OUR ENVIRONMENT
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FOR PUBLIC CONSULTATION

Green offsets

for sustainable development

Concept paper

April 2002

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New tools for complex issues

The NSW Government encourages sustainable development

Sustainable development takes a long-term view, and looks to the future effects of what we do today. It gives priority to building a healthy nation and world to pass on to future generations.

However, population growth and changing lifestyles pose new challenges demanding fresh resolve and innovative approaches to lead us to a sustainable future.

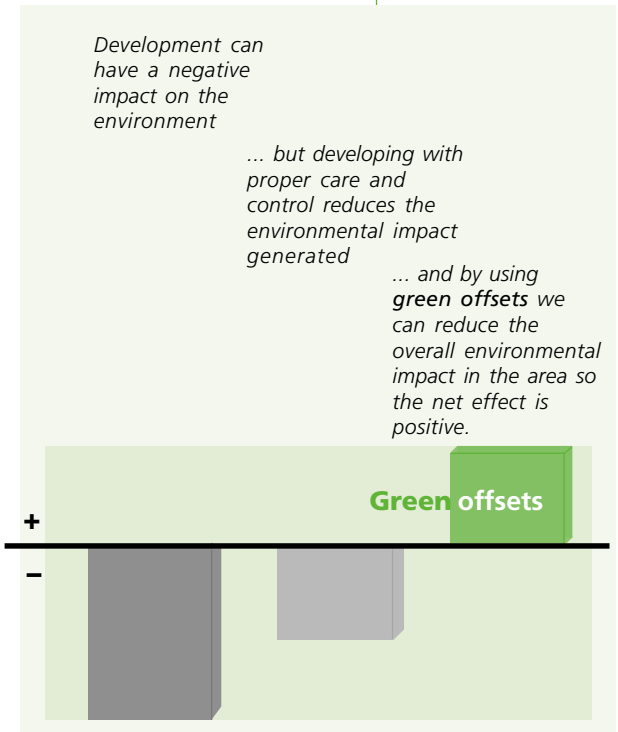
Developers point to the substantial human welfare generated by jobs and the infrastructure they build, and the high priority they give to environmental protection. Environmentalists remind us that even the most sensitive developments have environmental impacts, and that human activity as a whole needs to change if we are to avoid irreversible damage to the environment on which all life depends.

Stopping development is not the answer. As a community we need to move beyond the environment versus development debates. The NSW Government's vision is for a vibrant State with a progressive economy *and* a healthy natural environment.

What is needed now are practical tools to transform the ideal of sustainable development into reality

The NSW Government is a leader in applying innovative economic tools to address complex environmental issues. In its 2001 Environment Statement, *Action for the Environment,* the NSW Government highlighted the need to apply new tools to address the cumulative environmental impacts of development.

In particular, the Government wants to harness the dynamic strengths of market forces to benefit the community and the environment. Known as economic instruments, these new tools open opportunities to create more from less. For example, the NSW Government's Hunter River Salinity Trading Scheme has halved river salinity since starting in 1995 and overcome environmental obstacles to economic development of the Hunter Region.



This information paper presents the concepts underlying one of the new economic tools for NSW – green offsets. It also introduces five green offset initiatives that will be developed during 2002. The aims of these schemes are to demonstrate the value of the offset tool in NSW and to establish how broader offset schemes might work in the future. Based on the successes that have been achieved with offsets in other countries, we can expect them to become a valuable part of the sustainable development toolkit in NSW.

The NSW Government is interested in your response to the conceptual framework for offsets set out in this document. We would also like to hear from you if you want to be involved in one of the initiatives. Contact details and more information about the kinds of feedback we are seeking are provided on the back cover of this publication.

Please send us your comments by 30 June 2002.

Green offsets – development without additional environmental impact

Green offsets are a way of having both economic development *and* environmental protection. Development continues, but not at the expense of the environment.

A green offset is action taken outside a development site (but near to it) that reduces pollution or environmental impacts. The developers either take the action themselves or pay for others to do it on their behalf.

A green offset scheme ensures that there is a net environmental improvement as a result of development. Any additional environmental impact that is generated by a development is offset by action taken off-site that reduces a greater amount of environmental impact, so the net effect of development is positive.

Offset actions for water pollution might include:

- revegetating and stabilising river banks
- building better road surfacing and drainage to reduce the flow of sediments and nutrients into waterways
- improving stormwater systems at market gardens or on farms
- improving on-site sewage management
- installing pollution control equipment at other off-site sources.

Offsets for air pollution might include:

- installing vapour recovery units at petrol stations
- converting transport fleets to run on cleaner fuels
- assisting small businesses to optimise plant operations or install cleaner technology to reduce emissions
- replacing old wood heaters with cleaner forms of heating
- helping disadvantaged groups to fix smoky vehicles
- establishing practical car pooling systems
- expanding public transport availability.

Offsets actions for native vegetation clearing might include:

- fencing off an area of bushland to exclude sheep for most of the year
- encouraging bushland to regenerate by controlling weeds
- planting or regenerating locally indigenous trees, shrubs and grasses to link up isolated patches of bush
- planting trees on previously cleared land
- entering into a conservation agreement, property agreement or covenant to protect vegetation
- including areas of vegetation in the conservation reserve system.

