

# guidelines

## Wetland Restoration Plans

Department of Urban Affairs and Planning



Coastal wetlands are a limited natural resource in New South Wales. Large areas of coastal wetlands have been destroyed or damaged through draining, clearing, filling and the construction of levees for agricultural, urban and industrial purposes.

These guidelines are designed to help landowners prepare restoration plans for damaged SEPP 14 coastal wetlands.



## Introduction

Coastal wetlands are a limited natural resource in NSW. It is estimated that over the past 200 years 60 percent of the State's coastal wetlands have been lost through draining, clearing, filling and the construction of levees for agricultural, urban and industrial purposes.

To help preserve and protect the remaining coastal wetlands, the State Government gazetted State Environmental Planning Policy No. 14—Coastal Wetlands (SEPP 14) in December 1985. SEPP 14 applies to developments involving work that could damage or destroy wetlands. If for some reason there is a breach of SEPP 14 and wetlands are damaged, restoration may be required. SEPP 14 was amended in 1997 to include clause 7A which requires the preparation of a restoration plan before any restoration works are carried out.

## What is a restoration plan?

A restoration plan details all works to be carried out, the environmental protection measures to be implemented, the completion dates and a monitoring program for all restoration works. It does not need to be a long document and may be prepared by the applicant or a consultant.

## When is a restoration plan required?

Developments that include draining, clearing, filling or the construction of levees require the preparation of an environmental impact statement (EIS) which must be approved by council and the Director-General of the Department of Urban Affairs and Planning (DUAP).

A restoration plan, rather than an EIS, is required when there has been a breach of SEPP 14 and an applicant or landowner is willing to restore wetlands that have been affected.

Councils and the Department can advise on whether a restoration plan or an EIS is required.

A restoration plan may be produced for works that restore or enhance plant communities, water levels, water flow and soil composition in coastal wetlands. The restoration plan must accompany a development application (DA) for restoration works.

Restoration plans cannot be prepared if the works are likely to have a significant environmental impact beyond the area subject to the restoration plan or if the works are to be carried out in association with other development. Impacts include an alteration to hydrology, change in the ratio of salt to fresh water, or the release of acid from acid sulfate soils.

## What information should be covered in the restoration plan?

A restoration plan should detail all works to be carried out on the site. It should highlight all the environmental protection measures to be implemented and the results to be achieved from the restoration. For each work to be undertaken it is necessary to:

- describe the proposed works
- identify those responsible for completing the required works
- identify dates for completing individual works
- identify project milestones
- outline contingency planning.

The level of analysis for each section should reflect the level of anticipated impact. If a particular issue does not relate to the restoration, an assurance should be made to that effect and no further detail is required.

Commitment to best environmental outcomes in each instance is essential. The best environmental outcome, unless otherwise advised by DLWC, NPWS or DUAP, is restoration to the original or natural condition. Expert advice will help in selecting the appropriate methods for undertaking the necessary works. The local DLWC office, or a private environmental consultant, will be able to assist with advice on techniques.

## Other documentation required

All statutory and other planning controls which apply to the proposed works must be adhered to.

The Department of Land and Water Conservation (DLWC) and NSW Fisheries have licence requirements, particularly for lands near open water and mangrove communities. If the proposed works are likely to have a significant effect on threatened species, populations or ecological communities, or their habitats, the DA must be accompanied by a species impact statement.

Threatened species, populations and ecological communities are listed under Schedules 1 and 2 of the *Threatened Species Conservation Act 1995*. Fish and aquatic vegetation are listed under Schedules 4 and 5 of the *Fisheries Management Act 1994*. The National Parks and Wildlife Service (NPWS) and NSW Fisheries should be contacted in this instance. Council should be consulted about any requirements under other legislation that apply to the subject land.

## What are the legal implications of a breach of SEPP 14?

Undertaking developments which damage coastal wetlands, without the necessary approvals, is a breach of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and may lead to court action.

