Wessex Water Report

This is a copy report of the evaluation conducted by Wessex Water Ltd.

The trials conducted over an 8 month period accounted for the effects of secondary flushing .

A saving of 19.4 litres per property per day was achieved.

IN-SERVICE EVALUATION OF HIPPO WATER SAVING DEVICE

1.0 INTRODUCTION

As approximately 30% of domestic water use is consumed by WC flushing, this area is an obvious target for water economies. Objects such as bricks, lemonade bottles and Polythene bags have been placed in cisterns for years now but all have been tainted with the 'Heath Robinson' approach, or have been ineffective in some way. The company 'Hippo the Water Saver' offer a novel variation on the theme which is simplicity itself and looks to address the problems (in the cistern at least) which have dogged other devices, such as bricks flaking, bottles jamming ball valves or lightweight polythene bags breaking. Their solution is a purpose made heavy gauge Polyethylene container.

A decision to trial a small number of devices, was taken last year. As an association already existed between Wessex and Purbeck Upper School through the 'Purbeck Pride' organisation the headmaster was approached with a proposal of conducting a live trial of the devices with Wessex Water customers, to be jointly managed by Wessex Water and the school. Agreement was reached and the trial went ahead on this basis.

2.0 TRIAL OBJECTIVES

The objectives of the trial were as follows:

1. To confirm the manufacturers claims of water saving per flush

2. To identify overall water savings the devices make in use. (44 trial properties).

3. To assess the flushing effectiveness of the reduced flush volume.

4. To assess overall customer acceptance.

3.0 SUMMARY

If all devices fitted performed as the unit tested a saving of 2.78 litres would be made for each WC flush. During a seven day period of the trial 2714 flushes were made and 288 secondary flushes made in 38 of the households which approximates to an average saving of 19.4 litres/property/day for the 44 households in the trial.

The effectiveness of the reduced flush is difficult to quantify as of the 283 secondary flushes made, some may have been necessary even without the device fitted. However, the number of occasions when secondary flushes were made as a ratio to single flushes is about 10:1. This is supported by the manufacturers data and suggests that the lesser flush volumes, without

redesigned sanitary ware, are adequate for minor WC use.

The consumer call back information shown in appendix 4 is encouraging. Thirty five customers took part and 63% said that they were prepared to keep the devices in long term, 71% were generally satisfied with the flush efficiency and 63% said that they would have fitted the devices if they had been sent through the post without personal contact. Purbeck School's involvement influence 17% of the customers to join the trial, 83% saying they would have taken part in the trial regardless.

The devices are very low cost (around 55 pence each depending on numbers). Customer acceptance and potential water saving qualities also appear to be very good. It is likely that an enlarged mail-shot distribution coupled with an active PR/Media programme would bring both PR and water economy benefits to the company.

4.0 EVALUATION

4.1 Savings per flush

A rig was set up at Wessex Water workshops at Little Cranford which allowed
the flushed volume from a WC to be accurately measured before and after the water saving device was fitted. Purbeck students monitored 5 flushes before and 5 flushes after the device was fitted. The average saving was 2.78 litres per flush. Full results are shown in appendix 1 (this saving can be varied by the manufacturer at the production stage).

4.2 Overall Water Savings

Forty four of the customers involved in the trial completed a detailed list of the number of flushes they made over a seven day period from which overall savings per household have been calculated at 136 litres per week.

4.3 Effectiveness of Reduced Flush Volume

As part of the above 7 day information detailing the number of WC flushes made, customers were asked to list the number of second, third (and more where appropriate) flushes required on each occasion a flush was made. 2714 flushes were made and 288 additional flushes were found to be necessary. The overall water saving would therefore be (2714 x 2.78) - (288 x 8.5 - 2.78) = 5898 litres/7 days, 8.5 litres being the likely average cistern volume without the device fitted. The full information is also listed in appendix 2.

4.4 Assessment of Overall Customer Acceptance

Customer acceptance of the concept of fitting the devices will predictably be quite different if a mail-shot is undertaken rather than personal visits made as happened with this trial.

Also the local schools involvement may have influenced customers reactions to the trails. For these reasons the CSU at Poole made a customer call-back to the trialists to assess what may be a realistic customer acceptability for the future. Thirty five of the trialists were contacted and 62% said that they were prepared to keep using the devices long term. Full results are shown in appendix 4.

5. ACKNOWLEDGEMENTS

Acknowledgement is made to the headmaster, Mrs Karen Pallister and Mr Mike Dixon and students of Purbeck School for their co-operation and work during the 8 month duration of the project.

FLUSH VOLUME TEST Appendix 1.

Flush No	Volume in litres
1	8.1
2	8.5
3	8.3
4	8.1
5	8.1
Hippo Water Saving Device Fitted	
1	3.4
2	5.5
3	5.5
4	5.0
5	5.9

Discounting flush number 1 from each table to allow the cistern and cistern device combination to stabilise gives an average of 8.25 litre flush without the device and an average of 5.47 litre flush with the device fitted. The saving is therefore 2.78 litres per flush.

WC FLUSHES OVER A SEVEN DAY PERIOD

Appendix 2

No. of single flushes	No. 2nd flushes	No. 3rd flushes	No. 4th flushes	No. 5th flushes
48	11	0	2	0
30	1	0	0	0
68	3	0	0	0
58	13	1	1	1
46	4	0	0	0
90	0	0	0	0
60	6	0	0	1
34	2	1	0	0
74	7	0	0	0
22	2	0	0	0
63	14	2	1	1
58	5	0	0	0
128	0	0	0	0
52	1	0	0	0
49	8	0	0	0
43	3	0	0	0
43	6	0	0	0
102	0	0	0	0
54	5	2	0	0
37	7	0	0	0
63	10	0	0	0
52	7	0	0	0
65	13	3	0	0
140	0	0	0	0
70	0	0	0	0
145	11	0	0	0
57	0	0	0	0
48	1	1	0	0
94	5	0	0	0
55	7	0	0	0
44	3	0	0	0
19	3	0	0	0
36	13	0	0	0
29	1	0	0	0
62	0	1	0	0
25	17	5	2	0
64	25	0	0	0
65	5	1	0	0
56	6	0	0	0
82	8	1	0	0
70	2	0	0	0
68	11	0	0	0
37	7	0	0	0
106	0	0	0	0
Totals 2714	**261**	**18**	**6**	**3**

Total flushes 2714 + 261 + 18 + 6 + 3 = 3002 flushes

CISTERN VOLUMES (MEASURED IN TRIALISTS HOUSEHOLDS) Appendix 3

Volume in litres	Number found
4.5	1
5.0	4
5.5	2
6.0	0
6.5	5
7.0	4
7.5	7
8.0	15
8.5	2
9.0	17
9.5	2
10.0	3
10.5	0
11.0	0
11.5	1

Few if any WC's in current use flush at 4.5 litres. It is likely that all cisterns at 6.5 litres and less are of the double flush type and only the short flush volume was measured by the students. However, some of the higher volumes may also be dual flush units but the long flush was measured.

CUSTOMER CALL BACK (35 customers) Appendix 4.

	Yes	No	Not sure
Are you prepared to keep the devices in your WC long term?	22	12	1
Have you generally been satisfied with flush efficiency during the trial?	25	10	0
If we had mailed the device to you with no other contact would you have fitted it yourself?	22	9	4
If the school were not involved would You have been willing to enter the trial?	29	3	3