

Victorian Desalination Project



Plant & General Area D&C Environmental Management Plan
 Attachment I3 – Site Reinstatement and Rehabilitation Sub Plan

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Definition and Acronyms

The following Definitions and Acronyms are used in this document:

Close-Out	The stage at which all D&C activities have been completed in accordance with the State Project Documents
CWMS	Construction Work Method Statements
D&C	Design and Construct phase of the VDP
Defect liability period	The period set out in the Project Deed after Close-Out that requires a defect to be corrected. The period is 2 years or 12 months after a defect notice has been issued, whichever is the later date.
DSE	Department of Sustainability and Environment
DPI	Department of Primary Industries
EES	Environmental Effects Statement
EIRP	Environmental Incident Response Plan
Emergency Response Services	May, as appropriate, mean police, ambulance, fire brigades, state emergency services, hospitals or other specialist groups
EMP	Environmental Management Plan
EMR	Environmental Management Representative
EMS	Environmental Management System
Environmental Hazard	A state of danger to human beings or the environment whether imminent or otherwise resulting from the location, storage or handling of any substance having toxic, corrosive, flammable, explosive, infectious or otherwise dangerous characteristics (s.4, <i>Environment Protection Act 1970</i>)
Environmental Incident	Any event that causes, has caused or has the potential to cause an Environmental Hazard or Pollution (from section 4, Appendix S3, PS&PR). [Please see the definition of <i>Environmental Hazard</i> . Please see the definitions of <i>Pollution of Atmosphere</i> , <i>Pollution of Land</i> and <i>Pollution of Waters</i> for the legislative definitions of ‘Pollution’ in Victoria.]
EO	Environmental Officer
EPA	Victorian Environment Protection Authority
EP Act	<i>Environment Protection Act 1970</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
HSE	Health, Safety and Environmental
JSEA	Job Safety and Environmental Analysis
NAP	National Action Plan
Near Hit	Any unplanned event in the workplace that, although not resulting in environmental damage, had the potential to do so



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NEPM	National Environment Protection Measure
O&M	Operation and Maintenance Phase of the VDP
OHS	Occupational Health and Safety
Performance Criteria	The Performance Criteria outline the overarching requirements based on the environmental objective for each Subject Area of Schedule A of Appendix S3 of the Project Scope and Project Requirements
Plant site	Victorian Desalination Project Wonthaggi Plant site
Pollution of Land	<p>A person shall not pollute land so that the condition of the land is so changed as to make or be reasonably expected to make the land or the produce of the land—</p> <p>(a) noxious or poisonous;</p> <p>(b) harmful or potentially harmful to the health or welfare of human beings;</p> <p>(c) poisonous, harmful or potentially harmful to animals, birds or wildlife;</p> <p>(d) poisonous, harmful or potentially harmful to plants or vegetation;</p> <p>(e) obnoxious or unduly offensive to the senses of human beings; or</p> <p>(f) detrimental to any beneficial use made of the land.</p> <p>(s.45, <i>Environment Protection Act 1970</i>)</p>
Project Area	Refers to all areas designated for the project as defined in the Project Deed
PR	Performance Requirements
PS&PR	Project Scope and Project Requirements
SEI	Site Environmental Inspection
SEP	Site Environmental Plans
SEPP	State Environment Protection Policy
State Project Documents	Refers to the Project Deed and other relevant project documents as defined in the Project Deed
TDJV	Thiess Degremont Joint Venture
VDP	Victorian Desalination Project
WAP	Work Area Packages
WP	Work Packs



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1 Purpose and scope

This Site Reinstatement and Rehabilitation Sub Plan describes the measures required to mitigate the potential negative impacts to native vegetation and to manage reinstatement and rehabilitation, following the design and construction (D&C) of the Victorian Desalination Project (VDP) Wonthaggi plant site.

This sub plan must be read in conjunction with the Environmental Management System (EMS) Manual, D&C Environment Management Plan (D&C EMP) and the D&C Plant and General Area EMP. This sub plan forms an attachment to the D&C Plant and General Area EMP and addresses requirements listed in the Environmental Compliance Tracker (TDV-0-EV-RP-0001-01), including licence conditions, Performance Requirements (PRs), Performance Criteria (PC) and other obligations which may influence site reinstatement and rehabilitation.

Specific management measures from this and other environmental sub plans have been incorporated into Work Area Packages (WAP) and Work Packs (WP) which include Construction Work Method Statements (CWMS), Site Environmental Plans (SEP) and Job Safety and Environmental Analysis (JSEA's) where applicable.

