

Charged Stormwater Drainage Systems Design Guide



City of Ryde

September 2010

Design Guide for Charged Drainage Systems

Under the requirements of the City of Ryde's Development Control Plan 2010, Section 8.2, Stormwater Management, the design of a charged 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.

NOTE On-site stormwater detention requirements still apply to properties with charged drainage systems.

Prerequisite Information

This type of system:

- Is ONLY permissible for single occupancy and small duplex 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. The letter must indicate that a reasonable amount of compensation has been offered for a drainage easement.
- Must have a minimum of 1.8 metres between the roof gutters and the front boundary of the site.
- Must have a fall from the front boundary to the kerb line.
- Will only be permitted if there are no drainage problems down stream from the site.

This MUST be checked with the City of Ryde before proceeding and may require an analysis of the downstream kerb capacity to be undertaken.

Submission

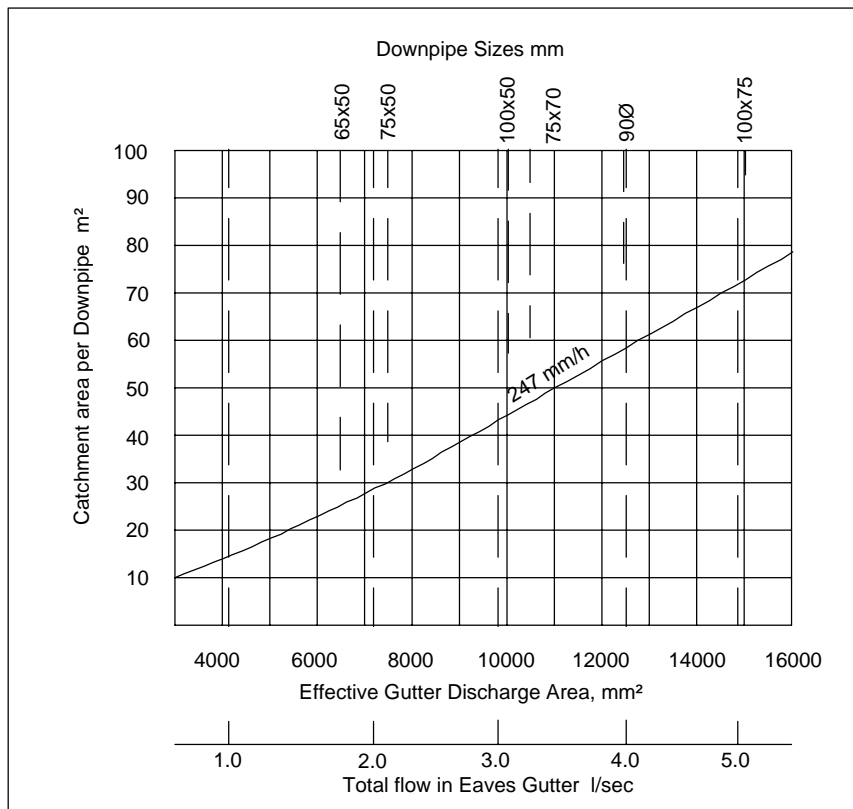
The following information is required to be provided on or with the application and must be prepared by a suitably qualified Engineer.

- All plans must be to AHD levels.
- A roof/site plan clearly showing catchment areas, direction of flows in gutters, and the location and sizes of all downpipes, pipes, pits and discharge point.
- Details of the gutter type, capacity and gutter guard system to be used.
- Calculations for : gutter sizing
Downpipe sizing
Pipeline sizing including hydraulic losses on pipe system
- A longitudinal section of the pipe system showing
 - ⇒ Gutter levels
 - ⇒ Cleaning eye / pit levels
 - ⇒ Isolation pit at boundary with invert and surface levels
 - ⇒ Location and levels of any services in footpath
 - ⇒ Discharge point
 - ⇒ Pipe sizes, capacity and design flows in each section.
- Calculations for any on site disposal system that may be required to drain paved areas that cannot be directed to the charged system.
- Detail drawings of pits, gutters, and dispersal system if included.

