

# Stay high and dry with Drainflo

Marley's effective/economical land drainage system.



# BENEFITS OF GOOD DRAINAGE

Drainage lowers the ground water level but moisture is retained in the pores of the soil.

Removing the “excess” or “surplus” water from the soil has the following major benefits:-

1. Improves soil aeration – allows oxygen into the soil to encourage micro organism growth and better utilization of fertiliser and natural fertility.
2. Runoff of natural or rain irrigated effluent and fertilizers, which pollute local streams and rivers, is reduced.
3. Improves soil structure by allowing worms better conditions for activity.
4. Crops are earlier as the sun warms the soil quicker.
5. Plant growth is more vigorous as roots go deeper and are more resistant to drought and winds.
6. Improves fertilizer utilization and absorption into the pasture via deeper root penetration.
7. Discourages rushes, sedges and buttercup etc. (wet growth plants)
8. Reduces surface pugging by vehicles and stock.
9. Reduces animal health problems such as footrot etc. caused by wet conditions.
10. Allows for warm dry paddocks for calving, lambing, marking and feeding out.
11. Means cleaner cows in the milking shed and less chance of contamination.

## DRAINFLO / DRAINCOIL

### DRAINFLO



**Drainflo is manufactured from high-density polyethylene material, with a corrugated profile wall to give high crush resistance, flexibility and lightness.**

**Drainflo has slots cut at the bottom of the corrugations and spaced around the circumference. Drainflo is also available unslotted (Draincoil).**

**Drainflo is designed for the economic removal of excess ground water in pasture, cropland, orchards, playing fields, roading and construction work. It can also be used in effluent soakage fields, retaining wall drainage and stormwater diversion.**

### DRAINFLO DIMENSIONS

Drainflo – Nominal Size	160mm	110mm	65mm
Mean outside diameter	159.5mm	110.2mm	68.4mm
Mean inside diameter	139.0mm	94.0mm	55.5mm
Average weight/metre	0.882kg	0.500kg	0.231kg
Slot area/metre	9180mm <sup>2</sup>	7668mm <sup>2</sup>	5560mm <sup>2</sup>
Slot dimensions (mm)	15 x 1.7	12 x 1.5	8 x 1.5

## DRAINCOIL



Draincoil is easily identified by twin yellow stripes along its length.

Draincoil can be used where root penetration is a problem, for example when the drain passes under or near trees or hedges, or where a low cost water disposal pipeline is required.

## DRAINFLO/DRAINCOIL COIL DIMENSIONS

Nominal Size(mm)	Coil Length(mm)	Core Diameter(mm)	Coil O.D.(mm)	Coil Width(mm)
160	45	450	1500	650
110	100	450	1500	600
110	30	450	1000	600
65	150	550	1350	550
65	30	300	750	350
65	15	300	650	350

## PRODUCT RANGE

Product Code Drainflo	Pipe O.D. (mm)	Coil Length (m)
400.65.15HP	65	15
400.65.30	65	30
400.65.150	65	150
400.110.15	110	15
400.110.30	110	30
400.110.100	110	100
400.160.15	160	15
400.160.45	160	45

Product Code Draincoil	Pipe O.D. (mm)	Coil Length (m)
500.65.15U	65	15
500.65.30U	65	30
500.65.150U	65	150
500.110.15U	110	15
500.110.30U	110	30
500.110.100U	110	100
500.160.15U	160	15
500.160.45U	160	45

## FITTINGS

Fittings available for Drainflo, Draincoil, Heavy Wall Drain “Road Drain” and Drainflo with Filter Sock are opposite.

If junctions are required for 65mm Drainflo, Marley 65mm Downpipe fittings can be used.

	Joiner	Junction	Reducing Junction 110/160	Reducing Joiner 110/160
65mm	✓	-	-	-
110mm	✓	✓	-	-
160mm	✓	✓	✓	✓



# HEAVY WALL DRAINFlo - "ROAD DRAIN"



Heavy Wall DrainFlo is made from high-density polyethylene material, with a corrugated profile but with greater wall thickness. The increased wall thickness provides higher crush resistance at the expense of flexibility.

Heavy Wall DrainFlo has slots cut at the bottom of the corrugations and spaced around the circumference. Heavy Wall DrainFlo is also available unslotted (Heavy Wall Draincoil).

