

Cresswell Horticultural Services

(ABN 86 077 362 442)

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Below Flow - Case study 1

Client: Pacific Hills Christian School
 9 to 15 Quarry Rd
 Dural NSW 2158
 Australia

Site: Main playing field.
 An area of approximately 5000m² with a complete cover of buffalo.

Installation date: Below Flow was installed in December 2001.

Irrigation method:

Previous	Travelling irrigator discharging 7200L/hr
Present	Below Flow 2.2L/m/hr at 1m line spacing and 200mm depth

Water use (Spring – Autumn):

Previous	Three 6 hour irrigations a week (18 hours total/week). Irrigation volume = 18×7200 = 129 600L/week Or $\frac{129600}{5000}$ = 25.9mm/week
Present	Three 1 hour irrigations a week (3 hours total/week). Irrigation volume = 3×2.2 = 6.6L/m ² or 6.6mm/week

Water saving:

Irrigation method	Water application (5000m ²)	
	mm/week	KL/week
Travelling irrigator	25.9	130
Below Flow	6.6	33
Saving	19.3mm/week	97KL/week

Comment:

The analysis is based on information supplied by the grounds manager at Pacific Hills Christian School.

Over the warmest part of the year (Spring to late Autumn) the Below Flow system has provided a water saving of approximately 75% relative to the travelling irrigator.

The saving is not because the travelling irrigator was used inefficiently.

From BOM average monthly evaporation and rainfall data and using a crop factor of 0.5 (Warm season grass growing strongly and of acceptable appearance) the weekly application rate is estimated to be in the range 7.4 – 20.5mm/week.

When this is adjusted for an application efficiency of 0.8 which is fairly generous for this method of irrigation, the calculated application rate is 9.3 – 25.6mm/week.

The irrigation schedule used with the travelling irrigator at Pacific Hills provided 25.9mm/week which is only just outside the upper limit of the target application rate. This would ensure that the schedule provided enough water for the turf during the warmest months of the year.

Over the period of operation the manager has reduced the application rate for the Below Flow system from 9.9mm/week to 6.6mm/week. The reduction in water requirement over this period may reflect the adaptation of the grass to the deeper and more uniform wetting pattern provided by the Below Flow system.

Anecdotal evidence suggests that a period of adjustment is required for turf previously irrigated by sprinklers. This is supported by observations of root development in grapes converted from surface drip irrigation (University of Western Sydney 2002-2004).

Bureau of Meteorology station – Marsfield, Sydney. Records 1970-2004

Month	Mean monthly evaporation (mm)	
	Daily	Weekly
September	3.6	25.2
October	4.7	32.9
November	5.4	37.8
December	5.9	41.3
January	5.7	39.9
February	5.1	35.7
March	3.7	25.9
April	2.9	20.3
May	2.1	14.7

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