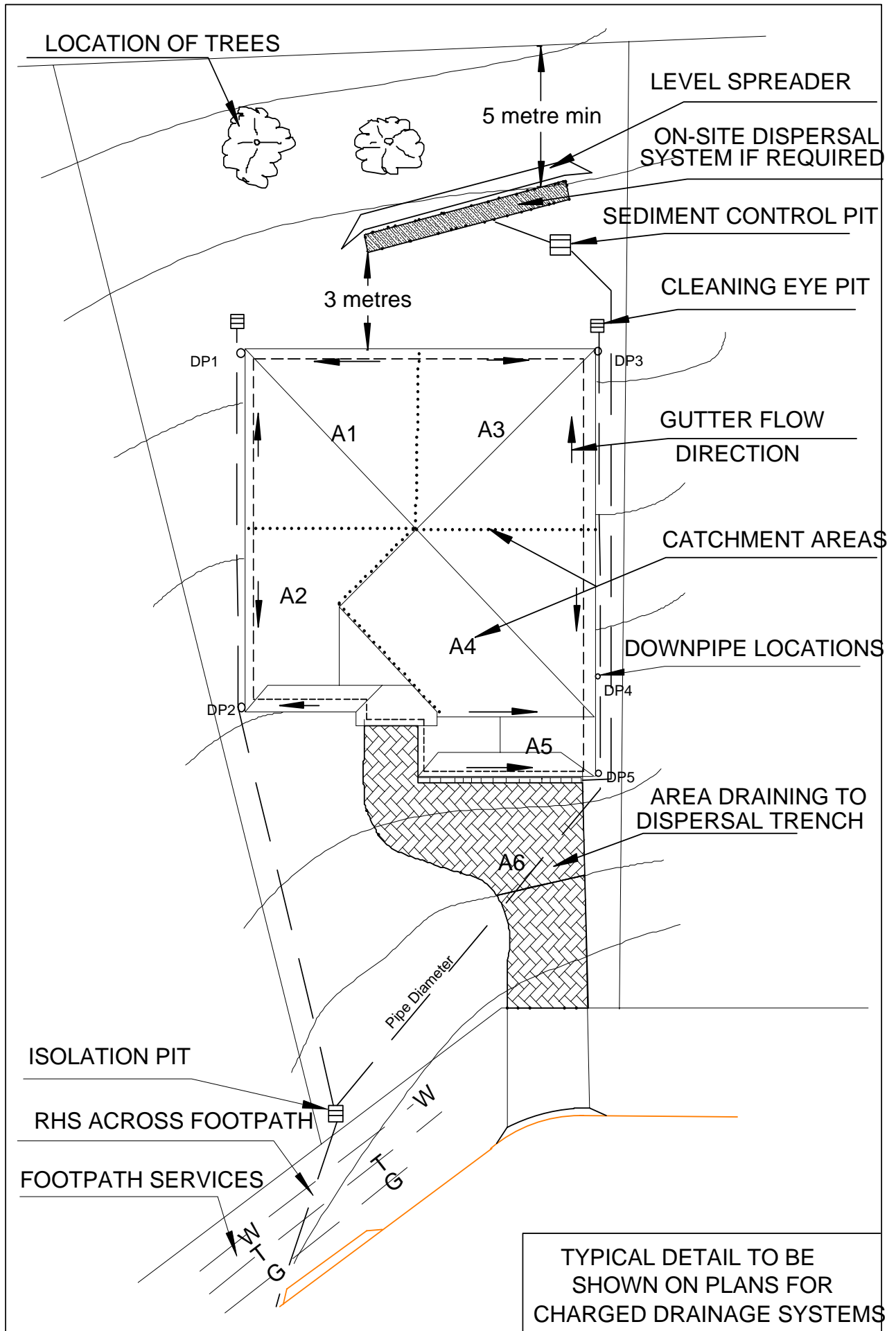
NOTE A Positive Covenant will be required to be registered against the property title to ensure the ongoing maintenance of the system. This will be required prior to the issue of the Occupation Certificate.