Heavy Wall DrainFlo is easily identified by twin red stripes along its length.

- COST EFFECTIVE
- HIGH LOAD APPLICATIONS
- EASY TO INSTALL

Heavy Wall DrainFlo with its distinctive red stripes is designed for use in high load applications.

110mm Heavy Wall DrainFlo meets the requirements of Transit New Zealand Specification NRB F3: 2000 and subsequent amendments. Heavy Wall DrainFlo is tested to AS 1462.22

## PIPE STIFFNESS

Product	SN Rating Load to achieve 5% deflection (kn/m/m)
65mm Drainflo	5
110mm Drainflo	5
160mm Drainflo	5
110mm Heavy Wall Drainflo	12
160mm Heavy Wall Drainflo	8.5
110mm Punched PVC	5
160mm Punched PVC	5

## PRODUCT RANGE

Product Codes	Pipe O.D (mm)	Coil Length (m)
400-110-30HW	110	30
400-110-100HW	110	100
400-160-45HW	160	45
400-110-4HW	110	4
400-160-4HW	160	4

## DIMENSIONS

Heavy Wall Drainflo	160mm	110mm
Mean outside diameter	159.5mm	110.2mm
Mean inside diameter	138.5mm	93.0mm
Average weight/metre	1.0kg	0.661kg
Slot area/metre	9180mm <sup>2</sup>	7668mm <sup>2</sup>
Slot dimensions (mm)	15x1.7	12x1.5
Coil sizes	45m	30 & 100m
Straight Lengths	-	4mt

# DRAINFlo WITH FILTER SOCK



DrainFlo with Filter Sock fitted, has been developed to provide fast and cost effective installation, to make life easier for DrainFlo users.

The pre-fitted thermal bonded Polypropylene filter sock provides the combined functions of filtration and separation to prevent excess fines in the water, entering the pipeline and causing silting up of the pipe bore.

Benefits of Filter Sock are;

- High permeability to air and water
- Resistant to mildew, moisture and rotting
- Lightweight and high bulk, specific gravity 0.91
- Exceptional dimensional stability
- High tear strength, high tensile strength
- Non fray
- High spectrum of resistance to most chemicals
- Low pore size to prevent root fibre penetration

## PRODUCT RANGE / DIMENSIONS

Description	Product code	Diameter (mm)	Coil length (m)	Colour of filter sock
110mm dia x 100metre coil Drainflo with filter sock	400.110.100FS	110	100	White
110mm dia x 100metre coil Heavy Wall "Road Drain" Drainflo with filter sock	400.110.100HWFS	110	100	Red
160mm dia x 45metre coil Heavy Wall "Road Drain" Drainflo with filter sock	400.160.45HWFS	160	45	Red

