# Site Environmental Management Plan (EMP)

| | | | |
|---|---|---|---|
| Project Name | Cockatoo Swamp Levee Removal | Project Location | Cockatoo Creek u/s Yellingbo |
| Revision Date | 27/01/2016 | Project Initiator | Edwina Manifold (Melbourne Water) |
| Prepared By | Nicola Logan (Jacobs) | Project Manager | Toufeek Edross (Melbourne Water) |

**Scope/Purpose**

This project involves works to address the hydrological conditions within Cockatoo Swamp and enable recovery of the State protected Sedge-rich *Eucalyptus camphora* Swamp community through improved hydrological conditions. Historical modification of the channel and vegetation has altered streamflow within the creek, impacting the ecology within the area. A series of levees, built by landholders to allow improved farming on the floodplain, has significantly modified the swamp's natural flood pattern. In general, the presence of the levees has meant the area to the north of Cockatoo Creek is not inundated as frequently, and that water is more rapidly diverted to the lower swamp. Additionally, there are levee sections across depressions that act as barriers to overland flow and retain floodwaters. It is proposed to remove targeted sections of this levee network to encourage a return to more natural wetting and drying regimes across the floodplain.

The aim is that by increasing overland flow in this area of the swamp water levels will decrease downstream, allowing vegetation to recover from prolonged inundation and naturally re-establish, improving conditions supporting the protected vegetation community and threatened species habitat.

**Project Environmental Aspects**

The following have been identified as significant environmental aspects for the site:

- Water quality
- Noise
- Erosion and sediment control
- Flooding
- Native vegetation
- Soil quality and management of acid sulphate soils
- Fauna and fauna habitat

**Requirements**

All work undertaken by Melbourne Water personnel and contractors must be undertaken in a manner which is compliant with:

- Melbourne Water policies and procedures.
- Legislative requirements (see Legislative Framework section below for key legislation applicable to this site).
- Requirements listed in the Risk Assessment (see Risk Assessment section below).

**Responsibilities**

All personnel shall undertake their works in a manner consistent with their defined responsibilities. Particular responsibilities for this site include:

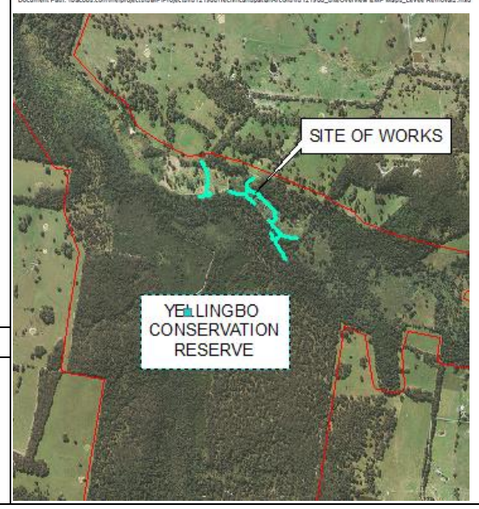
- Responsibility for overall environmental management rests with the Melbourne Water Project Manager.
- Responsibility for the direction of operations, including planning and management of the environmental protection measures, rests with the Melbourne Water Project Manager.
- Day-to-day environmental duties are undertaken by the Construction Manager at pre-start meetings. Day-to-day environmental duties include supporting the planning and management of the environmental protection measures, inspections, monitoring and reporting.
- For emergency response responsibilities, refer to the Emergency Contacts List prepared by the contractor.
- All personnel will be responsible for reading, understanding and complying with this EMP as it relates to their individual works tasks.
- Offsite support for environmental matters may be sought from the Melbourne Water Project Manager.

**Communication of Site EMP Requirements**

This EMP needs to be communicated to all Melbourne Water personnel and contractors to inform them of the environmental requirements for the project. Communication of this plan will be undertaken in the following ways:

- By displaying this document at the Muster Point.
- During the induction process for all staff.

