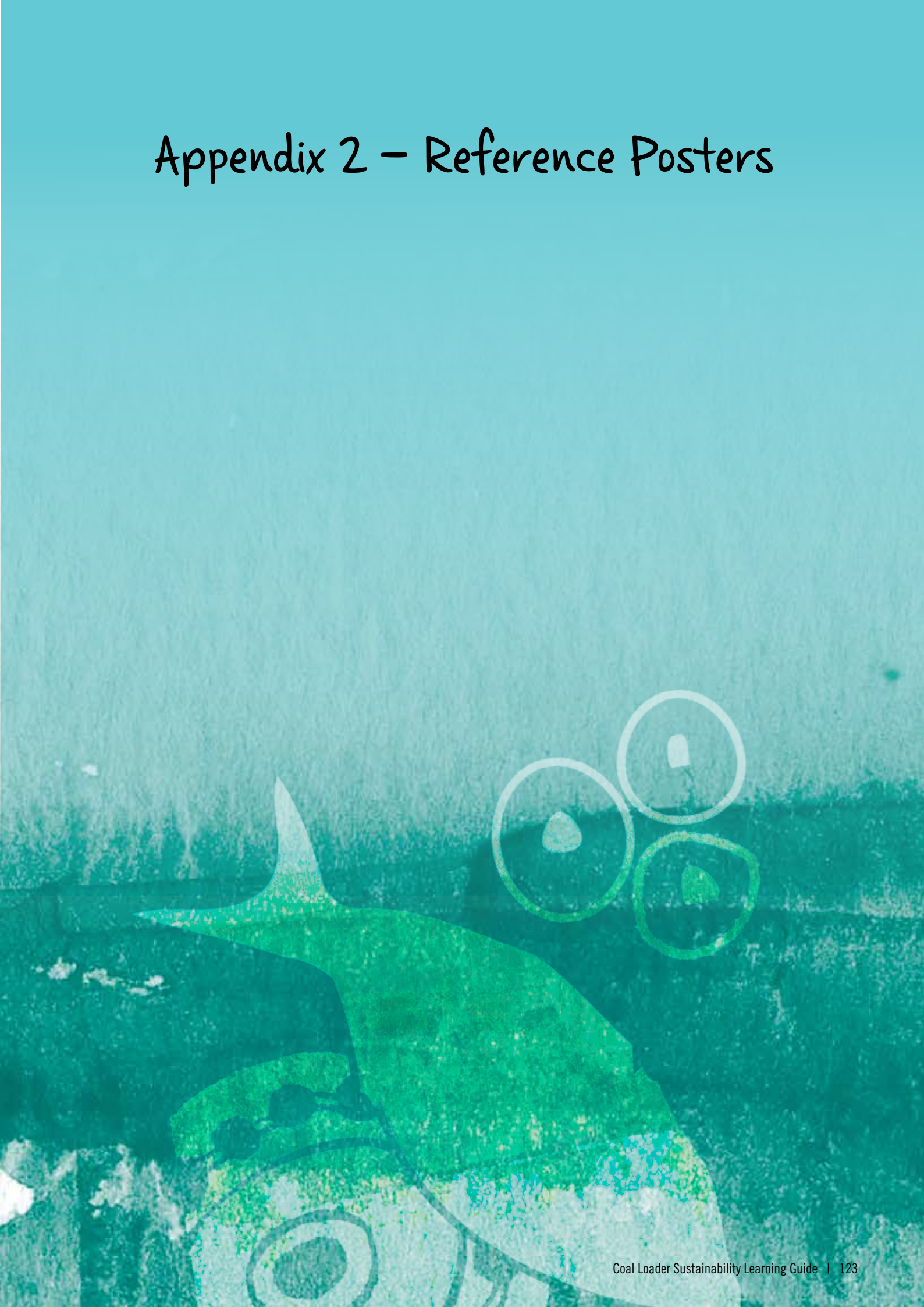
Appendix 2 – Reference Posters



Return to Community

A History of Balls Head & its Coal Loader

Aboriginal engraving at Balls Head c.1900. North Sydney Heritage Centre/Stanton Library

Balls Head is a special place where many pathways of history intersect. It has been a site of spiritual significance, repose and industry. Most recently, it has become a place for people to explore sustainable development and options for the future of our environment.

The Cammeraygal people met here for thousands of years. They fished the abundant waters around the headland, sheltered in its sandstone overhangs and carved an image of a marine creature – possibly a whale - on a rock platform with views up and down the Harbour.

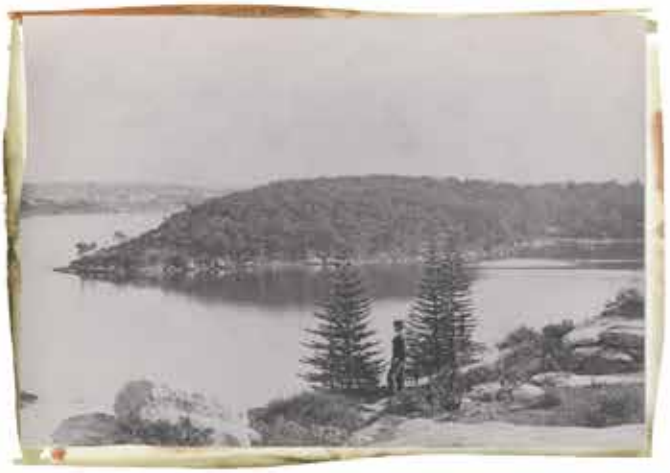
Thirty years after the arrival of Europeans in 1788, the headland and more than 200 hectares behind was simply given away to merchant Edward Wollstonecraft. The land later passed to his partner Alexander Berry.

Steamer docked for taking on coal, 1940s. Photograph by Robert Donnell. North Sydney Heritage Centre / Stanton Library

There was some development on the eastern side of the peninsular through the 1800s but much of the headland remained undisturbed. In the early 1900s Henry Lawson, who had lived locally over many years, described its 'tracks and tangle' and its 'peaceful hush'. It was a bush oasis for the working people of North Sydney. Lawson was outraged therefore when the government re-acquired the land and leased it to the Sydney Coal Bunkering Company. His protest in poetry was an early expression of conservationism.

The coal loader that operated from 1921 reflected Sydney's place as a major working port and the importance of coal as the fuel that powered modern industry and transport. Balls Head serviced the needs of steamships until the 1960s for the Wallarah Coal Company and then despatched coal for overseas markets through Coal and Allied until 1992. Its obsolescence, in turn, reflected the decline of waterfront industry on Sydney Harbour.

Environmental Earth Sciences ran their pioneering environmental remediation operations from the site from the mid-1990s. The place was saved as public open space by the State Government in 1997, in accordance with the wishes of local residents. Control was later given to North Sydney Council. After community consultations, it was decided that a Centre for Sustainability using the existing infrastructure would ideally serve the interests of local residents and, indeed, people from beyond North Sydney. Its motto is 'Learn from the Past, Embrace the Future'.



View to Balls Head from McMahons Point 1870s. North Sydney Heritage Centre / Stanton Library

You can find out more about the history of the Coal Loader by following the signs throughout the site or viewing the DVD *Return to Community – A History of Balls Head and its Coal Loader.*

your environmental levy at work

NORTH SYDNEY COUNCIL

Critical Decade for Climate Change

Over many decades thousands of scientists have painted an unambiguous picture: the global climate is changing and humanity is almost surely the primary cause. The risks have never been clearer and the case for action has never been more urgent.

