

# **On-Site Dispersal Stormwater Drainage Systems – Design Guide**



City of Ryde

Prepared March 2004

## Design Guide for On-Site Dispersal Stormwater Drainage Systems

Under the requirements of the City of Ryde's Stormwater Management Development Control Plan DCP 41 the design of an on-site dispersal drainage system must be completed in full with the development Application.

The following information is provided to assist in preparing this design and ALL parts must be completed.

### Prerequisite Information.

This type of system:

- Is ONLY permissible for single and dual occupancy developments.
- Will only be considered as a last resort and letters from adjoining property owners indicating a refusal to grant a drainage easement **MUST** accompany the application.
- Will only be permitted where the total hard or impervious paved area is LESS than 35% of the total site area AND there is an equivalent or greater area downslope of the dwelling to disperse the flow.
- Will not be approved for sites that are located in areas that have been identified by the City as containing soil types that are predominantly not conducive to dispersal of stormwater or likely to induce landslip.

### Submission

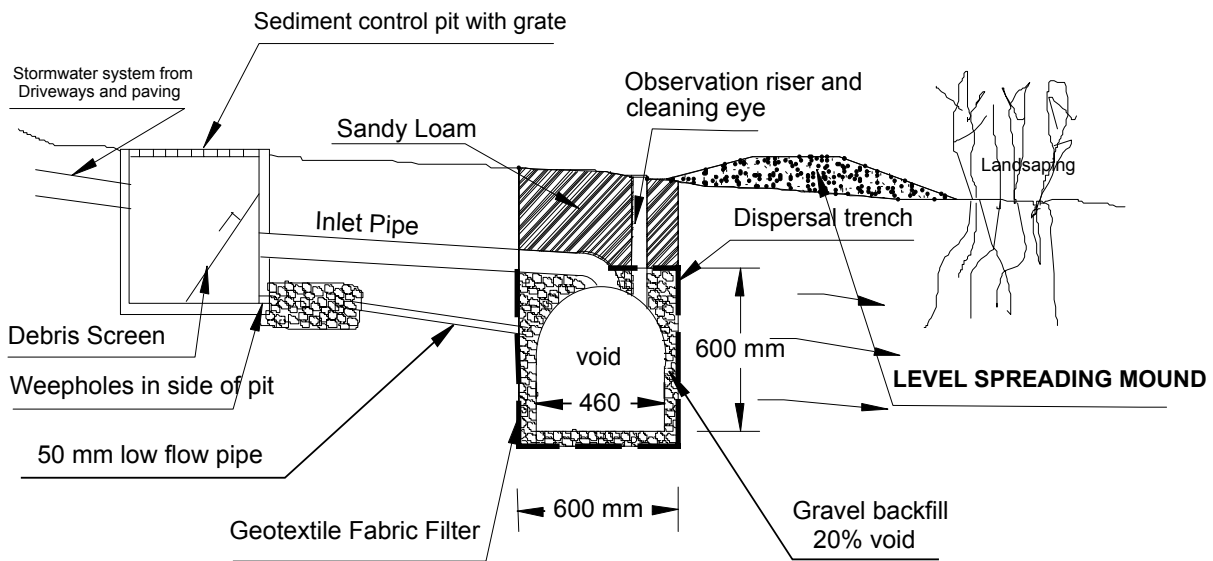
The following information is required to be shown on or with the application.

- A site plan clearly showing roof and paved catchment areas to be directed to the on site dispersal trench.
- Any other areas, including areas of “pervious paving” not being directed to the dispersal trench.
- The area to be used for dispersing the stormwater. This area must not contain driveways, sheds swimming pools or other hard paved areas.
- Calculations for catchment areas
  - Pipeline sizing
  - Dispersal trench sizing
- Detail drawings of pits, gutters, and dispersal system if included.

Following is a checklist to be completed and included with the submission and examples of the detail requirements.