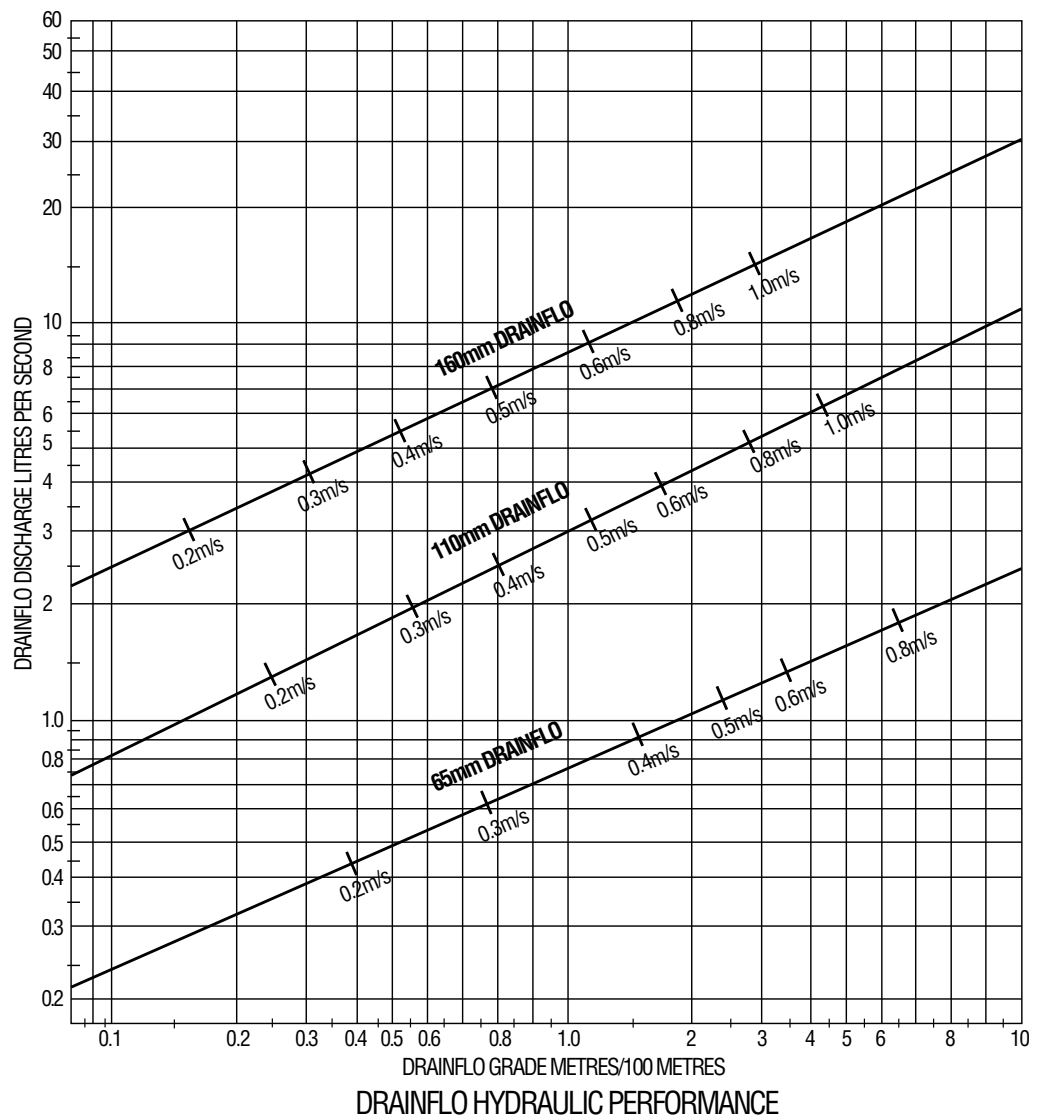
## SPECIFICATIONS

### WATER ENTRY

The area of inlet slots exceeds 5500mm<sup>2</sup> per metre, see individual sizes. The slots are positioned at the bottom of the corrugations, to reduce the possibility of damage or clogging, and to maximize water inflow.

### FLOW RATE

The chart shown here gives the hydraulic capacity of Drainflo under laboratory test conditions. The water velocities noted apply to both full pipe and half pipe flows.



## CHEMICAL AND BIOLOGICAL RESISTANCE

High density polyethylene is resistant to acids (particularly soil acids), alkalis non-aromatic solvents and oils.

However, when Drainflo is likely to be subject to discharge of large volumes or a concentrated effluent, confirmation of suitability should be obtained.

High density polyethylene is not subject to attack nor will it support the growth of bacteria. However, iron ochre or similar soil bacterial growths formed when certain ground waters come into contact with air can cause blockage of the inlet holes or in extreme conditions will block the pipe bore. This problem should be discussed with a qualified drainage consultant.

## PIPE GRADE

In general pipe gradients between 0.6% and 1.2% are practical and most efficient. Steeper grades obviously produce greater discharges than flatter grades, but should be used with caution.

A water velocity of 0.5m/sec is desired to flush out fine sand or coarse silt which may enter the pipe.

Accurate control of trench grade and hence pipe grade is to be achieved.

Flatter grades need to be treated with caution due to low flow rates and possible silting.

## DRAIN SPACING

The distance between parallel lines of drains, in for example a paddock, depends on the soil permeability and the drain depth.

The following information is offered as a guide only.

The Company cannot accept any responsibility for decisions based on this guide since the actual drain spacing and depth is determined from specific soil permeability tests and survey results.

For drains laid at 0.9 – 1.0m deep; spacing for the listed soil types will be of the order.

Sand	20 – 23m
Loam	12 – 13m
Sand Clay	5 – 6m
Sand Loam	14 – 15m
Clay Loam	7 – 8m
Clay	4 – 5m

## STANDARDS

Drainflo substantially exceeds the requirements of AS 2439 "Perforated Plastics Drainage and Effluent Pipe and Fittings".

