



Warringah  
Council

# Schools Environmental Resource Kit

*Project ideas, step by step guides, case studies,  
sample budgets and resources to help schools run  
environmental education programs*



# Contents Page

<b>INTRODUCTION .....</b>	<b>1</b>
How to Use this Resource Kit.....	1
Getting Started .....	1
<b>SECTION 1: PROJECT IDEAS.....</b>	<b>2</b>
1: Bushland Education Project Ideas.....	2
2: Eco Gardens and Waste Reduction Project Ideas .....	3
3: Water Education Project Ideas .....	5
4: Climate Change and Sustainable Living Project Ideas.....	6
5: Environmental Leadership and Visioning Project Ideas .....	8
<b>SECTION 2: RESOURCES.....</b>	<b>9</b>
1: Bushland Education Resources.....	9
2: Waste Education Resources.....	15
3: Water Education Resources .....	21
4: Climate Change and Sustainable Living Resource Section .....	23
5: Environmental Leadership and Visioning Resources .....	26
<b>REFERENCES AND FURTHER READING .....</b>	<b>30</b>
1: Environmental Education Grants and Resources	

# Introduction

This resource kit has been designed to assist schools to run successful environmental education programs. The kit includes project ideas and estimated costs, case studies and links to lesson plans to make it easier for teachers and students to achieve great environmental education outcomes.

## How to Use this Resource Kit

The first section of this resource contains project ideas. Once you have chosen a project idea go to the corresponding appendix in Section Two for step by step guidelines, teaching resources, sample budgets and examples of suppliers for each project. The list of projects presented in the kit is not exhaustive and school communities are encouraged to be innovative.

## Getting Started

Experience has shown that the best starting point for schools wanting to be more sustainable is developing a School Environmental Management Plan (SEMP). All schools in NSW are required to develop their own SEMP for incorporation into their school plan. SEMPs help integrate environmental learning into all aspects of the school and ensure that environmental management and continuous improvement becomes part of the way that the whole school is managed. The most successful SEMPs and environmental projects are ones that involve the whole school community, are linked to the school curriculum, focus on the management of resources as well as the school grounds and are part of the whole school management plan.

Running environmental leadership programs and visioning exercises are also a great place to start with students before undertaking an environmental project, as they can encourage students to feel ownership over a program from the beginning. Information on environmental leadership programs and visioning exercises has been included in this resource kit.

There are many resources and tools available to help schools develop a SEMP and do environmental audits. Two of these are:

1. The NSW Sustainable Schools website at [www.sustainableschools.nsw.edu.au](http://www.sustainableschools.nsw.edu.au) has a SEMP builder, guides on how to do environmental audits, and resources and examples from other schools. The Sustainable Schools website is a great place to share your experiences and learn from other schools.
2. The NSW Department of Education and Training (DET) has also developed a resource to help schools develop SEMPs, run environmental audits and implement environmental education programs called *Implementing the Environmental Education Policy in your school* which is available at [www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplementdoc.pdf](http://www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplementdoc.pdf)

## Section 1: Project Ideas

### 1: Bushland Education Project Ideas

This section provides information on native gardens, frog ponds, managing bushland on school grounds and threatened species. See the Resource Section of this kit for step by step project guides, teaching resources, sample budgets and suppliers.

#### **Native Gardens**

Native gardens provide valuable habitat for native animals and help to support wildlife corridors throughout the northern beaches. They can also be used as a valuable learning area for a range of different subjects from K-12. Students can be involved in all stages including the development of a site plan, choosing plants, planting, learning about bushland issues and can be garden monitors to remove rubbish and care for the garden. By establishing a native garden students can learn about the values of natural areas and how to protect them. Native gardens are also ideal for school grounds as they are low maintenance, hardy, don't require much water or fertilisers and are best suited to local conditions.

#### **Frog Ponds and Lizard Lounges**

Frog ponds provide important habitat for frogs and attract other wildlife such as lizards and birds. Frog ponds are best integrated into a native garden at a school and can be used for classroom activities such as the study of wetlands, amphibians, water quality, reptiles and ecology. Students can be involved in researching, building and caring for the frog pond.

Building a lizard lounge is a really fun activity to do with students, and creates shelter for lizards such as Blue Tongues. Students can be involved in researching and building the lizard lounge and monitoring the lizards that make it their home. Students learn about local biodiversity, habitat, and the importance of supporting native animals in their own gardens.

#### **School Vegetation Management Plans**

Many schools on the northern beaches have remnant pockets of bushland on their school grounds. Schools can apply for a number of different natural resource management grants to help them develop a vegetation management plan for their school. Students and teachers can use their remnant bushland as an outdoor learning area to learn about biodiversity, habitat, native plants, weeds, native animals and how to care for natural areas.

## 2: Eco Gardens and Waste Reduction Project Ideas

This section provides information on eco garden projects, composting, worm farming, waste audits and recycling projects. See the resource section of this kit for step by step project guides, teaching resources, sample budgets and suppliers.

### **Reducing Your School's Waste**

There are many things that schools can do to reduce the amount of waste that is sent to landfill. Schools can reduce their waste in half, simply by composting food scraps, establishing eco gardens, recycling paper and containers and running fun waste education challenges such as rubbish free lunches. Schools can also promote waste-free canteens by reducing packaging, avoiding disposable containers, buying in bulk, and encouraging students and teachers to supply a lunch box for lunch orders.

### **Waste Audits and Recycling Programs**

Doing a waste audit helps your school identify how much waste goes to landfill and how this could be reduced simply through waste avoidance, reuse and recycling. Students learn first hand how much waste they produce and what they could do to reduce their waste at school and home. The school can then investigate setting up a compost system or worm farm, paper and container recycling as well as fun educational activities such as waste free lunches. Schools can apply for one of the grants listed on Council's website for setting up composting and worm farming systems, food gardens and waste education programs.

### **Composting and Worm Farming Programs**

Organic materials, like food scraps, usually make up half of a school's waste. A typical school of 400 students may generate up to 20 kg of food waste per day, this means that 4 tonnes per year of organic material goes to landfill costing the school approximately \$500 per year in disposal costs. It also has a high environmental cost as food scraps mixed with plastics and garbage creates leachate which can damage soil and water quality. Schools can save money and help the environment by using their food scraps to create rich compost or worm castings for the school grounds and to improve soil quality.

Composting and worm farming encourages students to become excellent recyclers as they see first-hand how waste can become a valuable resource. It also encourages students to bring less packaged (and therefore healthier) food to school so that they can compost their food scraps. Students also gain a better understanding of the life cycle of plants, the natural process of growth and decay and the role of insects and micro-organisms in breaking down waste products. Students can be involved in each step of the process from setting up a compost system or worm farm, collecting food scraps and then using the finished product on the garden.

### **Eco or Food Gardens**

Food gardens provide an excellent opportunity for students to learn about a number of environmental issues and discover a fun approach to healthy eating. They can also be a source of pride for school communities, with many schools successfully growing food for the canteen and for students to take home.

Students should be involved in all stages of the garden project including the design of the garden, researching plants, growing seedlings, building the garden bed, watering, weeding and harvesting.

By growing their own food, students learn through experience about ecosystems and the life cycles of plants, reducing waste, composting, sustainable water use as well as a better understanding of agricultural systems and the production and transportation of food around the globe. They can also gain skills in team work and in gardening. Food gardens are a good project to run for a whole year so that students have time to grow their own seedlings, build a garden, harvest and then collect seeds for next year. Food gardens should include a composting system or worm farm and if possible, a rainwater tank so that the garden can be self sustaining.

### 3: Water Education Project Ideas

This section provides information on water conservation projects including water audits and rainwater tanks as well as stormwater and catchment education projects. See the resource section of this kit for step by step project guides, teaching resources, sample budgets and suppliers.

#### **Water Audits and Water Saving Actions**

Before starting a water saving program, all schools should first do a water audit so that they can identify how much water they are using, the problem areas and where they could make the best water savings. The water audit will also give you important baseline data that you may need when applying for grants and to develop a water savings action plan. Students can carry out a water audit which helps them to learn through experience how water is wasted and how to reduce their consumption of water at school and at home. A detailed step by step guide to doing a water audit and a free DVD is available from Sydney Water. Contact [education@sydneywater.com.au](mailto:education@sydneywater.com.au) or phone 1800 724 650 to order a copy.

Once a water audit has been completed, students and teachers can develop a water savings action plan that includes water saving targets, water education programs for the school as well as installing water saving devices.

#### **Catchment Education Programs**

Schools can run catchment education programs to educate students about the impacts of stormwater pollution and improve water quality. Students can get involved in water quality programs such as Streamwatch, learn about stormwater pollution and visit different catchment areas.