Land managers or landowners who carry out clearing, draining, filling or the construction of levees within a SEPP 14 area without approval run the risk of facing court proceedings under sections 123 or 125 of the EP&A Act. Failure to comply with SEPP 14 can result in substantial fines and orders to plant and maintain vegetation under section 126 of the EP&A Act. Orders to remedy or restrain a breach of the EP&A Act can also be made under section 124.

As DUAP's priority is to preserve wetlands in as natural a state as possible, DUAP prefers to request restoration of the wetlands, rather than to take court action.

Where an applicant is not contesting responsibility for works, clause 7A of SEPP 14 provides an alternative to the expense and time involved in court proceedings. If consent or concurrence is

not obtained through clause 7A for whatever reasons, then council and DUAP reserve the right to take legal action to achieve restoration of the subject land. Non-compliance with the agreed restoration plan could be subject to the same penalties as those for failure to comply with other requirements of SEPP 14.

In any case where a restoration plan is put in place to restore a breach of SEPP 14, the existence of the restoration plan will need to be noted on any section 149 certificate issued for the subject land. The section 149 certificate will be required to use the following wording.

*A transgression of SEPP 14 has occurred on this property. As a result a restoration plan is in place. The requirements of the restoration plan must be adhered to until the date of completion. The completion date may be extended if further works are required as a result of unforeseen circumstances and contingency planning. The council can advise on requirements of the plan.*

## Hydrology and earthworks

This section refers to works that will affect the flow and chemistry of water, and the form of the site or wetland bed.

### Objectives

The objectives of hydrological works and earthworks are to return soil levels and surface and groundwater flow and chemistry to original conditions.

### Relevance of this section

Hydrology and earthworks will need to be considered if the following works are to be restored:

- levee banks, drains, dams
- areas that have been filled (e.g. areas where the soil level has been raised to reclaim land or to construct a road)
- other works affecting the flow of water.

### Detail required

The information in this section should include the:

- area where earthworks are to be undertaken
- depth to which soil is to be removed (usually to the apparent or extrapolated original soil level)
- level to which areas are to be filled (usually to the original or surrounding soil level)
- conservation methods to be used to stabilise exposed soil
- existing or projected chemistry of the water affecting or influencing the site
- volumes and rates of lime and any other materials needed for chemical treatment of the soil.

Structures such as silt fencing and geotextiles or plantings to be used for soil conservation purposes must be described in detail. The monitoring and contingency plans for any potential failings of the systems to be used, and natural events such as tidal movement, flooding or storm surge, should also be detailed.

Works should be listed in the chronological order in which they will take place. Annual, seasonal and diurnal tides or water table fluctuations may need to be considered when planning works. Completion dates for each task should be in the shortest time frame possible without compromising environmental safeguards. Earthworks should be overseen by an officer from council or DLWC, at the expense of the landowner.

### Specific issues to be covered

An hydrology and earthworks plan should include:

- methods to be used to avoid disturbance of acid sulfate soils
- methods for the management of acid sulfate soils
- methods for earth moving and for temporary storage, transport or disposal of materials
- methods for erosion and sedimentation control during and after the restoration works
- site monitoring and feedback on site management
- contingency planning for system failure or natural events
- maintenance of water quality.

## Acid sulfate soils

This section refers to any works that disturb the soil in any way.

### Objectives

To ameliorate any existing acid sulfate problems, minimise the release of acid during works and guard against the potential for future acid releases.

### Relevance of this section

This section must be covered. Acid sulfate soils (ASS) are widespread in low lying coastal areas, especially in estuarine floodplains. It is likely that ASS or potential ASS exist at or close to the soil surface in most coastal wetlands.

Drainage and excavation of actual and potential ASS can result in acid leaching into surrounding soils and waterways. This kills fish and crustaceans, and damages plants and soils. Information on the processes required to minimise the release of acid during restoration works can be found in the New South Wales Acid Sulfate Soils Management Advisory Committee's *Acid Sulfate Soil Manual* (1998), available from DUAP.