# INSTALLATION

## DESIGN

The design of a land drainage system requires the experienced evaluation of a large number of factors e.g land configuration, soil porosity, proposed crop requirements etc.

We recommend that, wherever possible, professional advice be sought from appropriate qualified persons.

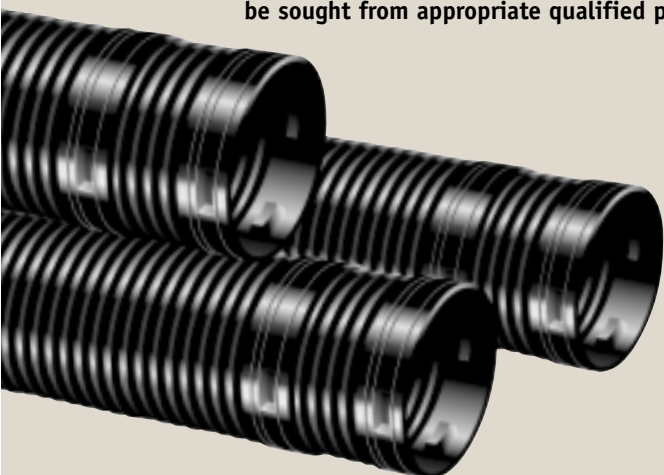
## TRENCH DEPTH

This will be determined by the professionally qualified designers.

In average pastoral and horticultural installations a minimum depth of 0.6m is recommended. This will provide reasonable protection against farm traffic loads. If the ground is soft or peaty or heavy wheel loads are frequent, we suggest using Heavy Wall Drainflo.

Under driveways or roads where frequent traffic is usual we recommend Heavy Wall Drainflo laid to a minimum depth of 0.75m and fully surrounded with gravel.

There is no practical maximum depth of any size of Drainflo provided the width of the trench at the pipe is not greater than 2 x the O.D. and Type A bedding is used.

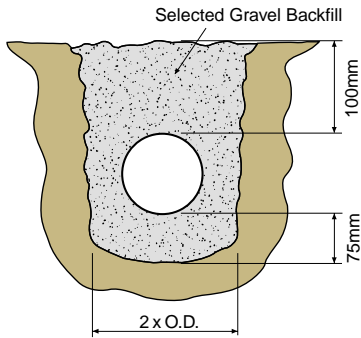


## PIPE LAYING

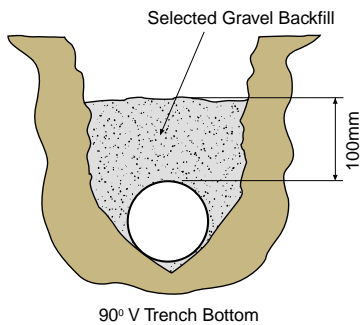
The long term performance of pipe laid with a full gravel surround is superior to the alternatives. Topsoil backfill should be used only with the agreement of the professional advisor.

**Three types of bedding may be used:**

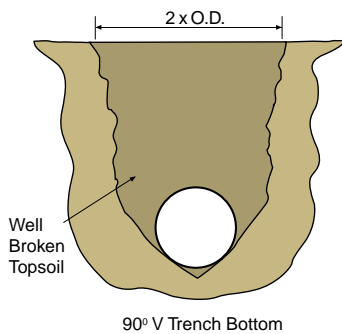
### Type A: Gravel Surround



### Type B: Partial Surround



### Type C: Soil Backfill



## GRAVEL FILL

Gravel selected for the pipe surround should have as low a fraction of particles below 1.5mm as possible (the slot width is 1.5mm); below 5% if possible.

Stones larger than 20mm are also unwanted. The commercially available 7mm – 20mm is suitable although in very wet areas a minimum nominal of 5mm will be better.

Excess fines (below 1.0mm) will eventually enter the pipe and possibly cause settling of the backfill. In this situation, use Drainflo with Filter sock as an option.

The gravel base should be placed and screeded to grade, the pipe laid centrally and the backfill placed so that the space between the pipe and the trench wall is completely filled. Where the pipe is laid directly on the soil it should be placed in the 90°V and then backfilled.

## SOIL BACKFILL

The excavated soil, well broken up, should be placed over the gravel and compacted.

## IN EVERY CASE

- The pipe must not be stretched
- The pipe must be central in the trench.

