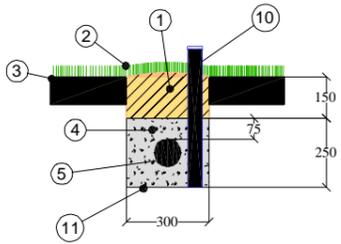
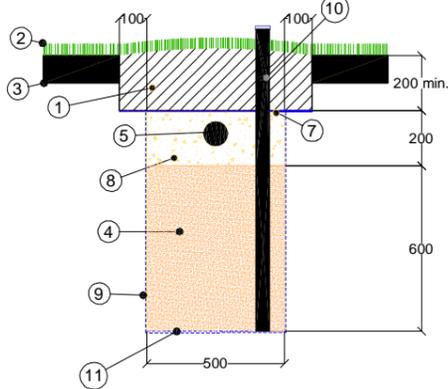


Absorption Trench Designs

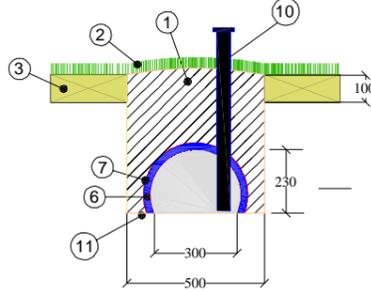
A. CONVENTIONAL PIPED TRENCH



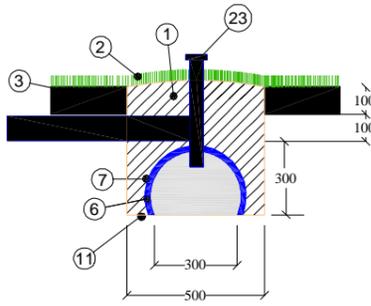
B. DISCHARGE CONTROL TRENCH FOR HIGHLY PERMEABLE SOILS (Refer Note e.)