Green offsets can correct some previous damage

In the past, many activities operated with less strict controls than apply today.

By allowing new developers to counterbalance their environmental impact by working off-site, we also create the opportunity to reduce some existing impacts.

Offset examples

The 1970 United States Clean Air Act requires a 120% air pollution offset for developments in areas where air quality fails national standards. This action was taken in response to large increases in pollution resulting from economic growth between 1900 and 1970. Several thousand offsets have been successfully implemented.

In New York city, new wastewater treatment plants must 'offset' every additional kilogram of phosphorus they discharge by a reduction of 3 kilograms of phosphorus loading from other sources.

For more information:

http://nyc.gov/html/dep/html/press/phospho.html

Principles of green offset schemes

Although zero extra environmental impact from a new development is a good goal, it is not always practical. But often an even better outcome of net environmental *improvement* can be achieved cost-effectively using offsets.

While offsets are simple in concept, offset schemes must be carefully designed to ensure their full beneficial potential is achieved in practice. These pages set out the central principles that are proposed to guide development of green offset schemes in NSW.

Principles of offsets

- Environmental impacts must be avoided first by using all cost-effective prevention and mitigation measures. Offsets are then only used to address remaining environmental impacts.
- All standard regulatory requirements must still be met.
- Offsets must never reward ongoing poor environmental performance.
- Offsets will complement other government programs.
- Offsets must result in a net environmental improvement.

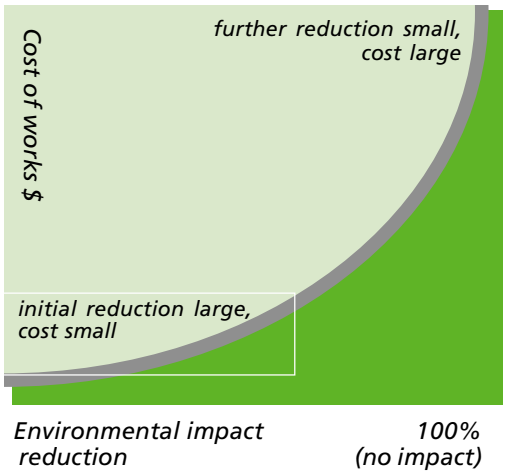
Offsets must be:

- enduring – they must offset the impact of the development for the period that the impact occurs
- quantifiable – the impacts and benefits must be reliably estimated
- targeted – they must offset the impacts on a 'like for like or better' basis
- located appropriately – they must offset the impact in the same area
- supplementary – beyond existing requirements and not already being funded under another scheme
- enforceable – through development consent conditions, licence conditions, covenants or a contract.

Why offsets can work better than stricter regulatory controls

Offsets can often achieve environmental improvements at lower cost than regulation alone. They allow resources to be used where they can achieve the greatest environmental improvement.

It may not be economically feasible to ensure that a development site does not impact on the environment. For example, most developments will add at least a small amount to the total load of pollutants entering the environment, even after all cost effective prevention and mitigation measures are used. Although the individual impacts are small, in total they can lead to significant cumulative degradation.



The cost of reducing environmental impact increases dramatically as we approach zero additional impact. The law of diminishing returns is at work. At some point the cost of further on-site impact mitigation is greater than the value provided to the environment. Stricter controls can increase the cost of development dramatically but may only provide limited gains for the environment.

However, worthwhile environmental gains can be made if the resources used for mitigation (or a fraction of them) are used to reduce environmental impact at other sources. That is, once all economically feasible on-site measures have been used to reduce environmental impact, further cost-effective impact reduction is still possible using offsets.

Offsets allow a developer to achieve a positive impact by investing in impact reduction programs away from the new development. Whether a particular offset would increase or decrease the overall cost of a development will depend on its particular nature and circumstances and the mitigation options open to it. The result, however, is that money spent on impact reduction provides a larger environmental benefit.

For example, further reduction in nutrient pollution from modern sewage treatment plants can cost over $10,000 for every kilogram. Reducing three kilograms by trapping run-off from market gardens can cost as little as $600.

Offsets – a great way to tackle diffuse-source pollution

Diffuse-source pollution is released to the environment from many small emissions over a large area – for example, vehicle exhausts and farm run-off.

It is important to reduce diffuse sources of pollution, because:

- they now account for the majority of pollutant loads in many areas – for example, diffuse sources contribute 80% of phosphorus and 90% of nitrogen pollution in the Warragamba catchment
- significant improvements have already been made to point sources – for example, Sydney Water has reduced phosphorus emissions by 75% and nitrogen emissions by 50% over the past four years in Western Sydney and further reductions are costly.

Diffuse-source pollution is often cheaper to address than point source. However community awareness of the causes of and solutions for diffuse source pollution is not as consistent or well developed as for point source pollution.

Offset schemes have the potential to address diffuse sources of pollution by:

- providing funds for diffuse source pollution abatement
- demonstrating the effectiveness of new pollution abatement actions
- encouraging broader acceptance of pollution management methods
- providing a framework to systematically address diffuse sources of pollution over time.

