

Smart Water Fund

Banyule-Nillumbik Public Schools Joint Water Initiative



Final Report

Overview

This report represents and an overview of the Banyule-Nillumbik Public Schools Joint Water Initiative. Its provides sound insight to other school groups considering a similar pathway to sustainability – learning from the experience of others and enabling a fast-track approach to their goals.

In addition to this final report the Smart Water Fund has been provided with;

- Each school's Community Outreach Program
- Smart Water Schools Calendar
- Further information about each school's display signage and labelling arrangements
- Each schools community outreach surveys program/results
- Relevant media releases from the project
- Each schools commentary on the Sustainable Schools Waterwise Curriculum
- Each schools water usage data (targets & actual) including a commentary from each school relating to the water usage
- A report into 'in-kind' support costs.

This material can be made available upon application.

Project Background

The Project developed and conducted water audits and implemented a Water Wise program in 11 schools within Banyule and Nillumbik local government areas. The Project was aimed at changing water usage habits at a young age and, by way of demonstration, throughout the school community. It also sought to achieve accreditation as an innovative community module of the Sustainable Schools Water Wise Module.

The Project aims were to:

- Develop and undertake a comprehensive water use audit
- Seek recommendations of what innovative as well as existing products and practices can be implemented to significantly reduce and recycle each participants' water use
- Purchase the Sustainable Schools Water Wise curriculum
- Train staff to deliver the curriculum
- Purchase and install water conservation and water recycling infrastructure as recommended from individual water audits
- Provide community outreach initiatives including signage, community information workshops, and student-led demonstrations of initiatives

Project Results Summary

- This stage of the Project (Stage 3) was the implementation stage, in which schools carried out their community education outreach programs and continued their water wise curriculum delivery.
- Physical water savings began when infrastructure became operational in the 2nd quarter of 2004. Schools all saw big water savings. The target average savings was expected to be 26%. The schools saw a 26% savings already in 2003 before infrastructure was installed, probably due to the fact that in the process of water audits, major pipe leaks were found and fixed. The average actual savings were well above the 26% target. Comparing 2002 with 2004 usage saw an average 56% saving. But removing the major leaking infrastructure, comparing 2003 with 2004 saw an average 40% savings. The combined schools water savings, after simply fixing water leaks in 2003, was 9970 kL. The combined schools water savings, after installing Smart Water infrastructure and compared to 2003 water usage, was 11,086 kL.
- Most schools individual actual water savings was close to or over the projected target savings. Diamond Valley College's target savings was 15%, but they achieved 36.5%. Lower Plenty Primary School expected 25% savings but gained 54.2% instead. Research Primary School expected 45% and achieved 52%.
- Some schools did not achieve their target water savings, but this was due to circumstances such as burst water pipes, leaking infrastructure, growth in their school population. For example, Briar Hill Primary School tripled in size over 2004 and had a burst water pipe, yet their 2004 water bill was the almost the same as their 2003 water bill.
- One result of the heightened water consciousness at the schools is that they do find and repair water leakages faster than before because they are monitoring their water use.
- In the course of this project, it was found that water use greatly fluctuates at each school, either due to seasonal use or construction activities or population changes. Further analysis is needed, such as removing the confounds of annual changing population sizes by finding out what the per capita usage changes are, which should provide a more accurate savings calculation as it. Schools are providing detailed annual size changes to allow for additional analysis of the water savings.
- Public awareness is up at schools because of the physical presence of the water tanks installed. In schools where water tanks supply toilets, the school community can see the water levels of the water tanks go down with use. Parents are surprised at the amount of water used by the toilets alone.
- Schools' public artwork installations have made a visual impact that is unavoidable to anyone in the community on campus or nearby. Schools and their community have greatly enjoyed creating this art. Much media interest has been generated for each schools activities. All designs were vastly different; the theme is the importance of

water. Strathewen Primary School had students design and make a sustainable cubby house with mudbricks created from the earth excavated for their Smart Water 31,000 litre water tank. Lower Plenty Primary School students developed Smart Water game boards, which they then took to a local senior citizen's club to explain and play the games with. Eltham North Primary School students created beautiful murals and a lovely garden to make the area by their Smart Water water tank, which supplies their school greenhouse, a nice place to hang out. The students use the greenhouse to propagate water wise native plants. Briar Hill Primary School had community members mosaic the brick pillars of its front gate with a water themed design from students.