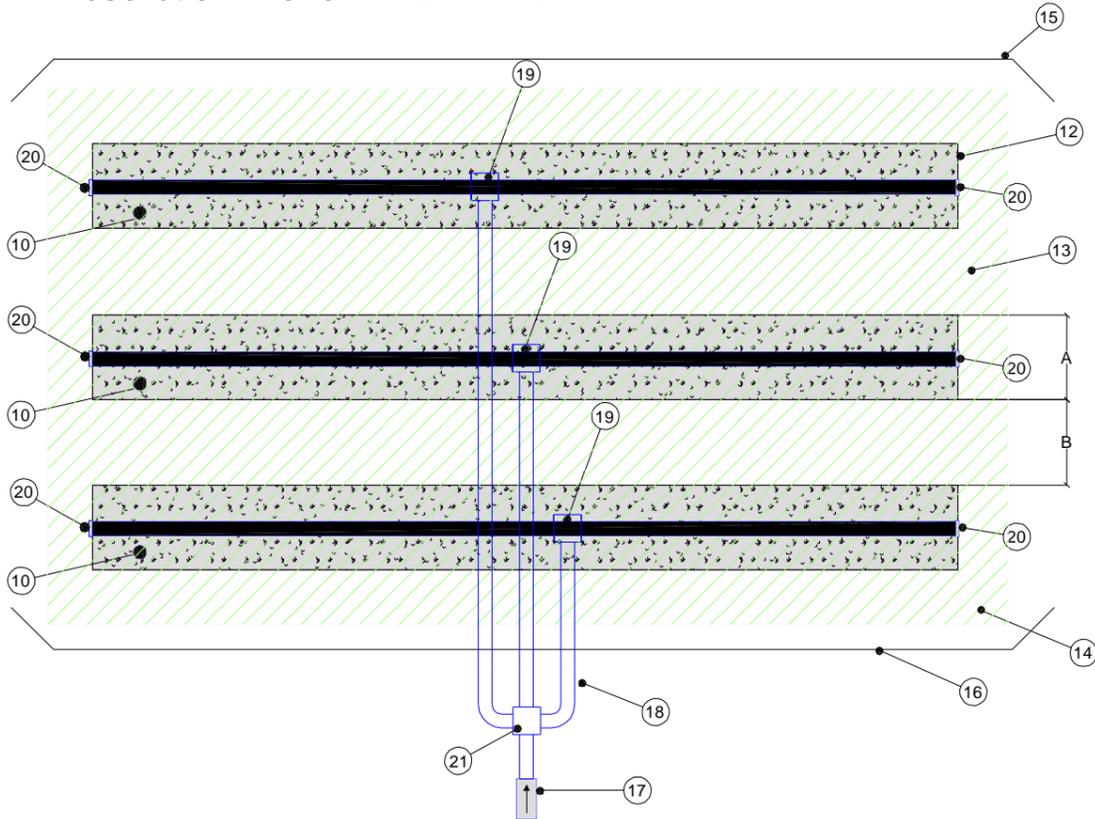
C. SELF-SUPPORTING ARCH TRENCH



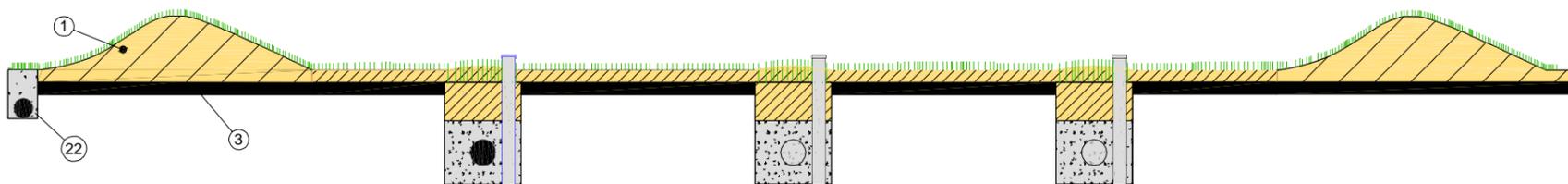
D. JUNCTION OVER SELF-SUPPORTING TRENCH



Absorption Trench - PLAN VIEW



SECTION VIEW (not to scale)



Absorption Trenches - Minimum Components and Design Requirements

1. Imported clean soil or backfilled local soils, mounded to reduce surface water infiltration.
2. Grass or other suitable cover (refer Council guidelines).
3. Existing soil.
4. Sand filtration media. Effective size range from 0.25 - 0.75 mm, typical value 0.35 mm.
5. 100 mm diameter sewer-grade PVC pipe (pre-perforated). See Sheet 5 for alternative design for low-pressure dosing.
6. Self supporting arch (usually PVC).
7. Geotextile filter cloth.
8. Pea gravel (5 - 10 mm).
9. 0.25 mm polyethylene lining on walls of trench.
10. Inspection port to be placed on downhill side of each trench. Typically a 50 mm PVC piezometer perforated in gravel zone. Inspection ports must be kept visible, accessible and suitably protected to prevent damage by mower or other maintenance.
11. Flat trench base, laser-levelled to ensure equal distribution of effluent.
12. Trench width - A (width ranges from 300 - 500 mm).
13. Spacing between trenches - B. The distance between trenches will vary depending upon trench dimensions and absorption field area requirements (m²). Spacing between trenches should be at least 1000 mm.
14. Trench dispersal area (m²). If greater than 2 m between trenches, calculate dispersal area as trench basal area plus 500 mm each side.
15. Downslope surface runoff collection drain (see inset A). Only required if close to sensitive feature downstream.
16. Upslope run-on diversion and/or drain if required (see inset B). Diversion required on all sloped sites.
17. Non-return valve, if required to prevent backflow.
18. Feeder pipe, typically 100 mm sewer-grade PVC pipe.
19. Splitter box, for even flow distribution, to be built from moulded PVC or pre-cast concrete. Box must be placed and levelled on 600mm x 600mm pre-cast slab or bedded in concrete.
20. Screwed or glued end caps.
21. Manifold distribution box, to be built from moulded PVC or pre-cast concrete, housed within 600mm x 600 mm stormwater pit with solid lid. Distribution box must be placed and levelled on 1000mm x 1000mm pre-cast slab or bedded in concrete.
22. 100-150 mm agricultural drain, if diversion drainage required.
23. " Junction", may be PVC or earthenware, forming riser to surface to provide inspection opening (instead of separate trench piezometer), capped with cast iron sewer box and bedded in concrete. Junction is cut into top of trench arch in centre of trench.