Our Earth's surface is warming rapidly and we can already see social, economic and environmental impacts in Australia. Failing to take sufficient action today means potentially huge risks to our economy, society and way of life into the future. This is the critical decade for action.

Key messages from the bipartisan Independant Climate Commission

1. There is no doubt that the climate is changing. The evidence is overwhelming and clear.

- The atmosphere is warming, the ocean is warming, ice is being lost from glaciers and ice caps and sea levels are rising. The biological world is changing in response to a warming world.
- Global surface temperature is rising fast; the last decade was the hottest on record.

2. We are already seeing the social, economic and environmental impacts of a changing climate.

- With less than 1 degree of warming globally the impacts are already being felt in Australia.
- In the last 50 years the number of record hot days in Australia has more than doubled. This has increased the risk of heatwaves and associated deaths, as well as extreme bush fire weather in South Eastern and South Western Australia.
- Sea level has risen by 20 cm globally since the late 1800s, impacting many coastal communities. Another 20 cm increase by 2050, which is likely at current projections, would more than double the risk of coastal flooding.
- The Great Barrier Reef has suffered from nine bleaching events in the past 31 years. This iconic natural ecosystem, and the economy that depends upon it, face serious risks from climate change.

3. Human activities – the burning of fossil fuels and deforestation – are triggering the changes we are witnessing in the global climate.

- A very large body of observations, experiments, analyses, and physical theory points to increasing greenhouse gases in the atmosphere - with CO^2 being the most important - as the primary cause of the observed warming.
- Increasing CO^2 emissions are primarily produced by the burning of fossil fuels, such as coal and oil, as well as deforestation.
- Natural factors, like changes in the Earth's orbit or solar activity, cannot explain the world-wide warming trend.

4. This is the critical decade. Decisions we make from now to 2020 will determine the severity of climate change our children and grandchildren experience.

- Without strong and rapid action there is a significant risk that climate change will undermine our society's prosperity, health, stability and way of life.
- To minimise this risk, we must decarbonise our economy and move to clean energy sources by 2050. That means carbon emissions must peak within the next few years and then strongly decline.
- The longer we wait to start reducing carbon emissions, the more difficult and costly those reductions become.
- This decade is critical. Unless effective action is taken, the global climate may be so irreversibly altered we will struggle to maintain our present way of life. The choices we make this decade will shape the long-term climate future for our children and grandchildren.

This is the critical decade

Source: Independent Climate Commission, 2011

your environmental levy at work

NORTH SYDNEY COUNCIL

Dirty little household secrets

Tips for a squeaky clean, green & healthy home

Are you waging chemical warfare against household grime? Powerful cleaners that zap household grime can contain ingredients you'd really rather not be breathing, wearing or washing in.

Choice Magazine tested bathroom cleaning products and found that 43% of testers reported skin irritations from a popular mould remover. Nasty cleaning chemicals can be absorbed through our skin or inhaled. Here is a better way that's healthier for you, your family and our planet.

Get your kit together

Bicarbonate Soda
(Baking Soda)
An excellent odour absorber and mild abrasive for cleaning.

Borax
Natural in its concentrated form, borax disinfects, deodorises and inhibits mould growth. Keep out of reach of children as it can be an eye irritant and is toxic if swallowed.

Essential Oils
Essential oils such as mint, eucalyptus, lavender, lemon and tea tree are mostly used for deodorising or scenting cleaners.

Lemon Juice
A mild bleach, deodorant and cleaning agent.

Liquid Soap
Vegetable-based soap sometimes referred to as castile soap.

Washing Soda
(Sodium Carbonate)
Slightly caustic and a great grease cutter. Don't use it on waxed floors (unless you want to remove the wax), fibreglass or aluminium.

White Vinegar
Removes soap scum, grease and mineral deposits and acts as a deodoriser.

Note: these ingredients may be toxic in their concentrated form. When used in small amounts, they are non-toxic.

Our favourite green cleaning recipes

Everyday All Purpose Cleaner

1 cup vinegar
1 cup water

Fill a spray bottle with half water and half white vinegar. Spray on any surface (except wood) and wipe off. Leave for 5 mins on soap scum.

Drain & Toilet Cleaner

1 cup bicarbonate soda
1 cup vinegar

Sprinkle bicarb soda into toilet bowl and pour vinegar on top. Watch it react. Leave it for 10 minutes then clean with a toilet brush and flush. To finish, put a few drops of tea tree oil on a cloth and wipe around the bowl and seat to provide some antibacterial protection.

Mould Remover

Vinegar & Salt

Mix equal parts vinegar and salt into a spray bottle. Spray onto mouldy surface, leave for a few minutes and then wipe off using a soft cloth.

Awesome Liquid Handwash

250ml boiling water
2 tsp glycerol or glycerine
2 tbsp grated Sunlight/natural soap
2 tsp rosewater

Add the grated soap to boiling water, stir and then let sit for about 10 minutes until it melts. Stir in glycerol and rosewater. When mixture is smooth, pour into dispenser bottle. Do this while it is still warm as it will set to a jelly when cold and be difficult to pour.

Gutsy All Purpose Cleaner

1 tsp Borax
½ cup Bicarbonate soda
Vinegar
Eucalyptus oil

Place borax and bicarb soda into a recycled glass jar. Mix in enough vinegar to make a paste. Add a few drops of eucalyptus oil. Wipe mixture onto surfaces to be cleaned and wipe off with a soft cloth. You can make a milder version of this paste without the borax. If the paste dries out over time, simply add more vinegar.

Window Cleaner

1 part vinegar
4 parts water

Mix vinegar and water into a spray bottle. Spray onto windows and wipe off with newspaper, window squeegee or a soft cloth.

Oven Cleaner

Bicarbonate soda
Vinegar

Sprinkle a little bicarbonate soda over oven surface. Spray vinegar over bicarbonate soda (watch it sizzle!) then leave overnight. Wipe off with a cloth dampened with water. Wipe over one final time with vinegar on your cloth.

Squeaky Clean Baby Steps

Do your best to learn about whatever you clean with in your home. Scrutinise the labels on your cleaning products and then go on a product diet. Phase out harmful commercial cleaning products and replace them with healthy alternatives.

A note on commercial cleaning products

There are many environmentally responsible cleaning products on the market. If purchasing commercial cleaning products, look out for these qualities:

- Phosphate free
- Low sodium < 20g per wash
- Plant-based ingredients
- Synthetic fragrance free
- Petrochemical free
- Microfibre cloths

your environmental levy at work

NORTH SYDNEY COUNCIL

Compost

Nature's gift to the garden!

Your garden will love you

Compost strengthens plant's immune systems, allows soils to breathe and ensures plants are healthy and vibrant. It also increases the water holding capacity of the soil and fertilises our plants.

4 easy steps to great compost

1. Choose your site

The ideal location for compost has good drainage, is well shaded in summer, and not too cold in winter.

2. Know what to compost

Compost is a mix of different materials:

- fresh kitchen or garden organics such as fruit and vegetable peelings, grass clippings, green leaves, weeds and manure, which are rich in nitrogen
- brown garden organics such as dry leaves, woody twigs, paper and straw, which are low in nitrogen
- water – compost needs to be moist
- soil or completed compost to introduce vital micro-organisms

3. Use the layering recipe

Building compost is like making a layer cake. Start with a thick layer (15cm) of twigs or coarse mulch at the base for drainage. Add a thin layer of kitchen organics and green garden organics, then cover with a layer of finished compost or manure. Finish with a layer of brown garden organics. Moisten, then continue building the heap with alternate layers of green and brown organics.

