Superseded/repealed from 1 November 2021 – refer to https://www.dit.sa.gov.au/standards/environment

ENVIRONMENTAL CODE OF PRACTICE

for construction

road, rail and marine facilities

Government of South Australia

Department of Planning, Transport and Infrastructure

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Transport and Infrastructure

GPO Box 1533 Adelaide SA 5001
For information regarding this document contact the Projects Directorate, Transport Services Division.

First published: August 1997
Revision1: April 2008
ISBN 978-0-7590-0100-8
#1816971
Design and production by Corporate Profile

Preface

The goal of the Department of Planning Transport and Infrastructure is to ensure that safe and efficient energy, transport and other infrastructure are met in an ecologically sustainable and cost-effective way. We recognise that environmental protection is an integral part of our business and should be addressed in all phases of transport and infrastructure management.

As part of our commitment to continuous improvement and despite high standards already being achieved, we need to continue to look for ways of doing things better.

I encourage you to use this Code of Practice to help protect and enhance the environment and to ensure our activities are undertaken in a sustainable way.

Contents

1. Why a Code of Practice?

The Department of Planning, Transport and Infrastructure (DPTI) is committed to developing and managing:

a safe, efficient and ecologically sustainable transport system

We can contribute to the well-being of the community and our environment through:

- minimising pollution
- sustaining eco-systems
- conserving our cultural heritage
- enhancing amenity

This Code of Practice is designed to be used by field staff during the construction of road, rail and marine facilities.

The purpose of this Code is to ensure that construction activities are conducted in a manner that minimises impact on the environment. It promotes the awareness and use of best practice in environmental management. It applies to all areas within the contractor's activity zone including the construction site, stockpile sites, depots, site offices, diversion roads, access tracks, and materials disposal.

The Code covers both land-based and marine-based activities. Marine-based activities can affect the sensitive coastal strip through the establishment of access tracks, equipment compounds, pumps, pipeline systems and stockpiles comprising, for example, dredge spoil, wastes and old jetty timbers.

Whether working on land or in water environments care needs to be taken to protect flora and fauna, heritage items, water and air quality and impacts on the community.

It is the responsibility of all people involved in projects to adopt environmentally responsible work practices.

Best practice environmental management requires environmental awareness, care and appreciation of your environmental responsibilities.

Prevention is better than cure. Measures taken to prevent environmental impacts are preferred to those designed to control or repair the impact.

Your actions will make a difference.

2 Glossary of Terms

Explanation and definition of terms used in this Code of Practice

contractor's activity zone
The area where activities associated with the construction of the project are permitted to take place. This includes the construction site and any other area necessary for the construction of the works, including areas outside of the road reserve. Work is not permitted outside the contractor's activity zone.

construction materials
Materials used during construction including quarry products, aggregates, pavement materials and fill.

dredging
Removal of underwater sediments (usually by excavation or suction) for a specific purpose including, for example; maintaining, enlarging, deepening or creating a navigable channel; trenching for pipes, or cables; or removal of unsuitable or unwanted materials.

environment
All aspects of the surroundings of human beings, whether affecting them as individuals or in social groupings. This includes both social and physical aspects.

Project Environmental Management Plan (PEMP)
The Project Environmental Management Plan, prepared by the Department, is a project-specific document that details key environmental issues and management requirements for a particular project.

Contractor's Environmental Management Plan (CEMP)
The Contractor's Environmental Management Plan, produced by the contractor, responds to the PEMP and details how the environmental aspects of the project will be managed.

fauna
Animals (includes reptiles, fish, insects, etc).

flora
Any species of plant including trees, shrubs and grasses.

fuels
Manufactured hydrocarbon products such as diesel, petrol and oils.

groundwater
Underground or sub-surface water.

hazardous material
Any solid, liquid or gaseous substance that is harmful to plant, animal or human life.

heritage
Structures, features, artefacts etc., which because of their natural, cultural, historical or aesthetic value are worthy of protection and conservation.

landscaping
The process of restoring, rehabilitating and revegetating an affected area.

