GREENHOUSES Project

Evaluation Results

with a focus on City of South Perth Participants

February – June 2005

Southern Metropolitan Regional Council

SOUTHERN METROPOLITAN REGIONAL COUNCIL

for

City of South Perth

Contents

INTRODUCTION

GREENHOUSES is a behavioural change education program developed by Southern Metropolitan Regional Council (SMRC) and Murdoch University. It is aimed at greenhouse gas reduction through energy, water and waste reduction and uses information combined with the setting of goals (Eco-Aims) to achieve this.

A successful pilot project measuring energy use has been completed in March 2004 with 300 residents in SMRC. Compared to a control group, the pilot project achieved energy reductions from between 5 and 15% on average for different participant groups. These groups received either information only or included goal setting. The value of goal setting in increasing and sustaining energy savings was indicated by the goal setting seminar group having the largest reductions of 15%.

In January 2005, City of South Perth residents in Salter Point and Waterford were invited to participate in **GREEN**HOUSES, via a service agreement with SMRC. The residents could participate in three ways – attend workshops on any or all of the three **GREEN**HOUSES topics, access the website (www.greenhouses.org.au) or receive booklets with goal setting cards. Support was provided over the subsequent months through a newsletter, goal setting cards and emails to the website group.

The document summarises how City of South Perth residents chose to participate, what reductions they achieved and their satisfaction with different elements of the program.

WHO PARTICIPATED

1200 residents in Salter Point and Waterford were invited to participate in **GREEN**HOUSES. These suburbs were chosen because they are significantly high water users (1.62kL per day) compared to the Perth average of 1.26kL per day.

Invitation was through a personal letter on Council or Project letterhead. In addition **GREEN**HOUSES was advertised through the local community paper and Parents Paper. 138 residents chose to participate; a high12% response rate compared to other participating Councils.

The majority of City of South Perth participants took part in the **GREEN**HOUSES program by using the booklet. The breakdown between the three methods of participating were:

- Booklet: 90%
- Seminar: 7% (principally water)
- Online: 3%

PRE PROGRAM WATER CONSUMPTION OF PARTICIPANTS AND CONTROL

SMRC approached Water Corporation to assist with measuring the effectiveness of **GREEN**HOUSES on changing behaviour associated with water consumption. A similar method was used in the pilot program to measure energy reduction through on-foot meter readings and historic data supplied Western Power and Alinta Gas.

Water Corporation agreed to take four water meter readings over from February to June 2005 in selected streets in Waterford and Salter Point (as well as Bertram, Kwinana for future baseline reference). In these South Perth streets, some households were non-participants and hence made up the control group to compare against.

Table 1 shows the average daily water usage in February before **GREEN**HOUSES information and Eco Aim material reached participants. Water use is very similar between the two groups hence a comparison is appropriate.

Table 1. Daily average water use prior to **GREEN**HOUSES (early February 2005).

	Daily average measured in kL per day
Green Houses	1.61
Control	1.63

GREENHOUSE-RELATED BEHAVIOUR CHANGE

Given this pre-program baseline data, behaviour change was quantified in terms of water use through further meter readings. From this and pilot program data, reductions in greenhouse emissions can be quantified. In addition participants were asked to self-report on their behaviour change and actions associated with the three topics.

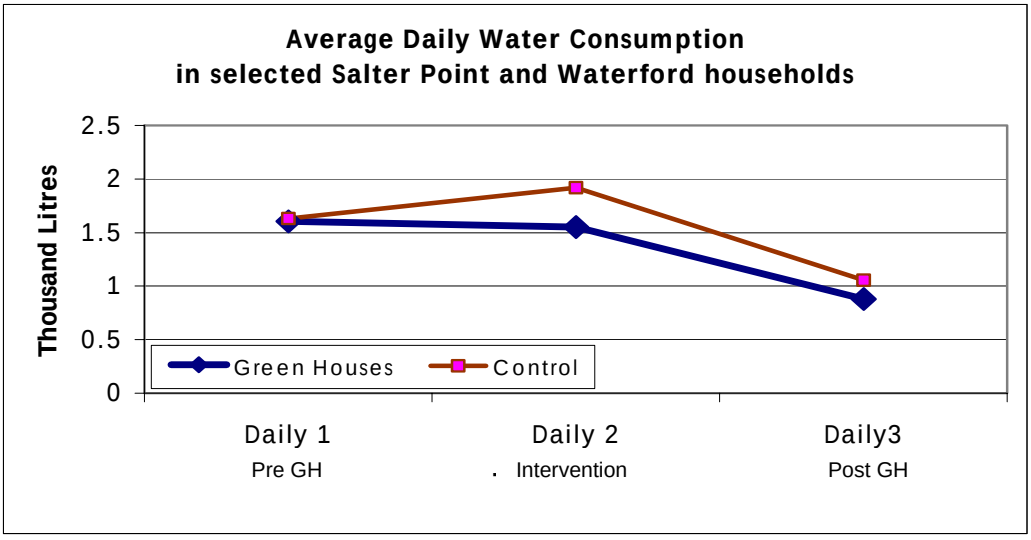
CHANGE IN WATER USE FROM WATER CORPORATION METER READINGS

A statistical analysis was carried out of water use trends between participants and control households using the data gathered from the meter readings shown in Table 2. These figures can be seen in Graph 1.