To determine the likelihood of ASS in the area of restoration works, contact council or the nearest DLWC office. DLWC hold a series of maps, known as the Acid Sulfate Soil Planning Maps. From these maps the probability of ASS in a particular area can be estimated and the type of works likely to present an environmental risk identified. A number of councils have combined these maps into their local environmental plan (LEP) to ensure this issue is addressed in the development process. The provisions of any such LEP must be considered in any restoration plan.

If the land where the restoration works are to be carried out has a high probability of ASS then an ASS

management plan must be submitted as part of the restoration plan. Such a plan must be approved by DLWC. If the subject land has a low probability or no known occurrence of ASS then further testing for ASS must be undertaken. If the soils are subsequently found to contain actual or potential ASS then an ASS management plan must be submitted as part of the restoration plan.

Expert advice will be required in the preparation of the ASS management plan. The nearest DLWC office can give guidance on finding suitable consultants.

### Detail required

A comprehensive work plan, describing all works to be carried out related to ASS, is to be included in the ASS management plan.

### Specific issues to be covered

An ASS management plan must include:

- how the works will be staged to minimise impacts
- how any acid at the site will be managed
- measures to remove or neutralise any acid-generating potential in the extracted material
- methods for quality control on the extracted material to minimise offsite impacts and operator liability
- management of the extracted material storage and processing areas
- procedures and protocols for leachate and sediment control
- contingency measures in case acid-related incidents occur
- a monitoring program.

# Vegetation

This section refers to works that encourage regeneration of, or manually reinstate, the original native vegetation community.

## Objectives

The objective of revegetation is to restore the native wetland vegetation to the composition, structure and form that originally occurred on site, or as near to original as possible.

## Relevance of this section

This section must be filled out if the native vegetation on the site has been cleared or modified, or if the vegetation will be cleared during, or due to, the restoration works on site.

## Detail required

Consideration must be given to the most appropriate regeneration techniques for each site. The optimal outcome is to restore the naturally occurring community, comprised of locally occurring plants. This can be achieved by one of the following.

### Regeneration by soil-stored seed banks

If an area can regenerate from native seeds that exist in the soil, the site can be left to regenerate naturally. This is likely in areas that have recently been cleared, and where the original soil profile is in place. If choosing this method some plants may be planted as a form of erosion control or to establish a nursery habitat for naturally regenerating plants.

### Restoration of vegetation by planting

Revegetation by planting is the best method in highly degraded areas where the original topsoil is not intact. This includes areas where levee banks or fill are removed, or where drains or dams are filled with material that was not sourced on site or that has been stored on site for a long time.

### Instatement of wetland vegetation best suited for long term survival in the modified environment.

In the rare event that a landscape cannot be restored to its natural state then the most appropriate local wetland vegetation should be established. This method may be used where the landscape or hydrology of a catchment has been altered to such a degree that

the natural vegetation community could not survive in the long term (e.g. saltwater to freshwater ratio is altered). Any plant material used in wetland restoration should be of local provenance, that is, grown from local genetic stock. A vegetation map at the scale of 1:5 000, centred on the restoration site, must be included in the plan and the proposed propagule collection site must be marked on the map. The maps should identify wetland communities in the vicinity of the restoration site.

Expert assistance from an environmental consultant may be necessary to complete this part of the plan. The type of community that existed on site can be established from interpretation of aerial photographs, plant species lists held by NPWS or historical anecdotes.

## Specific issues to be covered

It is important to document the type of revegetation program and the reason for choosing that program.

The revegetation program should include:

- the vegetation community to be established
- the area to be planted (expressed in maps or diagrams and words)
- the age, stock type, ratio and number of plants per square metre
- a commitment to the use of sterilised soil media
- characteristics of the site that the propagules are collected from
- source of offsite plants
- permission from the landholder of the site from which the propagules are collected
- a chronological plan of the project
- the rationale behind the plan
- a contingency plan.