## Checklist for On Site Dispersal drainage system submissions to the City of Ryde

- ❑ Letter(s) from adjoining owners (see sample letter attached)
- ❑ Is the property within an area suitable for on-site disposal (check with the City)
- ❑ Hydraulic calculations submitted (see calculation sheet)
- ❑ Catchment areas detailed (see example attached)
- ❑ A detailed site plan (see attached example)
- ❑ Detail of on site dispersal trenches shown (see below)



Typical detail of dispersal trench sediment control and level spreader

## Calculation Sheet for On-Site Dispersal

ADDRESS: \_\_\_\_\_

**Total Site Area**  $m^2$  (a)

**Roof Area**  $m^2$

**Driveway Area**  $m^2$

**Other Paved Areas**  $m^2$

**Area Draining to Dispersal Trench**  $m^2$  (b)

**Other Paved area not connected to trench**  $m^2$  (b1)

**Pervious Paving Area**  $m^2$  x 25% =  $m^2$  (b2)

**Total Impervious Area** b+b1+b2  $m^2$  (c)

**Area Percentage**  $c/a \times 100$  (Must be less than 35% of site area) %

Area available for dispersal (Must be 3 metres from dwelling and a Minimum of 5 metres from down-slope boundary and equivalent or greater than (c))  $m^2$

**Rainfall Intensity**  
For 1 in 5 year 20min Storm  
Zone 1 88.2 mm/h (29.4)mm  $mm$  (d)  
Zone 2 82.7 mm/h (27.6)mm

**Volume of Runoff** (b) x (d) L (e)

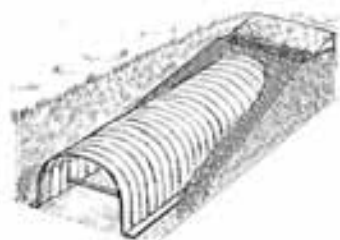
**Storage Required** (e) / 1000  $m^3$  (f)

**Length of Trench required**

Example  
Volume of 410 Jumbo =  $0.175m^3$  .....  
Volume of gravel in 600 x 600 trench  
with 20% void =  $0.013 m^3/m$   
Total Volume available =  $0.212 m^3/ metre$

**Total Volume of Trench**  $m^3/m$  (g)

**Length of Trench** (f) / (g) m



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## Catchment areas to be shown on On-Site Dispersal drawings

**A**  
Area available for dispersal A x B

Areas of Permiabile paving

**B1**  
Impervious areas not draining to dispersal trench

**B**  
Areas draining to dispersal trench

**C**  
Total site area  
.....sqm

### CALCULATIONS

DISPERSAL AREA  
A = ..... B= .....

A x B = .....Sq m (A)

ROOF AREA .....

DRIVEWAY AREA .....

