



From the biologically productive area on our planet that we share with 30 million other species and 6 billion other people, only 1.7 hectares is available to sustain the needs of each human being to supply food, water, energy and other materials, and to absorb waste.

**Environmental audit:** a tool used by a company to measure its environmental impacts, mainly in terms of resource use and waste emissions (liquid, solid, gaseous, energy); ensures the company complies with all legal requirements for environmental protection; and plans for regular monitoring of, and continual improvement in, environmental performance.

**Good housekeeping:** on industrial sites, means keeping the site in a clean and tidy state at all times, including cleaning up spills, however minor, before rain can wash pollutants into stormwater systems and into streams, beaches and aquifers (underground waters).

**Green waste:** organic, or plant-derived, waste. Commonly refers to food and garden wastes, especially garden wastes, as well as from food manufacturing firms.

**Integrated waste management planning:** a strategy of managing wastes which incorporates a variety of complementary waste management methods, often including some elements of the waste hierarchy.

**Litter:** litter is mismanaged resources and rubbish: it is waste originating from human activities carried out in the wrong place. It can be unsightly, polluting and directly harmful to fish, birds and marine mammals, as well as pose a health risk to humans.

**Waste analysis:** an essential part of good waste management, analysing the content of a waste stream tells you exactly what's in it and helps you identify wastes that can be easily reduced. Ministry for the Environment has developed a Waste Analysis Protocol for landfills so that results of waste surveys from all over New Zealand can be compared with each other.

**Wastewater:** water which has been used and become contaminated by that use, for example, in the home (showers, sinks, tubs, washing and dishwashing machines); at work (industrial or commercial uses); on the farm (washing dairy sheds or vegetables). Some wastewaters can be re-used without being treated, for example, if it is polluted only by heat, is only rinse water which can be used on the garden. Others must be treated to remove pollutants before re-using water or disposing of it into the environment.

**Zero waste:** some firms and councils have adopted a goal of generating no waste for disposal by early next century. This means a real move away from the 'waste' mentality, with all materials seen as valuable resources.





# CURRICULUM GUIDANCE

## ***Additional resources***

- Auckland Regional Council WASTELINE 09-366 2070
- Ministry for the Environment 09-307 7093; 04-473 4090
- Ministry for the Environment's home page - <http://www.mfe.govt.nz>
- <http://eelink.net/eeactivities-schoolyardecology.html>
- <http://www.ecouncil.ac.cr/rio/focus/report/english/footprint/benchmark.htm>
- see class ecological footprint results at:  
<http://www.gpals.com/PedalPlanet/CaliforniaToHawaii/Classroom/page34.html>
- the telephone contact list at the end of Book 1
- Alan Fricker, Sustainable Futures Trust, 30 Akatea Road, Petone. Phone 04-589 1575

## ***Technological outcomes***

By the end of this topic your class could have:

- completed a solid waste, energy and water audit of your school
- designed a waste minimisation programme for your school
- created a slogan, poster or cartoon for a waste minimisation and cleaner production programme at your school which will enable the programme to continue every year





Teachers - please photocopy this form for your own use and records

CLASS/ES:

**TECHNOLOGY Curriculum implementation**

**Topic 6: Your school's ecological footprint**

Technological areas: .....Biotechnology, Information/Communication, Materials  
 Learning contexts: .....Personal, School, Community, Environmental, Energy  
 Technological outcomes: .....Modified environment, System  
 Essential skills: .....Communication, Numeracy, Information, Problem-solving, Social/Cooperative, Work/Study  
 Community links: .....Landfills  
 Level: (Teachers: record the level or levels you are working with here):.....

<b>Achievement objectives</b>	<b>Learning experiences</b>	<b>Possible assessment (teacher to complete)</b>
<b>Strand A: Technological knowledge and understanding</b>		
Within a range of technological areas & contexts, students should develop understanding of:		
1. use and operation of technologies		
2. technological principles and systems		
3. nature of technological practice		
4. strategies for communicating, promoting and evaluating technological ideas and outcomes		
<b>Strand B: Technological capability</b>		
Within a range of technological areas & contexts, produce technological solutions:		
5. identify needs and opportunities to provide information for possible technological practice		
6. with reference to identified needs and opportunities:		
a. generate possible options & strategies; select, develop & adapt appropriate solutions		
b. produce technological outcomes to agreed quality standards, managing time and using human resources skilfully, safely and effectively		
c. present and promote ideas, strategies and outcomes throughout technological practice		
d. evaluate designs, strategies & outcomes in relation to their own and others' activities		
<b>Strand C: Technology and society</b>		
Within a range of technological areas and contexts, students should:		
7. develop awareness of, & understand how, beliefs, values & ethics of individuals & groups:		
- promote or constrain technological development		
- influence attitudes towards technological development		
8. develop awareness & understanding of impacts of technology on society & environment:		
- in the past, present and future		
- in local, national & international settings		