It is important to plan ahead so that plant stock is available when required. Seed availability, time for germination and propagation can all cause delays in restoration.

## Monitoring

This section refers to post restoration activities required to assess the success of the restoration works.

### Objectives

Monitoring of the restoration site is essential to ensure the project reaches a point where the wetland environment is stable and looks certain to regenerate fully.

A restoration site needs to be monitored for approximately 10 years. If at any point the restoration is not progressing satisfactorily, action must be taken to rectify the system failure and, where necessary, implement a plan variation. Specific objectives include:

- setting up a monitoring program that will document the works carried out on site
- tracking the progress of the restoration
- providing a mechanism for reporting on the restoration
- making provisions for contingency plans if necessary.

### Relevance of this section

This section must be covered. Monitoring is required for all restorations to ensure that restoration of the landscape is achieved and regeneration of vegetation is successful in the long term.

### Detail required

A monitoring plan must include:

- a baseline report to be prepared before restoration is initiated
- milestones and timeframes for restoration
- an assessment regime for recording the progress of the restoration area, to be compared against the ideal
- a mechanism to identify deviation from the anticipated progress of the restoration

- a mechanism for development of a contingency plan
- a recording and reporting schedule.

The monitoring plan is not a static plan, but rather a mechanism for actively managing the restoration if it does not go according to the original plan.

### Specific issues to be covered

Map of the site showing photo points and recording locations.

Quantitative data at relevant sites for:

- erosion
- sedimentation/deposition
- pH of water bodies and/or soil
- salinity of water
- plant survival rate
- plant growth (height and density)
- proportion of weeds to native plants.

The site should be documented before restoration works begin. Ongoing reports should be submitted to council at least annually for the first three years and then as required for the following seven years.

Documentation should include:

- photographs of the wetland from designated photo points
- measurement of pH and turbidity in water bodies
- an assessment of the natural and artificial soil formation
- an assessment of the vegetation health, including percentage cover of dominant plant species and structural formation
- an assessment of fauna use of the site.

Other relevant information particular to the site should be recorded as necessary.

## Site protection

This section refers to measures undertaken after restoration works have been completed to ensure ongoing protection of restored sites.

### Objectives

The objective of site protection is to allow the soils, water and vegetation of the subject area to be stabilised and restored, undisturbed by people, animals or vehicles.

### Relevance of this section

The restoration area requires protection if soil is left exposed or the restoration of the native wetland plant community is in progress and there is any possibility of disturbance, particularly by grazing animals, people or vehicles.

In areas adjoining public lands or for areas that are used as public thoroughfares, signs outlining the reason for protective fencing should be posted to encourage the public to respect the restriction of access to the restoration area.

### Detail required

Consideration must be given to the type of fencing to be used—this includes the impact of construction

and removal of that fencing. A star picket and wire fence is an example of a low-cost, low-impact fence that can be easily removed when necessary. Signage should be considered for areas that allow public access, or are exposed to public roads or other public land.

The possibility of native animals grazing on planted vegetation needs to be considered (e.g. swamp wallabies). Individual plant protection, such as grow tubes or wire netting, may be required to ensure vegetation can establish.

### Specific issues to be covered

This section must include:

- a description of the threats to the area (e.g. public access by foot, vehicle damage, cattle grazing or native animal grazing)
- the style of fencing to be constructed
- a map or diagram of the location of the fence
- actual or relative time for the fence to be in position
- details of minimal disturbance methods for fence and sign construction and removal.

**For more information on restoration plans contact the Department of Urban Affairs and Planning.**

Natural Resource Planning Branch  
Ph. (02) 9391 2000

Illawarra and South Coast Region  
Ph. (02) 4226 8120

Hunter and Central Coast Region  
Ph. (02) 4926 2566

North Coast Region  
Ph. (02) 6642 0622

**...or phone your local council.**

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