4. Maintain your compost

Adding air is vital to keep your compost fresh. Turn compost at least once a week with a garden fork or cork-screw compost turner, or place garden stakes or pipes through the heap to allow air in.

Keep your compost moist but not wet. If compost gets too wet, simply add dry organics and turn it.

Hints:

Keep a bucket with a well-sealed lid in the kitchen to collect food scraps.
Use the lawn mower to chop up coarse garden prunings.

Why compost?

- Reduce the amount of organic waste sent to landfill in everyday rubbish. Approximately 60% of Australia's 'rubbish' is food waste
- Reduce the potential for landfills to create liquid 'leachate' which can pollute our streams, oceans and underground water
- Reduce the production of methane, a powerful greenhouse gas

What you can compost

Anything that was once a plant or animal can be composted, including fruit and vegetable peelings, newspaper, grass clippings, weeds, tea leaves, coffee grounds, egg shells, old potting mix, dead flowers, tea bags, human and animal hair, even the vaccum bag contents! Experienced composters can even compost meat and dairy products.

Compost Q & A

"Help, I have smelly compost!"

Causes of smelly compost include too much moisture, not enough air, or too much food waste and not enough dry ingredients. Solutions to smelly compost include:

- Mix in dry leaves or garden mulch
- Turn the compost to aerate and let more air in
- Combine food waste with sawdust or shredded newspaper before adding to the heap
- Give your compost heap a 'floor' of twigs to ensure good drainage
- Add garden lime, dolomite or woodfire ash to reduce acidity of the heap and counteract too much food waste

"I have unwelcome visitors in my compost!"

Ants, cockroaches, mice or rats can sometimes make your compost their home. Solutions include:

- Ensure food in the heap is covered with a layer of green organics – then cover heap with underfelt, hessian or thick cardboard
- Turn the heap regularly to discourage ants and cockroaches
- Place fine wire under the compost bin or heap to keep out mice and rats
- Avoid placing dairy products, meat and seafood in the compost

"My compost is slow to mature"

A slow composting system can mean that the compost is not hot enough, or there may not be enough air or water. Solutions include:

- Move the compost to a warmer location
- Add nitrogen-rich material, such as kitchen organics or green garden organics to speed up the composting process
- Turn the heap and add water
- Cover the compost with insulating material in winter if it gets too cold

Did you know you can pick up a compost bin at cost price from North Sydney Council!

your environmental levy at work

NORTH SYDNEY COUNCIL

Worm farming

Why worm farm?

- Recycle food scraps into soil-like worm castings – great for the garden
- Make liquid fertiliser from diluted liquid or 'worm tea'
- Worms can be grown in worm farms, or in beds or troughs in the ground
- Worm farms can be kept outside, inside, on the balcony or in the garage
- They are ideal for apartments

Handy hint – red or tiger worms are the most commonly used worms. Generally sold by the thousand, worms can be bought direct from commercial worm growers or through a local nursery or hardware store.

Worm Farming Q & A

"My worm farm smells!"
Your worm farm can start to smell if the worms are being fed more than they can eat or if the worm farm is too wet. Start by feeding the worms slowly and gradually build up. Make sure that your worm farm is well drained. If it is too wet, the worms may drown.

"My worm farm has vinegar flies"
Add a handful of lime.

"My worms won't multiply!"
Worms need the right conditions in order to breed. Keep worm farms well drained, cool (ideally 18-25°C), wet, and away from direct light. Limit acid forming foods such as fruits, grains and sugary foods as worms will not breed well in acidic conditions. Add a sprinkling of wood ash, dolomite or lime every few weeks to prevent the worm farm from becoming too acid.

"I have ants and cockroaches"
Keep a lid on your worm farm or keep a hessian sack or underfelt cover over the food scraps. This will discourage unwelcome visitors. If your worm farm sits on legs, place each leg in a bowl of water.

"I'm going on holiday"
Add shredded paper to the worm farm before you go.

Hint: Worms find smaller scraps easier & quicker to digest. Blend food scraps with water before feeding worms.

4 easy steps to successful worm farming

1. Choose your site

Worms don't like to get too hot, so make sure your worm farm or bed is in a well shaded spot.

2. Collect worm food

Worms like to eat food wastes like vegetable and fruit peelings, pulp from the juicer, tea bags, crushed egg shells and bread. They also like small amounts of soiled paper and cardboard (such as shredded egg cartons). Worms least favourite foods include dairy products, butter and cheese, meat, fish, fat and bones, very oily foods, citrus, onion and garlic.

3. Set up your worm farm

You can buy a worm farm, build one yourself with boxes, or make a worm bed in your garden.

Typical dimensions for a worm box are 30cm deep, 60cm wide and 90cm long. The box must have holes in the base to allow air in and for good drainage and a lid or cover of hessian or underfelt. Styrofoam fruit boxes are ideal. A tray underneath will catch liquid.

Make a bedding layer 10-15cm deep using a combination of finished compost, leaves and shredded paper. Soak the bedding layer before adding 1000-2000 worms. Spread the worms out gently on the surface and allow them to burrow down into the bedding.

Start adding your kitchen waste regularly in small amounts. Simply place the food waste in the box and cover it with bedding material or a handful of soil or compost. Don't add too much at once. Give the worms more food only when they have eaten most of their previous meal.

4. Harvesting worms

Harvest the worm castings/compost (vermicompost) by moving it all to one side of the bin. Add fresh bedding to the empty side.

Many of the worms will migrate to the fresh bedding in a few days.

The valuable worm castings can then be taken out and used.

Worms need:

- Moisture as they breathe through their skins and need to keep moist
- Drainage as they can suffocate if it gets too wet
- Shade as worms don't like direct light. Shade also discourages flies and other pests
- Alkaline surroundings. Avoid too many acidic foods such as citrus peels or onions

your environmental levy at work

NORTH SYDNEY COUNCIL

Powered By The Sun

Did you see what was on the roof?

Council has installed solar power (photovoltaic panels) on this building to generate electricity directly from the sun.

Solar power is the cleanest and most viable form of renewable energy available. By using photovoltaic (PV) panels to convert sunlight into electricity, we are protecting the environment and saving money.

The 16 PV panels at the Centre produce 2.96 kilowatts of power at their peak. They have a long life that will produce over 3000kWh of electricity every year. This will reduce greenhouse gas emissions from the Centre by 2.7 tonnes annually.

How does PV work?

Photovoltaic panels are made of semiconductors such as silicon. When light strikes the cell, energy from the sun is absorbed. The energy allows electrons to flow freely as a current, and by placing metal contacts on the top and bottom of the cell, the current is made available for use as electricity. Cells are connected together and covered by a glass sheet for protection, thus forming a solar panel.

Power generation varies throughout the day with the majority of power generated at the peak of the day. The solar panels work in all weather but work best on clear, cool days.

Designing with daylight

The Caretakers Cottage has a passive lighting system that collects sunlight using a light tube lined with highly reflective material. The light tube directs sunlight into the building, lights up a work area, and helps us reduce energy consumption. Our light tube has a dimmer so we can completely adjust daylight levels in the room with the touch of a switch.

your environmental levy at work

NORTH SYDNEY COUNCIL

Can you find our rainwater tanks?

The Centre for Sustainability saves thousands of litres of drinking water each year by harvesting rainwater to use on the site.

Rainwater is collected, treated and reused for toilet flushing. This saves drinking water, reduces stormwater flow and pollutant loads entering Sydney Harbour.

How is the water collected?