## 4: Climate Change and Sustainable Living Project Ideas

This section provides information on energy audits, renewable energy projects, transport projects and climate change initiatives. See the resource section of this kit for step by step project guides, teaching resources, sample budgets and suppliers.

### **Reducing Energy Consumption - Energy Audits**

Reducing the consumption of resources at schools is one of the best ways to help reduce the impact of climate change. With the assistance of teachers, students can run an energy audit (similar to the environmental audits for water and waste) to identify how much energy each area of the school is using and where reductions can be made. By completing an energy audit, students learn through experience how energy is often wasted and what they could do to help reduce energy consumption at school and at home. An energy audit will also give you important baseline data which will help you measure future savings, develop an energy savings action plan and assist you in applying for grants. Information and worksheets on how to do energy audits are available at the Sustainable Schools website at [www.sustainableschools.nsw.edu.au](http://www.sustainableschools.nsw.edu.au)

### **Energy Reduction Plan**

Once an energy audit has been completed, students and teachers should develop and implement an energy reduction plan for the school which may also include actions they can do at school and at home. Schools with the assistance of service providers can consider replacing inefficient lights, installing timers and a solar hot water system as well as behaviour patterns such as turning the lights and electronic equipment off. Any energy reduction initiatives should be supported by learning about energy consumption, climate change and renewable energy in the classroom.

### **Solar Power Programs**

By installing a solar power system (also known as photovoltaic systems) and/or a solar hot water system, schools can generate electricity from sunlight, saving money and the production of greenhouse gases. There are a number of different grants to help schools install solar power systems, visit the grants for schools section of Council's website for up to date information on grants.

### **Transport**

Student transport is often responsible for over 20% of a school's total greenhouse gas emissions. Students can investigate school related transport, keep a travel diary, learn about the environmental impacts of transport and develop alternative transport methods such as 'walk to school' days or walking school buses. By making small changes to their own travel habits, students learn that small changes can make a big difference for the environment. Transport education resources and activities for schools are available at [www.travelsmart.com.au](http://www.travelsmart.com.au) and sample surveys and templates are available on the Sustainable Schools website at: [www.sustainableschools.nsw.edu.au](http://www.sustainableschools.nsw.edu.au)

### **Ecological Footprint**

Another way of looking at environmental sustainability is to calculate a school's or individual's ecological footprint. An ecological footprint is the measure of the total

amount of land required to supply all the resources a person's lifestyle demands. By measuring their consumption habits, students gain a better understanding of the impact that their lifestyle has on the environment and the areas where they could improve.

## 5: Environmental Leadership and Visioning Project Ideas

This section provides information on environmental leadership and visioning exercise projects. See the resource section of this kit for step by step project guides, teaching resources, sample budgets and case studies.

### **Environmental Leadership Programs**

Environmental leadership programs empower students to take ownership of environmental problems and direct change. They typically involve student-directed learning and decision-making, mentoring, an analysis of complex environmental issues and multidisciplinary approaches. Some programs involve training a group of students to be environmental ambassadors who can then work with other students to share their experiences. Example leadership programs include student environmental councils and committees, training and mentoring courses, eco clubs and student-run conferences or events.

### **Visioning Exercises**

The exercise of imagining a better future, sometimes referred to as 'futures thinking' or 'visioning', is a major component of education and education for sustainability. Experience in environmental education has shown that 'doom and gloom' scenarios do not motivate people to change. As an alternative, visioning exercises are a positive way to help people change their view of the future and their understanding about how to reach it. They can assist students to feel engaged, empowered and responsible to act in ways to reach their vision and to understand the diversity of ideal futures that exist within a group.

Visioning exercises typically involve individuals imagining what an ideal sustainable future might be like, reflecting on and understanding why that vision is important to them and what values make up their vision. It is also a platform to start asking "what will we do to make these visions a reality?". Visioning exercises are not stand alone activities and should be supported by actions that follow-up on the visions created.<sup>1</sup>

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<sup>1</sup> This description is adapted from "Envisioning or Futures Thinking: EfS Portal" Australian Research Institute in Education for Sustainability [http://www.aries.mq.edu.au/portal/about/keycomps\\_future.htm](http://www.aries.mq.edu.au/portal/about/keycomps_future.htm) Accessed 25 September 2007

## Section 2: Resources

### 1: Bushland Education Resources

This section provides step by step guides, sample budgets, suppliers, teaching resources and case studies.

#### **Establishing a School Native Garden – A Step by Step Guide**

It is important to involve students in all stages of developing a native garden including the development of a site plan, choosing plants, building the garden and learning about bushland issues. Students can become garden monitors to remove rubbish and care for the garden.

##### Step 1: Planning

Make a site plan for your garden with your class. Consider pathways, soil type, existing vegetation, drainage, shady/sunny areas, the proximity of taps for watering, the location of other buildings and powerlines and how the space could be used for classroom activities. Consider including a frog pond or lizard lounge in your garden. If you already have bushland on your school grounds you will need to consult Council before deciding on a suitable site.

##### Step 2: Create Ownership

Develop a team of people to help you – work with the principal, grounds assistant, teachers, parents, students and Council to identify what jobs the students will need help with such as digging holes for planting or constructing pathways.

##### Step 3: Choosing Plants

Plant local native plants that are grown from seed collected locally. Obtain a plant list from Council for your specific area. To provide a range of habitat for different animals you need to make sure your garden has lots of different layers including ground covers, grasses, small and large shrubs and trees (if you have adequate room). Use native tube stock to help plants develop a stronger root system and adapt to your site. You will need approximately 5 tube stock per square metre. Please note, Council will not fund exotic species or native plants that are not from the local area e.g. Kangaroo Paw.

##### Step 4: Choosing Materials for Pathways and Edging

Use products made from recycled materials for pathways such as recycled gravel and recycled timber for edging which are available from Kimbriki Recycling and Waste Disposal Centre (Kimbriki). Consider reusing existing materials such as fallen branches, trees or rocks, and keep in mind that you can purchase table seating and picnic benches made from recycled plastic or timber.

##### Step 5: Prepare Your Site

Before planting, you may need assistance from the Grounds Assistant or parents to prepare the site, build any pathways and ensure that you have all the materials you need. If the ground is hard and you are planting out a large area, Council may be able to assist you in digging the holes for plants. Mulch can be delivered to your school free of charge through Council's Tree Management Program. Contact 9942 2741 for more information. If you need soil, it can be delivered through Kimbriki Recycling and Waste Disposal Centre, contact Ph: 9486 3512 for more information.

### Step 6: Planting

Hold a planting day or session where students (with adult supervision) can do the planting and mulch around each plant, this will encourage them to feel ownership over the garden and watch their plants grow.

### Step 7: Develop a Maintenance Plan

Help the students to decide how the garden will be maintained and cared for. You may want to consider giving a class the responsibility of making sure the garden is rubbish and weed free, or establishing a timetable for the school Eco Club.

### Step 8: Start Using the Garden for Educational Activities

See the list of teacher resources below for ideas.

## **Establishing a School Native Garden – Sample Budget**

*The prices below are designed to be used as a guide only. You may not need each item for your project.*

Native Garden Materials	Cost
Native Plants (tube stock only) - you will need approximately 5 tube stock per m <sup>2</sup> .	\$1.20-3.00 ea
Edging – Recycled timber for edging available from Kimbriki – call 9486 3512 for prices or you can use recycled bricks (approx. 0.70cents each).	
Pathways – Gravel made from recycled terracotta tiles or you can use crushed sandstone or mulch.	\$50-75 per tonne
Gardening Tools – Trowels (\$4 each), shovels (\$30 each), gloves (\$2 per pair) etc	
Seating	
Table setting made from recycled plastic	\$1400
Picnic bench with back	\$630
Bench without back	\$330
Signage made from recycled plastic (podium sign where you can replace the information on native plants and animals). Cost varies according to size. Alternatively, you may be able to make one cheaply out of recycled timber.	\$500–1000
Mulching – Council can provide mulching for free to school from Council's Tree Removal Service. If you need a particular type of mulch or soil then these are available from Kimbriki.	

## **Frog Ponds and Lizard Lounges – A Step by Step Guide**

Students, teachers and parents can easily build a small frog pond together in a few hours. You can also apply for funding for an expert to run a frog workshop at your school to teach the students about frogs and demonstrate how to build a frog pond.

### Step 1: Planning

Follow the steps outlined for Native Gardens on the previous page. Ponds should be part sunny/part shade but not directly underneath trees.

### Step 2: Obtaining Materials

Preloved materials such as an old bathtub, sink or a kid's plastic swimming pool make great frog ponds. If they are not available use a pond liner, available from hardware stores. You will also need enough shade cloth to line the pond, rocks to go in the pond and around the edges and native plants. You may also want to consider a solar water

pump for your pond. Mulch or recycled gravel can be used around the edge of the pond and for pathways.