native vegetation
Vegetation that is natural to the area (indigenous) including native trees, shrubs, grasslands and marine flora.

noise pollution
Sound that a listener does not wish to hear. Generally, a sound level in excess of background noise.

pest animals
Introduced animals that adversely affect native fauna or flora and/or agricultural produce.

pest plants/weeds
Introduced plants that adversely affect native vegetation and/or agricultural crops.

risk
The likelihood that an event will cause an adverse outcome for a person, a group or the environment.

shotplan
Documented plan nominating the blast site, blast time, blast hole specification and layout, type and amount of explosive, detonation sequence, safety and monitoring requirements.

spill
The accidental or unintended release of any material that has the potential to harm the environment.

stockpile
Material stored for use in, or associated with a project. It may include aggregate, gravel, road base, topsoil, overburden, mulch etc.

waste
Any matter (whether of value or not) discarded or left over in the course of industrial, commercial, domestic or other activities, including excavated material not classified as clean fill.

3. Responsibilities for Compliance

Construction activities should be undertaken in compliance with environmental legislation. However, DPTI is committed to ecological sustainability and adopting best practice environmental management.

The *Environment Protection Act 1993* requires that people must not undertake an activity that pollutes, or might pollute, the environment unless all reasonable and practical measures are taken to prevent or minimise any resulting environmental harm.

All individuals and their organisations have a ‘duty of care’ to prevent or minimise environmental harm.

On-the-Spot fines and more severe penalties can be applied to people who harm the environment.

4. Environmental Management Documentation

Environmental management requirements during construction will be documented in the Contractor's Environmental Management Plan (CEMP). The CEMP is a document produced by the contractor, in accordance with DPTI guidelines. It details how the contractor will implement and manage environmental aspects of the project. The contractor's performance will be audited against the Contract documentation, the Contractor's Environmental Management Plan (CEMP), and this Code of Practice.

The contractor's environmental management responsibilities for major projects where a Project Environmental Management Plan (PEMP) has been prepared, include:

- preparing a CEMP in accordance with the requirements of contract documentation, the PEMP and DPTI guidelines to show how the environmental requirements for a project will be met;
- carrying out the work in accordance with the CEMP;
- monitoring and auditing the environmental impact of the work;
- assessing the effectiveness of the CEMP based on monitoring and auditing results, and updating and improving the plans as required.

5. Community Consultation

Every construction site has its ‘affected community’ whether it is those living, visiting and working close to the project, or those interested in the environment where the project is located.

The community will judge your performance and will respect thoughtful, pro-active and courteous behaviour. Members of the community have a right to know of incidents and activities that could affect them. They respect the job you have to do, but you must respect the fact that you are intruding into their environment.

- Where works are likely to have a significant impact, keep the community informed of the timing and nature of the works throughout the project and respond to community enquiries and complaints promptly;

- Notify users of facilities, such as roads, railways, bridges, jetties and marine facilities if access is to be restricted; or major events such as noisy activities, blasting and working outside normal hours is to be undertaken.

Notify users of facilities if access is to be restricted

6. Environmental Safety and Risk Management

The Contractor and all employees have a “duty of care” to protect the public and the environment.

The *Environment Protection Act 1993* includes a general duty not to harm the environment by pollution and requires notification to the Environmental Protection Authority (EPA) of polluting incidents. If an environmental incident occurs that affects other aspects of the environment notify your site manager.

It is essential that field staff conduct all activities in a responsible manner.

The CEMP may include incident management plans for high-risk events or events with potential for significant environmental damage such as fires, fuel spills or burst hydraulic lines. Development of fire management plans and fuel spill contingency plans are examples of risk management. Be aware of these plans and respond to incidents in the way documented to ensure any damage or environmental impact is minimised.

- Be aware of emergency procedures, and the persons and organisations to contact in the event of an emergency;

- Be aware of the location of emergency equipment on site.

Prevention of pollution is better than cure.