Offsets are not a way for developers to buy their way out of their obligations

Developers must still meet all standard regulatory requirements and adopt all cost-effective measures to avoid environmental impacts. Offsets do not compromise this in any way.

However, offsets do allow developers to achieve the goal of net environmental improvement in a more flexible and cost-effective manner. Reducing the development costs to achieve this goal allows new developments to be more competitive, and to contribute to the sustainable prosperity of NSW.

Offsets are not just another tax

If a developer can demonstrate that their proposed on-site impact mitigation systems will not increase environmental impact, no offsets would be required. However, if zero environmental impact is not possible using on-site measures alone, offsets may be used so that the development can still take place.

Offsets as part of the bigger picture

The NSW environment is affected by a wide range of human activities – past and present. Some of the most profound changes reflect the development of NSW since white settlement, such as the clearing of land for cities, farms and industry. Other pressures arise from activities we continue today, such as the highly developed systems that we use to extract natural resources from the environment to provide us with food, water, shelter, energy and transport. Additional pressures will come from the new or expanded activities that we choose for the future.

Although most individual developments do not have a discernable impact on the state of the NSW environment, their cumulative affect is significant. Offsets are just one tool to help us reduce the total impact on the NSW environment over time, while also helping us build a strong economy and high community living standards.

The NSW Government's approach to offsets

Following consultation on this document, the NSW Government will develop a framework for offsets. The framework will guide the way offset initiatives are developed by different Government agencies. The NSW Government will make sure that different offset programs fit together to achieve the greatest benefits and ensure resources are used in the most efficient way.

Offsets will be used selectively and focus on the top priorities

Under our current laws, development proposals are assessed on the basis of their economic, social and environmental merits. Consent bodies such as local councils or State government agencies take all three attributes into account when they make decisions about development proposals. The proposed framework for offsets will fit within this approach.

What will be new is a recognition that in some areas of NSW, for some specific environmental issues, development is exerting pressure on already stressed environments. The Government will investigate using offsets in these cases, to ensure development can take place in a way that enhances rather than degrades the environment.

Offsets will be centred around existing development consent or regulatory processes

To implement the offset framework, relevant consent and regulatory processes would be amended to include offset requirements. For example, regulatory systems that control new activities (such as land clearing) might include a requirement for an offset (such as restoring a specific area of vegetation) as a condition of consent.

Thresholds for pollution offsets might be based on annual emission rates within defined stressed areas.

When designing a new offset scheme, the NSW Government will ensure integration with other government programs, including other offset schemes.

All offset schemes will be accountable and transparent

Under the NSW offset framework, all offsets would be based on open and accountable administration. Safeguards such as advisory panels will ensure offset schemes operate transparently, so that scheme participants and members of the community can see that the offsets principles have been put into practice.

Some offset schemes will include payments of contributions into offset funds. In these cases, scheme rules will ensure that contributions paid into offset funds are isolated from government revenue, and only spent on the offset scheme for which the contribution was provided.

Offsets will work alongside other NSW Government programs, including:

- strict regulation of potentially significant polluters via environment protection licences, now including load-based limits and incentive fees

See www.epa.nsw.gov.au/licensing

- *Action for Air* – this NSW Government plan has comprehensive strategies for cleaner cars, trucks and buses, cleaner industry, energy efficiency and better management of open burning

See www.epa.nsw.gov.au/air/actionforair/index.htm

- the development and implementation of water sharing plans under the *Water Management Act* 2000

See www.dlwc.nsw.gov.au/care/water/sharing/

- the regulation of native vegetation clearing by the Department of Land and Water Conservation
- the Environmental Services Scheme – a longer term project to develop markets for environmental services generated by landholders

See www.dlwc.nsw.gov.au/care/es_scheme.html

- the NSW Biodiversity Strategy and the *Threatened Species Act 1995* administered by the National Parks and Wildlife Services

See www.npws.nsw.gov.au/wildlife/biodiversity_defn.html

- the plan making system in New South Wales under the *Environmental Planning and Assessment Act 1979*

See www.planning.nsw.gov.au

Each scheme will be required to produce a public annual report, including an offset balance sheet. On one side of the balance sheet will be information about monies received and environmental 'credit' granted to developers. The other side of the balance sheet would list monies expended, details of the environmental works and the estimates of the environmental impacts reduced. Each scheme manager will be accountable in the annual report to ensure that the environmental benefits achieved exceed the offset credits granted.

Improving our scientific knowledge through offsets

Offsets in NSW will be based on the best available scientific information and include contingencies to allow for scientific uncertainties. Scheme managers will provide user-friendly estimation tools to assist developers and other scheme participants to estimate the impact and benefits of developments and offset actions. Each scheme will include ongoing monitoring programs to ensure the benefits obtained through offsets are retained. Both monitoring and the operation of the schemes will add to our knowledge of how key environmental issues can be cost effectively addressed.