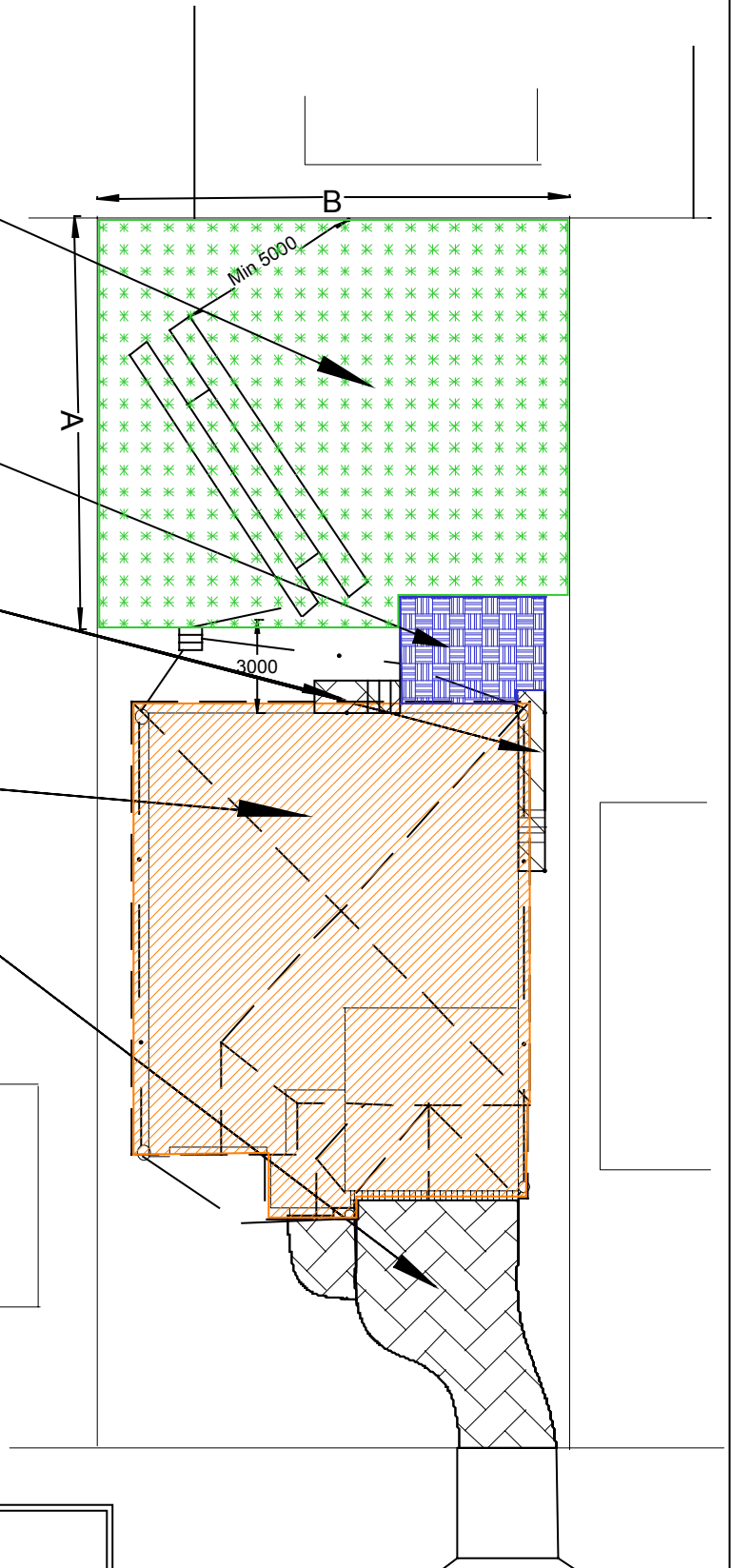
OTHER PAVED AREAS .....

PERVIOUS PAVED AREAS .....

PERVIOUS AREA x 25% .....

TOTAL HARD PAVED AREA ..... (B)

A must be equal to or greater than B  
B + B1 must be less than or equal to 35% of C



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## Details that MUST be provided with or shown on On-Site Disposal drawings

Letters from ALL adjoining downslope property owners indicating a refusal to grant a drainage easement. (see attached sample letter)