7. Environmental Protection Issues

FLORA AND FAUNA PROTECTION

Vegetation may be of biodiversity, heritage or amenity value and provides an attractive landscape for road and rail users. Marine flora stabilises and protects the coastal environment and provides essential habitat for marine fauna and fish breeding.

Native vegetation (trees, shrubs and native grassland) is valuable. Native vegetation within road reserves may represent the only remaining example of the original vegetation. Shrubs and groundcovers growing underneath native trees are particularly important. Preserving native vegetation is important because it:

- provides a link between isolated remnant vegetation
- provides protection for plants and animals
- provides movement corridors for animals
- provides shelter and a food source for animals
- assists in conserving native plants and animals
- provides a source of seed for revegetation programs
- protects soil from erosion and salinity
- protects water catchments
- provides an attractive landscape
- provides stock and crop protection on adjoining land.

Clear only the vegetation that needs to be cleared in accordance with the plans. These protection measures apply to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads.

Measures to protect flora and fauna:

- fell trees into the activity zone, not into undisturbed vegetation

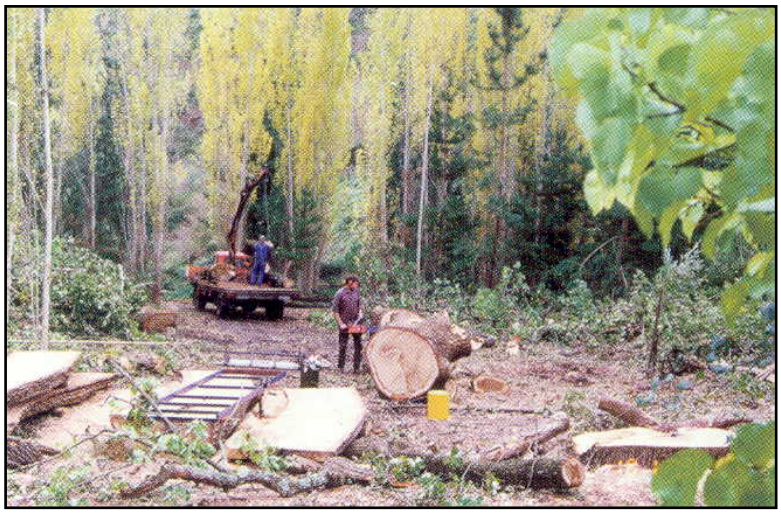
- do not burn off cleared vegetation - where feasible, chip or mulch and reuse for the rehabilitation of affected areas or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages regrowth and protection from weeds

Mulch vegetation and reuse on site

- in areas of native vegetation return topsoil and mulched vegetation to approximately the same area of the roadside it came from

- reuse cleared vegetation, where possible, for:

    - seed collection
    - milling
    - chipping or mulching for stabilising batters or landscaping
    - firewood



Reuse timber wherever possible

- vegetation from weed species (for example, olives and pine trees) should be disposed of separately at a licensed waste depot

- take special care with works within protected areas, for example, national parks or marine reserves (e.g. Port Noarlunga)

Protect flora and fauna during construction
Rapid Bay Jetty, SA

Leafy sea dragon

Old wife

- mark the areas to be cleared. Do not disturb areas outside the approved contractor's activity zone. Know what your CEMP says
- mark access tracks and keep traffic to these areas
- confine vehicle movements to the old or new alignment where feasible

Keep machinery clear of vegetation – damage to tree trunks can provide entry for disease.

- place site depots, equipment compounds and stockpile areas on previously cleared areas away from trees, bushes and native grasses
- if cleared areas are not available for stockpiles on the site, consider using cleared areas on adjoining land
- avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil
- store fill, materials, vehicles and equipment away from trees to avoid compacting the soil and preventing air and water reaching the tree roots