The following sub-plans will be implemented in conjunction with this plan:

- ~ Waterways and Wetlands Sub Plan
- ~ Water Quality and Erosion Management Sub Plan
- ~ Soil Management Sub Plan.

The Project Deed specifies that all work relating to site rehabilitation is subject to a defect liability period of two years after the date of Close-Out, or 12 months after a defect notice has been issued (whichever is the later date). Responsibilities for managing and maintaining the plant site during the defect liability period will be transferred to the Operations and Maintenance (O&M) phase of the project.

2 Objectives and Targets

The objective of this sub plan is to ensure appropriate management measure and controls are in place to minimise impacts to native vegetation during construction and the site is restored to pre-construction land quality and uses to ensure project objectives, targets and obligations, including PRs and associated criteria, are met.

Table 1: Environmental objectives, targets and performance requirements

Issue	Objective/Performance Criteria	Target/Performance Requirements
Site rehabilitation	<p>Restore preconstruction land quality and uses.</p> <p>All disturbed land progressively reinstated:</p> <ul style="list-style-type: none"> • In the case of the Desalination Plant, to the standards agreed with the State (PR#21136) D, C. 	<p>Progressively and prior to its disturbance, conduct pre-construction surveys of the land within 50 metres of the Project Area to be disturbed. Provide to the State a rehabilitation plan developed in consultation with each private landowner to address as applicable:</p> <ul style="list-style-type: none"> • Site protection and site preparation (PR#21138) D.

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Issue	Objective/Performance Criteria	Target/Performance Requirements
	<ul style="list-style-type: none"> • In the case of all other private land directly affected by the Project Activities in accordance with the rehabilitation plan (PR#21136) D, C. • In the case of public land, as agreed with the public and manager (PR#21136) D, C. 	<ul style="list-style-type: none"> • Planting design including plant densities relative to EVC benchmarks (subject to easement clearance requirements) (PR#21138) D. • Source of planting stock (PR#21138) D. • Post-planting maintenance. (PR#21138) D. • Protection of re-seeded and revegetated areas (PR#21138) D. • The timing of rehabilitation activities to ensure that it is appropriate to seasonal conditions as far as practicable (PR#21138) D. <p>Comply with Native Vegetation, Revegetation Planting Standards, DSE (2006) (PR#21141) D, C.</p> <p>Identify areas where there is a risk of subsidence, and develop and implement construction approaches to mitigate the risk. Monitor and rectify any defect. (PR#21142) D, C.</p> <p>Ensure that no Waste of any kind other than clean fill soil is placed in any trench or included in earthworks (PR#21143) C.</p> <p>Re-instate the soil profile to pre-existing conditions (PR#21144) D, C.</p> <p>Revegetate, in accordance with Native Vegetation Management Framework and not inconsistently with landholder uses (PR#21146) D, C.</p> <p>Restore any pre-existing infrastructure (including tracks, fences, dams, irrigation lines and the like) unless incompatible with obligations under the Deed or the terms of an acquired easement (PR#21147) D, C.</p>

D = Design phase requirement; C= Construct phase requirement

All PRs from Project Deed Schedule A of Appendix S3 are contained within the D&C Plant and General Area EMP Attachment G – Environmental Obligations Register. The Environmental Compliance Tracker tracks conformance with these PRs and is updated regularly by the TDJV Environmental Manager, Environmental Coordinator and Area Environmental Managers.

3 Legal, regulatory, licence, permits and approval requirements

This sub plan has been developed in accordance with the following legislation:

- ~ *Catchment and Land Protection Act 1994*
- ~ *Environment Protection Act 1970*
- ~ *Planning and Environment Act 1987*
- ~ *Coastal Management Act 1995*

The following guidelines have been used to determining the level of management necessary to meet legislative requirements. These are:

- ~ Native Vegetation Framework – A Framework for Action, (2002), DSE
- ~ Native Vegetation - Revegetation Planting Standards, (2006), DSE.

The legislative and contractual requirements for the D & C Plant and General Area works are summarised in:

- ~ D & C Plant and General Area EMP – Attachment E – Environmental Legislation Register
- ~ D & C Plant and General Area EMP – Attachment F – Environmental Licence, Permit and Approval Register
- ~ D & C Plant and General Area EMP – Attachment G – Environmental Obligations Register

The applicable PRs from Project Deed Schedule A of Appendix S3 are provided in Table 2.

Under the Project Deed the D&C EMP, all sub plans and any changes to these must be endorsed by the State, who may refer aspects to relevant agencies.