Table 2. Average daily water use pre, during, and post **GREEN**HOUSES measured in kL/day. Average daily was calculated by taking two readings over a period of time.

	Pre-**GREEN**HOUSES Meter readings on 10 Feb & 19 Feb *or* 15 Feb & 2 Feb	Intervention Meter readings on 19 Feb & 26 Feb or 21 Feb & 26 Feb	Post-**GREEN**HOUSES Meter readings on 26 Feb & 15 Jun
Green Houses	1.61	1.55	0.88
Control	1.63	1.92	1.05

Graph 1. Average daily water use pre, during, and post **GREEN**HOUSES measured in kL/day.



Participants decreased their water consumption by 45.3% after participating in the **GREEN**HOUSES program. Statistical analysis identified this to be a significant and large effect of time, largely as a result of the seasons changing from summer to winter. A control group however only reduced their water consumption over this time period by 35.5%. Indicating that the **GREEN**HOUSES participants **reduced their water consumption by a further 10% than the control group**, although this difference was not found to be statistically significant.

This figure is similar to the impact of **GREEN**HOUSES energy booklets on energy consumption, measured to be 9% reduction in the Pilot Program.

GREENHOUSE AND WATER REDUCTION ESTIMATES

Table 3 shows estimated reduction in greenhouse emissions and water use from extrapolating the 10% measured water reduction over a 4-month period to an annual figure and from the pilot program, the 9% energy reduction measured over a 5 month for households receiving the booklet and goal cards.

Table 3. Estimated greenhouse gas reductions for the 138 South Perth households.

	Reduction in usage for booklet participants	Greenhouse Emissions & Water per household associated with the subject	# of participating households in City of South Perth	Reduction Estimate
Energy	9%	6.8[i] tonnes / year	138 households	84 tonnes/yr
Water	10%	0.5[ii] tonnes /year 1.6kL/day		7 tonnes/yr 58 kL/yr
Waste	*Yet to be measured*	0.5[iii] tonnes / year)		
			Total greenhouse estimate	91 tonnes/yr

[i] : greenhouse emissions from electricity and gas use from GREENHOUSES pilot program

[ii] : greenhouse emissions from energy use for mains water used by the average household based on Water Corporation figures

[iii] organic waste to landfill; does not include energy reduction form reduce/reuse practices

SELF-ASSESSED CHANGE

The participants were provided with the opportunity to self assess their behaviour change with the question, "How would you rate your efforts to be conscious of energy, water and waste, now and before the program started?" The responses are seen in Table 4.

Table 4. Average response on a scale of 1 to 7 (1 being poor effort, 7 being strong effort)

	Before	Now
Energy	4.75	5.25
Water	5.25	5.75
Waste	5.37	6

Energy reduction was the area considered by participants to be of greatest change for them.

REPORTED ACTIONS

Below are examples of some of the actions taken by **GREEN**HOUSES participants in City of South Perth as reported through feedback forms received:

- Ensure full loads of washing machine
- Turn off auto reticulation
- Waste - Use calico bags
- Recycle all recyclable items
- Attempt to buy less packaged goods
- Cook in bulk in oven
- Short showers
- No junk mail left in letterbox
- Installing blinds to prevent heat loss

PROGRAM DELIVERY EVALUATION

At the completion of **GREEN**HOUSES participants were asked to fill out an evaluation rating different aspects of the program and how their knowledge or thoughts had changed. The workshop and booklet participants have been evaluated separately in order for us to ascertain information about each method of delivery.

PROGRAM SATISFACTION:

When asked whether they were satisfied with the program, **84%** of participants said they were satisfied or very satisfied. This figure combines the information from all participating councils, namely Canning, Cockburn, Kwinana, East Fremantle, Rockingham and South Perth.

SATISFACTION LEVELS WITH GREEN HOUSES BOOKLETS

South Perth residents rated the booklets above average, as did participants in SMRC. The "Steps to Reduce" in the Waste and Energy booklets were the most valued, scoring on average 5.6 (6 in SMRC) out of 7.

SATISFACTION LEVELS WITH GREEN HOUSES SEMINARS

The seminars on water use delivered across the region received very positive feedback with a 6.7 out of 7 for the facilitator and guest speaker and 4.5 out of 5 overall satisfaction rating. 91% of attendees set goals to reduce water at the seminars.

Feedback from the Waste seminars was also positive, though attendances were down, especially in the City of South Perth.

Seminars, though difficult to get large attendances, have been shown in the pilot program to achieve the greatest reductions compared to households participating online or with booklets.

CONCLUSION

Participant feedback showed a high satisfaction level with their participation in **GREEN**HOUSES.

Meter readings of water use confirmed that the **GREEN**HOUSES model of information and goal setting also applies effectively to water consumption. Results for Waterford and Salter Point residents show a 10% reduction in water use compared to the control group.

Seminars received good feedback but attendances in City of South Perth were generally low.

LOOKING AHEAD

To draw a large attendance to **GREEN**HOUSES seminars, new avenues will be explored to reach residents outside of the mailout. These avenues include scheduling seminars at existing community learning centres, or a series of library seminars as well as offering the chance to present to community groups at one of their regular meetings.

The current stream of **GREEN**HOUSES is reaching 8-12% of residents approached. To extend this to the wider community a new stream is being developed that focuses on single action steps using Community-based Social Marketing principles.