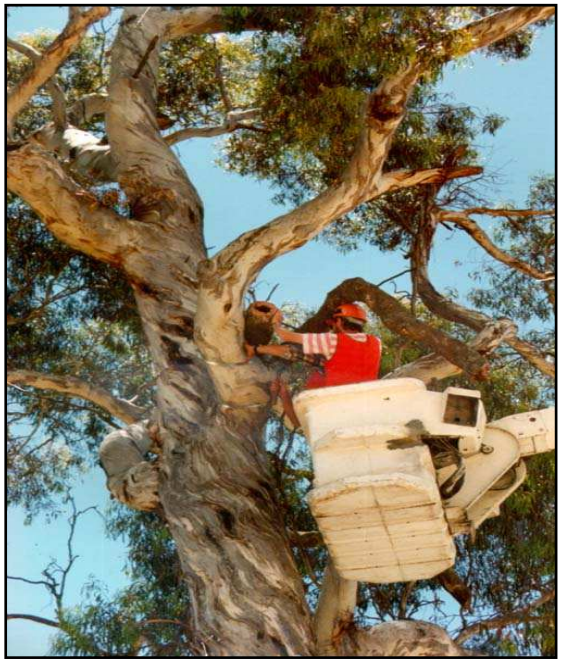
Do no disturb or place fill under the canopy (or dripline) of a tree.
Soil compaction reduces the trees ability to uptake water and nutrients through its root system.

- limit the removal of topsoil and cleared vegetation from the site to reduce the risk of spreading weeds and diseases.

Your construction site may be a habitat for native animals. Be aware of the animals that live near or use your site and keep alert for native fauna movements. The PEMP and CEMP will identify any special requirements for fauna protection:

Be aware of any special conditions to protect fauna on your project

- retain or relocate tree hollows, where appropriate
- leave dead trees where possible as habitat for fauna
- report any animal kills or injuries to the Site Manager
- check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal.



Collect tree hollows and place in nearby vegetation for the animals that use them

WEED, PEST AND DISEASE CONTROL

Pest plants (weeds) can easily be spread during construction works.

Weeds are introduced plants that grow so well they have a serious impact on agricultural production and they invade and displace native vegetation and the native animals that rely on the native vegetation.

Any special requirements for the control of weeds will be noted in the CEMP.

In some higher rainfall areas root-rot fungi, Phytophthora may be present. These fungi attack and kill native vegetation and some agricultural crops.

The control of Phytophthora is essential if it has been identified within the construction or material supply zones. Special management measures will be required in relation to drainage, topsoil, material movement, equipment and traffic control, and construction timing. These requirements will be defined in the CEMP, if applicable.

Pest and feral animals are introduced animals foreign to an area. They can destroy native vegetation, kill or displace native animals or affect agricultural production.

Measures to limit the spread of weeds, animal pests and diseases:

- follow weed or disease hygiene procedures for your project and clean vehicles and equipment as required
- ensure vehicles and equipment are clean and free of soil and seeds prior to moving between sites
- control weeds on site during construction and monitor the site for any outbreaks
- be careful not to spread weed seeds around the construction site

Avoid spreading 'Phytophthora' a root rot disease that affects native plants.

- use only approved chemical sprays with dye to identify sprayed areas
- dispose of weeds to a licensed waste disposal site
- minimise the opportunity for weeds to multiply by minimising disturbance
- limit topsoil movement along the road reserve
- import only clean topsoil free of weeds
- store topsoil away from drainage lines
- provide sealed bins for site waste to discourage animal pests

WATER USAGE

Water is a precious resource that needs to be managed carefully for the benefit of all. Water needs to be used sustainably to allow for droughts, climate change and future needs.

- minimise water usage
- use waste water or non potable water where available
- minimise impacts on the environment and the community from use of water
- comply with water restrictions

WATER QUALITY PROTECTION

Poor waste management, erosion and drainage control will decrease the quality of water discharged from the site, and may affect groundwater or adjoining marine areas.

Any change in water quality due to pollution may affect aquatic life, plants, animals, and create unsafe and unsightly waterways.

The generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes) from a construction site must be minimised. These substances must not enter waterways, stormwater systems or underground water tables.

