covenant and Restriction on Use of Land over the system.

STEP 3

Where the means of disposal in Steps 1 and 2 are not available, stormwater disposal from the site shall be via a gravity fed pipeline. This will require an easement to drain stormwater to Council's drainage infrastructure through the downstream property(s).

Noting there may be difficulties obtaining an easement through multiple properties, the property owner is ascertain which adjoining downstream property(s) it may be feasible and practical to drain stormwater through, and then approach the owner(s) to request an easement be granted for the purpose of draining stormwater to Council's drainage system (refer Attachment 1 - Sample Letter). If the property owner is unable to attain any written approval from the adjacent downstream property owner(s), the property owner is to then enclose a Statutory Declaration stating the above.

STEP 4

Where the means of disposal in Steps 1, 2 and 3 are not available, the use of level spreader will be permitted subject to the following circumstances:

- i. The level spreader will have minimal impact on the upon adjoining property, including public reserves and parks, by the direction and flow of stormwater and,
- ii. Soil absorption characteristics and other physical constraints indicate the on-site absorption system is not appropriate for the property (refer Attachment 2 – On-site Absorption Design Guidelines) and,
- iii. Compliance with any requirements of the affected downstream property owners, and
- iv. The level spreader shall require the creation of a Positive Covenant and Restriction on Use of Land over the system.

STEP 5

Council may, at its discretion, consider other methods of stormwater disposal only if all of the abovementioned methods have been exhaustively investigated and were considered not appropriate for this development.

Note : If no other method of stormwater disposal is feasible, the Development Consent may be refused.

2.2 Zone R2 Low Density Residential Dwelling House (for all new dwelling houses or alteration and additions to existing dwelling houses) where on-site stormwater detention is required

A Development Application for a Zone R2 Low Density Residential Dwelling House where an on-site stormwater detention system is required will require stormwater disposal from the site to be in accordance with the following steps:

STEP 1

- i. Connection of stormwater to an existing Council stormwater drainage line located within the subject site, subject to the drainage line having sufficient capacity.

OR

- ii. Connection of stormwater to an existing inter-allotment drainage easement and pipeline subject to the property owner demonstrating the inter-allotment pipeline has sufficient capacity and the property owner having a formal drainage easement(s) created over the inter-allotment pipeline within the downstream property(s).

STEP 2

Where the means of disposal in Step 1(i) is not available – stormwater disposal from the site is to be via a new gravity fed pipeline. This will require an easement to drain stormwater to Council's drainage infrastructure through the downstream property(s).

Noting there may be difficulties obtaining an easement through multiple properties, the property owner is ascertain which adjoining downstream property(s) it may be feasible and practical to drain stormwater through, and then approach the owner(s) to request an easement be granted for the purpose of draining stormwater to Council's drainage system (refer Attachment 1 - Sample Letter). If the property owner is unable to attain any written approval from the adjacent downstream property owner(s), the property owner is to then enclose a Statutory Declaration stating the above.

OR

Where the means of disposal in Step 1(ii) is not available – Council will accept the use of an on-site absorption system subject to the following:

- i. The on-site absorption system will not have an adverse impact upon adjoining and/or downstream properties by the direction or concentration of stormwater on those properties and,
- ii. Soil absorption characteristics and other physical constraints indicate the on-site absorption system is appropriate for the property (refer Attachment 2 – On-site Absorption Design Guidelines), and
- iii. The on-site absorption system shall require the creation of a Positive Covenant and Restriction on Use of Land over the system.

STEP 3

Where the means of disposal in Steps 1 and 2 are not available, the use of a charged line to drain roof runoff to the kerb and gutter system fronting the site will be acceptable provided:

- i. Stormwater is discharged into the same catchment (or sub-catchment), in comparison to stormwater being discharged to follow the natural fall of the land to the rear of the subject site, and
- ii. The property owner demonstrating that the kerb and gutter system including any low level driveways fronting the street has sufficient capacity to cater for the 1 in 100 year ARI storm event from roof runoffs from all applicable properties fronting the same road, and
- iii. On-site absorption system will be required to collect stormwater from impervious areas of the development that cannot drain by gravity to the kerb and gutter system (refer Attachment 2 – On-site Absorption Design Guidelines), and
- iv. The on-site absorption system shall require the creation of a Positive Covenant and Restriction on Use of Land over the system.

OR

The use of a level spreader to discharge stormwater will be acceptable to Council subject to the following:

Stormwater flows from the whole site are to be restricted to the 1 in 5 year ARI “state of nature” storm event, for all storm events up to and including the 1 in 100 year ARI storm event. This system will require the provision of an on-site stormwater detention system.

Council may, at its discretion, consider other methods of stormwater disposal only if all of the methods outlined above have been exhaustively investigated and were considered not appropriate for this development.

Note : If no other method of stormwater disposal is feasible, the Development Consent may be refused.

2.3 All Land use excluding Zone R2 Low Density Residential Dwelling Houses

A Development Application for land use other than Zone R2 Low Density Residential Dwelling Houses i.e. subdivision developments, commercial developments, industrial development and mixed commercial/industrial/residential will require stormwater disposal via a gravity fed pipeline where these properties fall naturally away from the street.

This will require an easement to drain stormwater to Council’s drainage infrastructure through the downstream property.

An application under Section 88K of the *Conveyancing Act 1919* can be made to allow the Court to consider making an order to impose an easement over land if the easement is reasonably necessary for the effective use or development of other land that will have the benefit of the easement.

Council may, at its discretion, consider other methods of stormwater disposal only if all methods outlined above have been exhaustively investigated and were considered not appropriate for this development.

Note : If no other method of stormwater disposal is feasible, the Development Consent may be refused.