Rain that falls on the roofs of the buildings is funnelled along the gutters and into downpipes connected to the 50,000 litre concrete tank, located underneath the grassed area at Jacaranda Square. First flush devices and leaf guards reduce the amount of sediment and other materials that pollute the water from entering the tank. Insect screens cover all tank openings to prevent mosquitoes entering and breeding in the tank.

A small pump provides pressure to move the water to flush the toilets. A control valve automatically switches to mains water when the tank is empty. When the tank is full, water overflows to the wetlands on the lower level of the site.

A smaller, above ground rainwater tank, at the southern end of the Caretakers Cottage, provides water to irrigate the community garden.

You can do this too!

You can save water (and your hip pocket) by installing water efficient appliances and a rainwater tank; reducing hard surfaces; mulching and creating rain gardens to help reduce run off on your property.

your environmental levy at work

NORTH SYDNEY COUNCIL

Keeping our cool in the Caretakers Cottage

Council has maximised the use of natural ventilation for cooling in the Caretakers Cottage, meaning we don't need an air conditioner! Building orientation and sea breezes make North Sydney ideal for maximising natural ventilation.

Wind-assisted turbo ventilators drive airflow through the Cottage (there is one fitted at the top of the raked ceiling in the lounge room), and ceiling-mounted fans increase cool air movement in summer and distribute warm air in winter.

The Caretakers Cottage and Mess Hall balconies are designed to protect the buildings from wind and hot afternoon sun. The trees and the louvres provide shading and help break up the movement of air.

Hot stuff in the Cottage

In winter, the Cottage is warmed by hot water heated by the sun through solar panels on the roof. This water is then circulated through insulated pipes to a series of radiators which warm each room. The system is controlled by a thermostat and is gas boosted overnight and on cloudy days. This hot water also supplies taps in the kitchen and bathroom. All the hot water piping and fittings are insulated to minimise heat loss.

The Cottage also has a solar powered air heating system. The fans pump cool inside air up through a ceiling vent to a roof mounted collector, where the warmth from the sunlight is captured, and returns warm air into the house. This system is well-suited to colder climates and commercial spaces when heat is not required at night or early in the morning.

The ceiling and walls of buildings at the Coal Loader have been insulated using batts comprised of a minimum of 85% recycled polyester content, and we are saving 45-55% of heating and cooling energy.

Have a look to your left at the electronic display that measures how much solar power and recycled water is captured and how much gas, water and energy the building uses.

Trees, glorious trees

When planted around buildings, in parking lots and along streets, trees help keep us cool. They also shade us from the sun, cool the air, filter air pollutants, sequester and store carbon, improve water quality, reduce noise levels and create habitats for animals. Trees are the embodiment of cool!

your environmental levy at work

NORTH SYDNEY COUNCIL

Low impact materials

During renovation and construction of the Coal Loader Center for Sustainability, 80-90% of demolition waste by weight was reused or recycled. Corrugated roofing was reused and bricks from old buildings have been used to build pathways. Plastic and steel was recycled.

We've reused crushed tiles and concrete to make the gravel paths in the Community Nursery, and even repurposed some old North Sydney street signs to make some furniture.

Our electrical equipment is low impact – the lamp in the Meeting Room's projector is energy efficient and can be recycled, the computers in the Resource Room are second hand and refurbished, and all the structural steel has been bolted together so that in the future it can be disassembled for use somewhere else.

Many of the new materials used around the site have a low environmental impact during their life cycle. The carpet is made from natural and recyclable materials, the chairs are the most sustainable on the market, and the paint is 100% Volatile Organic Compound (VOC) free (did you know that VOCs are potentially dangerous chemicals commonly found in household finishes, furnishings and products that can affect interior air quality and cause both short and long-term health problems?!)

Artist anthonywhyte.com
Photo by lunasolfoto.com.au

Reusing and recycling materials decreases the demand on the environment's natural resources, saves energy and water used in making new products, and reduces waste going to landfill.

Didn't the polished antique floorboards come up a treat!

Many things didn't even need replacing. Most of the original plasterboard & horse hair ceilings were retained, and any new ceilings have been made from compressed straw reinforced with galvanised wire to match.

your environmental levy at work

NORTH SYDNEY COUNCIL

Coal loader wetland

A natural water filter

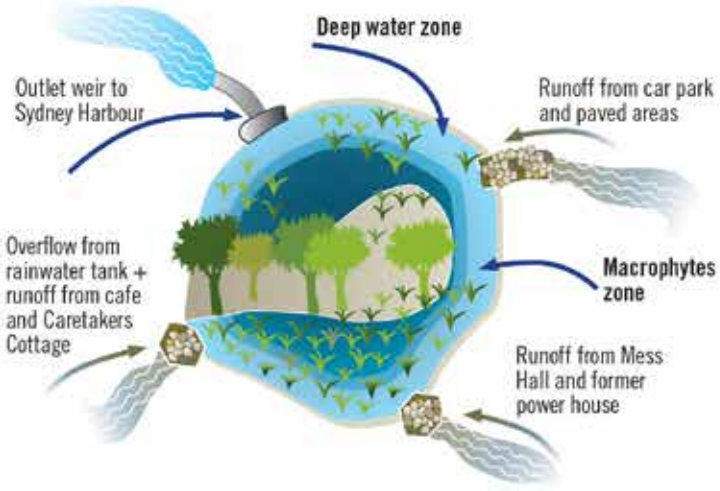
A wetland was constructed by a former caretaker of the site in the footprint of an old oil tank. The wetland acts as a filter, helping clean stormwater runoff from the site before it enters Sydney Harbour.

Increasing development has led to the destruction of many of our natural wetlands. In the past, wetlands were thought to be wastelands which were drained, filled and used for parks, playing fields and housing developments. This meant that stormwater was no longer filtered through the wetlands but instead piped direct to our local waterways through a system of man made concrete drains. This is why our waterways became polluted.

How our wetland works

When it rains, water from building roofs and pathways, plus overflow from the rainwater tank, all flow into the man made wetland. The water flows through a litter basket that strains out larger pieces of litter and debris, then enters a deep pond which spreads and slows the gush of incoming water. This allows some of the debris and sediment in the stormwater to settle into the pond's bottom.

The reeds and rushes planted in the pond's macrophyte zone filter out dissolved pollutants such as nitrates and phosphates, further slow down water flow, and draw floating solids to the bottom, which mixes with leaf litter. The sediment is soon converted to rich humus, much the same way as a compost heap works.



Appropriate water levels are maintained with a weir, through which cleaned water passes before flowing down a pipe and into Sydney Harbour.

Biodiversity in North Sydney

Endangered – Sunshine Wattle *(Acacia terminalis subspecies terminalis)*

What is biodiversity?

Biodiversity, or biological diversity, is the variety of all species on earth. It is the different plants, animals and micro-organisms, their genes, and the terrestrial, marine and freshwater ecosystems of which they are a part[1].

For the last 200 years, Australia has witnessed the largest documented decline of biodiversity of any continent in the world[1].The repercussions of this decline are not yet fully understood, however, it is feasible that the loss of key species such as insects could have a dramatic affect on our way of life. The goods and services we have come to rely on are inevitably derived from the wide variety of organisms on our planet. It is in our own best interests to preserve biodiversity.

Endangered – Magenta Lilly Pilly *(Syzgium paniculatum)*
Photo by P&J Smith

North Sydney's Biodiversity

North Sydney Council is a small, highly urbanised local government area. Only 5% of the original vegetation observed before European settlement remains. It occurs in narrow fragmented reserves that are vulnerable to urban pressures. Council's Bushland Plan of Management addresses these issues and aims to build ecological resilience.