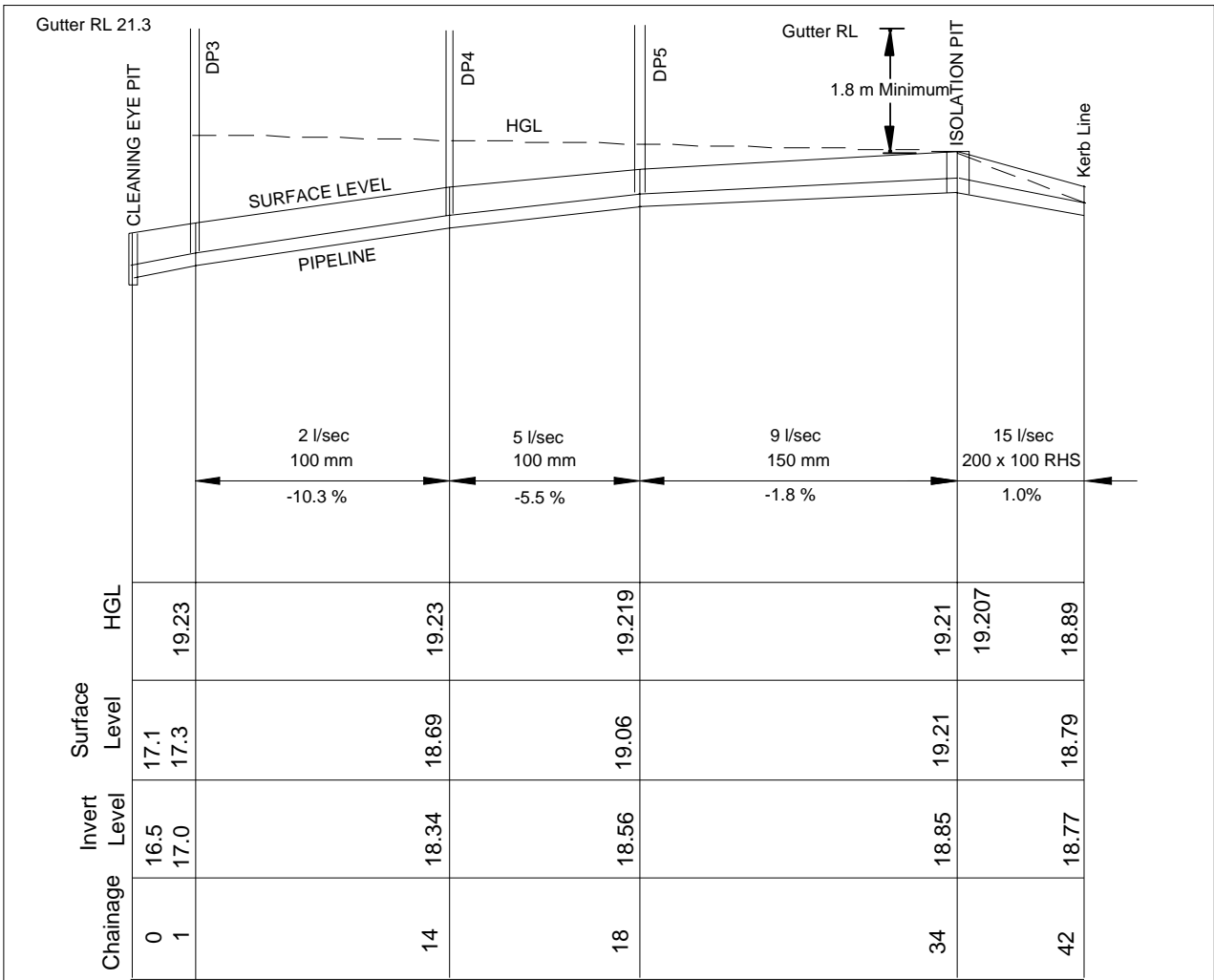
Checklist for Charged Drainage System submissions to the City of Ryde