### Step 3: Prepare Your Site

Dig a hole for the frog pond being careful to avoid tree roots and utilities. The pond should be no more than 30cm deep for safety reasons, a grate or mesh can be placed over the pond if needed or you could insert rocks to reduce the depth. If you are using a bath tub or plastic pool it could be placed only slightly in the ground with rocks around the edge.

### Step 4: Pond Lining

Line your pond with a shade cloth to provide a non-slippery surface for the frogs. Place rocks in the pond and around the edges of the pond to help create shading, standing areas and to help hold down the lining. When choosing rocks two types should be used: smooth rocks that will allow algae to grow on them and rough rocks to provide grip for the frogs to jump on. You can also place logs in the pond to add diversity to it and provide more shaded areas and hiding areas.

### Step 5: Plant Native Water Plants

Plant native water plants in the pond to provide food and shelter for tadpoles and to help maintain good water quality. Plant native grasses and sedges around the edges.

### Step 6: Research

Find out about frog species that may be found in your area so you can identify them when they arrive. It is better not to introduce frogs into your pond due to quarantine issues, once you build the pond eventually frogs will come. See 'Frog Facts' information sheets at [www.fats.com.au](http://www.fats.com.au) for more information.

### Include a Lizard Lounge

Create an area in the native garden where rocks can be piled on top of each other to create shade pockets and small spaces for lizards to hide under. Also use hollow logs or old pipes for lizards to hide in. If space permits, plant some prickly plants in the area to help protect the lizards from hungry birds.

## **Frog Pond – Sample Budget**

*The prices below are designed to be used as a guide only. You may not need each item for your project.*

Frog Pond Materials	Cost
Native Plants (tube stock only). Contact Council for a list of plants that are suitable for frog ponds.	\$1.20-3.00ea
Pond base – recycled bath tub or sink, or children's swimming pool made from hard plastic. Note if you use a brand new pond liner you will need to allow for approximately \$100.	\$20-50
Shade cloth – available from Hardware stores	\$5-10metre
Rocks – small and large. These should not be taken from bushland areas, if you don't have any on your school grounds contact your local quarry.	
Pots for plants that will need to be submerged in water.	\$10ea
Gardening tools – Trowels (\$4 each), shovels (\$30 each), gloves (\$2 per pair).	
Solar pump for small ponds	\$400
Mulching for around the edge of the pond – Council can provide mulching for free to school from Council's Tree Removal Service if you need a particular type of mulch or soil then these are available from Kimbriki.	

## Bushland Suppliers and Service Providers

*Please note, Council does not recommend any suppliers, consultants or manufacturers. This contact list is designed as a guide only and is by no means exhaustive.*

### **Nurseries that Specialise in Native Plants Endemic to the Warringah Area**

Please ask for plants grown for seed collected in the Warringah area.

- Harvest Seeds and Native Plants, Terrey Hills. Ph: 9450 2699
- Kulgoa Wholesale Nursery, Terrey Hills. Ph: 9450 1217
- Ku-ring-gai Community Nursery, St Ives. Ph: 9424 0825
- Sydney Native Nursery, Wallace Lake. Ph: 0410 472 785
- Sydney Wildflower Nursery, Terrey Hills. Ph: 9459 1555
- Tharwa Nursery, Terrey Hills. Ph: 9450 1967
- Toolijooa Native Nursery, Ingleside. Ph: 9970 8709
- Wirreanda Nursery, Ingleside. Ph: 9450 1400

### **Recycled Materials, Mulches, Soils, Timber and Recycled Gravel –**

**Kimbriki Recycling and Waste Disposal Centre** – Kimbriki Road, off Mona Vale Road, between Terrey Hills and Ingleside. Main switch Ph: 9486 3512.

- All vegetation collected from the local area is brought to Kimbriki and shredded by Australian Native Landscapes (ANL) and made into mulches and soils. Phone the ANL office at Kimbriki on 0409 247 207 for information or to arrange a delivery.
- Recycled gravels are available at Kimbriki. They are recycled from concrete, brick and roof tiles from demolished buildings. The gravels can be used for drainage or driveways, and the terracotta for driveways and paths. There are also bricks, Envirosand and crushed asphalt available for sale. Phone the Concrete Recyclers office at Kimbriki on (02) 9450 2611 to arrange a delivery, or for information.
- Hardwood & softwood timber is available at the Timber Recycling section at Kimbriki.

**Recycled Plastic Furniture or Signage** – Made from recycled toners or plastic bottles.

- Corporate Recycling Ph: 9557 7020 [www.corporaterecycling.com.au](http://www.corporaterecycling.com.au)
- The Go Green Group Ph. 02 9632 7475 [www.replas.com.au](http://www.replas.com.au)

Most of the other materials mentioned in the sample budgets can be sourced from hardware stores and nurseries.

## Teaching Resources and Bushland Education Programs for Schools

### Protecting Our Threatened Species – Duffy’s Forest Teaching Resource

This resource includes a series of lessons and activities (for stage 2 students, but easily adaptable) on bushland issues, native animals, native plants, threatened species and the values of urban bushland. The resource includes a range of activities from a number of Key Learning Areas with a focus on Science and Technology and Human Society and Its Environment. This resource is part of Warringah Council’s Threatened Species Education program and all teaching materials required to teach this program are provided free of charge from Warringah Council, including a bushland excursion. For more information contact Warringah Council on 9942 2542.

### Manly Dam Catchment Teaching Resource – Keeping Our Dam Alive

This teaching resource is aimed at stages 2 and 3 and although focused on Manly Dam it can be applied to any catchment area. It includes lesson plans and activities on native plants and weeds, birds, mammals, feral animals, reptiles, frogs, fish and water quality. This resource is part of Warringah Council’s Manly Dam Education program and all teaching materials required to teach this program are provided free of charge from Warringah Council. For more information contact Warringah Council on 9942 2543.

### Earth Alive Resource Book – Field of Mars Environmental Education Centre

Earth Alive is a 9 – 11 week Science and Technology program for stage 3 students that aims to develop knowledge, understanding and care for ecosystems and biodiversity. This program has been developed only for NSW Department of Education and Training schools and is available to schools that register to be involved in Field of Mars Environmental Education Centre’s programs.

### National Parks and Wildlife Services (NPWS) – Teachers Kits

NPWS has developed a number of resources for teachers of all stages on Aboriginal heritage, biodiversity, animal and plant habitats, ecosystems, wetlands, food chains and food webs. Teacher’s kits can be purchased online. There are fact sheets that can be downloaded for free and information on guided tours and school excursions. See [www.nationalparks.nsw.gov.au/npws.nsf/Content/Educational+resources](http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Educational+resources)

The Australian National Botanic Gardens site [www.anbg.gov.au/education/teacher-info.html](http://www.anbg.gov.au/education/teacher-info.html) contains teaching information on Australian plants including propagation and plant families.

For more information on native plants, native gardens and vegetation communities see Warringah Council’s website [www.warringah.nsw.gov.au](http://www.warringah.nsw.gov.au)

## Bushland Project Case Study: Wakehurst Public School

Wakehurst Public School used grant funding to run a number of environmental education projects that are guided by their School Environmental Management Plan (SEMP). The school grounds contain an endangered vegetation community known as the Duffy's Forest Ecological Community. Warringah Council and the school community prepared a Vegetation Management Strategy to help the school manage its special patch of bushland and use it for educational activities. Grant funding was used to install educational signage for the remanent bushland and to run educational activities on the Duffy's Forest ecological Community.

Each year students in stage 3 participate in the Protecting Our Threatened Species Program and learn about the importance of bushland areas. Grant funding has also been used to build a frog pond which was used to study wetland areas. Funding was also used to install recycled seating around tree roots to reduce the compaction and erosion of topsoil which was damaging two trees on the school grounds.



### Wakehurst Public School's Frog Pond costs:

Large Frog Pond –

- Plants \$190 (145 plants)
- Sandstone boulders for the edge of the pond \$205
- Teaching resources on frogs and wetlands \$200
- 5000 litre rainwater tank \$990
- Tank installation \$460
- Submersible pump to feed the pond \$300

Note: A rain water tank is not always necessary for frog ponds.

## 2: Waste Education Resources

This section provides step by step guides, sample budgets, suppliers, teaching resources and case studies.