In 2007, ecologists were engaged to survey avian biodiversity and to prioritise areas of habitat critical to the survival of less common native birds in our bushland reserves. Council then undertook a more comprehensive Natural Area Survey in 2010 of all North Sydney's remnant bushland. Several threatened plant and animal species, as well as three endangered ecological communities were identified. This survey established a baseline of North Sydney's natural assets and a measure of their intrinsic value for rehabilitation and recovery.

[1] (Australian Government Department of Sustainability, Environment, Water, Population and Communities)

Main photo:
'Forest Red Gum Foreshore Forest' occurs in Badangi Reserve and is a rare form of the critically endangered 'Sydney Turpentine Ironbark Forest' vegetation community. Photo by *P&J Smith*

your environmental levy at work

NORTH SYDNEY COUNCIL

Natural Area Survey Highlights

Council's 2010 natural area survey uncovered many rare and unusual highlights including: North Sydney's bushland reserves support 12 distinct native vegetation communities, three of which (Coastal Saltmarsh, Swamp Oak Forest on Coastal Floodplains, and Sydney Turpentine-Ironbark Forest) are listed as endangered ecological communities in NSW.

One type of Turpentine-Ironbark Forest, called Forest Red Gum Foreshore Forest is rare and unusual, and is listed as critically endangered under Commonwealth legislation.

Vulnerable – Powerful Owl (*Ninox strenua*). Photo by P&J Smith

Vulnerable – Grey headed Flying-fox (*Pteropus poliocephalus*). Photo by P&J Smith

2 biodiversity hotspots were identified:

1. The Wollstonecraft reserves Berry Island, Bandangi, Gore Cove and Smoothey Park have the most native vegetation communities, with 10 out of the 12 communities found here
2. Tunks Park was identified as the most important reserve for small native birds

190 native birds and animals were recorded in North Sydney, including 4 frog species, 20 reptile species, 148 bird species and 18 mammal species

3 threatened animal species occur regularly in North Sydney – Powerful Owl (*Ninox strenua*), Grey headed Flying-fox (*Pteropus poliocephalus*) and the Eastern Bent-wing Bat (*Miniopterus schreibersii*)

15 species are listed as migratory species under Commonwealth legislation and international migratory species agreements

15 species are significant at a regional level

61 species are significant at a local level

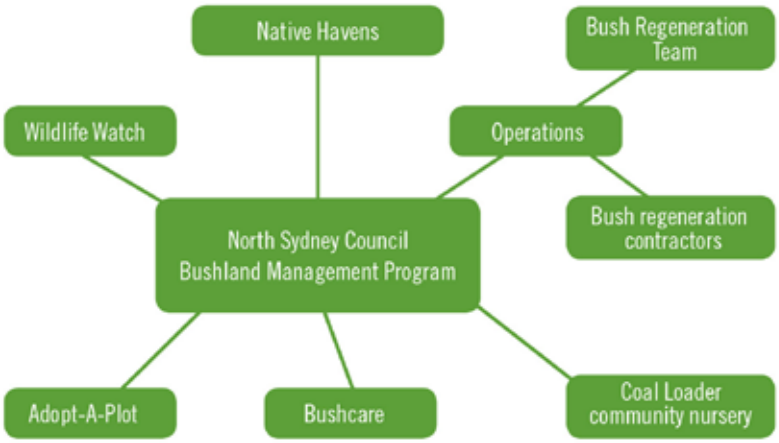
347 plant species were recorded, two of which are nationally threatened – the Sunshine Wattle (*Acacia terminalis* subspecies *terminalis*) and the Magenta Lilly Pilly (*Syzgium paniculatum*)

39 plant species are listed as significant at the Sydney Metropolitan Catchment Management Authority (SMCMA) regional level

Managing Council's Bushland

The biodiversity of North Sydney's natural areas is threatened by a multitude of urban pressures such as habitat fragmentation, invasive weed species, dumping, tree vandalism, feral animals, soil erosion and urban run-off. These impacts are addressed by Council through the Bushland Plan of Management and reserve-specific Bushland Rehabilitation Plans.

A multi-faceted approach...



Councils Bushland Rehabilitation Program features:

Council's Bush Regeneration Team works to:

- Control weed infestation
- Promote biodiversity in bushland reserves
- Implement ecological fire management practices
- Implement pest management
- Control erosion
- Deliver education programs

Bushland Contractors

- Facilitate natural regeneration in bushland
- Control weed infestations
- Promote species diversity and habitat creation
- Control erosion and other 'edge effects'

Bushcare Program

The Bushcare Officer, Bushcare Supervisors and Bushcare Volunteers work eleven sites in nine reserves across the North Sydney LGA. Volunteers regularly donate their skills and time to maintain these bushland areas.

BUSHCARE

Native Havens Program

Participants in the Native Havens program help to create wildlife corridors and habitat zones between North Sydney's bushland reserves by planting native gardens on their own property.

Adopt-a-Plot Program

The Adopt-a-Plot program works on marginal bushland areas adjacent to residential properties through the financial and physical assistance of resident volunteers.

Adopt a Plot

Wildlife Watch Program

Information collected by Wildlife Watch volunteers has contributed to North Sydney's Natural Area Survey, Council's bushland management practices and the Atlas of NSW Wildlife.

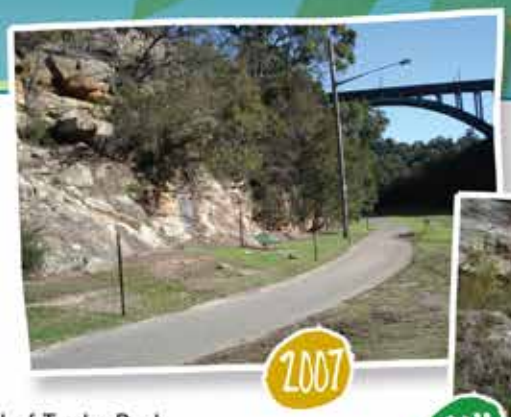
your environmental levy at work

NORTH SYDNEY COUNCIL

Bushcare Regeneration

Tunks East Seed Rain Experiment

After exclusion of mowing and pedestrian traffic, the seed resource from resilient bushland raining over the cliff face has been utilised to further extend the wildife corridor and bushland of Tunks Park.



Successional Revegetation at Primrose Park

The 2008 National Tree Day event was planned and executed to replicate the natural succession that occurs in healthy bushland. Ground and shrub layers were planted to emulate primary succession, whilst canopy species were excluded from the planting. Over time the surrounding native tree species seeded into the site. This is how secondary succession would occur in healthy bushland.

Disturbance + Resilience = Regeneration at Badangi Bushcare Site

When a large Sydney Red Gum fell down in 2006, the disturbance coupled with strong resilience and dedicated Bushcare workers has resulted in excellent regeneration of the Angophora Foreshore Forest vegetation community.

Bushcare Transformations

Tunks Park Success Story

Creation of a formalised track greatly minimised erosion and invasive weeds spreading down this steep site. Dedicated volunteers have helped transform this site to at least 80% native species cover. Rare bush birds have begun utilising the site for nesting.

Transforming our Bushland

A familiar scene from the past. Many bushland sites had heavy weed infestations which have been managed successfully over time. Within North Sydney the next phase of regeneration works is moving towards building structure, habitat and increasing species richness, which aims to achieve greater ecosystem resilience and health.