- School communities were bombarded with Smart Water tips and articles in their school newsletters, journals and websites. Some schools even had students writing editorial letters to the local newspaper about water conservation.
- School curriculum was carried out over the entire year. Activities were across all subjects. Schools carried out a curriculum review. Staff agreed it was successful and schools will continue with future delivery of the Water-wise curriculum.
- Each school has made the project and its water conservation message visually unavoidable. It has spawned great enthusiasm within each school, with staff and students involving themselves in further water and other ecological conservation activities.
- Schools joined together at the end of 2004 to demonstrate and celebrate their achievements at CERES for the Smart Water Schools Big Day Out. Most schools operated on their own in their curriculum and community outreach delivery. Though there were some crossovers where schools gave open invitations to attend events. The Big Day Out allowed the schools that were able to attend to see what they had achieved as a Smart Water School Community. Children and staff greatly enjoyed the day; it was a nice ending to a fantastic year.
- As the principal of Briar Hill Primary School put it, "the media circus came into town." There has been continued media interest in all the schools' involvement in this project. The project has made it to local and state papers, on television and the Internet. Thanks to the media staff of Yarra Valley Water, they have produced press releases and managed the interviews and opportunities. One of the Smart Water Schools hosted when Minister Thwaites announced the 2nd round of Smart Water Fund grants, which showcased the project to the state of Victoria for the first time.
- Outcomes of this project have won a variety of awards. In 2003 and 2004, Briar Hill Primary School has been a finalist in the Banyule City Council's Sustainable Gardens Awards, School category. Strathewen Primary School won the engineering contest, Engquest. They won the state first and second prize for middle primary section and lower primary, for books based upon water supply to homes and communities. Finally, Banyule City Council nominated the entire Smart Water Schools project for the Keep Australia Beautiful Victoria (KABV) First Annual Sustainable Cities Award, Proud Schools category. The project won that award, receiving public recognition for the great outcomes achieved by these 11 schools and the Smart Water Fund.

- School surveys saw that their communities had good levels of awareness and participated in good water conservation practices, which contribute towards water savings. Surveys showed a general increase in that awareness and practice after the project was finished. Of interest was that there could be improvement in community uptake of flow reducers and water tanks. Many wrote into their surveys that they were trying to save up or wanted to purchase a water tank.
- However, it was the investment to produce the water audit and to install the water saving infrastructure that produced the physical savings. The water tanks supplying toilets & garden use, the flow reducers, dual flush toilets, mulch and native plants all allowed the schools to function as they normally did, but use significantly less water.
- For some who may have been sceptical that the project would have any true savings or impacts, the reduced water bills converted all. The water savings economic benefits have provided an additional advantage for all these public schools. The money saved in water bills can be invested back into improving their schools. In a public school system, it cannot be emphasised enough, that investments into behavioural and infrastructure changes translates into long term benefits for the environment but also our children's education. Less water used at schools means more water for everyone. Less money spent on water and other utilities means more money for teaching.
- The project members recommend that the State of Victoria and the Department of Education, Victoria investigate the wide scale rollout of water audits and retrofit of all existing schools with water saving infrastructure, and constructing new schools with water saving infrastructure built in. The Sustainable Schools Pilot project is successful nationwide and may be rolled out to all schools in the near future, so everyone will have access to the water wise curriculum. This project's cost of \$14,000 per school is quite a small investment when put in perspective with the longevity of schools and the number of people who use their facilities over time. This amount could be smaller with greater savings achieved by the State negotiating bulk buy prices of water tanks, dual flush toilets and water flow reducers. This was achieved with only 11 schools negotiating a much reduced price over retail costs. Or an instalment payment system could be set up, as Yarra Valley Water did with some of the Smart Water Schools, in which costs of installation was paid through the normal water bill instalments, and paid out with the amount of money that was saved from the installations. Therefore schools did not have to come up with large lump sums but were paying with what they had already budgeted for their normal water bills. All Victorian Government bodies have to demonstrate sustainable practices, such as recycling, reduction of greenhouse gases and energy conservation. Public schools are also state government run and should operate under those same sustainability principles, set example to the community by practice.
- It is highly recommended that upper government, management at the water bodies, and Department of Education management go on a Water Tank Tour and visit each school to see the scope of project outcomes in its entirety. The results have truly been groundbreaking.