The Department of Sustainability and Environment (DSE) and any other relevant agencies and stakeholders will be consulted with regard to any specific approval requirements in relation to this sub plan. The requirements of any permits, licences and approvals obtained will be placed in the Environmental Licence, Permit and Approval Register on receipt and updated in the Environmental Compliance Tracker.

4 Existing conditions and issues

4.1 Site Condition

The landscape design and the Rehabilitation Plan are relevant to the entire 267 hectare Plant and General Area site. The description of the pre-construction site condition was taken from the Victorian Desalination Project Assessment under the *Environmental Effects Act 1978* - January 2009.

There are a number of small remnant native vegetation patches on the plant site containing a low diversity of indigenous plant species which are likely to provide links between habitats for a number of bird and small mammal species. A number of damp depressions on the site and a few farm dams may provide habitat for native species, such as bird and frog species. These latter habitats are unlikely to be ecologically important because they are isolated from other water bodies and lack fringing aquatic vegetation.

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The coastal dune and adjacent foreshore are adjacent to the south-west portion of the site. The crests of the dunes reach elevations of up to 20 m. Agricultural grazing has not extended into the dunes and its native vegetation is relatively undisturbed. The vegetation on the dunes comprises mainly native coastal scrub species interspersed with weed species, that provides habitat for a number of native animal species, including small mammals and reptiles. Williamson’s Beach is located between the dunes and Bass Strait. The beach provides habitat and breeding area for various bird species, including species protected under the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act).

The Powlett River flows to Bass Strait less than 1 km to the north-west of the Desalination Plant site. The Powlett River estuary is an intermittently opened and closed barrier estuary with an associated estuarine (saltmarsh) wetland. An unnamed tributary of the Powlett River crosses the north-eastern perimeter of the plant site. This tributary is a small, slow flowing ephemeral creek that flows into the lower reaches of the Powlett River. Upstream of the plant site there are deeper pools that do not completely dry out. Various migratory and freshwater fish may use these pools for habitat during summer months.

The possibility of encountering acid sulphate soils and potential acid sulphate soils has been identified as a site issue and is addressed under the Acid Sulphate Soil Management Sub Plan. Any risks associated with rehabilitating and revegetating the site are addressed in the Environmental Risk Register (Attachment C) of the D&C Plant and General Area EMP.

5 Environmental risks

An environmental risk assessment has been carried out for the D & C Plant and General Area works. This assessment is contained in the Environmental Risk Register, Attachment C of the D&C Plant and General Area EMP. Table 4 summarises the potential hazards from project activities, potential impacts of these hazards and the risk of occurrence as rated by the environmental risk assessment.

Table 4: Summary of plant and general area risk assessment for Air Quality

Activity posing hazard	Risk/ Potential Impact	Inherent Risk (before controls)	Control Measure Reference (Att I03.1)
Incorrect site reinstatement and revegetation	Inappropriate reinstatement and revegetation affecting amenity.	Moderate	#1-6, 9-24
Slow revegetation	Surface runoff creating soil erosion and requiring re-seeding.	Low	#1-5, 7, 9-13, 20-24
Stream profile being modified	Stream function being altered with different water flow patterns created.	Low	Refer to Att. I10.1 Waterways & Wetlands
Poor pasture establishment in agricultural land	Poor rainfall or disturbance of sowing of exotic pasture grasses.	Low	#1-7, 9, 11-12,

Attachment C of the D&C Plant and General Area EMP should be consulted for a comprehensive assessment of these risks.

6 Control, Management and Mitigation Measures

Attachment I3.1 describes a range of mitigation and control measures to be used to ensure the site is reinstated and rehabilitated according to the PRs. Control measures implemented on site in response to potential and actual issues will be recorded in the Weekly Environmental Inspection Checklist (FM-TDV-EN-0-X-000-0006) and records retained on site.

The measures in Attachment I3.1 are designed to address potential impacts from the risks outlined in Section 5 as well as deliver on the objectives, targets and in particular the PRs listed in Section 2, They include requirements and responsibilities for design, construction, evaluating performance and reporting.

Attachment I3.1 references Design Packages (DPs) in design-related control measures. PRs that relate to design are incorporated into the project-wide Design Management Plan (PL-TDV-PM-0-X-000-0011-0-00).

7 Site environmental plans

A single Site Environmental Plan (SEP) has been developed for the whole plant site that details environmental management measures such as permanent controls, No Go zones, property boundaries and significant flora and fauna species. These measures are implemented to minimise potential impacts of construction activity on the environment and community.

The information contained in the SEP is presented in pictorial and tabular drawing format. This is to make them easy to use by all site personnel, consultants and subcontractors. SEPs are updated to reflect operating practices on a regular basis.