Berry Creek from Rags to Riches

Infested with weeds, the natural ecosystem processes of Berry Creek were being choked. Community volunteers, Council's bushland team and contractors have worked tirelessly to transform this degraded creekline and raise local awareness about the benefit of healthy ecosystems.

Adopt-a-Plot Program

The concept of Adopt-a-Plot was devised by Cremorne Point Bushcare volunteers to assist the rehabilitation of marginal bushland areas adjacent to private properties of Cremorne Point. This initiative was made possible through an Australian Government 'Envirofund' grant, sponsored by North Sydney Council. Adopt-a-Plot's success exceeded expectations and as a result gained further funding beyond its initial 12 month duration from North Sydney Councils Environmental Levy.

Adopt a Plot has expanded activities to four separate bushland reserves since its inception including Cremorne Reserve, Gore Cove Reserve, Harry Howard Reserve and Badangi Reserve. The program operates in two ways:

Sponsorship of Bush Regeneration Works

This option allows participants to donate an annual fee to cover half the cost of employing a professional bush regenerator to work on the adopted plot. The donation is matched with funding from Council to pay for 4 hours of bush regeneration work each month.

DIY Bush Regeneration

This option allows participants to commit three hours of their time each month to work alongside a professional bush regenerator on their adopted plot of bushland.

O'Briens plot, north eastern corner of Cremorne Reserve, Cremorne Point

Before Regeneration works began, Plot covered in Asthma Weed and Wandering Trad with understorey of Privet.

After primary weeding completed.

After 5 years of continual work on site, regeneration of native groundcovers & grasses, ferns, and shrub layer have established.

Page & Sally's plot, eastern side of Cremorne Reserve, Cremorne Point

Prior to Regeneration works, the plot was covered in Wandering Trad, Asthma Weed and Ehrharta.

After primary weeding completed in upper and central plot areas.

After 6 years of continual work on site, regeneration of native groundcovers & grasses has occurred. Shrub and tree species have established well, note the healthy Sydney Red Gum & Sunshine Wattles.

You can get involved in Adopt-a-Plot by calling Council on 9936 8100.

your environmental levy at work

NORTH SYDNEY COUNCIL

Native Havens

Create Habitat in your backyard

Habitat for native animals in North Sydney has been drastically reduced with urbanisation. Less than 5% of the original 1048ha of bushland remains. Pockets of remnant bushland are separated from each other by urban development, which impedes the movement of native fauna. The Native Havens program helps to alleviate these pressures by increasing native habitat and creating wildlife corridors in private gardens and public open space.

North Sydney residents can help our native fauna by turning their own gardens into native havens. Residents can contact the Bushland Project Officer and arrange a free professional assessment of their property. Council will recommend and then supply free plants, ongoing advice, support, and site visits.

Native Havens participants receive many benefits for their involvement. Small birds, lizards and invertebrates are attracted to native gardens for food and shelter. Native plants require less water than exotics and are generally a low maintenance alternative.

Native plants for a layered garden structure

Groundcover

Mid-Storey

Canopy

Native Haven Gardens in North Sydney

Why not turn your garden into a Native Haven?
Call Council on 9936 8100 or go to
www.northsydney.nsw.gov.au

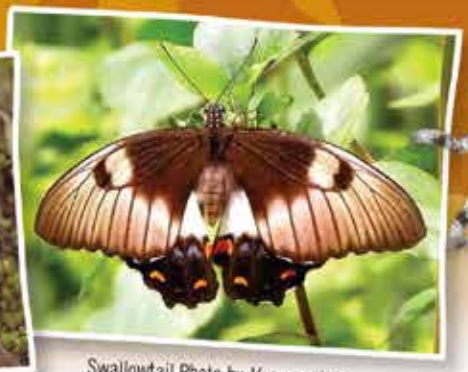
your environmental levy at work

NORTH SYDNEY COUNCIL

Wildlife Watch

Superb Fairy Wren Photo by *Peter Simth*

Eastern Water Skink



Swallowtail Photo by *Vanessa itea*
© Australian Museum

Wildlife Watch is a community based program in which participants regularly record their observations of fauna in and around North Sydney's bushland reserves and report their sightings to Council. This valuable data is collated and added to the NSW National Parks & Wildlife Service Atlas of NSW Wildlife.

North Sydney Council has utilised this information in its Natural Area Survey along with previous observations and ecological studies. This baseline information plays an important role in developing Council's future Bushland Plans of Management.

Ringtail Possum

Striped Marsh Frog

How Wildlife Watch works

Volunteers register with Council to receive a Wildlife Watch Kit, containing:

- a map of North Sydney Council's parkland, bushland reserves and residential areas
- a key which identifies all observation areas
- tools for fauna identification
- a record sheet

Volunteers send their observations to Council on a regular basis and enjoy regular training opportunities with professional ecologists.

You can join more than 300 Wildlife Watch volunteers in North Sydney. Not only can you observe our native fauna in your own time, but you will be helping Council manage our biodiversity for the future. Contact Council on 9936 8100.

your environmental levy at work

NORTH SYDNEY COUNCIL

Regenerating the Bush with Fire

Woody Pear in Smoothey Park after burn.

Dipodium orchid responded well after fire with increased numbers observed

Geebung (*Persoonia laurina*) after a burn

Bushfires are naturally occurring events in the bushland around Sydney. In fact, they are essential to the health and long-term sustainability of our remnant bushland areas. The life-cycles of our native plants and wildlife that inhabit these bushland reserves are well adapted to cope with fire, providing it conforms with particular ecosystem requirements of intensity and length of time between burns.

In the context of North Sydney Council's bushland reserve system, managed (or prescribed) burning is used to meet both ecological objectives of bush regeneration and hazard reduction to adjoining assets – namely residential housing. While the risk of a wildfire damaging property or threatening life is relatively low in North Sydney, Council's Bushland Management Team actively undertakes hazard reduction activities including the creation of fire access management zones, manual fuel reduction, pile burns and broad area burns.

Oat Speargrass was not found in Tunks Park Reserve until after burn occurred.

Extensive flora and fauna species lists are created pre and post fire. Site monitoring is carried out on all managed burns within North Sydney. Monitoring of fire sites is as imperative as it creates baseline data which is compared to future survey results and highlights changes in vegetation structure and species diversity over time.

Sustainability makes good business sense

North Sydney businesses are leading the way in sustainability

North Sydney Council is dedicated to helping local businesses reduce their environmental footprint with the Better Business Partnership (BBP) program for small to medium businesses, and CitySwitch Green Office for commercial office tenants.

Better Business Partnership

Support local businesses with the BBP badge on their shopfront

In partnership with Willoughby and Ku-ring-gai Councils, BBP works with small to medium sized businesses to improve their environmental performance.

Through the free program, businesses save money through reduced energy and water bills, improve their environmental performance, and are promoted and recognised for their actions.

www.betterbusinesspartnership.com.au

BETTER BUSINESS PARTNERSHIP
Success through sustainability

CitySwitch Green Office

Commercial office tenants can influence up to 50% of the total energy use in office buildings

CitySwitch is a national energy efficiency program helping tenants improve energy efficiency and reduce greenhouse gas emissions. CitySwitch focuses on saving electricity within the office (and thereby reducing the CO_2 emissions attributed to climate change) and uses NABERS ratings to measure.

CitySwitch benefits include:

- Proven methodology to improve energy efficiency, with a formal assessment and reporting process
- Positioning as environmental leader, and public recognition of achievements
- Networking opportunities
- Branding and marketing opportunities

www.cityswitch.net.au

CITY SWITCH Green Office

NABERS is a performance-based rating system for existing buildings. Using a 5 star rating scheme to assess energy, water, waste and indoor environment, it's a great tool to assess your building's impact on the environment.

www.nabers.com.au

your environmental levy at work

NORTH SYDNEY COUNCIL

North Sydney Schools Making it Happen!