### **Waste Audits**

The aim of a waste audit is to identify how much waste is going to landfill and how this could be reduced through recycling, reuse or simply avoiding it in the first place. Once you have done a waste audit with students it is much easier to develop a waste management plan for the school. The Sustainable Schools website has resources and examples to help you conduct a waste audit or you may decide to get assistance from an Environmental Education service provider who can supply the equipment and help you run the waste audit (a list of providers is below). Do it yourself waste audit kits are available from School Communities Recycling All Paper (SCRAP) for a small fee. Waste audits can be done as a classroom activity or by many different areas of the school. It involves the following steps:

#### Step 1: Calculating the Waste Management Costs

Calculate the waste management costs for your school, the number of bins and how often they are collected. This will give you important baseline data so that you can calculate the savings that you could make by reducing your waste. You can use the waste management cost template at:

[www.sustainableschools.nsw.edu.au/Portals/0/Content/Downloads/03a\\_wastemangementcosts.doc](http://www.sustainableschools.nsw.edu.au/Portals/0/Content/Downloads/03a_wastemangementcosts.doc)

#### Step 2: Preparation and Equipment

- Find a grassed area out of the way to sort the waste, or use an old tarp
- Organise school bins, cardboard boxes or plastic bags to collect the rubbish
- Students that are separating the rubbish will need gloves, appropriate footwear and safety glasses to ensure no foreign objects (eg. glass) get into the eyes. They will also need a pair of tongs each to help sort the rubbish. You may need to obtain parent/guardian permission for any student involved in the waste audit
- A set of scales to weigh the rubbish collected
- A clip board, recycled paper and a pencil to record the information
- A camera, if possible, to take pictures of the waste collected.

#### Step 3: Choose a Number of Bins to Audit

Choose bins from different areas of the school, you may even want to do separate audits for bins located at different areas such as the playground, canteen or sport fields so you can identify where the problems are.

#### Step 4: Sort the Rubbish

Take collected rubbish to your sorting site and empty out the contents of the bins onto a lawn area or tarp/plastic sheet. Allocate roles to each student (collecting, sorting and weighing of material and recording data). The rubbish is to be sorted into the following categories:

##### **Pile 1: Reuse**

Make a separate pile that is just food scraps and another pile that is items that can be used again such as clean paper, plastic sleeves, old folders etc

## **Pile 2: Recycling**

Create two piles, one for paper recycling and one for container recycling (plastic bottles, cans, yogurt containers, poppers etc).

## **Pile 3: Avoid**

These are garbage items that can not be recycled that should be avoided such as packaging, straws, plastic etc.

### Step 5: Weigh Your Waste

Weigh each category once all the rubbish has been sorted and fill in the data collection results.

### Step 6: Discuss Results and Develop a Waste Management Program

Discuss your results with the team and identify ways to manage the waste and educate students. Use the results to develop a waste management program for your school.

## **Rubbish Free Lunch Challenge**

Many schools regularly organise a 'Rubbish Free Lunch' day where students, parents, teachers and the canteen make a special effort to make lunches that don't create rubbish. Some schools organise this as a weekly event or once a year during November's National Recycling Week and promote it through their newsletters. The focus of the challenge is to get students to reduce the amount of packaging from school lunches and understand the effects packaging has on the environment. At the conclusion of lunch, a waste audit is conducted as described above to assess the events success and provide information for waste management strategies.

## **Paper and Container Recycling**

SCRAP provides a free collection service of white paper and toner cartridge to schools in Sydney and can also provide advice on recycled paper products. Schools can apply for funding for the purchase of collection boxes for each classroom or just use cardboard boxes. There are also service providers that collect cardboard and mixed paper as well as containers for recycling. Council will fund the cost of purchasing bins for setting up paper and container recycling programs if they are part of a larger waste education program. However, please note that this grant program does not fund the cost of fortnightly recycling collection fees as that is a core activity that should not be dependant on grant funding.

## **Composting and Worm Farm Systems**

Setting up a compost bin or worm farm can easily be done as a classroom activity. Students or classes should be allocated roles such as collecting food scraps and checking the compost or worm farm. Schools can apply for funding to have an expert run a composting or worm farming workshop at your school. Before purchasing a compost bin and/or worm farm, consider the amount of food waste produced at the school as most schools will need a couple of compost bins or a large worm farm to cope with the food waste produced.

Follow the step by step guide to setting up a compost or worm farm on Council's website:

[www.warringah.nsw.gov.au/services/documents/Finalcompostingsteps.pdf](http://www.warringah.nsw.gov.au/services/documents/Finalcompostingsteps.pdf)

[www.warringah.nsw.gov.au/services/documents/FinalWormfarmingDisplayA3\\_000.pdf](http://www.warringah.nsw.gov.au/services/documents/FinalWormfarmingDisplayA3_000.pdf)

or call Council's Waste Education Officer for a copy on 9942 2111.

## Waste Audits and Recycling Programs – Sample Budget

The prices below are designed to be used as a guide only. You may not need each item for your project.

Waste Audit	Cost
Waste audits can be done at a small cost, however you can hire an expert to run the audit for you or hire a DIY kit.	
Waste audit consultant	\$350-700
DIY waste audit kit available from SCRAP	\$150
Composting Systems and Worm Farms	
Compost bin (simple black units available from Kimbriki)	\$50ea
Compost tumblers (bin on a frame suitable for schools that only have space for a compost bin on concrete rather than earth)	\$180-250ea
Compost turner (a tool that makes turning the compost really easy)	\$25ea
Worm farm kit – including worms, kit, video and 30 minute workshop	\$180
Industrial size worm farms and user workshops – suitable for coping with for the entire food waste for schools, available from SCRAP	\$3,100
Workshops on worm farming or composting.	\$250–500ea

## Establishing Food Gardens

Involve students in all stages including the development of a site plan, choosing plants, building the garden and learning about nutrition and the production of food. Each class can have a designated garden bed that they care for. A detailed project outline for food gardens is not included here as a comprehensive guide to food gardens for teachers and educators has been developed called *Seed to Seed – Food Gardens in Schools*. This book covers everything from lesson plans, seed raising, vegetable beds, composting, materials, mulch, seasonal planting calendar, lesson plans and useful websites. This resource is free to download from [www.seedsavers.net](http://www.seedsavers.net) or you can purchase a hard copy at [www.communitygarden.org.au](http://www.communitygarden.org.au)

## Food Garden – Sample Budget

Prices are estimates only, you do not necessary have to include each item these are suggestions only to use as a guide.

Food Garden Materials
Free recycled materials needed for the garden:
Mature compost (free if you have a compost system, make sure it has all broken down)
A stack of old newspapers and/or cardboard (you need about 20 large newspapers for each small garden bed)
A tub (like an old garbage bin to soak the newspapers in)
Old milk cartons or old garden pots (with the plastic bottom cut out) are great to place over baby seedlings to protect them until they get bigger
Thin wooden or bamboo stakes for staking
Old stockings or string make excellent ties
Ask parents to donate any recycled timber, stones and other building materials that are useful for making your own compost bin or worm farm, garden edging and signs
Seeds – ask parents and local gardeners to donate seeds or join your local seed network, see <a href="http://www.seedsavers.net">www.seedsavers.net</a>
Paddle pop sticks, cut up ice cream containers or old plastic bottles make great markers for plants.

Seedlings are available from most nurseries however, growing plants from seed is much better for the environment, cheaper and more fun for students.	\$3-5ea
Packets of seeds	\$2-5ea
Seed raising trays	\$5-10ea
Seed raising mix	\$5-10ea
For each garden bed: 2 Bags of organic fertiliser (either compost, cow manure or chicken manure) One bale of straw (try and get clean straw with little seeds) One bale of lucerne hay (avoid buying loose lucerne as a bale tied with string is easier to use) One large bag of potting mix One small bag of lime	\$10ea \$10ea \$15ea \$5-10ea \$2-3ea
Edging - Recycled timber for edging available from Kimbriki – call 9486 3512 for prices or you can use recycled bricks (0.70cents each)	
Pathways - Gravel made from recycled terracotta tiles or Council can supply you with free mulch.	\$50-75 per tonne
Gardening Tools – Small trowels (\$4ea), shovels (\$30ea), gloves (\$2 per pair), wheelbarrow (\$50-100), hoses (\$30-60ea), watering cans (\$5-20), spray bottles (\$2ea)	
Seating (optional) Table setting made from recycled plastic Picnic bench with back Bench without back	\$1400 \$630 \$330
Signage (optional) made from recycled plastic (podium sign where you can replace the information). You can also ask if any of the parents have carpentry skills and can make you a sign from recycled materials for free.	\$500–1000 Depending on size
Rainwater tank and drip irrigation system (optional) It is great to have a self sustaining watering supply for your garden, schools can apply for a Community Water Grant for water tanks - see the Water Education section of this kit for more information.	