**Cockatoo Swamp Levee Removal Site Plan**

| Incident Management and Emergency Response | | |
|---|---|---|
| • All incidents shall be managed in accordance with the standard Melbourne Water Project Management Manual.<br>• All incidents will be recorded in the Melbourne Water Integrated Risk and Incident System (IRIS).<br>• Locations of environmental emergency response equipment (including spill kits) are shown on the adjacent Site Plan. | | |
| **Associated Documents** | **Ideas and Innovation** | **General Site Comments** |
| The following documents are associated with this EMP:<br>1. Design documentation<br>2. Cultural Heritage Management Plan (CHMP)<br>3. Threatened Species Management Plan<br>4. Acid Sulphate Soils Management Plan | All personnel are encouraged to seek and share innovative ideas. Any ideas should be raised at Toolbox Meetings or otherwise raised with the Melbourne Water Project Manager. | The vegetation permitted for removal (as identified by the project ecologist) shall be clearly communicated during site meetings and project start up. No vegetation outside of the identified Permitted Clearing Area is to be directly or indirectly impacted in any way.<br>The access and locations for construction equipment, machinery, locations for stockpiles and equipment and machine storage shall be clearly defined and marked, and communicated during site meetings and project start up. The emergency muster point is shown on the site plan. |

## Legislative Framework

Melbourne Water will hold or obtain the following licences, permits and/ or approvals relevant to the project.

| Relevant Legislation | Authority | Applicable Approval |
|---|---|---|
| *Aboriginal Heritage Act* 2006 | Wurundjeri Tribe Land Compensation and Cultural Heritage Council | Approval of a Cultural Heritage Management Plan |
| *Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth) | Commonwealth Minister for the Environment and Energy | Referral of the proposed action |
| *Planning and Environment Act* 1987 | Minister for Planning | Use and development to be carried out in accordance with the granted planning permit and the endorsed plans for the land |
| *Flora and Fauna Guarantee Act* 1988 | Department of Environment, Land, Water and Planning | Permit to Take Protected Threatened Flora |
| *Water Act* 1989 | Melbourne Water | Licence under section 67 of the Act required to construct, alter, operate or decommission works on a waterway. |

## Risk Assessment

A risk assessment was undertaken for the project to identify and characterise the nature of existing and potential adverse effects to humans and the environment resulting from exposure to environmental hazards. The environmental hazards were identified and mitigation measures are included to avoid or minimise the risk. This EMP informs the implementation of risk management measures.

## Site Environmental Management Plan

### Noise

| Environmental Aspect | Environmental Impact | Mitigation Actions | Responsibility | Timing |
|---|---|---|---|---|
| Construction noise | Disruption to amenity/fauna | • Working Hours limited to: 07:00 to 18:00 Mon-Fri, 07:00 to 15:00 Saturdays | Contractor | During construction |

### Erosion and Sediment Control

| Environmental Aspect | Environmental Impact | Mitigation Actions | Responsibility | Timing |
|---|---|---|---|---|
| Erosion and scour caused by vegetation removal | Increased sediment available for deposition downstream in sensitive areas | • Cleared areas will be reinstated as per Parks Victoria direction<br>• Spoil will be hydro-mulched once placed, using a mixture of native grasses, typical to the region<br>• If the ground conditions are too wet to allow access then hand mulching with sterile straw should take place.<br>• Revegetation of the spoil areas and other exposed soil areas shall take place. In the first instance, this will be conducted as directed by Parks Victoria. The Melbourne Water Planting Guidelines will also be considered (available online). Follow up weed control will be required to be regular and comprehensive as areas of spoil are likely to be hotspots for weed growth. | Contractor | During construction |