Issues Arising

What issues arose during the project and what actions were used or are proposed to be used to address them?

- **Scheduling Issues**

Schools lock in their schedules almost a year in advance. When the Community Outreach Action Plans were created and submitted to the Smart Water Fund, many of the activities were listed but no true dates had been set. As the project progressed, it became an issue for some schools trying to fit these activities into an already busy school term schedule. Some schools had to delay activities, redesign their activities to fit into other events that were already happening, or merge separate Smart Water Activities as there simply wasn't the time available to hold separate events. Some schools who had planned excursions or incursions (demonstrations or events brought to their school, i.e.: Cloudia Raindrops) found that many were booked out and/or not available when it was convenient for the school. Some schools even had to push their events past 2004 and do them the first term of 2005. Though this was not a negative outcome. Schools saw that having to continue into 2005 was simply extending the benefits of Smart Water and exposing a new generation at the school to it.

Hence it was difficult to organise the Smart Water Schools Big Day Out at CERES. It was basically negotiated late in the year for use of the GST reimbursed funding. It was a major achievement that the number of schools that attended did. Unfortunately, there were some schools that were already locked into school concerts and other pre-arranged activities that were regrettably unable to attend. Despite this, all schools have managed to achieve what they set out to do in both their curriculum and their community outreach action plans. It is something to consider in other future programs with public schools, that scheduling must be set a good year in advance as there is little flexibility in their system.

- **Water Leaks**

Water leaks and aging plumbing has been a continued issue with all schools. Major leaks were identified and fixed at the start of the project. Yet throughout the year, more pipes have burst or new leaks have been identified. Many of these schools are 50 years or older and their plumbing infrastructure use by date has expired. Some schools, such as Sherbourne Primary School and Diamond Valley College, have undergone or are about to undergo major upgrades and construction where this issue will be addressed. Other schools do not have this in their future. The cost of completely redoing their plumbing is too prohibitive for the Department of Education at this point in time, but really must be addressed. Consider that almost 10,000 kL of water was saved in 2003 just because the Smart Water Schools actually looked and found water leaks. That is enough water to supply 3 average schools or 6.5 Smart Water Schools. It does beg the question of how many other schools are unaware of water leaks and how much water is being wasted? For the Smart Water Schools, it is frustrating to see their water savings yet lose water and incur great costs in their continued battle with their aging plumbing infrastructure.

- **Water Use Analysis**

Schools had to keep track of their water use throughout the course of this project, from late 2002 till the present. Their only method was to examine their water bills. Some found it very complicated to extract their water usage in terms of volume and costs. In the end, Yarra Valley Water was asked to directly supply the water usages for each school to produce the analysis for this report.

In hindsight, it would have been useful to have a Water Supply Company, such as Yarra Valley Water, to run a workshop for school staff and their community on how to read a water bill and extract useful information from it. This would allow schools to keep records for their long term monitoring purposes. Another idea is that the water suppliers could provide a website service where all public schools can look up their quarterly and annual water usages in one big chart. It would serve the dual purpose of making this information easily available; allowing schools to track their usage, identify leaks, and compare their usage with other schools of similar size. It should be publicly available so that a school community member can look up and see what their school is using and maybe become motivated in trying to find further ways to reduce the school usage.

Analysing the water usage rates was a complicated process. There is huge seasonal variation in usage at each school. There were multiple causes to variations in water use. To deduct whether each schools target water savings was achieved it had to be inferred through multiple levels of analysis. Annual use, quarterly use, daily use, average use, per capita use was all looked at. At first it was felt that per capita use might overcome population fluctuations and seasonal fluctuations. However, schools could only supply the number of staff and students enrolled. In reality, a wider population uses schools, there are parents who are on campus to help out at in classrooms and the canteen or to drop off or pick up their children. There are after school programs and community groups which use school facilities, all who contribute to the water usage on site but are unmeasurable. It may be that only monitoring water usage over a long period of time will provide the clearest picture of long term water savings.