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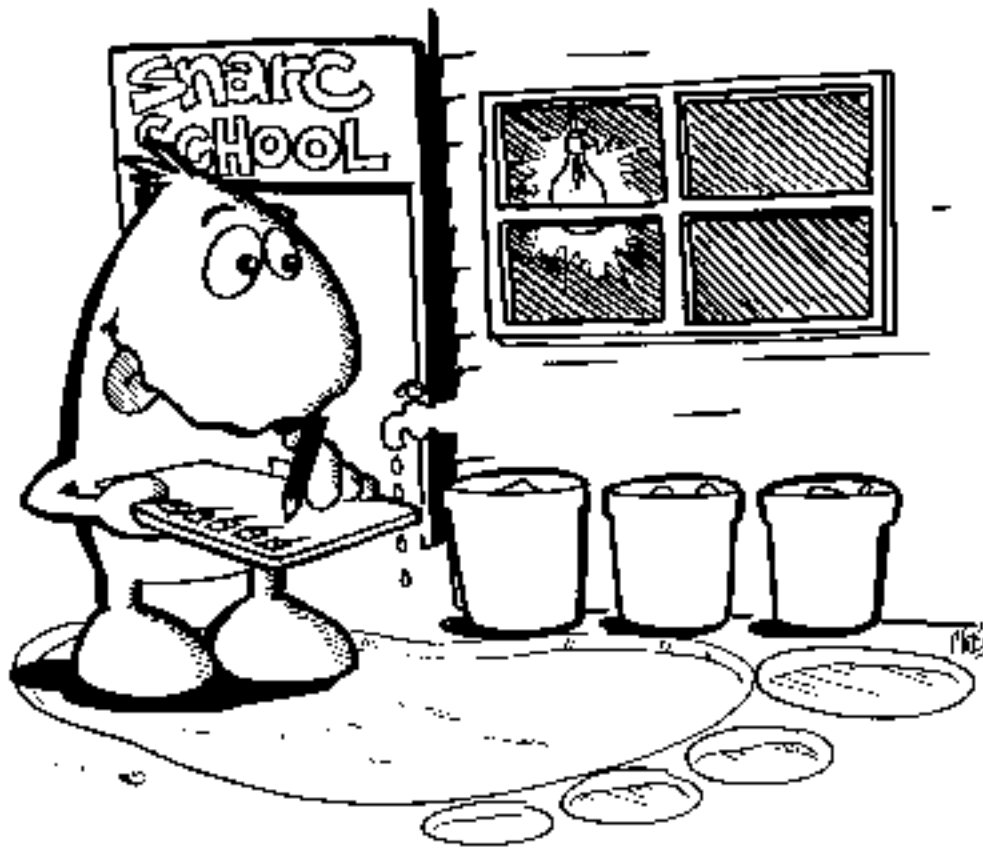
CLASS/ES:

**SCIENCE Curriculum implementation**

**Topic 6: Your school's ecological footprint**

**Learning contexts:** .....School grounds, Consumer science, Urban waste disposal, Energy management, Food processing, Magnets, Construction, Industry, Rubbish dumps, Colours, Dyes and paints, Refuse centres, Electropainting, Supermarkets, Pollution, Manufacturing, Garden centres, Building materials, Environmental organisations, Brick making, Industrial waste  
**Essential skills:** .....Communication, Numeracy, Information, Problem-solving, Self-management, Competitive, Social/Cooperative, Work/Study, Physical  
**Community links:** .....Landfills  
**Level:** (Teachers: record the level or levels you are working with here).....

<b>Achievement objectives</b>	<b>Learning experiences</b>	<b>Possible assessment (teacher to complete)</b>
<b>Making sense of the nature of science and its relationship to technology</b>		
2. explore the relationship between science and technology by investigating the application of science to technology and the impact of technology in science		
3. gain an understanding of personal, community and global implications of the application of science and technology		
<b>Developing scientific skills and attitudes</b>		
In their study of science, students will use their developing scientific knowledge, skills and attitudes to further develop their investigative skills and attitudes (see pages 44-51 of the curriculum)		
<b>Making sense of the living world</b>		
4. investigate local ecosystems and understand the interdependence of living organisms, including humans, and their relationship with their physical environment		
<b>Making Sense of the Physical World</b>		
4. explain how physical phenomena are used in everyday technology and how such technology affects people and their environment		
<b>Making Sense of the Material World</b>		
2. apply their knowledge of the properties of substances to the safe and appropriate use of these in the home, industry and the environment		
4. make informed decisions about the interrelationships of chemical substances and processes with technology, people and the environment		
<b>Making Sense of Planet Earth and Beyond</b>		
4. investigate how people's decisions and activities change planet Earth's physical environment; develop responsibility for guardianship of the Earth and its resources		





# RESOURCE MATERIALS FOR TOPIC 6

## YOUR SCHOOL'S ECOLOGICAL FOOTPRINT

### ***DOING AN ENVIRONMENTAL AUDIT OF YOUR SCHOOL***

**Topic 6: Your school's ecological footprint:**

Waste minimisation and cleaner production technologies and behaviour can benefit households, schools, companies and communities.

*Specific learning objectives are to:*

- ✓ do a solid waste, energy and water audit of your school
- ✓ develop a programme to save your school money and make it more environmentally friendly