- Letter(s) from adjoining owners (see sample letter attached)
- Downstream drainage conditions checked with the City of Ryde.
- Downstream drainage report if required by the City of Ryde.
- Hydraulic calculations submitted
- Catchment areas detailed.
- Gutters designed for 1 in 100 year storm event.
- Downpipes sized
- Details of gutter guard system included
- Detail of cleaning pit included
- Detail of isolation pit included
- Services in footpath located and shown on plans
- Detail of any on site dispersal shown.
- Details of any on-site stormwater detention system if applicable

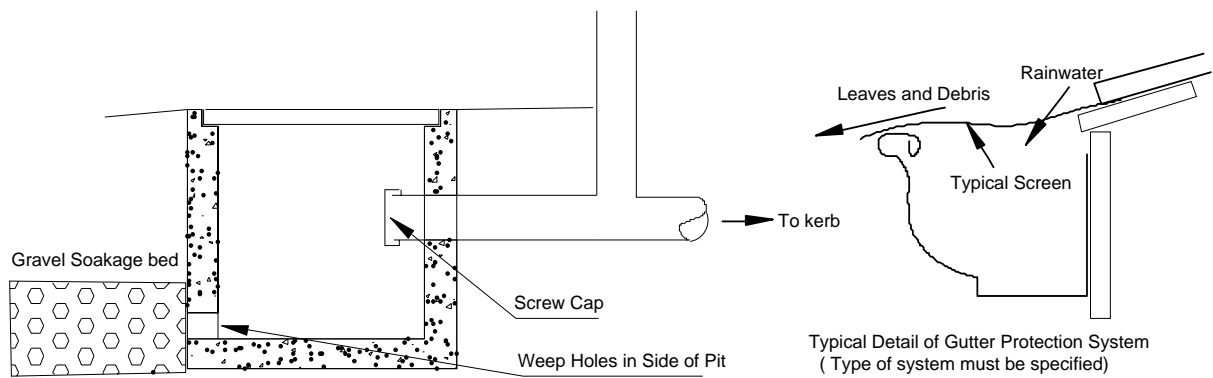


Eave Gutter and Downpipe Sizing Chart From Figure 5.1 in AS 2180 - 1986





TYPICAL LONGITUDINAL SECTION DETAIL



TYPICAL DETAIL OF CLEANING EYE PIT

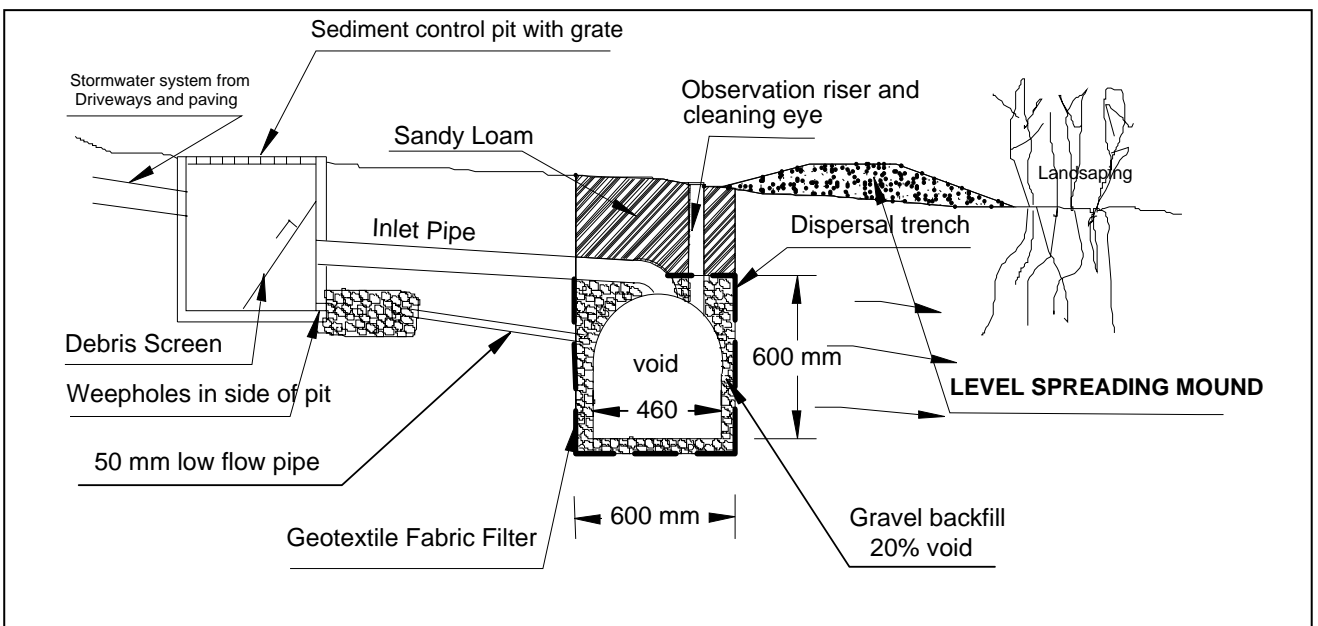
Calculations and information required for on site dispersal of runoff from areas that cannot be directed to the charged system.