Sustainability Educators North Sydney (SENS)

Launched in June 2008, the SENS network is a great mix of primary and secondary school students, teachers and parents from 12 schools in the North Sydney local government area.

Recognising we are all teachers and students, no matter our age, the SENS bi-monthly get-togethers are filled with sharing ideas and experiences to support each other in progressing environmental sustainability within our school communities.

GreeNSchools Grant program

Council's GreeNSchools grant program aims to provide local schools with funding to develop and implement environmental projects. For schools, this environment may be within the school itself, the immediate school grounds or be an area of community concern in which the school can be involved.

Some great projects have been supported through the GreeNSchools program ranging from the installation of edible gardens, school ponds and waste management systems, to energy savings, water audits and school conferences.

For more information on the **SENS** network or the **GreeNSchools Grant** program, please visit www.northsydney.nsw.gov.au or, contact Council's Sustainability Education Officer on **9936 8100**.

your environmental levy at work

NORTH SYDNEY COUNCIL

Community Gardens

A place to grow

Community gardening is more than simply growing food and improving your gardening skills. It is also a way to grow a sense of place, community and stability.

Working with your neighbours at a community garden will help you grow new social networks and friendships. You will become part of the growing movement of people across Australia and the world who are producing locally grown, fresh, nutrient rich fruits and vegetables that haven't been transported around the world to arrive at our dinner plates.

Love the sound of growing your own herbs, veggies, fruit and collecting eggs from the chicken coop? Then come along and get growing with us.

your environmental levy at work

NORTH SYDNEY COUNCIL

Community Gardens

Student Teacher; Teacher Student

By working together in a community garden you soon discover that we are all teachers and students, no matter your age or life experience.

Community gardens are great at bringing together all types of people, each with a different story or skill to be shared. As we share our abilities, we can also learn new skills like how to stake a tomato plant; what worm castings are; and how to garden as a group.

In addition to practical gardening skills, community gardens allow us to be creative and explore the natural environment and our place within it.

your environmental levy at work

NORTH SYDNEY COUNCIL

All the world's problems can be solved in a community garden

Community gardens provide healthy fruit and vegetables for the community as well as a local hub for residents to come together with a common purpose, and develop new friendships and connections.

Working together to produce healthy food also fosters communal problem solving and decision making, like how to split this pea and who gets the ripe pumpkin?

Beyond this, community gardens bring a sense of ownership, stewardship and community identity.

your environmental levy at work

NORTH SYDNEY COUNCIL

The Coal Loader Community Garden

One paver at a time

Like all community gardens, The Coal Loader Community Garden has its roots in motivated local residents coming together around a common need and goal to produce local fruit and vegetables sustainably in a community space.

Not only did the site offer beautiful views of the harbour and a local historic story but the former tenant living at the site had built a series of in-ground garden beds and a chicken run. This provided for a great foundation for the garden and its community to grow from early 2007.

In 2008, the garden volunteers secured grant funding through the ABC Open Garden program. This allowed the group to build on the initial garden foundation and expand. A new garden design was established based on permaculture principles.

With volunteer effort and teamwork, a new keyhole garden bed was established along with a series of raised garden beds constructed from recycled hardwood sourced from a local packaging manufacturer.

Since then, the garden and the group of volunteers have continued to share their stories, harvests and love of gardening amongst themselves and the wider North Sydney community.

The Coal Loader Community Garden is run by volunteers on a communal basis. Pop along to a meeting any Wednesday from 10am or for more information, www.northsydney.nsw.gov.au

your environmental levy at work

NORTH SYDNEY COUNCIL

Be a good neighbour protect our harbour

The Dubious Frogfish is living in your neighbourhood.

Let's be honest, Frogfish aren't pretty – they have a face that only a mother could love and even she's too embarrassed to stick around.

There are plenty of Frogfish in Sydney Harbour but fortunately they rarely dare to be seen out in public. They spend their days, hiding from view, in dark and dingy holes.

The Frogfish in Sydney are known as Dubious Frogfish. We have no idea how they earned the 'dubious' title but the 'Frogfish' part of the name is wholly appropriate. When anglers catch a Frogfish and drag this dubious character out in public… it complains loudly by croaking like a frog.

Be a good neighbour and keep our catchments clean. This little guy needs all the help he can get.

SYDNEY COASTAL COUNCILS GROUP

Underwater SYDNEY

NORTH SYDNEY COUNCIL

Is your home climate friendly?

1 Ceiling insulation
- A well insulated house can be up to 10°C warmer in winter and 10°C cooler in summer. As much as 35% of heat loss is through un-insulated ceiling.
- Insulation can cut 40% from home-heating costs.

2 Cooling
- Avoid using air-conditioning – it is the worst form of domestic greenhouse gas pollution.
- Install ceiling fans – they are cheaper to run and cause less greenhouse gas pollution

3 Electronics
- Turn off electrical appliances at the powerpoint when not in use. The average Australian home has many items of equipment on standby power, together generating over 750 kilograms of greenhouse gas and costing around $100 each year!

4 Indoor Heating
- Always put on a jumper before putting on the heater!
- Turning down the thermostat reduces your energy consumption.
- Gas heaters are cheaper to run and produce less greenhouse gas than electric heaters.

5 Lighting
- Flick the switch – turn off unnecessary lights. Simple as that.
- Use compact fluorescent light bulbs – they last 10 times longer and use 80% less energy than regular light globes.
- Use skylights and windows for natural lighting.

6 Insulating Paint
- If you are repainting your home, check out the thermally-insulating paints on the market. They work by cutting heat loss through painted walls and ceilings.

7 Windows
- External shades help reduce heat from direct sunlight and cool your home in summer.
- Internal curtains can trap up to 50% of the heat inside and warm your home in winter.
- Double glazing can reduce heat loss in winter and reduce indoor temperatures by up to 80% in summer.