## ROCK TRENCH

Where Drainflo is to be laid in a rock or rocky trench (stones larger than 50mm) full gravel surround shall be used.

## WET TRENCH

Drainflo will float. It should be held in place until partially backfilled, or better, the trench should be dewatered.

## TRANSPORT AND STORAGE

Drainflo is easily damaged by the forkhoist forks, overtight rope, sharp or heavy objects etc. Improper handling and stowing during transport are major sources of damage.

Drainflo can be stored in the open for up to 12 months but stacked flat in cool shade is recommended.

## SEPTIC TANK INSTALLATIONS

Drainflo may be used, subject to Territorial Authority approval for the effluent disposal pipework of a septic tank. You should refer to NZS4610 "Specification for

Household Septic Tank Systems" and the Territorial Authority Public Health Inspector.

# HOME GARDEN DRAINAGE

## PLANNING

Wherever water flows across your lawn or garden, a drain should intercept the flow and divert it away. Plan the drain so that it runs across the slope on a slight downhill grade to ensure a steady even flow.

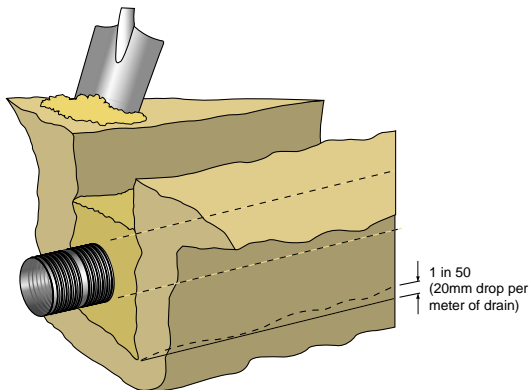
Where water collects in low areas, the drain should start in the depression and run on a downgrade to a suitable outlet.

## DISPOSING OF RAINWATER

Drains can either run to a soak hole or be channeled to existing stormwater drains. The advice of your local Council regarding the most suitable method of disposal is recommended.

## DIGGING THE TRENCH

The trench should be dug not wider than a spades width, to a depth of approx 300 – 400mm. Ensure that the trench bottom is smooth and flat and runs on an even flow downgrade. A suitable downgrade is to allow a steady, even flow. A suitable downgrade is about 1 in 50 (20mm drop per metre of drain).

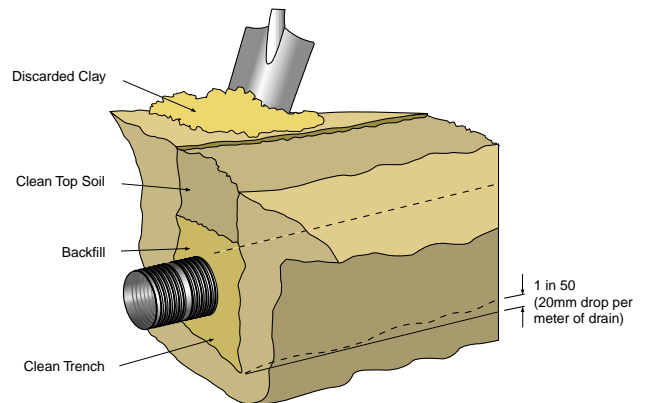


If possible leave this drain open until a period of rain proves that water will run freely to the discharge point.

## PIPELAYING

Remove any loose soil or mud from the bottom of the trench, then lay the pipe and cover it with at least 60mm of suitable backfill material.

Fill the remaining trench with topsoil. Clay and other soils are not recommended for backfill as they tend to seal off the trench, causing the excess water to sit on top of the clay rather than filtering through to the pipe.



Ensure that the pipe sits firmly on the bottom of the trench and that it doesn't lift off during filling.

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### AUCKLAND

Mahia Road, Manurewa, Private Bag 802 Manurewa  
Sales Department: Telephone 09 279 2777  
Direct Fax 09 279 2778 Freefax 0800 652 621  
Head Office: Telephone 09 279 2799 Fax 09 279 2798  
Sales Hotline: 0800 222 922

### CHRISTCHURCH

Shands Road, Hornby, PO Box 16233 Christchurch  
Sales Hotline: 0800 222 922  
For a quotation, installation or more information call free

For further information: **0800 MARLEY** (0800 627 539) [www.marley.co.nz](http://www.marley.co.nz)

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