For future projects or simply for the use of water suppliers, The Sustainable Schools Project, and just schools in general, it would be useful for these stakeholders to get together and look at these issues to develop an accepted measurement of water usage which can most accurately overcome the variables seen in school water use. Easy to use measurements are critical to maintain long term monitoring of water use and awareness of water use behaviour.

- **Community Surveys**

Schools were able to monitor the effectiveness of their Water wise curriculum through their curriculum reviews and student performance, methods already established in the school system. Schools could also monitor effectiveness of the project through their water savings. The project has used a simple before and after survey to measure whether the community outreach program has raised community awareness of water conservation. Schools sent out surveys, but the issue was getting the surveys completed. School parents are inundated with school notices and forms to sign and return. There is a known general apathy in getting responses from a school community. Smart Water Schools tried everything to increase the number of surveys returned. Some schools sent it home with students as required homework. Some schools sent surveys to families with a high probability of return, such as school council families or families on Environmental committees. Some schools resorted to bribery, putting returned surveys

into a lottery for a big box of chocolates. Other schools hounded families in newsletters and other reminders, including physically asking people, "remember to return your survey". As a result some schools had 100% return on their surveys, but many schools had very low returns. Some schools gave up and didn't try to get a second survey done, though were then asked to try regardless of response levels.

This has meant that the survey results for some schools are not definitive as the sample size may be quite small. However, we can use the results for generalities regarding water conservation awareness and behaviour, and we can pool all the schools results to give a picture of the Banyule-Nillumbik community water use behaviour. In the future, to improve the accuracy of such surveys, it is recommended that schools send them out to their entire population, require returns as part of their students' coursework, with perhaps returns put in for a draw of some prize as a sweetener reward. This should maximise responses and provide a more accurate measurement of community awareness.

- **Cost of Infrastructure**

The Smart Water Schools have been extremely fortunate in receiving the Smart Water Fund Grant to achieve its outcomes. The effects of this project are long term, the water savings at each school will continue for the life of the infrastructure installed and the curriculum commitment is carried out. With many of the schools now continuing in the Sustainable Schools Project for the other modules certification, that curriculum and behaviour commitment are long term. The schools have truly demonstrated to themselves and to others what can be achieved by this change in behaviour and infrastructure. The project has seen many inquiries from other schools on how to achieve the same results; many schools want to get on board. Water conservation on this scale is tangible.

However, there is a major constraint for others, from schools to the general public, to follow suit. All of the types of infrastructure needed to achieve large-scale savings, such as water tanks, the flow reducers, the dual flush toilets, grey water recycling, AAAAA washing machines etc are costly. There are many good rebate schemes out there, and there are good efforts by water suppliers, such as Yarra Valley Water, to provide instalment payment plans to facilitate these costly purchases. But it is still limiting to those on reduced incomes or institutions such as schools who don't have large amounts of money available for capital works. The same applies for all other conservation activities, such as energy conservation, fuel conservation, etc.

There are several ways to address these issues. Obviously continuance and increase of rebate schemes for water conservation infrastructure is a much needed incentive. People and schools need more flexibility to be able to purchase their water saving infrastructure. No interest payment plans or other similar alternatives should be more widely available.

This project has demonstrated how effective providing communities with a sense of empowerment can be in achieving long-term conservation goals. Individually, each of the Smart Water Schools didn't think they could win the Smart Water Grant let alone achieve such widespread effect of water conservation. Now that they have, the schools are applying for all sorts of grants, such as to install solar panels, and to try to do more for the environment whatever way they can.

To facilitate this sense of empowerment but overcome the costs of taking action, maybe schools could work with Water Suppliers and other water conservation professionals and host a series of workshops for other schools and the general public. These could be

workshops on how to carry out their own water audits so that they can start understanding what needs to be done. Or to show communities how to install flow reducers and other simple but effective water savers into their homes, and providing a bulk discount of the reducers and other products at the workshop. Smart Water Schools would be a good site for these workshops as they have a range of these devices installed and operational for demonstration. These are simple, cost effective steps that can allow people and schools to start saving water while saving up for the big ticket items.