Using offsets to achieve net environmental improvement

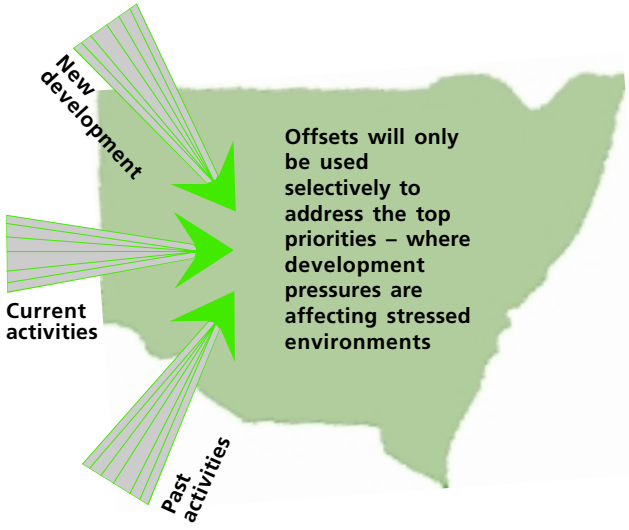
The purpose of offset schemes is to improve the condition of the environment compared to what it would have been in their absence. Over time, it is expected that offsets will open up opportunities for more cost-effective means of avoiding or reducing environmental impacts. These benefits should be shared between developers and the environment so that both are better off.

The NSW Government's offset initiatives

A number of specific offset initiatives are presented in the following pages. These fall into two broad categories, pollution offsets and natural resources offsets. These initiatives are practical examples of how offsets might work. You are invited to participate in one or more of the offset programs, or if you choose, simply respond to the offset principles and concepts set out above to help finalise the offset framework for the State.

The sum of human activities affects the state of the NSW environment

Human impacts include:
- **effects on air and water quality**
- **loss of biodiversity**
- **consumption of natural resources**
- **changes to the condition of land and salinity problems**



The EPA will trial three pollution offset schemes

NSW EPA
ENVIRONMENT PROTECTION AUTHORITY

Three pilot schemes will demonstrate how pollution offset schemes work in practice.

The pollution offset schemes will be designed to:

1. reduce water pollution in the lower Hawkesbury-Nepean River (the South Creek pilot)
2. reduce water pollution in the drinking water catchments of Sydney and adjacent regional centres
3. reduce air pollution in the greater metropolitan area.

The regions and pollutants selected for the pilots are those where there are particular environmental challenges involving population and economic growth. More information on each pilot is provided on the following pages.

What we expect from the pilots

The pilots will:

- allow the offset approach to be developed and tested in three different and challenging situations
- demonstrate the usefulness of specific pollution abatement actions for water and air pollution
- serve as models that might be adapted and applied to different locations and/or pollutants throughout NSW.

Legal mechanisms and administrative structures to provide for future offset schemes will also be developed based on the lessons learned from the pilot programs.

Who participates?

Developers proposing developments that:

- are within the pilot scheme area, and
- are over a set threshold, and
- cannot achieve zero extra emissions of the targeted pollutants

may need to participate in an offset scheme to allow the development to proceed.

Draft proposed participation thresholds will be developed for public consultation before each pilot starts. Simple but robust emission estimation tools will be developed by the EPA to help calculate offset needs.

Developers or EPA licensees who need to obtain offsets will generally be able to:

- design, implement and maintain their own offset program, or
- make a financial contribution to a combined offset fund operated by a scheme manager for each pilot.

Other parties participating in offset schemes do so voluntarily. For example, if offset funds are available to reduce nutrient run-off from farms, farmers can choose whether or not they will be involved in the scheme. If they choose to participate, some in-kind contribution will be needed. So a farmer might agree to maintain fences and new vegetation alongside a stream bank while the offset fund might contribute materials and an alternate stock water supply and make an annual payment to compensate the farmer for production foregone in the revegetated area.

How will funds be managed?

In many cases, the most practical approach will be for developers to contribute to a combined offset fund (rather than designing, implementing, maintaining and reporting on their own offset works).

Pooling contributions will also allow larger cost-effective offset works programs to be put in place – streamlining overall supervision, public reporting and compliance costs.

A scheme manager could receive the payments from developers who choose to make a financial contribution, saving developers the cost of managing offset pollution reduction activities.

The scheme manager would ensure that:

- the offset actions reduce more pollution than is being emitted by the developments at any point in time
- the contribution schedule reflects the costs and risks involved in achieving reductions in pollution
- the money is spent in the most effective way and that programs are implemented where they are most needed
- each offset is appropriate and is well maintained throughout its life.

An advisory panel, including community representatives, will ensure offset schemes operate transparently. The scheme manager will be guided by the panel, while being accountable to the relevant Minister for the financial management and effectiveness of the scheme. An evaluation report will be produced at the end of each pilot covering funds received and expended, pollution reductions achieved and offset credits granted.

Who will deliver the pollution reduction works?

On the ground, pollution reduction actions commissioned under the green offset pilot projects will use existing mechanisms and programs to deliver pollution reduction works. For example, works to reduce diffuse water pollution under the proposed South Creek pilot will be integrated with the Department of Water and Land Conservation's (DLWC) catchment improvement programs to address land degradation. This will build on existing systems and relationships between government, industry and the community, and also minimise administration costs. It will ensure the greatest environmental benefit for each dollar spent.