## Waste Education Suppliers and Service Providers

*Please note, Council does not recommend any suppliers, consultants or manufacturers. This contact list is designed as a guide only and is by no means exhaustive.*

- **SCRAP**, Ph: 9825 1062 [www.scrapltd.com.au](http://www.scrapltd.com.au)  
Offers waste education programs, workshops, waste audits, paper recycling, worm farms and compost bins.
- **Kimbriki Recycling and Waste Disposal Centre**, Ph: 9486 3512.  
Offers free excursions for schools to the Eco Garden. Fee based workshops can also be run for schools and Kimbriki sells compost bins.
- **Gibberagong Environmental Education Centre**, Ph: 9457 8245  
[www.gibberagon-e.schools.nsw.edu.au](http://www.gibberagon-e.schools.nsw.edu.au) offers waste education program and workshops.
- **Keep Australia Beautiful**, Ph: 9633 3380. Offers waste education program and workshops.

- **The Gould League**, Ph: 9560 7844 [gouldnsw@gould.edu.au](mailto:gouldnsw@gould.edu.au) offers waste education program and workshops.
- **Worm Farm Man**, Ph: 0411 261 346 [gvagg@apex.net.au](mailto:gvagg@apex.net.au) offers worm farm workshops and can supply worm farms.

### **Paper and Container Recycling Services**

White paper recycling collection is offered as a free service by SCRAP to schools. Other companies provide fee-based container and paper recycling collection services. Council will fund the cost of setting up paper and container recycling programs but not the fortnightly collection fees. The cost of a fortnightly collection of a 240 litre wheelie bin is between \$7-15 per collection (\$200-300 per year).

- SCRAP Ph: 02 9825 1062
- Visy Ph: 97943076
- URM (United Resource Management) Ph: 0448 414 535
- Warringah Council Waste Management Services Ph: 9942 2821

### **Recycled Materials, Mulches, Soils, Timber and Recycled Gravel –**

**Kimbriki Recycling and Waste Disposal Centre –** Kimbriki Road, off Mona Vale Road, between Terrey Hills and Ingleside.

- All vegetation collected from the local area is brought to Kimbriki and shredded by Australian Native Landscapes (ANL) and made into mulches and soils. Phone the ANL office at Kimbriki on 0409 247 207 for information or to arrange a delivery.
- Recycled gravels are produced at Kimbriki; recycled from concrete, brick and roof tiles from demolished buildings. The gravels can be used for drainage or driveways; and the terracotta for driveways and paths. There are also bricks, Envirosand and crushed asphalt available for sale. Phone the Concrete Recyclers office at Kimbriki on (02) 9450 2611 to arrange a delivery, or for information.
- Hardwood & softwood timber, fencing, treated pine logs etc is available at the Timber Recycling section at Kimbriki.

### **Organic Seeds**

Green Harvest, Ph: 1800 681 014 [www.greenharvest.com.au](http://www.greenharvest.com.au)

Greenpatch Organic Seeds, Ph: 6551 4240 [www.greenpatchseeds.com.au](http://www.greenpatchseeds.com.au) online or credit card orders.

Organic seeds are also available from Manly Food Cooperative (located at 1B Whistler St, Manly) or Green Tucker Food Cooperative (located at Shop 4, 51 Arthur St, Forestville).

**Recycled Plastic Furniture or Signage –** Made from recycled toners or plastic bottles.

Corporate Recycling Ph: 9557 7020 [www.corporaterecycling.com.au](http://www.corporaterecycling.com.au)

The Go Green Group Ph. 02 9632 7475 [www.replas.com.au](http://www.replas.com.au)

Most of the other materials mentioned in the sample budgets can be sourced from hardware stores and nurseries.

## Teaching Resources and Waste Education Programs for Schools

A number of lesson plans and teaching tools have been developed in this area and are available on the following websites:

*Seed to Seed – Food Gardens in Schools.* This book covers everything from lesson plans, seed raising, vegetable beds, composting, materials, mulch, seasonal planting calendar, lesson plans and useful websites. This resource is free to download from [www.seedsavers.net](http://www.seedsavers.net) or you can purchase a hard copy.

You can also find good gardening lesson plans on:

[www.teachernet.gov.uk/growingschools/resources](http://www.teachernet.gov.uk/growingschools/resources)

[www.kidsgardening.com/growingideas/projects/sept04/pg1.html](http://www.kidsgardening.com/growingideas/projects/sept04/pg1.html)

Waste education teaching resources and activities sheets on

[www.kesab.asn.au/index.php?page=teaching-resources](http://www.kesab.asn.au/index.php?page=teaching-resources)

Information and case studies on food gardens [www.communitygarden.org.au](http://www.communitygarden.org.au)

## Waste Education Case Study – St John the Apostle Primary School

Parents of the school attended a 'No dig' gardening workshop at Kimbriki's Eco Garden and were inspired to build a vegetable garden at their school in an unused area between the school and the Church. They worked with the school and the local Parish community to apply for a grant. The parents and children built three garden beds made from recycled materials. The garden area has now become a focus area for environmental learning for the school community and is maintained by students and parents in the Eco Garden Club. Celeste, a student in the Eco Garden Club reports "We learnt how plants grew. We used maths in measuring the spaces between the seeds, we became aware of how precious water is, and realised that not all food came in plastic packaging."

The no dig garden has since been expanded to include a rainwater tank, a compost system, wooden benches made from recycled timber and a water feature.



The rainwater tank has also been used to teach the students about water saving.

The school held a water relay where a small bucket of water was passed from the rainwater tank to the other end of the school. It was passed on by every child who said "Don't waste a drop" and then used to water a plant at the front of the school.

### 3: Water Education Resources

This section provides grant funding information, sample budgets, suppliers, teaching resources and case studies.

#### **Grant Funding for Water Saving Initiatives**

Green Vouchers for Schools Program - The Australian Government will provide up to \$50,000 for every school to install a rainwater tank (above 10,000 litres) and a solar hot water systems along with their associated infrastructure and fittings. For tanks, the installation costs can include a pump and reticulation to toilets, gardens and ovals. Schools can register their interest online at [www.environment.gov.au/programs/greenvouchers](http://www.environment.gov.au/programs/greenvouchers) or call 1800 020 625.

#### Australian Government Water Fund - Community Water Grants

This grant program provides up to \$50,000 for water saving programs for schools and community organisations. The program will fund the installation of water saving devices including rainwater tanks, spring loaded bubblers, dual flush toilets and water recycling systems. Many schools have already received funding for water saving projects and round four opens in early 2008. An education kit and a number of resources to assist schools to implement successful water education projects are available on the Community Water Grants website at [www.communitywatergrants.gov.au](http://www.communitywatergrants.gov.au)

#### Sydney Water Rainwater Tanks in Schools Rebate Program

Sydney Water offers a rebate of up to \$2,500 to schools that install a rainwater tank. The rebate is available to all primary and secondary schools, public and private, connected to a Sydney Water main. More information and step by step guides and teaching resources are available from: [www.sydneywater.com.au/EnsuringtheFuture/WaterSchool/](http://www.sydneywater.com.au/EnsuringtheFuture/WaterSchool/)

#### **Water Audits**

A detailed step by step guide to doing a water audit and a free DVD is available from Sydney Water. Contact [education@sydneywater.com.au](mailto:education@sydneywater.com.au) or phone 1800 724 650 to order a copy.

Sample budgets have not been provided for rainwater tanks or bubblers as the cost of plumbing, installation and tank styles varies enormously for each specific site. However, a couple of schools that have installed spring loaded bubblers have found that they cost approximately \$350 each.

For information on environmental plumbers that specialise in rainwater tanks and water saving devices in your area contact Green Plumbers on 1300 368 519.

Council also has a water conservation information kit which contains information on rainwater tanks, greywater systems and suppliers. Contact 9942 2111 for a copy.

Streamwatch is a free program to run however, schools can apply for funding to purchase Streamwatch testing kits. For more information, contact Streamwatch on 9350 6343.

## **Water Education Teaching Resources Programs for Schools**

### Manly Dam Catchment Teaching Resource – Keeping Our Dam Alive - Stage 2 and Stage 3

This teaching resource is focused in Manly Dam but can be applied to any catchment area. It includes lesson plans and activities on native plants and weeds, birds, mammals, feral animals, reptiles, frogs, fish and water quality. This resource has been designed to meet NSW Syllabus Outcomes and Key Learning Areas for Stage 2 and Stage 3. This resource is part of Warringah Council's Manly Dam Education program and all teaching materials required to teach this program are provided free of charge from Warringah Council. For more information contact Warringah Council on 9942 2111.