Location and length of dispersal trenches

Trees and other features

Contour lines

Sediment and Debris Control Pit

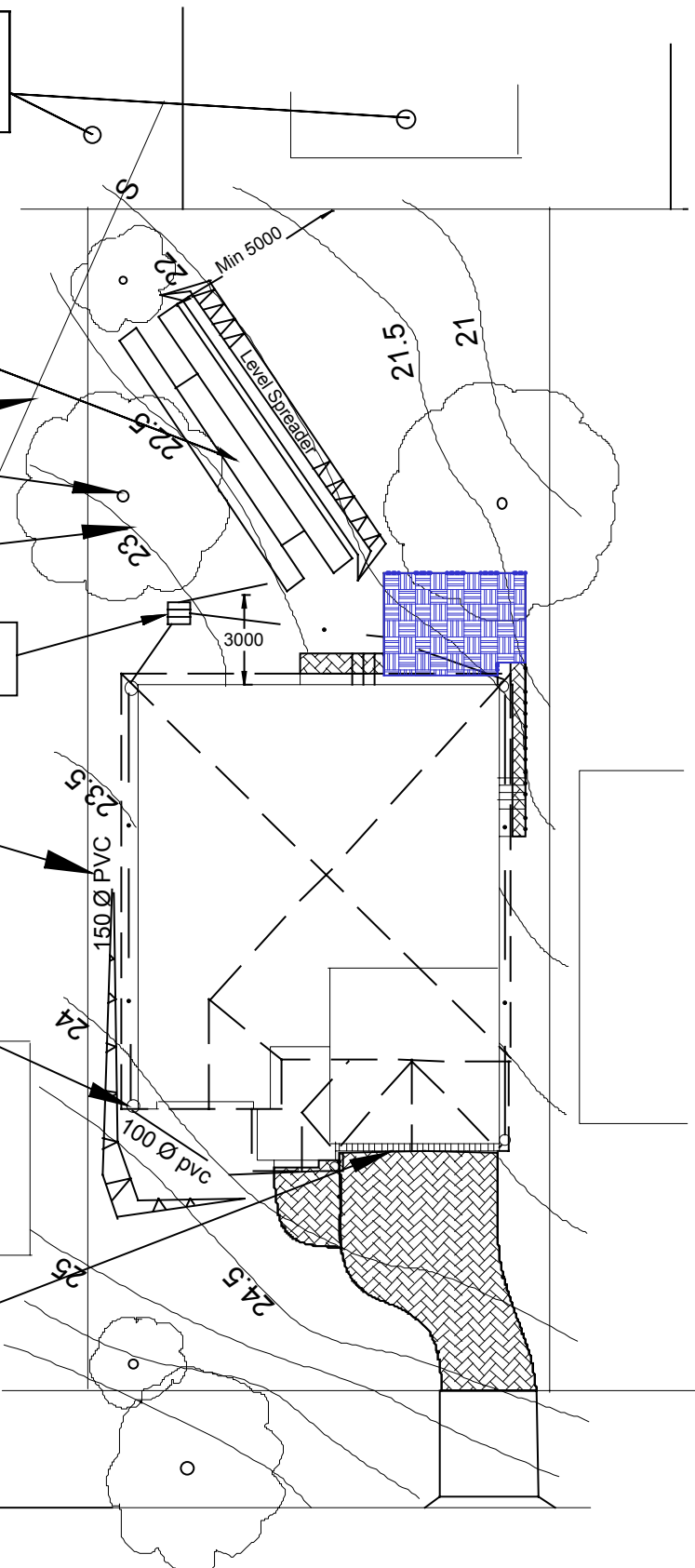
Location and Size of Pipelines

Location of Downpipes

Adjoining Buildings

Location of Grated Inlet Drains

Kerb and Gutter



Sample letter to be used when approaching adjoining property owners. A signed copy of this letter will be required for the City’s files if the easement is refused

Dear .....

I/we are proposing to redevelop our property at .....

Before we can proceed with this proposal the City of Ryde has advised us that we have two options for the drainage of stormwater, the first, which is the preferred method, is to obtain a drainage easement to convey the stormwater runoff from our property to

.....  
This would require you to grant us a drainage easement through you property with all costs for the creation of the easement being born by us, together with any consideration for the use of your property as may be determined by an independent valuation or later agreement. Alternatively we are prepared to offer you \$..... as compensation for the right to drain our stormwater under your property.

The other alternative is to have the development of our site limited to 35% of the site area to allow sufficient area between the house and our back/side fence next to your property to install an underground dispersal system to spread and absorb the stormwater flow into the ground. As the runoff and seepage from this system may flow towards your property and possibly cause some dampness because of the slope of the land the best solution would be to have a drainage system that will convey our stormwater under your property to

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

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

.....  
Name

.....  
Address

NO I/we understand that our property will be subject to some overland flow and that we do not want to accept any compensation for a drainage easement as we are not willing to grant you a drainage easement:

.....  
Name

.....  
Address