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## INTERNAL MEMORANDUM

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TO: [REDACTED]

FROM: [REDACTED]

SUBJECT: Hydrosmart benefit quantification and recommendations

DATE: 5<sup>th</sup> February 2011

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### **Background and Summary of trial**

Two “hydrosmart” units were installed on the “blackline” town reticulation system on November 12<sup>th</sup> 2010, in order to conduct a trial to determine if a reduction in dripper maintenance costs and watering requirements of the town could be realised.

The hydrosmart system enables scale forming elements in the water (in [REDACTED] case iron and its precipitates) to remain in solution by applying a “resonance frequency” which prevents the oxidation and precipitation of the elements.

The hydrosmart group were so confident that their system would be successful in our application, that they hired us the units for the 3 month trial (cost of approx \$9253). If the trial was deemed successful and [REDACTED] wished to purchase the units, Hydrosmart will allow [REDACTED] to pay the remaining balance of the unit’s purchase price (approx \$15000). (See installation cost breakdown section)

### **Labour saving**

Before installing the hydrosmart units, approximately \$17500 pa (468 hrs) in labour was consumed by checking and unblocking sprinklers and drippers around the township (see justification and benefit quantification section below). The best estimate of the required sprinkler maintenance labour after installing the hydrosmart is \$1966 pa (see justification and benefit quantification section below).

### **Water saving**

Although many of the lawns around the township are growing particularly well for this time of year, it is difficult to determine whether this is a result of the installation of the hydrosmart units or a result of significant/heavy (and very unusual) rainfall in December and January.

### **Conclusions and Recommendations**

- The hydrosmart units have reduced the cost of sprinkler maintenance labour by approximately \$15500 per year.
- Although a reduction in water consumption could not be determined by the trial, the project was justified by the savings in sprinkler maintenance labour.
- The reduction in labour will create a payback period for the hydrosmart units of approximately 1.7 years. It is recommended that [REDACTED] retain the units permanently.
- Permanent pipe supports and sun covers for the control boxes must be fabricated and installed to ensure unit longevity.

**Justification and benefit quantification.**

The following table shows the sprinkler maintenance labour costs required before and after installation of the hydrosmart units.

<b>Justification and benefits of Hydrosmart system</b>			
<b>Costs associated with sprinkler maintenance</b>			
<b>Assumptions and info</b>	<b>Before Hydrosmart</b>	<b>After hydrosmart</b>	
Cost of Labour/hr	\$ 37.80	\$ 37.80	\$/hr
Number of weeks per year	52	52	
number of dripper checks/week	4	1	
number of men checking drippers	1.5	1	
number of hours checking drippers	1.5	1	hrs
number of man hours for weekly checks	9	1	hrs
Total hours per year	468	52	hrs
<b>Total labour cost of checks per year</b>	<b>\$ 17,690</b>	<b>\$ 1,966</b>	

<b>Estimated Savings per year</b>	<b>\$ 15,725</b>
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Dave King:  
someone helps scott every  
second time

<b>Total cost of purchase and installation</b>	\$ 27,244.80	\$ 27,244.80
<b>Estimated payback period in years</b>	1.54	
<b>payback if 75% of benefit realised</b>	2.05	

<b>Payback period based on realised savings</b>	<b>1.73</b>	years
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**Discussion and trial notes**

Reduction in sprinkler/dripper blockages

- The estimates on labour hours used in the justification and benefit quantification were gathered from the town horticulturalist.
- For about the first 3 weeks of the trial, large chunks of scale were delaminating from the inside of the pipe work. These had to be flushed out at strategic points along the line. Some pictures of this scale where taken on the 30/11/10,



The horticulturalist had the following comments

- Before the hydrosmart, just about every dripper line was blocked and needed to be cleaned on every inspection. All drippers had the adjusting caps removed so a flow could be achieved.
- By the end of the trial, all the dripper caps have been replaced as there is so much water coming out of the dripper line that it sprays everywhere.
- The occurrence of blockages has reduced from approximately 90% blocked upon each inspection to approximately 5% blocked upon inspection.
- In addition to this, at some of the vacant houses around the town, the horticulturalist would unblock sprinklers each morning. Since the installation of the hydrosmart the need to unblock these sprinklers has practically gone.

#### Reduction in water consumption

It is difficult to determine whether the hydrosmart units have had an effect on the amount of water required for the lawns in town for the following reasons

- 91 mm of rain fell in December. This is extremely atypical of this area.
- 27mm of rain fell in January. This is also very atypical of this area.
- When rain occurs all the grass tends to grow very lushly and rapidly for a number of weeks after the rain event.

If during February and March (and if there is no significant rainfall) the growth rate of the grass continues it may be reasonable to say that the grass is responding better since the installation of the hydrosmart units. It may also be possible to determine if the number of watering days could be reduced whilst maintaining the same grass quality.

#### Installation cost breakdown

The following table shows the initial breakdown of installation costs for the hydrosmart units.

<b>Installation cost of hydrosmart system at useless loop</b>	
Purchase price of hydromaster 100mm unit	\$ 15,995.00
Purchase price of the hydromaster 80mm unit	\$ 7,895.00
installation labour 10hrs at \$37.8/hr	\$ 378.00
installation parts	\$ 500.00
10% contingency	\$ 2,476.80
	\$ 27,244.80

Given that \$9250 dollars has already been paid for the hire of the units, the outstanding balance for complete purchase of the units should be in the vicinity of \$15000. The 10% contingency (\$2500) in the initial estimates will be used to fabricate and install permanent pipe supports and control panel enclosures.