- **Delays in achieving Milestone 3**

There were a number of time extensions sought for the Milestone 3 final report. Originally extensions were sought many of the community outreach actions had not been completed. For example printing of calendars, signage and school magazines were delayed at various printers, not in the control of the schools. Some schools hadn't sent or received back their final surveys and were waiting for those results. Delays were also caused by when in the process of writing up the report, it was discovered that more information was needed to improve water usage analysis or survey analysis and schools were asked to re-score their surveys or provide further information. In addition, extensions were sought as the Smart Water Coordinator (Jo Hess), who was responsible for writing the report, had moved to South Australia. She was reliant upon schools to gather materials and forward them to her. She was unable, as in prior Milestone reports, to physically assist schools compilation of data (running around collecting the data) or with their questions so there were delays due to communication and waiting for things to arrive by post, internet, etc. Unfortunately, there were also delays caused by illness and death in her family. The Smart Water Fund has been generous in allowing for the delays and providing extensions and this project is extremely grateful for that.

The extensions do not affect the final Milestone (3), as this is the end of the project. The extensions were needed to provide the best possible analysis of the results and for the report.

- **School staff allocation of time**

Again, schools met the challenge of allocating staff time to attend meetings and implement their community outreach action plans and curriculum delivery. Furthermore, coordinators were now experienced in this project, and had a better understanding of what was needed for the Milestone reports. Once in-kind support was summarised at the end of this project, the amount of investment per school was impressive. For future projects, funding should be made available to assist in paying for Casual Relief Teachers so that staff can participate in training, meetings and events without putting undue hardship on school budgets. Scheduling of events and school staff allocation of time will be constant issues with any school involved project like this. They are not insurmountable but need to be addressed to allow projects to succeed. This project has developed a number of methods to make schools' participation more efficient and less onerous, which can be of use for future similar endeavours. Electronic forms and documents, sharing of ideas, standardised formats for responses and outcomes, flexibility in arranging workshops & meetings are some of the useful techniques to help school staff participate.

Next Steps

This is the end of the Smart Water Schools project. Regardless, the water savings, the water-wise curriculum and the change in water conservation behaviour at each school will continue, and hopefully continue to improve. Schools are convinced that they can achieve these goals and what are the wide-ranging benefits to them environmentally, economically and socially. Schools are already demonstrating that with their enthusiasm in participating in further activities for the 2005 school year. Other schools have inundated the project wanting to know how to duplicate the effects. It has been a win-win project for all involved. It is hoped that the project's recommendations and outcomes are seriously considered by the state of Victoria and the Department of Education and make this widely available to all public schools and communities.

Acknowledgements

The project wishes to thank firstly, the Smart Water Fund for its vision in understanding what a difference it would make and making this opportunity possible to the Smart Water Schools. The project would like to thank each of the individual schools and their hard working staff, students and supportive communities for getting behind this project and making it the success it was. They have taken on an innovative challenge and met it with astounding versatility. The future is indeed in our public education, and if these 11 schools are an example, the future is in sound and creative hands.

Finally as project coordinator, I would like to personally thank all the members on the Smart Water Steering Committee, who cheerfully attended those early morning meetings, answered my insistent emails/phone calls and doggedly worked at their schools to get the milestones completed. Their fantastic ideas and enthusiasm never flagged despite their many other responsibilities and requirements. They are: Eric Bottemley (CERES); Ross Dudgeon & Stephanie Cantrell (Briar Hill P.S.); John Donovan, Angelika Ireland & Colin Schot (Concord S.S.); Sharon Marmo & Sharon Lim (Eltham North P.S.); Graham Sinclair (Diamond Valley College); Brendan White & Hilary Lane (Diamond Valley Special Development School); Jacqueline Hayes & Kerry Wall (Lower Plenty Primary School); Ursula Wilks (Olympic Village Primary School), Geoff Whyte (Research Primary School); Janet Hayes (Sherbourne Primary School); Gary Bartlett & Margaret Hirth (Strathewen Primary School) and Tony Adams (Wattle Glen Primary School). A further thank you to Sharon Marmo for her great help and support in assembling the milestone reports, running the steering committee meetings and keeping things ticking over after I moved to South Australia.

For Further information contact the Smart Water Fund on 1800 882 432 or visit www.smartwater.com.au or contact any of the schools directly.