### Streams Alive Manual - Stage 3 Students

Streams Alive is a teaching resource for Stage 3 (years 5 and 6) focusing on catchment issues and on how the activities of people affect waterways. Streams Alive is divided into a series of 10 lessons. Each lesson provides aims, background information, syllabus outcomes, and everything you need to know to run the lessons, as well as Student Sheets. Copies of the resource can be downloaded from the Streamwatch website [www.streamwatch.org.au](http://www.streamwatch.org.au)

### Community Water Grants Education Kit for Schools

This kit includes lesson plans and activities on the water cycle, water sources, stormwater and sewage, greywater, measuring water and water savings. Go to <http://www.communitywatergrants.gov.au/publications/education-kit.html>

### Rainwater Tanks in Schools – Every Drop Counts Water Audit - Stage 3

'Every Drop Counts in Schools' is an education resource designed to assist schools to do a water audit involving students and teachers and to use the water audit results to develop a water management action plan. The resource consists of eight lessons that are linked to the Key Learning Areas of Human Society & Its Environment, Science & Technology, English and Mathematics. The lessons cover a range of water related topics including precious water, water and how we use it, home water consumption, measuring and monitoring water use, managing the water supply, school water audits and saving water at school.

Sydney Water has also produced a short and simple DVD guide on how to conduct a water audit in your school. The 7-minute DVD will guide you through the water audit process and assist you to develop your school's water savings action plan. These resources are free, to request a copy email [education@sydneywater.com.au](mailto:education@sydneywater.com.au).

### Rainwater Tanks in Schools Water Audit - Stage 4

This resource provides a series of lessons to help schools reduce water consumption and become eligible for the rainwater tank rebate. Students will audit their school's current water use and then plan and implement ways to reduce water consumption. There are five lessons including Water for the Future, Reading the School Water Meter, School Water Audit, Our Plan to Reduce Water Use and Putting Our Plan into Action. Each lesson consists of teaching and learning activities linked to appropriate NSW syllabus outcomes.

## 4: Climate Change and Sustainable Living Resource Section

This section provides step by step guides, sample budgets, suppliers, teaching resources and case studies.

### Energy Audits and Transport Initiatives

Step by step guides, worksheets and information on how to do an energy audit are available from [www.sustainableschools.nsw.edu.au](http://www.sustainableschools.nsw.edu.au) and from the NSW DET manual *Implementing the Environmental Education Policy in your school* available at [www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplemementdoc.pdf](http://www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplemementdoc.pdf). Schools can also apply for funding to get a service provider to assist you to implement energy saving actions at your School.

### Energy Audit - Sample Budget

*The prices below are designed to be used as a guide only. You may not need each item for your project.*

Energy Audit	Cost
Energy Meters – allows you to enter the local price of your electricity and the meter will tell you exactly how much the appliance is costing to run and how much power is being used.	\$30ea
Mains Timer – Any appliance can plug into a mains timer and can be programmed to switch appliances on and off as needed.	\$30ea
Energy Audits workshop facilitated by a service provider or consultant. Note: Energy audits can be done at no cost by a team of students and teachers but schools may prefer to hire an expert to help them.	\$350-1000
Ecological Footprint workshop.	\$500-1000
The prices for energy efficient appliances and lighting varies enormously depending on what you need for your school. Consultants and service providers can help you.	

### Solar Hot Water Systems and Solar Power Systems

Schools can apply for the Australian Government Photovoltaic Rebate Programme for Schools and Community Buildings Grants which provides rebates for up to 50 percent of the cost of the photovoltaic system (for systems up to 2KW). For more information visit [www.greenhouse.gov.au/rebates/](http://www.greenhouse.gov.au/rebates/) or call the solar information line on 1300 138 122.

Sample budgets have not been provided for solar hot systems and solar power systems as the cost of plumbing and installation varies enormously for each specific site.

Installers of solar systems must be accredited for design and installation of photovoltaic systems by the Australian Business Council for Sustainable Energy (BCSE), visit [www.bcse.org.au/default.asp?id=119for](http://www.bcse.org.au/default.asp?id=119for) a list of accredited installers.

Installers of solar hot water systems should be registered and the Australian Greenhouse Office has a list of registered agents which can be downloaded from: [www.greenhouse.gov.au/solarhotwater/pubs/solarhotwater-agents-20sept07.pdf](http://www.greenhouse.gov.au/solarhotwater/pubs/solarhotwater-agents-20sept07.pdf)

## Ecological Footprint

There are a number of websites that can help schools and individuals calculate their footprint such as [www.1degree.com.au](http://www.1degree.com.au) . Alternatively, schools can apply for funding to get a service provider to facilitate an Eco footprint workshop for their school.

Ecological footprint websites:

- Powerhouse Museum's interactive Bigfoot game:
- [www.powerhousemuseum.com/education/ecologic/games.htm](http://www.powerhousemuseum.com/education/ecologic/games.htm)
- Australian Conservation Foundation Consumption Atlas:
- [www.acfonline.org.au/consumptionatlas/](http://www.acfonline.org.au/consumptionatlas/)

## Climate Change and Sustainable Living Suppliers and Service Providers

*Please note, Council does not recommend any suppliers, consultants or manufacturers. This contact list is designed as a guide only and is by no means exhaustive.*

- Gibberagong Environmental Education Centre, Ph: 9457 8245  
[www.gibberagon-e.schools.nsw.edu.au](http://www.gibberagon-e.schools.nsw.edu.au) Offers energy education programs, workshops and energy audits.
- SCRAP, Ph: 9825 1062 [www.scrapltd.com.au](http://www.scrapltd.com.au). Offers energy education programs, workshops, energy audits and helps schools work with suppliers to retrofit their building to become more energy efficient.
- Leapfish, Ph: 9958 1003 [www.leapfish.com.au](http://www.leapfish.com.au). Ecological footprint workshops and performances, environmental education programs.

*Please note that other service providers may be found by searching on the web.*

## Climate Change Teaching Resources and Programs for Schools

### Travelsmart Teaching Resource for Primary and High School Students

Travelsmart has online education resources for schools with activities and lesson plans on transport issues including the development of the motor car and bicycle, keeping a travel diary and personal travel plans, investigating transport options, traffic congestion, greenhouse gases and the importance of exercise. There is also information on how to set up a walking school bus program and other resources at [www.travelsmart.gov.au/schools](http://www.travelsmart.gov.au/schools)

Ollie Saves The Planet is an interactive Environmental Edu-tainment Program. The Ollie Saves the Planet CD Rom and Website program is a government and industry led interactive environmental education initiative that encourages children, their parents, teachers and community groups to appreciate their connection to the natural world and to understand their "ecological footprint". This program is an interactive learning tool for ages 5-13 and contains fun units of work in the areas of sustainability, waste, water, energy, air and biodiversity. The CD-rom is full of fun activities and a movie. Visit the website for more information [www.olliesworld.com](http://www.olliesworld.com)

### An Inconvenient Truth Study Guide

A resource for middle and senior secondary and tertiary level students in Geography/Society and Environment, English, Media Studies and Environmental Studies. This resource has activities and lesson ideas on understanding the greenhouse effect, climate change, renewable energy and personal actions to reduce

the impact of climate change. The activities are designed to accompany a screening of the film *An Inconvenient Truth*. Available to download for free from metro magazine at [www.metromagazine.com.au](http://www.metromagazine.com.au)

#### CoolAid Primary and Secondary Study Guides

These study guides for primary and secondary students are designed to accompany a screening of the television program *CoolAid –The National Carbon Test*. They include lesson plans and activities on understanding climate, the carbon cycle, the greenhouse effect, energy consumption and climate change. Available to download for free from metro magazine at [www.metromagazine.com.au](http://www.metromagazine.com.au)

#### The 11th Hour Study Guide

This study guide is designed to accompany a screening of the documentary *The 11th Hour*. It contains lesson plans and activities suited to students between years 5 -12. The activities focus on the causes of environmental problems and are designed to assist students to develop individual and local plans of action to help care for the environment. Available to download for free from metro magazine at [www.metromagazine.com.au](http://www.metromagazine.com.au)

A number of resources on climate change, energy efficiency and renewable energy for teachers are available on the following websites:

- Australian Greenhouse Office has fact sheets for students, information on grants and rebates and education programs; visit [www.greenhouse.gov.au/education/tips/school.html#resources](http://www.greenhouse.gov.au/education/tips/school.html#resources)
- Energy Smart Information Centre has a Kids Energy Smart Zone section which includes online games and a tool to build an online energy efficient home [www.energysmart.com.au/les](http://www.energysmart.com.au/les)

## 5: Environmental Leadership and Visioning Resources

This section provides step by step guides and case studies.

### **Environmental Leadership Programs**

There are no hard and fast rules on how to establish a leadership program, as local context, style of program and number of students involved will impact on delivery. Leadership programs can include setting up a student group to act as leaders on environmental issues for the school and to implement environmental programs, or training students to be mentors for other students. Some issues to consider are:

- How many students can participate in the main program and how will other students be able to benefit or be incorporated?
- Who is available to mentor the students and how often are they available?
- Leadership programs can benefit from partnerships outside the school. Have all relevant partner organisations such as Tafe or a local business been considered?
- The program should not be a one-off isolated experience. How can it be incorporated into the curriculum and supported by resources to ensure follow-up actions occur?
- Where only select students can participate, how will they be chosen? Is the program being designed to suit a mixture of learning styles and levels?
- Leadership programs need to be flexible to allow students to direct the priorities. How will you provide the right level of structure to the program to support learning without stifling creativity and expression?
- Where in the timetable will the program take place?