Notes

- a. Maximum trench length 20 m for centrally-fed trenches, or 10 m for end-fed trenches.
- b. Applied effluent must be filtered to 1-2 mm through effluent outlet filter or disk filter, and will ideally have been treated through secondary treatment device (e.g. reed-bed or sandfilter).
- c. Effluent must be applied in discrete doses, either by gravity through dosing siphon or by pumped application.
- d. Sub-surface pipes as per manufactures specifications, all pipe work and fitting should comply with the Australian Standard 2698 "Plastic Pipes and Fittings for Irrigation and Rural Application". Effluent grade pipe work should be used.
- e. Discharge control trench should only be considered when discharging high-quality effluent on highly permeable soils (refer AS/NZS 1547:2000 for further design detail).
- f. In clay soils each trench should be scoured to a depth of 5-10 mm to reduce base and sidewall sealing.
- g. In acid soils, addition of lime at 0.5 kg/m² is recommended at the base of the disposal trench.
- h. In heavy clay soils, addition of gypsum at 0.5 kg/m² is recommended at the base of the disposal trench.
- i. Trench field to be covered by 50-100 mm topsoil (not heavy clays), maintaining access to all access points.
- j. On sloping blocks, effluent application fields may be terraced. Maximum slope along and across trench must be <0.5 %.
- k. Pre-formed arches are usually slotted along the lower portion of both sides of the arch.
- l. Effluent manifold design may be varied to accommodate trenches with varying flow and distance requirements.
- m. Construction of upslope swale diversion and/or sub-surface drains may be necessary in poorly drained sites or where run-on would otherwise be concentrated onto the absorption field.
- n. Effluent should be evenly distributed throughout the absorption trench to prevent 'short-circuiting' and ensure optimum operating conditions are maintained over the total available area. Before filling, the base of the trenches should be filled with water to identify low areas. Low areas should be levelled with compacted soil before ETA bed constructed.
- o. The commissioning of the disposal system should include a test run/check for leaks and poorly distributed areas.
- p. Site-specific detailed trench/ irrigation designs must be submitted and approved by council before construction.
- q. Surface stormwater and sub-surface seepage shall be diverted from the irrigation area.
- r. On completion of work a plan indicating the works as executed must be provided to Council detailing any changes to the original design.
- s. The base of the trench must be at least 500 mm from highest seasonal groundwater table.

Maintenance and Management

- a. If effluent ponds on the surface or soils become soggy, seek advice from Council or a plumber immediately
- b. The absorption systems must be maintained in such a manner as to prevent any run-off of effluent of the mound system to adjoining allotments, public places and natural waterways.
- c. The system operator should maintain the absorption field regularly, to ensure adequate cover of the pipe work, elimination of weeds maintenance and harvesting of plants and shrubs.
- d. Trenches should be inspected as part of the regular on-site wastewater system service and maintenance program.

Final Draft

CLIENT/ PROJECT North Coast Councils	TITLE Example Design Absorption Trenches	DESIGNED: DL	DATUM: na	SHEET 4 OF 10 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
	PROJECT MANAGER:	PROJECT REFERENCE / DRAWING NUMBER: 2003G812J/D6.2	DRAWN: DL		HORIZONTAL RATIO: na	1.0	Design guide for disposal systems.	10/11/2003
All measurements in mm unless otherwise specified.					2.0	Amended design guide for disposal systems.	11/03/2004	DM
		REVIEWED: DM	VERTICAL RATIO: na	PAPER SIZE: A3	3.0	Final design guide for absorption systems.	25/03/2004	DM