| Waste and Resource Use | | | | |
|---|---|---|---|---|
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Waste due to construction and works | Possible contamination and pollution into environment | • The waste hierarchy AVOID-REDUCE-REUSE-RECYCLE will be used.<br>• All waste materials assessed and disposed of according to the relevant guidelines and legislation.<br>• Any suspected contaminated material to be tested and assessed in accordance with EPA's IWRG621 Soil hazard categorisation and management.<br>• All daily domestic refuse will be taken from the site at the end of each work day | Contractor | During construction |
| Mobilisation of acid sulphate soils | Contamination of environment | • If a potential acid sulphate soil hazard is identified, waste acid sulphate soils and rock must be managed in accordance with the requirements of the Industrial Waste Management Policy (Waste Acid Sulphate Soils) 1999. | Contractor | During construction |
| **Weeds and pathogens** | | | | |
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Transfer of weeds and/or pathogens to and from site by vehicles/equipment | Introduction and spread of weeds and/or pathogens | • Operators are to inspect vehicles and plant, and remove any vegetation or mud which could contain seed or infected soils – before entering and leaving the site.<br>• Vehicles to be cleaned using phytoclean (as specified for Cockatoo Swamp by Parks Victoria).<br>• Following washdown and prior to site entry, vehicles should be overseen by a vegetation specialist or someone trained in vegetation management to check for residual plant material or soil potentially containing weed propagules.<br>• Implement best practice hygiene protocols for control of weeds and pathogens, to reduce the risk of the introduction and spread of weeds and pathogens, as specified for Cockatoo Swamp in Parks Victoria Hygiene Protocols for Phytopthera and Other Potential Soil Pathogens (2002) in the first instance, or under the *Arrive Clean, Leave Clean* guidelines from Department of the Environment and Energy (DoEE).<br>• Any sand, soil or gravel imported to the site should be certified to be weed and pathogen free.<br>• Generic weed monitoring, treatment and reporting procedures will be in alignment with Melbourne Water and Parks Victoria methods and legislative requirements. The methods and treatment will be comprehensive and will occur within the works areas concurrently to the monthly pump fuelling and maintenance schedule. Outcomes of the weed monitoring and treatment will be reported to Melbourne Water and Parks Victoria.<br>• Specific and comprehensive weed monitoring will be conducted for particularly invasive species, including Reed Canary Grass, Reed Sweet Grass, Creeping Buttercup, Lesser Spearwort, Cut-grass and Grey Sallow. Subsequent treatment (suitable for sensitive environments; such as hand-pulling) will be implemented in alignment with the Vegetation Condition Monitoring Program for the Cockatoo Swamp (Melbourne Waterway Research Practice Partnership, 2015).<br>• Weed suppression treatment (as appropriate for sensitive environments) will be implemented in areas of disturbed soils. Liaison with Parks Victoria will confirm the most suitable weed suppression methods for use in this sensitive area. | Contractor | Prior to works commencing and during construction |

| Flora and Fauna | | | | |
|---|---|---|---|---|
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Clearance of vegetation | Loss of habitat | • To avoid native vegetation impact as far as practicable, on-ground planning and ground-truthing of access tracks and construction works will occur. The final access track alignment should be reviewed by Contractors on-site and confirmed prior construction to minimise disturbance to vegetation and to consider ground conditions at the time.<br>• Before works commence, temporary protection fencing must be erected around the native vegetation (habitat) Permitted Clearing Area of under the supervision of a suitably qualified ecologist. All fencing must remain in place until all works are completed.<br>• Vehicle parking limited to the permitted clearing area or the existing National Park roadways and the number of vehicles parked on-site will be limited to avoid vegetation compaction and spread of invasive species that may degrade the high quality vegetation.<br>• Slashed vegetation material containing weed matter will NOT be dispersed around the project area and will be suitably stored and removed from the site to an appropriate facility.<br>• In areas dominated by woody shrubs that have a high potential to damage vehicle tyres, the most minimal vegetation removal will occur, as practicable.<br>• A pre-construction habitat survey is to be completed prior to construction to identify nest-bearing and hollow-bearing habitat trees and map specific threatened species breeding resources that may occur within or adjacent to the project areas, including active nesting, denning and sheltering habitat.<br>• Communicate ecologically sensitive areas to contractors to minimise likelihood of unintentional disturbance. This will be done during induction and toolbox meetings.<br>• Implement best practice hygiene protocol(s) for control of weeds and pathogens, to reduce the risk of the introduction and spread of weeds and pathogens, as specified for Cockatoo Swamp by Parks Victoria in the first instance, or under the *Arrive Clean, Leave Clean* guidelines available from the Department of the Environment and Energy (DoEE). | Contractor<br>Melbourne Water | Prior to works commencing |
| Habitat protection | Damage to native aquatic and terrestrial fauna and/or fauna habitat | • All on-site personnel inducted by a suitably qualified ecologist to communicate the sensitivities of threatened species and their habitats on site. This is to minimise the likelihood of inadvertent disturbance and to communicate stop-work procedures if any fauna species are found to be present and at risk of impact (eg. stress/injury/death) within the works area.<br>• A qualified and licensed fauna spotter/catcher will be present at the time of permitted habitat clearing to assess for fauna presence prior to vegetation removal. Fauna detected will be encouraged to disperse of natural accord or transferred to suitable habitat using methods in accordance with approved fauna ethics licensing.<br>• Where native animals are found to be present during works, works should cease and the animal be given the opportunity to naturally disperse outside the works area.<br>• Standard terrestrial run-off, erosion and sedimentation controls to minimise potential impacts to the aquatic environments. As determined to be appropriate by the contractor during the works, controls may include silt curtains and sand bagging around the waterway to intercept potential contaminants entering the waterway.<br>• Silt curtains used during in-stream substrate removal to minimise the potential mobilised silt impacts to surrounding and downstream aquatic habitats for species including fish and amphibians.<br>• Both in-stream and terrestrial habitat elements (e.g. large woody debris, rocks and | Contractor | Prior to works commencing and during construction |