Please note that training courses that focus on teaching environmental or scientific facts will not typically be viewed as leadership programs by Council.

### **Environmental Leadership or Visioning Project - Sample Budget**

*The prices below are designed to be used as a guide only. You may not need each item for your project.*

Item	Cost
Participation in a program like Youth LEAD (see below) or registration for the International Youth Coastal Conference (a kids teaching kids program)	\$200-250 per student
Teacher training as a facilitator	\$100
Follow-on actions resulting from the program	Depends on outcomes

### **Environmental Leadership Case Studies**

#### Davidson High School's Eco Club

Davidson High School's Eco Club is a group of students that meet weekly with one teacher to work on environmental initiatives for the whole school. The Eco Club will work on existing environmental projects and come up with ideas on how to address problems such as littering and recycling. In the last four years the Eco Club has developed some fantastic initiatives that have been funded through the grant program. This has included the development of a Garden & Recycling Centre that

includes a paper recycling system, six garden beds for growing fruit and vegetables, a rainwater tank, a compost system and worm farm. Students are involved in preparing soil, growing vegetables, collecting food scraps from the canteen for the compost system, watering, weeding and selling the produce to the teachers. Each year the Eco Club holds a 'Green Day' to coincide with National Threatened Species Day which is run by students as a fundraiser for their environmental programs.



Davidson High School holding their annual fundraiser 'Green Day'

### Youth Lead Program

Adapted from [www.ozgreen.org.au/program\\_youth.php](http://www.ozgreen.org.au/program_youth.php)

Youth LEAD is an initiative that is building a national network of young leaders who are working in their local community and beyond to build a life-sustaining society. Youth LEAD achieves this through leadership training and mentoring that enables young people aged 15 to 25 to face up to the challenges of our times and develop eco-social projects that address their major concerns and forge pathways to sustainable futures. Youth LEAD helps young people to learn to be leaders by designing and undertaking their own projects. It also provides participants with ongoing support so they can pursue additional issues.

Each Youth LEAD program involves a three day training and action planning residential workshop involving 20 participants aged 15-25. The workshop features skills training in ecological footprint assessment and lifestyle analysis, strategic questioning and critical thinking, values and visioning, goal setting and action planning for the lifestyle changes and eco-social projects they will undertake. This is followed up by a one day mentor training program involving up to 6 adult mentors. There are also opportunities for Youth LEADers to train as youth to youth mentors and Youth LEAD facilitators and to volunteer in OzGREEN programs within Australia and Internationally.

### Home Hill School in Queensland

Adapted from: [education.qld.gov.au/tal/ddemo/html/2003projects-homehill.html](http://education.qld.gov.au/tal/ddemo/html/2003projects-homehill.html)

"Many schools have Environmental Education programs. The difference with ours is that we have incorporated the Student Council as the governing body to implement and oversee the running of Home Hill State School Environmental Leadership

Program.(H.H.E.L.P.) All of the students in years 6 & 7 are responsible for teaching the rest of the school about caring for and improving their school environment.

“Our students, being part of the upper school, act as the government ministers and involve all of the lower school in the Student Council projects, outlined in H.H.E.L.P. This also helps the younger grades to foster a desire to develop leadership skills and prepare them to take on these roles in later years.

“The buddy system of pairing an older child with a younger, in caring for and beautifying our school has been very beneficial in developing interpersonal skills. The year 6/7 cluster have enjoyed leading by example and mentoring the younger children in how to use equipment safely, maintain existing garden beds as well as plant, water and care for new seedlings. The younger children thoroughly enjoy working with their peers and look forward to their weekly gardening session.

“We consider that this program is making a difference to students at Home Hill State School, because they are actually 'living and working' the democratic system, not just hearing about it. We also feel that because we have tied it directly to our H.H.E.L.P. scheme, it is making a difference to Environmental Awareness and the total 'green culture' of our school.”

#### The Youth Environment Council of South Australia

By Nick Goode: Department for Heritage and Environment South Australia

Youth Environment Council (YEC) of South Australia provides advice to the State Government about the environmental perspectives of young people, and supports young people to be active in caring for the environment. It is run by young people for young people. Council members range in age from 10 to 21 years.

In February 2000, the Youth Environment Council of South Australia launched the 'YEC Community Plan'. This document is a set of guidelines for establishing youth driven environmental action projects. In 2001 the YEC developed the Youth for Environmental Action Workshops (Y4EA) to ensure that the 'Community Plan' was implemented. The two-day workshop continues to operate. Like the Council, it is run by young people for young people, and includes presentation and project management sessions, and networking with environmental experts to help participants to initiate and develop their own environmental projects.

Another workshop developed by the Youth Environment Council is the Youth Action for Sustainability (YAFS) workshop. This workshop was designed for adults who wish to work effectively with young people. Workshop participants learn about strategies that the YEC uses to engage the interest of young people. The YEC also helps to organise effective mentoring of young people to maintain their involvement and enthusiasm. For more information on this program contact Dave Butler from the Department of Education and Children's Services on Ph: 08 8226 4312

### **Visioning Exercises**

Visioning exercises can typically be carried out without funding. However, some costs appropriate for grant funding include teacher relief and course costs for teacher training in visioning techniques and/or consultant fees for a skilled facilitator to direct the activity. These items would only be funded if the visioning exercise was linked to the development of a SEMP or another action plan. Schools should consider budgeting

not only for the cost of a visioning workshop but also for any follow up actions. There are many different ways to do a visioning exercise, below are some examples.

#### Future Wheels:

A future wheel is where an environmental issue is chosen in the centre of a piece of paper, (for example water consumption) and students brainstorm possible future problems that would stem from this issue and write them in a circle around the centre. Once a first round of possibilities has been drawn up, the facilitator asks what might happen as a result of the issues (or consequences) in this new circle, and another, wider concentric circle of issues is added. This pattern continues until ideas are exhausted.

Debrief with students by marking each issue as negative, positive or neutral, noting which radii contain the most positive or desirable futures and brainstorming actions needed at the school to make these futures a reality.

**Future trees** – is a branched version of the future wheel, with main branches and smaller sub-branches showing consequences of each change.

**A history of the future** – students imagine a sustainable future and then describe the changes in the past that allowed this future to come to pass. Use these changes to demonstrate all the steps that need to occur in the school community to reach a sustainable future.

Another method is doing a planning game like the Wheel of Coastal Fortune which could be adapted to the school grounds. Information on how to make and run a Wheel of Coastal Fortune game are available at

[www.dpi.vic.gov.au/DSE/wcmn203.nsf/LinkView/5239A19FB3ACFC5FCA2570890017D5663BF00D6661685053CA257091001072C3](http://www.dpi.vic.gov.au/DSE/wcmn203.nsf/LinkView/5239A19FB3ACFC5FCA2570890017D5663BF00D6661685053CA257091001072C3)

and [https://www3.secure.griffith.edu.au/03/toolbox/casestudy\\_list.php](https://www3.secure.griffith.edu.au/03/toolbox/casestudy_list.php)

#### Case study 1: Enviroschools New Zealand

This case study is adapted from one of the examples given in Tilbury, D. and Wortman, D. (2004) Engaging People in Sustainability: Chapter 2 Imagining a better future which is available at:

[www.aries.mq.edu.au/portal/pdfs/UnderstandingEfS/Chapter2\\_BetterFuture.pdf](http://www.aries.mq.edu.au/portal/pdfs/UnderstandingEfS/Chapter2_BetterFuture.pdf)

In New Zealand, the successful Enviroschools program is changing the way that students learn for the environment and their future. Envisioning forms a key part of the Enviroschools program, prompting students to think critically about several questions. How do we want our school to be in the future? What are our priorities? What difference will our decisions make? Students are asked to create a 'whole school vision,' producing an aerial view vision map with input from classes throughout the school. Posted prominently and accompanied by a storyboard and set of guiding principles, the map is used to prioritise class projects, raise awareness of shared goals and values, assist in student reflection and monitor progress. The program also incorporates indigenous Maori learning styles through sharing of traditional stories and songs. Initiated as a pilot project in 1993 by the Hamilton City Council, management of the program became national in 2001, and has spread to over 80 schools around the country.

Details of other techniques and ideas are available from Council. Contact 9942 2351 for more information.