Offset example – reducing nutrient loads in the Minnesota River

Under US federal law, states are authorised to establish offset schemes to help them ensure water bodies meet environmental standards. In Minnesota, Rahr Malting Company is paying farmers to undertake on-farm best management practices to reduce total nutrient loads in the Minnesota River and offset the impact of Rahr's operations. These practices include establishing buffer strips, excluding stock from waterways, erosion management, setting land aside and wetland treatment systems.

For more information:

http://www.pca.state.mn.us/hot/es-mn-r.html

1. Cleaning a waterway – offset pilot

This pilot green offset scheme provides a framework for trading between point and diffuse sources of nutrients in the South Creek catchment.

The pollution problem

South Creek has significant environmental problems and there are a range of sources of pollution in the catchment. Water quality in the South Creek catchment is severely impacted by human activities, including agriculture, sewage discharges and overflows and urban stormwater run-off.

There are five sewage treatment plants licensed by the EPA in the South Creek catchment. Around 20 other activities are licensed for discharges to waterways, including the Rouse Hill development area, an abattoir, dairies, swimming pools, golf clubs and farm production. (These are usually only licensed for wet weather discharge.)

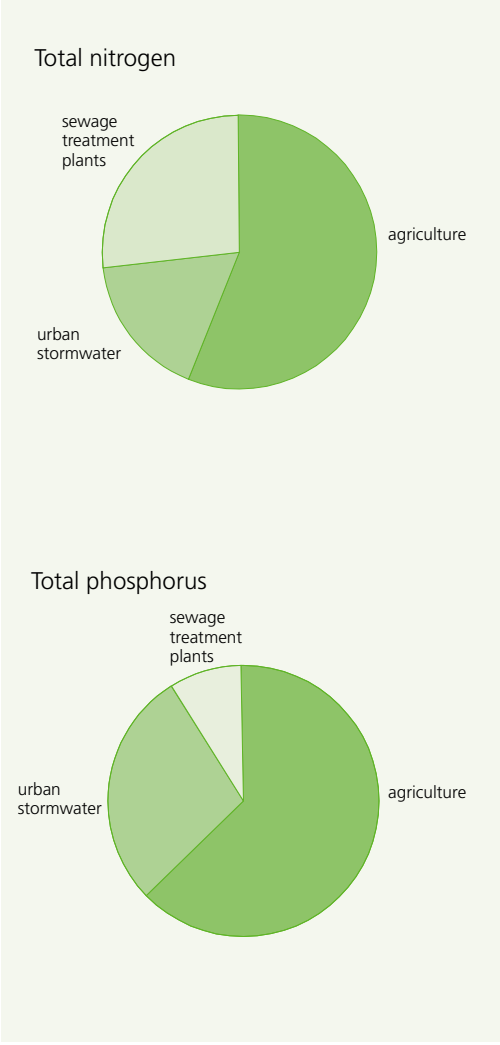
Opportunities for improvement

Large reductions in pollutant loads have already been made at point sources in the South Creek catchment. Further on-site reductions are increasingly costly, especially to further reduce nitrogen. For example, it is possible, but costly, for sewage treatment plants to undertake even higher levels of treatment or effluent reuse. Eliminating effluent discharges through reuse would also result in a more natural flow regime for South Creek. It would, however, impact on other uses of the creek, especially irrigation.

It is currently difficult to quantify pollutant loads from diffuse sources of pollution due to the complexity of environmental factors involved. However, the benefits of addressing diffuse-source pollution are real, significant and cheaper to achieve than further point source reductions. For example, the cost of upgrading a sewage treatment plant to reduce phosphorus discharge is in the order of $10,000 per kilogram. But the cost of reducing phosphorus from some diffuse sources in the South Creek catchment has been estimated at $10–$200 per kilogram.

Diffuse-source pollution from urban areas can be reduced by street sweeping, planting vegetative buffer strips and installing sedimentation dams. Run-off pollution from

Major sources of pollutants in the South Creek catchment



How the scheme might work

A sewage treatment plant manages growth in nutrient loads

A hypothetical sewage treatment plant currently emits 1,000 kg of phosphorus each year. Residential growth is expected to increase these emissions by 100 kg over the next few years. The licensee proposes to reduce emissions off-site to ensure it can continue to meet its load limit.

The licensee suggests that there are opportunities to reduce pollution from a number of market gardens, close to the plant, which have significant phosphorus emissions. The EPA has set a trading ratio of 3:1, so the off-site measures need to reduce phosphorus emissions by at least 300 kg per year to meet the load limit.

The licensee funds small dams at the bottom of the farms to intercept run-off from irrigation and light rain. The measures are estimated to reduce phosphorus loads by around 300 kg per year at a total cost of around $90,000.

The landholders agree to maintain the dams and ensure drainage is directed to them. They also commit to paying the cost of relocating irrigation equipment and will bear the cost of production foregone.

In contrast, upgrading the plant to reduce emissions is estimated to cost around $2.25m. The licensee will also save load-based licence fees of around $1,500 per year.