2.4 Pump-out systems

Council will only permit pump-out systems for draining sub-surface seepage flows from underground areas, such as basement garages where the seepage flows are minor and intermittent.

The pump-out discharge line is only to be connected to a Council stormwater gully pit and not to the kerb and gutter.

The use of sump and pump-out systems for the disposal of stormwater flows are only to be used for the drainage of surface flows from basement vehicle entry driveways.

Council will not accept stormwater disposal to the public road fronting the low level property by employing pump-out systems because of the following reasons:

- Potential failure of the pump-out system and consequent stormwater related damage to property and adjacent properties.
- Diverting flows from one catchment (or sub-catchment) to another catchment (or sub-catchment) burdened that catchment (or sub-catchment) with additional stormwater flows that may cause nuisance flooding or exasperate existing flooding problems.
- The public road drainage system fronting the low level property was not designed to adequately cope with the additional stormwater flows from these pump-out systems or charged drainage lines.

3 Definitions

Zone R2 Low Density Residential Dwelling Houses – land use as referred to in the Warringah Local Environment Plan 2009

Low Level Property – a property that has the ground level which is lower than the roadway fronting the property.

Level spreader – a device that allows for the even distribution of flows across the land.

Downstream catchment – the direct sub-catchment a low level property would drain to via gravity.

State of nature – the undeveloped condition of a property, that is, the property is grassed or turfed

On-site stormwater detention system – a stormwater drainage device to control the amount of stormwater discharge to a specified rate. The device is to be constructed on the subject property. Refer to Council's On-site Stormwater Detention Technical Specification and On-site Stormwater Detention (OSD) checklist for more information.

Attachment 1 – Sample Letter

Dear

I/we
are proposing to redevelop our property at

Before we can proceed with this proposal Council has advised us that we have two options for the drainage of stormwater, the first, which is Council’s preferred method, is to obtain a drainage easement to convey the stormwater runoff from our property to the nearest public stormwater drainage infrastructure or Council approved discharge point, being

This will require you to grant me/us a drainage easement through your property with all legal and survey costs for the creation of the easement being borne by us, together with any consideration for the use of your property as determined by an independent valuation or agreement. (Attach independent valuation or agreement to this form)

The other alternative is to install an underground absorption system or level spreader (if appropriate for this site) to spread and disperse the stormwater flow. As the runoff and seepage from this system may flow towards your property because of the slope of the land, the best solution would be to have a drainage system that will convey our stormwater via an inter-allotment drainage pipe to

You are advised that if Council determines that the only way for the drainage of stormwater is via an easement through your property, I/we may have to use Section 88K of the Conveyancing Act 1919 to request the Supreme Court to grant me/us the drainage easement. This will probably result in legal expenses and time spent for both you and I/us.

Could you please indicate your position regarding this matter so that we can advise Council to enable our application to progress.

YES I/we are willing to grant you a drainage easement.

.....

Name Address

NO I/we are not willing to grant you a drainage easement.

.....

Name Address

Attachment 2 – On-site Absorption Design Guideline

1. A consulting geotechnical engineer must submit a geotechnical report providing the following details (where applicable) for the proposed location of the absorption/dispersal trench:
 - Depth to rock
 - Depth to the water table
 - Measured infiltration rate (in litres/square metres/second)
 - Infiltration rate that can be maintained in the long term
 - Minimum distance any infiltration system should be located clear of property boundaries
 - Whether the use of infiltration is likely to cause seepage problems to the proposed structure or to any adjoining properties
 - The use of any waterproofing to protect underground areas
 - Any special requirements for the design of walls or footings on the site

The above information must be submitted to Council to determine whether any absorption system is permitted for the site.

2. The absorption pit is to be designed for an Average Recurrence Interval (ARI) storm of 50 years using DRAINS computer software based on the infiltration rate that can be maintained in the long term. An overflow mechanism in the form of a level spreader must be provided for all storms greater than the 50 year ARI storm, up to and including the 100 year ARI storm. The overflow mechanism is required to minimise overland flow disturbance to the lower property.
3. The roof guttering and downpipe system should be designed to collect the 50 year ARI design rainfall and pipe it to the absorption system, or alternatively provide for surface collection of guttering overflows into the absorption system.
4. A site plan showing the location of absorption pit(s) relative to fences and to the buildings on-site and on neighbouring properties must be provided. The pipe layout with sizes and grades is also to be shown. Drainage calculations must be submitted with the plans.
5. Where a high water table is encountered and a gravel filled trench design is proposed, the base of the trench should be at least 500mm above the water table to accommodate fluctuations of the groundwater.
6. When considering available storage volumes for the storage design methods, a maximum of 20% voids in the base aggregate may be used. Volumes in the end pits and the Everglas Trench systems may also be used.
7. The absorption pit should not be located within three metres of the side or rear boundary, or three metres from any on-site building or neighbouring buildings.

Attachment 3 – Level Spreader Design Guideline

1. Level spreader is to be designed by a suitably qualified and experienced Civil Engineer, who has Membership to the Institution of Engineers Australia.
2. Stormwater flows from the whole site are to be restricted for all storm events up to and including the 1 in 100 year ARI storm event. This system will require the provision of an on-site stormwater detention system.
3. Total discharge including bypass flows and controlled flows through the level spreader must not exceed the 1 in 5 year ARI state of nature storm event.
4. The level spreader should not be located within three metres of the side or rear boundary, or three metres from any on-site building or neighbouring buildings.
5. The level spreader ideally is to be located as far as possible from the downstream boundary.
6. Level spreader must not directly or indirectly, result in the concentration and increase of surface flows downstream of the property.