Impervious area to be drained to dispersal trench m² (a)

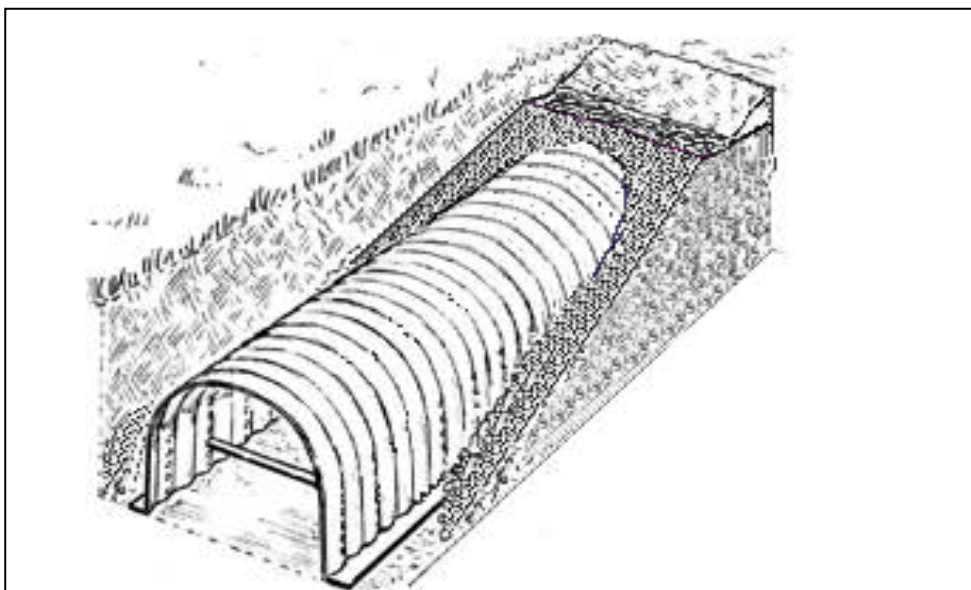
Volume required in trench for storage of a 1 in 5 year 20 min storm
 ... (a) x .0294 (29.4 mm of rainfall in Zone 1) m³ (b)
 x .0276 (27.6 mm of rainfall in zone 2)

Length of trench required. (b) / 0.212 Metres

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 (a)) m²



Typical detail of dispersal trench sediment control and level spreader



View of method of installation of trench dome and gravel backfill

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 redirect our roof stormwater through a charged drainage system to the street and also to install an underground dispersal system to spread and absorb the remainder of 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