## References and Further Reading

*Please note this list is suggestions only, Council does not endorse or recommend any material or information on the websites listed below.*

### Sustainable Schools

[www.sustainableschools.nsw.edu.au/](http://www.sustainableschools.nsw.edu.au/)

Information on grants, funding, case studies and schools can upload their projects.  
Free study guides on a range of topics [www.metromagazine.com.au](http://www.metromagazine.com.au)

### DET Environmental Education Centres and Resources

DET teaching resources [www.curriculumsupport.education.nsw.gov.au](http://www.curriculumsupport.education.nsw.gov.au)

Gibbergon Environmental Education Centre [www.gibberagon-e.schools.nsw.edu.au](http://www.gibberagon-e.schools.nsw.edu.au)

Field of Mars Environmental Education Centre [www.fieldofmar-e.schools.nsw.edu.au](http://www.fieldofmar-e.schools.nsw.edu.au)

## Environmental Education Grants and Resources for Schools

This page contains information for schools on grants and resources available for environmental projects.

A list of Government community grant programs can be found at:

[www.grantslink.gov.au/](http://www.grantslink.gov.au/)

DET have a list of grants available to schools on their website visit:

[www.curriculumsupport.education.nsw.gov.au/policies/envired/prosupport/grants/](http://www.curriculumsupport.education.nsw.gov.au/policies/envired/prosupport/grants/)

The National Solar Schools Program offers grants of up to \$50 000 to install solar power systems, rainwater tanks and a range of renewable energy and energy efficiency measures; visit:

[www.environment.gov.au/settlements/renewable/nationalsolarschools/index.html](http://www.environment.gov.au/settlements/renewable/nationalsolarschools/index.html)

Department of Environment and Climate Change provide grants of up to \$2500 to schools through their Eco School Grant Program, visit:

[www.environment.nsw.gov.au/grants/schools.htm](http://www.environment.nsw.gov.au/grants/schools.htm)

The Community Coastcare program and the Threatened Species Network Community grant program provides funding for natural resource management and threatened species projects; visit:

[www.nrm.gov.au/funding/index.html](http://www.nrm.gov.au/funding/index.html)

NSW Environmental Trust - Protecting our Places Grants provides funding for Aboriginal Cultural heritage programs in schools; visit

[www.environment.nsw.gov.au/grants/pop.htm](http://www.environment.nsw.gov.au/grants/pop.htm)

Rainwater Tank rebates and teaching resources on water:

[www.sydneywater.com.au/EnsuringtheFuture/WaterSchool/](http://www.sydneywater.com.au/EnsuringtheFuture/WaterSchool/)

### Eco Gardens

Seed to Seed – Food Gardens in Schools: [www.seedsavers.net/schoolgardens/](http://www.seedsavers.net/schoolgardens/)

Information and resources: [www.communitygarden.org.au](http://www.communitygarden.org.au)

Great lesson plans: [www.teachernet.gov.uk/growingschools/resources](http://www.teachernet.gov.uk/growingschools/resources)

### Native Gardens and Frog Ponds

Teaching information: [www.anbg.gov.au/education/teacher-info.html](http://www.anbg.gov.au/education/teacher-info.html)

Frogs and Frog Ponds: [www.fats.com.au](http://www.fats.com.au)

### Climate Change and Sustainable Living

Education resources, factsheets and grant information [www.greenhouse.gov.au](http://www.greenhouse.gov.au)

Online educational games on energy issues for children [www.energysmart.gov.au](http://www.energysmart.gov.au)

Information on climate change [www.climatecrisis.net/](http://www.climatecrisis.net/)

Teaching resources on transport [www.travelsmart.com.au](http://www.travelsmart.com.au)

Teaching resource and student activities [www.olliesworld.com/](http://www.olliesworld.com/)

Warringah Council's website: [www.warringah.nsw.gov.au](http://www.warringah.nsw.gov.au)

## **School environmental programs and teaching resources**

### **Warringah Council Environmental Education Team**, Ph: 9942 2111

Provides advice on environmental education programs for schools, free teaching resources, assistance in developing School Environmental Management Plans, letters of support for school grant applications, information about the northern beaches environment and assistance in choosing native plants.

### **Kimbriki Recycling and Waste Disposal Centre**, Ph: 9486 3512.

Provides free excursions for schools to the Centre, the excursions include a tour of the Eco Garden and recycling areas. Fee based workshops can also be run for schools and Kimbriki sells compost bins, mulches, gravels and recycled products.

### **Department of Education and Training (DET) Sustainable Schools Programs**

The NSW Sustainable Schools website at [www.sustainableschools.nsw.edu.au](http://www.sustainableschools.nsw.edu.au) has a SEMP builder, guides on how to do environmental audits, information on grant funding and resources and examples from other schools. The Sustainable Schools website is a great place to share your experiences and learn from other schools.

The NSW Department of Education and Training (DET) has also developed a resource to help schools develop School Environmental Management Plans, run environmental audits and implement environmental education programs called *Implementing the Environmental Education Policy in your school* which is available at [www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplementdoc.pdf](http://www.curriculumsupport.education.nsw.gov.au/policies/envired/assets/pdf/eeimplementdoc.pdf)

## **DET Environmental Education Centres offering school programs:**

### **Field of Mars Environmental Education Centre**

[www.fieldofmar-e.schools.nsw.edu.au](http://www.fieldofmar-e.schools.nsw.edu.au)

Ph: 9816-1298. Offers school excursions, environmental audits and other programs.

**Gibberong Environmental Education Centre** [www.gibberong-e.schools.nsw.edu.au](http://www.gibberong-e.schools.nsw.edu.au)

Ph: 9486 3512. Offers school excursions, environmental audits and other programs.

**Coastal Environment Centre (CEC)**, Ph: 9970 6905 [www.pittwater.nsw.gov.au](http://www.pittwater.nsw.gov.au)

CEC is a community environmental learning centre operated by Pittwater Council. The Centre runs environmental education programs for schools, provides a range of fee based excursions and information on the northern beaches environment.

**Manly Environment Centre**, Ph: 9976 2842 [www.mec.org.au](http://www.mec.org.au)

MEC is a community environmental resource centre that provides extensive information on environmental education and information on the northern beaches environment.

### **Teaching Resources on Bushland and Catchment programs:**

#### Protecting Our Threatened Species – Duffy’s Forest Teaching Resource

This resource includes a series of lessons linked to syllabus outcomes (for stage 2 students, but easily adaptable) on bushland issues, native animals, threatened species and the values of urban bushland. Contact Warringah Council on 9942 2111.

#### Manly Dam Catchment Teaching Resource – Keeping Our Dam Alive

This teaching resource is aimed at stages 2 and 3 and although focused on Manly Dam it can be applied to any catchment area. It includes lesson plans and activities on native plants and weeds, birds, mammals, feral animals, reptiles, frogs, fish and water quality. Contact Warringah Council on 9942 2111.

#### Earth Alive Resource Book – Field of Mars Environmental Education Centre

Earth Alive is a 9 – 11 week Science and Technology program for stage 3 students that aims to develop knowledge, understanding and care for ecosystems and biodiversity. This program has been developed only for NSW Department of Education and Training schools. Contact Field of Mars on 9816-1298.

#### Streams Alive Manual - Stage 3 Students

Streams Alive is a teaching resource for Stage 3 focusing on catchment issues and on how the activities of people affect waterways. Streams Alive is divided into a series of 10 lessons all linked to syllabus outcomes visit: [www.streamwatch.org.au](http://www.streamwatch.org.au)

### **Teaching Resources on Water Conservation programs:**

#### Rainwater Tanks in Schools – Every Drop Counts Water Audit - Stage 3 and 4

‘Every Drop Counts in Schools’ is an education resource designed to assist schools to do a water audit, develop a water management action plan and become eligible for the rainwater tank rebate. Sydney Water has also produced a short DVD guide on how to conduct a water audit in your school. These resources are free, to request a copy email [education@sydneywater.com.au](mailto:education@sydneywater.com.au).

### **Teaching Resources on Climate Change and Sustainable Living:**

Ollie Saves the Planet program is an interactive learning tool for ages 5-13 and contains fun units of work in the areas of sustainability, waste, water, energy, air and biodiversity. The CD-rom is full of fun activities and a movie. Visit the website for more information [www.olliesworld.com](http://www.olliesworld.com)

#### Travelsmart Teaching Resource for Primary and High School Students

Travelsmart has online education resources for schools with activities and lesson plans on transport issues visit [www.travelsmart.gov.au/schools](http://www.travelsmart.gov.au/schools)

Seed to Seed – Food Gardens in Schools is a resource that includes lesson plans, seed raising, vegetable beds, composting, mulch, lesson plans and useful websites. This resource is free to download from [www.seedsavers.net](http://www.seedsavers.net) or you can purchase a hard copy.

Study guides for primary and high schools on climate change and other environmental issues can be downloaded for free at: [www.metromagazine.com.au](http://www.metromagazine.com.au)

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