The offset provides funds to a group of market gardeners who currently have limited technical or financial capacity to address pollution, and serves as a model for other farmers.

agricultural land can be reduced by using fertilisers more efficiently, reducing excessive irrigation, planting buffer strips, managing stock around river banks, and better pasture management.

How the scheme will work

Priority pollutants

The pilot scheme will initially focus on loads of phosphorus and nitrogen. However, other environmental benefits are likely and may be recognised under the scheme. For example, it is likely that some diffuse pollution reduction works (such as restoring river banks) would have broad ecosystem benefits beyond nutrient export reduction. The scheme could be expanded in future to address a wider range of environmental outcomes.

Abatement actions

The scheme will start with a small list of actions to reduce nutrients off-site. The offsets must provide enduring outcomes that are quantifiable and enforceable.

The pilot scheme will involve trialling the concept of offsets and trading under the EPA's regulatory framework. New activities requiring a licence from the EPA will be required to clean up as much nutrient pollution as they create. Existing EPA licensees can use the scheme to reduce licence fees and manage growth in nutrient loads. Sydney Water Corporation will be one of the founding participants. The EPA will act as the scheme manager for the pilot, supported by an advisory panel of participants and stakeholders.

Licensees will have the option of providing funds to the EPA to generate credits or of proposing individual off-site actions they would like to implement themselves. The EPA will issue credits and approve actions to reduce pollution throughout the catchment. Works to reduce nutrients could be implemented directly by EPA licensees or through existing programs such as the Department of Land and Water Conservation's land degradation program in South Creek.

Possible initial measures for the pilot scheme include:

- reducing nutrients in run-off from market gardens – for example by modifying fertiliser use or installing measures for run-off detention such as dams, grassed drains, diversion banks and filter strips
- revegetating areas near rivers to protect river banks and to buffer and filter pollution going into the river
- sediment trapping pits and wetlands in urban areas, and
- reducing nutrients in run-off from grazing lands – through changing stocking rates and fertiliser use, irrigation management, dams and buffer strips.

Expected pilot outcomes

The main objectives of the pilot scheme are:

- to demonstrate the effectiveness of actions to reduce pollution from diffuse sources in the catchment
- to establish model systems for approving and enforcing actions at diffuse sources, to offset the environmental impact of point sources
- to provide opportunities for existing EPA licensees in the catchment to reduce pollution in a cost-effective way.

The EPA will release a detailed scheme proposal for public consultation shortly.

2. Protecting drinking water – offset pilot

The NSW Government is proposing a pollution-offset scheme to support sustainable development in Sydney's drinking water catchments.

This will be done under the draft Regional Environmental Plan (REP), *Sustaining the Catchments – A regional plan for the drinking water catchments of Sydney and adjacent regional centres.*

This scheme has the potential to allow development to occur while protecting and enhancing water quality in these catchments.

The *Sydney Water Catchment Management Act 1998* states that consent cannot be given unless the development can demonstrate a 'neutral or beneficial effect' on water quality. Under the draft REP, a development proposal could demonstrate a 'neutral or beneficial effect' on water quality by offsetting additional water pollution through a pollution offset scheme.

The pollution problem

The catchments provide water to more than four million people, and includes the cities of Sydney, Wollongong, Goulburn, Lithgow and Nowra. They support diverse land uses including cities and towns, national parks, coal mines, industrial development and a variety of farming.

Some of the areas around rivers have been damaged and sheet and gully erosion are major sources of diffuse pollution.

Opportunities for improvement

Realistically, the offset scheme will not be able to assist all developments to meet the neutral or beneficial effect test. The primary role of the scheme will be to offset long-term cumulative impacts, such as stormwater from different sources.

Initially, the scheme will be used to counterbalance a limited set of impacts and pollutants such as nutrients and sediment. Reducing the flow of sediment and nutrients to the catchment is likely to have the added benefit of reducing the transport of pathogens, metals, agrochemicals or other organic compounds.

How the scheme may work

Developers can participate in the scheme by either:

- putting in place a program to offset pollution from their development, or
- paying a contribution into a fund which will use combined contributions from a number of developments for large cost-effective pollution reduction programs.

The contribution required will differ between developments and depend on a number of factors, such as the type(s) and amount of pollution likely to be released, and the costs of reducing pollution in an appropriate location.

Expected pilot outcomes

The pilot will provide an effective model that will achieve the dual goals of allowing development to go ahead while protecting and enhancing water quality in these catchments.

The EPA will release a more detailed scheme proposal for public consultation as part of consultation by PlanningNSW on a revised draft Regional Environmental Plan during 2002.

How the scheme might work

A stormwater system is proposed for a new sewered housing subdivision.

The development proposes to use best management practices to design a stormwater management system that controls the quality and quantity of stormwater generated from the site. Modelling will determine the pre-development and post-development pollutant loads, entering and leaving the development, including the proposed stormwater management system.

In spite of control measures, it is expected that a small amount of additional sediment and nutrients will run off into a local river during storm events. To offset these impacts the developer will be required to resource offset actions at sites within the same sub-catchment, upstream of the development.