Measures to manage water quality leaving the site include:

- divert runoff from undisturbed areas around the construction site
- limit the area of disturbed land - progressively clear the site in accordance with construction needs and rehabilitate as soon as possible
- protect drainage lines with sediment basins, silt fences and hay bales
- dewater sites by pumping water to a sediment basin prior to release off site - do not pump directly off site

Treat sediment laden water before release into creeks, drainage lines or marine areas

Collect wastewaters from cutting brick and asphaltic concrete

- monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary
- protect water bodies from sediment loads by silt or bubble curtains or other barriers

Use silt curtains or other barriers to protect water bodies from silt

- stockpile materials away from drainage lines
- maintain equipment to prevent fuel and oil leaks
- prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to a licensed waste disposal site or recycling depot
- minimise surplus wastewater from brick and pavement cutting
- store all chemicals, fuels and other hazardous liquids and solids within a bunded and covered area
- wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site
- ensure that roads used by construction vehicles are swept regularly to remove sediment.

Monitor the water quality in areas affected by works

EROSION AND SEDIMENT CONTROL

Soil movement by wind, water and site activities provides the greatest threat to water quality downstream from, or in, adjoining marine areas.

Soil and pavement materials will erode if they are not protected. The best form of protection is to prevent water flowing over the site, except in designed and protected drainage lines.

Wherever possible do not disturb vegetation as it provides good soil protection

Where it is necessary to remove vegetation cover, strip the topsoil immediately after clearing and, if possible, use the topsoil to rehabilitate this area or an adjacent area that has been disturbed. If this is not possible, locate soil stockpiles in cleared areas away from drainage lines. Protection of exposed embankments (via silt control devices including silt fences, straw bales, mulch or temporary plant covers) should be a priority.

Protect batter slopes with mulch

Measures to control runoff, erosion and sediment:

- divert natural runoff around construction areas prior to any site disturbance
- install protective measures on site prior to construction, for example, stormwater basins or sediment traps
- control drainage through a site in protected channels or slope drains

Install and maintain sediment protection devices where soil is disturbed

Establish cut off drains around site works

- install ‘cut off drains’ on large cut/fill batter slopes to control water runoff speed and hence erosion
- locate stockpiles away from drainage lines
- protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds

Install silt fences at the toe of batters

- restrict vehicular movements over cleared areas
- limit equipment and vehicular movements to within the approved construction zone
- construct temporary access tracks to cross concentrated water flow lines at right angles
- plan construction access to make use, if possible, of the final road alignment
- use vehicle-cleaning devices, for example, ramps or washdown areas

Use vehicle cleaning devices eg shaker ramps or washdown areas

- reinstate and protect cleared areas as soon as possible. Mulch to protect batter slopes before planting
- remove debris from drainage paths and sediment control structures
- observe the performance of drainage structures and erosion controls during rain and modify as required.

CONSTRUCTION NOISE AND VIBRATION CONTROL

Construction noise can be a nuisance and cause disturbance to sleep and vibration can cause structural damage. However, noise and vibration can be controlled and the impacts minimised.

It is important that the noise and vibration impact adjacent to sensitive land uses is minimised and meets project requirements provided in the CEMP or Construction Noise and Vibration Management Plan.

Noise and vibration impacts will vary due to frequencies, intensities, time, place, duration, combination of contributing sources and the location of nearest affected premises. Noise and vibration are transmitted through air, water or ground from the use of plant and equipment (e.g. rock breakers, pile drivers and vibrating rollers) and as a result of blasting. Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.

Use noise shielded equipment and noise lining in pipes

Measures to control construction noise and vibration:

- use the quietest available equipment
- modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines)
- use the correct equipment within the defined operating hours and locations

- install temporary noise control barriers where appropriate
- notify affected people if noisy activities will be undertaken, e.g. pile driving

Pile driving – notify affected people if noisy activities will be undertaken

- plan activities on site and deliveries to and from site to minimise impacts
- notify affected people prior to blasting.
- restrict blasting times, limit maximum instantaneous charge, provide adequate stemming and ensure accurate drilling of blast holes

Notify users of facilities of restrictions prior to blasting

- design shotplans to minimise environmental impact and impact on marine fauna

- monitor and analyse noise and vibration results and adjust construction practices as required.