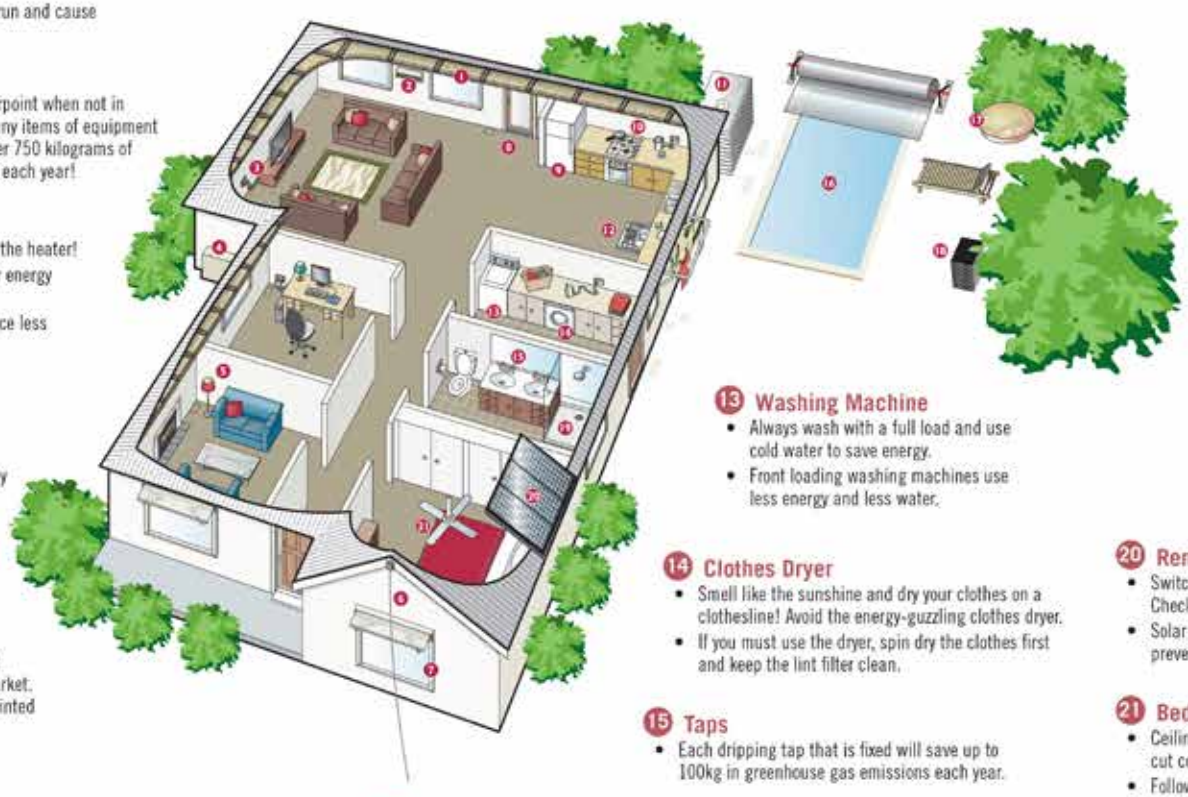
8 Air Flow
- Draughts and unwanted gaps that allow air to leak from the house can increase heating costs up to 25%. Repair door seals, hang heavy curtains and lay rugs on bare floors.

9 Fridge
- Fridges are one of the biggest energy users in the home so buy a 5 star rated fridge.
- Get rid of the drinks fridge – it is costing you up to $200 each year to keep those drinks cold!

10 Cooking
- Gas and microwave cooking generates 30 to 50% of the greenhouse gas generated by traditional electric cooking
- Cook as many organic, unpackaged, unprocessed meals as you can.

11 Rainwater Tank
- Collect filtered rainwater from the roof in tanks and use it for the garden, washing machine, and flushing the toilet.
- Rebates are available for rainwater tanks.

12 Dishwasher
- Only use your dishwasher when you have a full load.
- Choose a dishwasher with top energy and water star-ratings.



13 Washing Machine
- Always wash with a full load and use cold water to save energy.
- Front loading washing machines use less energy and less water.

14 Clothes Dryer
- Smell like the sunshine and dry your clothes on a clothesline! Avoid the energy-guzzling clothes dryer.
- If you must use the dryer, spin dry the clothes first and keep the lint filter clean.

15 Taps
- Each dripping tap that is fixed will save up to 100kg in greenhouse gas emissions each year.

16 Backyard Pool
- Pool filter pumps generate up to 3 tonnes of greenhouse gas emissions per year. Save energy by using the correct size pump and fit a timer switch to ensure it only runs when needed.
- Heat your pool with a solar blanket or solar heating.
- Cover the pool when not in use to prevent water evaporation.

17 On-site Sewage Treatment
- You could potentially disconnect from the sewerage mains if you correctly treat your own waste water.
- On-site treatment systems can kill bacteria with a UV radiation system and the treated water can be used in the garden, for washing or flushing toilets (Council application required).

18 Garden
- Plant local native trees and shrubs. Shade provided by trees can reduce your cooling bill by 15%.
- Grow some of your own food to reduce greenhouse gas emissions associated with food production, transport, storage and retail.
- Compost or worm farm your food waste – 50% of our weekly garbage is food waste that produces methane emissions when it goes to landfill.

19 Bathroom
- Bathrooms account for around 65% of hot water use in the home.
- Turn your hot water thermostat down – water heating accounts for 30% of total household energy use and about 30% of a household's greenhouse gas emissions.
- Installing a AAA-rated water efficient showerhead can save more than 500kg of greenhouse gases each year.
- Take shorter showers or try a navy shower – lather up with the water turned off.
- Convert your hot water system to solar – this will save energy now and money in the long term!

20 Renewable Energy
- Switch to renewable energy sources from wind, sun, water or waste. Check out the government-accredited GreenPower scheme for suppliers.
- Solar hot water systems can save up to 75% on hot water costs and prevent up to 3 tonnes of carbon dioxide emissions each year.

21 Bedrooms
- Ceiling fans can reduce indoor temperatures by 10°C in summer and cut cooling costs by 40%.
- Follow passive solar heating principles and orient bedrooms to the south side of the house and living areas to the north side of the house.

the Coal Loader
CENTRE FOR SUSTAINABILITY
Learn from the Past : Embrace the Future

NORTH SYDNEY COUNCIL

Source: ACF Greenhome, Australian Government Department of Climate Change and Energy Efficiency, NSW Government Department of Environment & Heritage, NABERS. Illustration by K Cutsil/HWT

Top tips for healthy catchments

There are many things you can do to help our catchments stay healthy

1 Plant natives instead of exotics – the native Mauve Flax Lily (*Dianella revoluta*) looks gorgeous but won't spread into bushland like Agapanthus.

2 Use native grasses for your lawn – they need less water than non-native species and do not become weeds in local bushland.

3 Dispose of garden waste responsibly – through composting, mulching or recycling. Dumping weeds and grass clippings is against the law. It spreads weeds throughout the catchment and increases the chances of an algal outbreak through nutrients released from rotting vegetation.

4 Avoid using chemical-based pesticides & fertilisers – especially before rain or next to creeks and waterways. Encourage natural pest controllers like Blue-tongued Lizards and Leaf-tailed Geckos into your garden by providing rocks and logs for them to live in.

5 Use a broom, not a hose – sweep up leaves from paths, paved areas, driveways and guttering. They make great mulch or compost.

6 Clean up after your dog – place dog droppings in the dog litterbins provided or take them home. Dog droppings add unwanted nutrients that change the soil to favour weeds over native plants.

7 Install a rainwater tank – this can store water from your roof to use on your garden and around the home. It also reduces the amount of stormwater going down our drains.

8 Oil and chemical disposal – motor oils and chemicals should be recycled. Spills can be absorbed by sawdust or sand and disposed of in a rubbish bin. Don't put chemicals, oils or paint down the sink or drain.

9 Washing your car – to keep phosphorous-based detergents out of the catchment, park on the grass and use a bucket. Use car-washing products that don't require water, or a car wash that uses recycled water.

10 Keep rubbish out of the drain – rubbish left on our roads ends up in our local waters.

11 Check driveway drainage – ensure it drains towards a vegetated area. That way you will water your plants when it rains and stop precious water loss down stormwater drains.

12 Minimise hard surfaces – cut down on paving, tiling, and concrete. Keep water on your property wherever possible through the use of permeable paving, pebble paths, lawns and garden areas.

13 Prevent root rot – wash soil from boots, tools and tyres to prevent the spread of *Phytopthora cinnamomi*, a fungus that causes root rot.

Image courtesy of NSW Department of Environment and Conservation

the Coal Loader
CENTRE FOR SUSTAINABILITY
Learn from the Past : Embrace the Future

North Sydney Council

What is Council doing?

North Sydney Council is committed to walking the green talk. Sustainability underpins Council's 10 Year Community Strategic Plan and results in many excellent outcomes, such as these: