

Costs

Guideline No 20.



This guideline aims to provide an insight to the costs associated with the purchase and installation of various parts of a dairy effluent management system.

This guideline should be used in conjunction with [South East Dairy Effluent Guideline No. 23](#), which provides further information of the sources used in providing these costs.

Costs are all estimates as of **March 2005** (Prices exclude GST) and may vary among distributors.

The referencing numbers in this fact sheet refer to suppliers listed in '[Guideline 23 – Sources of Information](#).' This enables the reader to identify the source of the cost estimates.

Trafficable solids trap

Referencing No.	Materials Required	Materials Measurements	Unit Cost	Extended Cost
53	Concrete (40 MPa)	11 m ³	\$178/m ³	(Delivered within 25km) \$1958
39	Reinforcing F72	6 sheets	\$75/sheet	\$ 450
	Y12	19 lengths	\$11.00/6m length	\$ 114
55	Formwork			\$ 498
-	Excavation			\$ 200
TOTAL COST				\$3220

Manure pumps

Referencing No.	Materials Required	Cost
32	Yardmaster 10 HP 3-phase	\$ 430
	Reeves 10 HP 3-phase	\$4200
	Upper and lower float switch (for 10 HP motor)	\$ 450
	Yardmaster pond/pit stirrer (10 HP 3-phase, 1500mm shaft)	\$6800

Piping

Referencing No.	Materials Required	Cost
26	50 mm polyethylene	\$1.50/m
	90 mm PVC (stormwater)	\$3.23/m
	100 mm PVC (sewer)	\$6.39/m
	150 mm PVC (sewer)	\$12.85/m

Sprinklers

Referencing No.	Type of Sprinkler	Cost
32	Manurain sprinkler	\$1500
	Effluent traveller	\$4000 - \$5000

Flood wash

Referencing No.	Item	Cost
59	Most popular selling tank; 22,500 Lt (5000 gall)	
	For a yard with a width of 12 – 14m; with 375 mm diameter downpipe and fittings	\$10 000
	For a yard with a width of 25 – 30m; with 450 mm diameter downpipe and fittings	\$10 700

* The three main downpipe sizes sold are as follows. The prices include tank, installation piping, flumes, valves and stand. (Concrete footings and connection to services is an additional expense)

* The system comes with a 10-year warranty. Commercial grade tanks are used. They also offer a do-it-yourself kit, which could save up to \$2000 on the prices quoted above.

Fencing

Referencing No.	Item	Cost
38	Stock lock	\$0.96/m
	Barb	\$0.15/m
	Plain wire	\$0.09/m
	Strainer posts; 7 foot treated pine	each \$38.00
	Steel posts	each \$ 4.60
	Gate; 1 inch tubing, 12 foot	\$89.50
	Gate fittings	\$27.00
	Strainer support; 10 foot treated pine strut	\$15.00
-	Labour	\$30 - \$40/hr

Typical fencing cost

Typical pond: fencing three sides to existing fence line; 140 metres stock lock, 280 metres plain wire, 280 metres barbed wire, three strainer posts, three supports, 10 steel posts, gate. **MATERIALS COST =\$500**

Typical trap: fencing three sides to existing yard fence; 20 metres stock lock, 40 metres plain wire, 40 metres barbed wire, two strainer posts, two supports, gate **MATERIALS COST =\$225**

Mechanical Solids Separator (FAN Press Screw Separator)

Referencing No.	Items Required	Cost
16	Collection pit	\$10,000 – 15,000
	Stirrer	\$ 5,000
	Stirrer installation	\$ 2,000
	Pump	\$ 6,500
	Pump installation (includes access winch)	\$ 2,500
	FAN separator	\$37,000
	Separator housing and platform	\$20,000 – 22,000
	Plumbing	\$ 3,500
	Electrical fittings and installation	\$ 5,000
TOTAL COST		\$91,500

Additional requirements for recycling separated liquid effluent

Item	Cost
Storage tank (60 – 90 kL)	\$15,000
Pump	\$ 5,000
Plumbing	\$ 2,000
Electrical fittings and installation	\$ 2,000
TOTAL COST	\$24,000

Earthworks

Referencing No.	Type of Service	Type of Equipment	Cost
22	Contractor	20 Tonne Excavator	\$90/hr + Float
	Excavation, turkeys nest pond	Bulldozer, scraper, compaction, water	≈ \$5.00/m ³
	General excavation	Bulldozer, scraper	≈ \$2.50/m ³
24	Contractor	20 Tonne Excavator	\$100/hr + Float
		Long Reach Excavator	\$125/hr + Float
		Tip Truck	\$100/hr (neg)

Linings for Effluent Ponds

Referencing No.	Material Required	Cost
50	High Density Polyethylene (HDPE; 1.5mm)	*\$8.50m ²
51	Geosynthetic (Bentofix)	**\$10.00 m ²
22	20 mm crushed rock	\$18.50/tn
	Landfill Grade Clay (locally sourced)	\$5.00/m ³
	Compaction rate for 600 thick layer	\$15.00/m ²

* supplied and laid; excludes trenching around perimeter to secure the liner.

** supplied and laid, plus placement of a protective layer of crushed rock. Does not include the cost of the rock.

Storage ponds

Winter Storage, Mt. Gambier District

- Based on 500 cows, 150-day storage, 70 litres of effluent produced per cow per day. Fresh water is diverted from the effluent stream (both yard and roof).
- 35,000 litres of effluent produced per day

Single Pond System

Design Storage: 6300 m³ Pond Surface Area: 1781 m²

Referencing No.	Item	Dimensions x Cost	Total Cost
22	Excavation	6307 x \$ 2.50	\$ 15,768
	Filling Sand	267 x \$12.50	\$ 3,338
50	HDPE liner	1781 x \$ 8.50	\$ 15,138
TOTAL COST			\$ 34,244

Two Pond System

Pond 1 Storage: 2100 m³ Pond 1 Surface Area: 600 m²

Referencing No.	Item	Dimensions x Cost	Total Cost
22	Excavation	2100 x \$ 2.50	\$ 5,250
	Filling Sand	95 x \$12.50	\$ 1,125
50	HDPE liner	596 x \$ 8.50	\$ 5,066
TOTAL COST			\$ 11,441

Pond 2 Storage: 8620 m³ Pond 2 Surface Area: 8620 m²

Referencing No.	Item	Dimensions x Cost	Total Cost
22	Excavation	8622 x \$ 2.50	\$ 21,555
	Filling Sand	1293 x \$12.50	\$ 16,163
50	HDPE liner	8622 x \$ 8.50	\$ 73,287
TOTAL COST			\$111,005

Total for the two ponds system is \$122,446

Installation of 50 mm PVC Groundwater Monitoring Wells

Referencing No.	Item	Cost
14	Soil coring	\$72.00/m
	Drilling	\$65.00/m
	Hole set-up (takes approximately an hour)	\$150

Example: For a 20 metre hole the cost of materials would be approximately \$300, which includes Class 9; 50 millimetre pre-slotted PVC, six metre screen intervals, gravel backfill and bentonite cap and cement finish.

Drilling, materials and installation for a 20 metre well:	\$1,750
Additional expenses	
Travelling	\$1,500 – \$1,800
Accommodation (for two people)	\$180/night

Waste Spreading

Liquid Spreaders – Tractor Drawn

Referencing No.	Size Range	Price Range
15	5,000 – 19,500 Lt	\$40,000 – 80,000

Most common system purchased is the 10,500 litre tanker. The price varies according to type of injection/nozzle system fitted.

Suitable applications:-

Tankers are capable of spreading a range of slurries, from liquid wash water to effluent with a viscosity similar to wet concrete.

Referencing No.	Liquid Spreader Specifications	Outputs
15	10,500 Lt tanker	≈ \$43,000
	Filling time	3 – 4 minutes
	Spreading time	3 – 6 minutes
	Average output	42,000 L/hr

Contract rate @ \$100 – 140/hr (depends on method of application).

Liquid Spreaders – Truck Mounted

Truck units are designed to ISO and EPA standards, and are equipped with automated loading arms.

Referencing No.	Item	Cost
17	Truck Hire, 12,500 litre tanker Filling time approx. 4.5 mins Unloading time approx 3 – 5 mins	\$130/hr
	Pond stirrer	\$50/hr
	Excavator (surface cleaning)	\$90/hr (no float fee)
	Travel fee	\$120/hr Local \$100/hr Lucindale

Solid Spreaders

Spreader Specifications	Output
Size range	7 – 20 tonne
Spreading width	20 metres

*Suitable applications: chicken, dairy and piggery manure

Water Sample Collection

Item	Cost
Sampling technician	\$110/hr
Travel costs	\$1.00 km
Sample Freight costs	\$15.00 (TOLL Mt Gambier – Adelaide)

Laboratory Analysis

Referencing Number	Type of Testing	Parameters Tested	Cost Per Sample
44	Water Testing	Salinity, total suspended solids, pH, major metals and salts (Fe, Mg, Na Cl) and nutrients (N and P).	\$33.50
	Soil Testing	pH, extractable P:K:S:Al:B, organic carbon, salinity, free lime, texture, nitrate, chloride, exchangeable cations and EDTA extractable Cu:Zn:Mn:Fe	\$120.00
	Effluent and Wastewater Sludges	BOD, COD, TOC, N, P, K. Total, Dissolved and Suspended solids.	\$150.00