| | | | | |
|---|---|---|---|---|
| | | • fallen logs) to be reserved and placed nearby to enable the retention of habitat values within the immediate surrounds and to be reinstated at the project end.<br>• Native trees cleared that include nests, hollows or substantial fissures will have the nests/hollows/fissures retained and erected in nearby trees to maintain habitat values in the locality. The nests/hollows/fissures are to be checked for fauna presence before being lopped from any felled trees. Lopped limbs to be sealed at one end to provide adequate shelter.<br>• Refer to Threatened Species Management Plan (Jacobs 2017). | | |
| **Stakeholder/Community** | | | | |
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Disruption to adjacent landholders and stakeholders | Damage to Melbourne Water reputation | • Works to only occur during the day. Working Hours limited to: 07:00 to 18:00 Mon-Fri, 07:00 to 15:00 Saturdays.<br>• Stakeholders to be informed of schedule of works.<br>• Landowner agreement signed with DELWP.<br>• Land manager consent from Parks Victoria.<br>• Council engaged throughout project.<br>• Communications prior to the commencement of work with signage erected on gates. | Melbourne Water | During construction |
| **Cultural Heritage** | | | | |
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Damage to cultural heritage items | Social impact on cultural values | • A Cultural Heritage Management Plan (CHMP) has been prepared for the site and will be implemented.<br>• Site personnel will be trained in protocols around any culturally significant findings<br>• A cultural heritage advisor will be present during construction to evaluate topsoil removal. | Contractor | During construction |
| **Access/Parking** | | | | |
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Increased vehicle traffic due to access requirements for onsite works | Potential impact on native vegetation | • Parking will be limited to the area permitted for clearing or the existing National Park roadway.<br>• To avoid traversing and parking on vegetation, the number of vehicles present on-site will be limited to the most minimal number necessary to complete the works safely. | Contractor | During construction |
| Increased noise due to vehicle traffic accessing the site | Potential disturbance to native fauna | • The potential for disturbance to threatened fauna species has been discussed with the relevant experts and is considered minimal for this area.<br>• Timing of works outside Helmeted Honeyeater breeding season (January – April). | Contractor | During construction |
| **Flooding** | | | | |
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Increased water levels onsite | Floods potentially encroaching on equipment then being washed into creek | • Store equipment away from watercourse during construction.<br>• Monitor weather conditions prior to each day. | Contractor | During construction |
| Increased water levels onsite | Danger to workers and environment | • No work when severe weather is forecast.<br>• Melbourne Water flood team advised of works and requested to offer information on rainfall and predicted flows, to minimise impacts to the environment and/or public when working close to the watercourse, inclusive of warning systems for localised flooding, cessation of works and appropriate timing of works. | | During construction |

| Post works/Site rehabilitation | | | | |
|---|---|---|---|---|
| **Environmental Aspect** | **Environmental Impact** | **Mitigation Actions** | **Responsibility** | **Timing** |
| Regeneration for vegetation | Habitat quality may be further reduced if vegetation is not encouraged to regenerate as quickly as possible following works | • The disturbance footprint will be closed-off with temporary fencing (bunting) to limit unauthorised access that may hinder natural regeneration of the native vegetation.<br>• At the conclusion of the project, discussions will be held with Parks Victoria Yellingbo NCR Ranger in Charge to establish whether supplementary planting is required in the disturbed area and what other remediation actions are required.<br>• At the conclusion of the project, discussions will be held with Parks Victoria Yellingbo NCR Ranger in Charge to establish whether supplementary planting is required in the disturbed areas and what other remediation actions are required.<br>• Monitoring of vegetation change conducted twice-yearly and in accordance with the Vegetation Condition Monitoring Program for the Cockatoo Swamp (Melbourne Waterway Research Practice Partnership, 2015) to identify whether the Project is having the desired effect on the waterway. Monitoring is to include drone capture of aerial imagery of the site, conducted twice-yearly. | Melbourne Water | After the works are complete |