The site rehabilitation controls set out in the SEP are drawn from this sub plan. Additional practical management measures are picked up and covered by the Weekly Environmental Checklist.

SEPs are held by Area Environment Managers.

8 Evaluating performance and reporting

Environmental audits and site environmental inspections (SEIs) are scheduled to detect where PRs are not being met with appropriate corrective actions developed to address these issues as they arise. Schedules, responsibilities and reporting procedures for rehabilitation and reinstatement are set out in the Monitoring, inspection, audit and reporting schedule - Attachment L of the D&C Plant and General Area EMP.

Monitoring will be undertaken by appropriately qualified personnel, in accordance with the appropriate standards and guidelines as specified in Attachment L of the D&C Plant and General Area EMP.

9 Contingency measures

Contingency measures have been developed and are summarised below. The control measures table (Attachment I3.1) focuses on preventative measures. These include such measures as monitoring the success of revegetation and responding accordingly.

All environmental incidents will be responded to in accordance with the plant site Environmental Incident Response Plan (EIRP). The EIRP provides project specific details for the identification of and response to potential environmental related incidents at the plant site during the D&C phase of the VDP. It provides assistance in managing potential and actual incidents, as well as follow-up and reporting requirements.

The environmental risk assessment has identified the following circumstances that could occur outside normal operating conditions:

- Subsidence (refer to the Water Quality and Erosion Control Sub Plan)
- Soil erosion (refer to the Water Quality and Erosion Control Sub Plan)
- Stream profile significantly altered (refer to the Waterways and Wetlands Sub Plan)

Further risks to successful rehabilitation include severe drought and flooding, and require ongoing monitoring of the site to ensure adherence to the Rehabilitation Plan. In any of these cases, contingency measures will be implemented in accordance with the procedures outlined in the relevant sub plan and in consultation with the Rehabilitation Consultant, who is responsible for verifying that the project area has been rehabilitated in accordance with Project Deed requirements.

If any of these cases occur within the Defect Liability period (after Close-Out), then the corresponding O&M sub plans should be referred to.

10 References

10.1 VDP Documents

- ~ Victorian Desalination Project, Environmental Effects Statement, Volume 3, Chapter 5 – Geology, Geomorphology and Soils.

10.2 Technical/ legislative documents

- ~ Native Vegetation Framework – A Framework for Action, DSE 2002)
- ~ Native Vegetation - Revegetation Planting Standards, DSE (2006)
- ~ *Water Act 1989*
- ~ *Catchment and Land Protection Act 1994*
- ~ *Environment Protection Act 1970*



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ATTACHMENT I3.1 SITE REINSTATEMENT AND REHABILITATION – CONTROL MEASURES TABLE

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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
1	Rehabilitation	21136	All disturbed land will be progressively reinstated. In the case of the plant and general area to the standards agreed with the State	Construction Manager	Construct	Certificate of Rehabilitation	
2	Rehabilitation Consultant	21138	Engage a Rehabilitation Consultant (independent to and suitable to the State) to verify that the project area has been rehabilitated in accordance with the requirements of the State Project Documents and, if the project area meets these requirements, issue a certificate (substantially in the form set out in Schedule 2 Part B of the Project Deed)	Construction Manager	Construct	Employment Contract	
3	Rehabilitation Plan	21138, 21141	<p>Prepare a rehabilitation plan in accordance with Native Vegetation Framework – A Framework for Action, DSE (2002) and Native Vegetation - Revegetation Planting Standards, DSE (2006) and agree the plan with the State. The rehabilitation plan will be provided to the State and will address:</p> <ul style="list-style-type: none"> - Pre-construction surveys of the land within 50 metres of the Project Area to be disturbed, prior to its disturbance - Site Protection and site preparation - Planting design including plant densities relative to EVC benchmarks and/or required to adequately stabilise sites (subject to easement clearance requirements) - Source of planting stock - Protection of re-seeded and revegetated areas - The timing of rehabilitation activities to ensure that it is appropriate to seasonal conditions as far as practicable 	Rehabilitation Consultant	Design	DSE approval of Rehabilitation Plan	
4	Landscaping design	-	Prepare a landscaping design plan that is consistent with the principles for the Rehabilitation Plan including the Native Vegetation Framework – A Framework for Action, DSE (2002) and Native Vegetation - Revegetation Planting Standards, DSE (2006).	Landscape designers	Design	Completed Landscaping Design Plan	