These actions could include:

- paying to stabilise and revegetate degraded upstream sections of the river bed and bank
- paying a neighbouring grazier to exclude stock from the river and to create and maintain a buffer strip (including providing an alternative stock water supply)
- lodging a bond to ensure that offset works are maintained.

Offset rules will specify the requirements of the scheme, including compliance reporting and the method used to estimate pollutant loads.

3. Reducing air pollution – offset pilot

The NSW Government is proposing an offset scheme to improve air quality in the greater metropolitan area.

In 1998, the Government released its long-term air quality management plan, *Action for Air*. This plan details a strategic approach to managing air quality in NSW across all sources.

The pollution problem

The highest levels of air emissions in NSW occur in the Greater Metropolitan Region (Sydney, Newcastle, and the Illawarra region), due to its high population and level of industrial activity.

Although much progress has been made in improving air quality overall, the two remaining broad areas of concern are photochemical smog and particle pollution. Motor vehicles, coal-fired electricity generation, industrial processes (e.g. solvent and evaporative losses) and domestic heating are all significant sources of these pollutants.

Opportunities for improvement

A suite of actions is under way to achieve the *Action for Air* objectives. In particular, there is a focus on cleaner vehicles, recognising the major contribution made by vehicles to air quality problems. This includes: a smoky vehicle enforcement program, stricter emission standards for petrol vehicles and a low-volatility petrol program, as well as a newly announced five-point Cleaner Vehicles program which includes stamp duty incentives and a change in government purchasing policy to favour cleaner cars.

Other programs are also in place to manage industry emissions. Approximately 200 significant air emitters are now licensed under the new load-based licensing scheme with fees and new limits to encourage ongoing efforts to further reduce emissions.

However, within the Greater Metropolitan Region, industrial growth, and the predicted increases in motor vehicle use, could seriously compromise the gains made in improving urban air quality.

An associated issue is the scope to reduce greenhouse gas emissions by expanding the use of cleaner fuels and co-generation of electricity. One side effect of these otherwise environmentally benign developments is extra emission of nitrogen oxide in urban areas, contributing to smog formation.

Offsets could provide a cost-effective way to achieve further improvements in air quality within this context of growth.

How the scheme may work

This offset scheme is likely to focus on nitrogen oxide, fine particles and ozone-forming chemicals such as reactive organic compounds.

The scheme will have a similar structure to the two other pilots and include a scheme manager. It will be implemented initially via EPA licences. The scheme may be broadened later to include a requirement of 'no net increase' of key pollutants from medium-sized industrial and commercial developments.

A detailed proposal will be released for public consultation in the second half of 2002.

Offset example – cleaner trucks make way for power plant

In San Diego USA, the owners of a proposed 500-megawatt power plant will offset air emissions from the plant by cleaning up the city's refuse collection trucks.

The city's 120 diesel-fuelled trucks will be replaced with new trucks fuelled by clean-burning natural gas. The fleet conversion program will reduce nitrogen oxide emissions by more than 35 tonnes per year – the equivalent of removing 9,200 cars from the roads.

This arrangement brings much-needed new sources of power while improving San Diego's air quality.

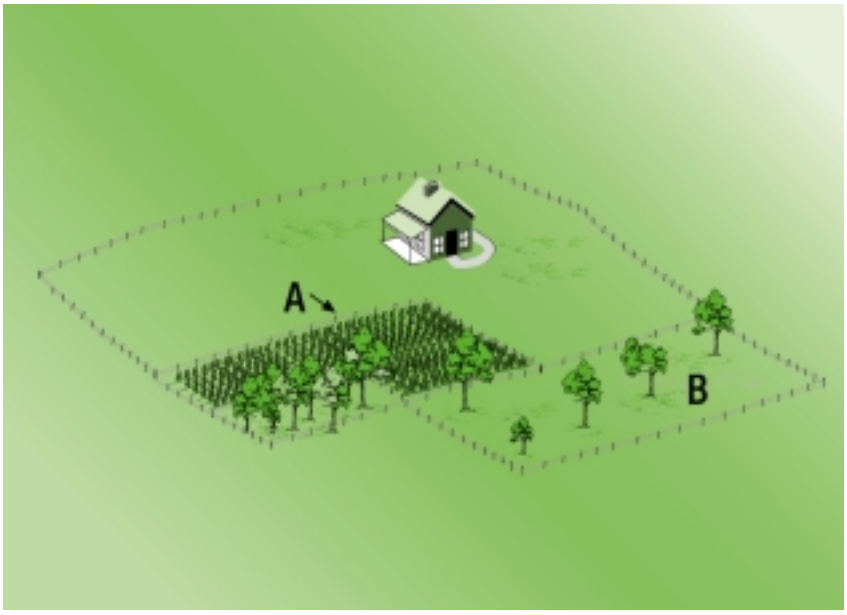
4. Natural resource offsets initiative – a consistent approach to native vegetation offsets

LAND & WATER CONSERVATION

Developments involving native vegetation clearing can have environmental impacts such as soil loss, water pollution, increasing dryland salinity and the loss of native plants and animals. Generally these impacts should be avoided, but there may be cases where large social and economic benefits of the development suggest it should go ahead. In these cases, offset actions may be used to counteract its potential negative environmental effects.