- Where possible avoid undertaking the noisiest activities when working at night

Monitor noise and adjust construction practices as required

AIR QUALITY CONTROLS

Dust generation is the main air quality issue on construction sites. Dust is a nuisance in the environment, can be a health hazard and a risk to traffic safety. It can be generated by:

- operating plant, equipment and vehicles

- wind blowing over cleared ground, stockpiles or uncovered loads of construction materials

- blasting.

Air quality can also be adversely affected by vehicle exhaust emissions and burning of wastes.

Measures to control air quality:

- control the movement of construction traffic
- water or seal the surface over which construction traffic moves.

Control dust from activities on site

- limit the extent of disturbed areas
- restore disturbed areas as soon as practicable
- limit dusty activities, including blasting, on windy days
- water construction materials prior to loading and transport
- use equipment and vehicles fitted with appropriate emission controls
- service all equipment and vehicles regularly to minimise emissions
- spray with water and/or cover pavement materials and aggregates before transporting.

Minimise dust from activities

MATERIALS, FUELS AND WASTE MANAGEMENT

Various solid and liquid materials are required on a construction site. The management of imported materials, the storage and use of fuels and the management of waste generated on the site are crucial to the protection of water quality and the protection of the site against incidents involving spills.

Many of these activities are covered by legislation and in some cases licences are required to store, use or transport certain fuels or wastes.

Bund the refuelling area

Special care needs to be taken when working in marine or freshwater areas and rail corridors. Wastes should not be discharged into the marine or land environment. Rail corridors may contain contaminated ballast and sleepers which require specific management and disposal measures.

Measures to control potential damage:

- minimise the production of waste materials
- reuse and recycle materials (for example, mulch vegetation, stabilise and reuse pavement materials), recycle oils
- separate and recycle solid wastes generated by construction activities, from offices and mess rooms
- notify the Site Manager of any spills or incidents that may cause environmental harm

- be aware of the licence requirements for the control, use, storage and transport of all materials

Wrap contaminated rail sleepers during storage, transport and disposal

Comply with any site contamination requirements on your site

- ensure all fuel and chemicals are appropriately contained and bunded in safe locations
- site storage depots away from watercourses and danger areas, areas prone to flooding, or tidal areas
- avoid spillage during refuelling and servicing of plant and equipment
- collect, store and dispose of waste oil correctly
- be aware of and comply with emergency site plans for accidents and incidents that may cause environmental harm
- ensure materials are readily available on site to control an incident that may cause environmental harm
- dispose of any harmful solid and liquid waste at an approved and licensed disposal site

Don’t flush bitumen spray bars onto the ground

- take special care when working over water not to drop or spill materials. Use tarpaulins under work areas where necessary
- dispose of dredge spoil in compliance with licence conditions
- protect against vandalism (confine material so it cannot be thrown into the water or spilled).

PROTECTION OF SITES OF CULTURAL AND NATURAL HERITAGE SIGNIFICANCE

Sites of heritage significance to Aboriginal and non-Aboriginal people must be protected.

Heritage items include Aboriginal sites, buildings, jetties, shipwrecks, geological features, trees and natural areas.

Sites of known significance within the construction zone will be identified in the CEMP and construction drawings, and must be clearly flagged as 'no-go' areas prior to construction to ensure their protection.

Stone arch bridge, One Tree Hill Road built 1874 - State Heritage Register

Glen Osmond Toll House built 1841 - State Heritage Register

Measures to protect sites of heritage significance:

- restrict all construction activities and related activities including stockpiling, servicing, drainage works, etc to approved areas - do not enter “no-go” areas
- maintain flagging or fencing marking ‘no-go’ areas during construction;
- work in accordance with the contract documents
- take special care and use appropriate equipment when working next to a heritage site.
- **If, during construction, an Aboriginal heritage or burial site is discovered, stop work immediately and notify the site manager. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the Project Manager.**

Aboriginal heritage – Lady Bay Aboriginal fish trap

Aboriginal artefacts

Aboriginal canoe tree