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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
5	Protection of revegetated areas	21141, 21146	Protection measures of re-seeded and revegetated areas with permanent fencing removed for works replaced and temporary fencing used where appropriate and necessary to ensure establishment of vegetation	Construction Manager	Construct	Site Inspection reports	
6	Closeout	-	Removal of all plant, machinery and equipment used for the D&C phase of the project other than that required for operation of the VDP	Site Manager	Construct	Final Site Inspection report	
	Closeout	-	Completion of all landscaping and rehabilitation works by date of Close-Out to the standards agreed with the State	Site Manager / Rehabilitation Consultant	Construct	Certificate of Rehabilitation	
7	Closeout stakeholder meeting	21136	Conduct a close out meeting with all stakeholders to agree the completeness of the work activities on completion of work (minutes recording actions required will be taken and distributed to all parties)	Stakeholder and Community Relations Manager	Construct	Stakeholder meeting minutes	
8	Additional closeout works	21136	Additional works undertaken in order to close out work areas must be completed in a timely manner and will require verification by agreed stakeholders affected by the additional works.	Stakeholder and Community Relations Manager / Construction Manager	Construct	Stakeholder verification	
9	Rehabilitation plan implementation	-	Check actual revegetation and reinstatement is in accordance with DSE approved Rehabilitation Plan. Prepare verification schedules.	Construction Manager	Construct	Completed verification schedules	
10	Soil Reinstatement	21144	Stockpile topsoil for use in rehabilitation, subject to appropriate treatment for weeds	Site Manager / Area Environment Manager	Construct	Spoil management records	

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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
11	Soil Reinstatement	21144	Ensure that the pre-existing soil profile and layering of sands, clays and topsoil is reinstated to ensure regeneration of existing pasture and vegetation	Site Manager / Area Environment Manager	Construct	Inspection records	
12	Soil Reinstatement	21142	Reinstate and rehabilitate to prevent soil erosion and settlement following construction activities	Site Manager	Construct	Inspection records	
13	Rehabilitation	-	Stabilise and landscape areas around new buildings and facilities	Rehabilitation Consultant /Site Manager	Design, Construct	Inspection records	
14	General measures	-	Ensure landscapes around building and facility sites are maintained so that vegetation in the surrounds is not a fire hazard.	Site Manager	Construct	Inspection records	
15	Induction	-	Education programs for workforce, and definition or contractual environmental responsibilities	Area Environmental Manager	Construct	Training records	
16	Site reinstatement	21147	Restore any pre-existing infrastructure (including tracks, fences, dams, irrigation lines and the like) unless incompatible with obligations under the Deed or the terms of an acquired easement	Site Manager / Area Environment Manager	Construct	Inspection records	
17	Subsidence	21142	Identify areas where there is a risk of subsidence, and develop and implement construction approaches to mitigate the risk.	Area Environment Manager	Construct	Site Environmental Plans	
18	Subsidence	21142	Monitor subsidence on reinstated sites and rectify any defects	Area Environment Manager	Construct	Inspection records	

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#	Issue	PR # addressed	Control Measure	Responsibility *	Project Phase	Evidence	Audit Check
19	Weed management	-	Control noxious and environmental weeds according to Weed Management Plan (see Flora and Fauna Sub Plan). For example: <ul style="list-style-type: none"> - Identify weed infested areas - Control movement of spoil from infested areas - Ensure wheel washers for vehicles - Spray/cut/poison weeds - Heat treat soils to kill weed seeds 	Area Environmental Manager	Construct	Site Environmental Plans / Inspection records	
20	Site Rehabilitation	21136, 21141, 21146	Rehabilitation with approved non-invasive pasture species or indigenous species as soon as possible after construction	Rehabilitation Consultant and Site Manager	Design, Construct	Rehabilitation Plan, site inspection records	
21	Erosion controls	-	Sediment/runoff measures to be in place (according to Water Quality and Erosion Management Sub Plan) before clearing commences	Site Manager	Construct	Inspection records	
22	Fire prevention	-	Provision of fire breaks and tracks around the site and monitoring of weather conditions.	Site Manager	Construct	Inspection records	
23	Ongoing Monitoring and maintenance	-	There will be a handover of responsibilities from the D&C phase to the O&M phase of the project, for managing and maintaining the plant site during the defect liability period.	Area Environmental Manager	Construct	Correspondence records	
24	Landscape Design	-	Ensure the Landscaping Design which will detail the specific requirements for the plant site is implemented.	Rehabilitation Consultant and Site Manager	Construct	Inspection records	

* The *Responsibilities* column refers in many cases to senior positions within the project organisation, due to the changing nature of project teams. In practice some responsibilities may be delegated by the person nominated.