Salinity impacts may be able to be offset through tree planting. Restoring degraded native bush could offset impacts on flora and fauna. Controlling grazing stock in riparian vegetation could offset some of the impacts on water quality.

Native vegetation offsets are best understood through an example. A farmer may wish to clear scattered trees to develop a paddock for high value cropping (area A). The development has benefits to the economy and the community, but it increases the risk of dryland salinity and reduces the habitat of a threatened bird species. The farmer mitigates the impact by avoiding clearing an area of habitat in one corner of the paddock. However there are some remaining impacts. The farmer might be permitted to offset these impacts by fencing off another area of remnant bushland on the property (area B) and regenerating it to improve its value for bird habitat and salinity mitigation.



Last year, as part of the NSW Government's Salinity Strategy, the Department of Land and Water Conservation (DLWC) released a Discussion Paper on *Offsets, Salinity and Native Vegetation* (see www.dlwc.nsw.gov.au/care/salinity/offsets.html). The discussion paper proposed four major principles for an offset policy which are consistent with those on page 4. It also discussed ways in which offsets could be implemented.

DLWC received 31 submissions on the discussion paper, mainly from regional vegetation committees, catchment management boards, landcare groups and other non-government organisations or peak groups. Response to the paper was varied. Similar numbers of submissions supported and opposed the concepts in the discussion paper, although people generally agreed with the principles.

The Government is now starting to develop a native vegetation offsets policy. The policy will set out:

- cases where offsets may be used (including classes of vegetation) considering the *Native Vegetation Conservation Act 1997* and other environmental and planning laws
- whether offset requirements should be set on a case-by-case basis or through ratios common across a region or the State
- how to balance the social, economic and environmental impacts and benefits of developments where land clearing is involved
- practical and robust measurement and prediction methods to assess the current condition of native vegetation to be cleared and the benefits of offset actions
- mechanisms to ensure the ongoing management of offset sites over the long term
- how to allow offsets and meet the national Bushcare goal 'to reverse the long-term decline in the quality and extent of Australia's native vegetation cover'.

The aim of the native vegetation offsets policy will be to provide farmers and others wishing to clear native vegetation with greater flexibility in how they account for the environmental impacts of clearing, while producing real gains for the environment.

The development of the policy will take into account the comments received on the discussion paper and feedback on this paper. You are invited to provide your comments in relation to a native vegetation offsets policy to the contact shown at the end of this document. You do not need to re-send comments already provided on the discussion paper.

Offset example – aquatic habitats

NSW Fisheries has a policy of 'no net loss' for developments that damage aquatic habitat. Developers can compensate for damage by:

- transplanting seagrass or constructing fishways, or
- making payments into a Conservation Trust Fund used for strategic rehabilitation projects throughout NSW waters.

A monetary bond may be required as insurance against the offset action failing. For example up to $250,000 per hectare for seagrass. Habitat compensation is calculated on a 2:1 basis for vulnerable habitats. Consent conditions require an annual progress report for the offset action.

For more information:
http://ww.fisheries.nsw.gov.au/conservation/policies/policy_guide_content.htm

5. Biodiversity offsets for major Government infrastructure development

The National Parks and Wildlife Service has been working with PlanningNSW to offset the impact of major Government infrastructure projects such as highway and railway construction. These offset actions have been negotiated on a case-by-case basis, and in some cases have led to significant additions to the reserve system.

One example is a compensatory habitat package negotiated with the Roads and Traffic Authority and PlanningNSW for the Pacific Highway upgrade.

In line with the development of a whole-of-government approach to offsets, PlanningNSW (in conjunction with a number of other agencies) are developing a policy for major Government infrastructure developments which will set the framework for these types of offsets.

Responding to this proposal

The NSW Government is seeking feedback on the offsets concepts presented in this booklet. We would also like to hear from you if you want to be involved or kept informed about the five green offset initiatives.

The EPA will be coordinating receipt of your comments on behalf of the NSW Government. The EPA will provide copies of submissions to all the government agencies who are dealing with the issues raised.

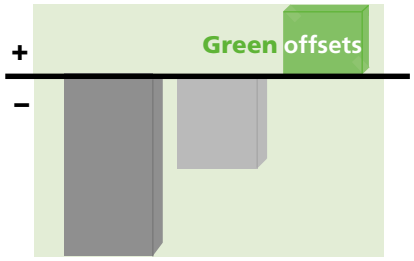
Please send us your comments **by 30 June 2002**, to the address below.

In preparing your response, you might want to suggest:

- situations where you believe offsets would or would not help improve the environment in NSW
- improvements to the offset principles proposed on page 4
- information about activities you are involved in that might have links to offset programs
- which of the offset initiatives you want to be involved in.

Executive Director
Economics and Environmental Reporting
Environment Protection Authority
Level 15, 59–61 Goulburn St
PO Box A290
Sydney South NSW 1232

ph: (02) 9995 5000 (switchboard)
131 555 (information and publications requests)
fax: (02) 9995 5941
email: greenoffsets@epa.nsw.gov.au
web: www.epa.nsw.gov.au



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