

DELIVERING OUR TRANSPORT FUTURE NOW

north-south corridor northern connector



Part F. Environmental management

23 Environmental management, mitigation and monitoring framework

Project Impact Report Volume 2

An environmental, social and economic assessment



Government of South Australia
Department for Transport,
Energy and Infrastructure

23 Environmental management, mitigation and monitoring framework

23.1 Introduction

Parts D and E of this Project Impact Report summarise the assessments undertaken to determine the effects of the Northern Connector on the existing social, economic, biological and physical environment.

As a component of these assessments, measures to manage and mitigate the identified impacts have been developed. A ‘total project’ approach to the management and mitigation has been adopted with measures identified for the three specific phases of the project — planning and design, construction and operation.

The approach includes the project environmental management framework and how the environmental management, mitigation and monitoring measures would be considered and implemented in each phase of the project.

23.2 DTEI’s approach to environmental management

The Department for Transport, Energy and Infrastructure (DTEI) is committed to developing and managing a transport system that is in harmony with the environment. This can be achieved through:

- minimising pollution
- sustaining ecosystems
- conserving cultural heritage
- enhancing amenity.

To facilitate these outcomes, DTEI has implemented an environmental management framework that includes the implementation of an environmental management system (EMS) and the development of environmental documentation (including procedures and manuals) to help manage construction and maintenance activities.

23.2.1 Environmental management system

DTEI’s EMS is based on the philosophy of continual improvement and consists of:

- commitment and policy (ensuring top-level commitment to the environment)
- planning (how to assess and understand the environmental effects to be managed)
- implementation and operation (implementing environmental objectives, actions and ongoing procedures)

- checking and corrective action (reporting on and reviewing environmental performance and taking corrective action to mitigate effects on the environment)
- management review (ensuring management review of the system components).

23.2.2 Environmental management documentation

As part of the EMS, the following environmental management documents have been developed to assist DTEI and its contractors with the management of construction and maintenance activities:

- Environmental Code of Practice for Construction — Road, Rail and Marine Facilities (DTEI 2008a)
- Project Environmental Management Plan Guidelines for Construction — Road, Rail and Marine Facilities (DTEI 2009a)
- Environmental Management Workbook for Roadside Maintenance Activities (DTEI 2009b)
- Environmental Workplan and Risk Assessment Guidelines for Road Maintenance Contracts (DTEI 2004)
- Contractor's Environmental Management Plan Guidelines for Construction — Rail, Bridge and Marine Facilities (DTEI 2009c)
- Environmental Audit Guidelines for Construction — Road, Bridge and Marine Facilities (DTEI 2008c).

23.3 Environmental management in the planning phase

Environmental management has been integrated throughout the route selection process and development of overall and specific objectives for the project.

23.3.1 Route selection

The selection of the preferred route considered potential environmental effects such as noise, visual effects, impacts to wetlands and native vegetation associations, in addition to community accessibility. The route selected was considered to minimise the effect on the environment while providing the greatest benefit for society and value for money.

An environmental assessment process is currently being undertaken as part of the planning phase of the project. The development of this Project Impact Report is an important component of that process. It provides for public involvement, explains the project and its implications, releases supporting technical documents and encourages public submissions.

23.3.2 Setting of environmental objectives

The key objectives of the project (Section 1.2) include overall project environmental objectives to:

- minimise adverse impacts on local communities and the surrounding natural environment
- enhance community and environmental opportunities, where possible.

Further specific objectives have also been developed for individual environmental elements of the project:

- minimise the effects on community accessibility
- minimise the effects on existing land uses
- minimise the number of properties to be acquired
- minimise adverse effects on the transport network
- minimise the effects of noise on the local community
- minimise the effects of vibration on structures and the local community
- prevent or minimise disturbance to significant cultural heritage sites
- minimise negative visual effects and enhance visual opportunities
- avoid contamination of soils and, where possible, manage contaminated sites
- prevent the pollution of water and maintain existing natural surface water flow
- minimise the effects of air quality on the community
- reduce greenhouse gas emissions associated with the construction and use of the road
- prevent or minimise disturbance to native vegetation and the spread of weeds and disease
- prevent or minimise disturbance to native fauna (primarily birds) and their habitat
- enhance environmental opportunities where possible.

23.4 Environmental management in the design phase

The approach to environmental management during the design phase of the project includes several key activities:

- undertaking the detailed design
- developing the project environmental management plan

- identifying and seeking legislative approvals
- continuing community consultation.

23.4.1 Detailed design

Detailed design works for the Northern Connector project will provide further detail for infrastructure and geometric design of elements of the project including:

- connections to existing/adjoining transport networks (road and rail)
- existing and proposed utility services
- intersection function and design
- drainage system geometry and function
- bridge design
- crossfall of pavements and embankments.

The measures in Table 23.1, together with environmental principles and specific design requirements in DTEI's design contract specification, will be incorporated into the detailed design of the Northern Connector.

The design will ensure that the key environmental objectives (Section 23.3.2) are met.

23.4.2 Environmental management plan

A project environmental management plan (PEMP) would be developed. This project-specific source document details the environmental protection measures required to mitigate and minimise environmental effects. The PEMP's primary purpose is to ensure that the environmental requirements and commitments of the project are carried forward into the construction and operation phases and are effectively managed.

The PEMP (or contract specific requirements) forms part of DTEI's environmental contract specification and would form part of the construction contract. It would detail the requirements of the construction contractor to develop and document a contractor's environmental management plan (CEMP). This CEMP must outline the way in which environmental management and mitigation measures would be implemented on-site during construction.

The PEMP would incorporate the following sub-plans, where appropriate:

- noise and vibration management plan
- Aboriginal cultural heritage management plan
- vegetation management plan
- surface water quality monitoring plan

- vegetation management plan
- weed management plan
- soil erosion and drainage management plan (SEDMP)
- contamination and acid sulfate soils management plan.

23.4.3 Legislative approvals

Several legislative approvals, licences and permits would need to be obtained before construction began (Table 1.2).

The requirement to apply for approvals or relevant conditions would be incorporated into the detailed design of the project and the PEMP.

23.4.4 Community and stakeholder engagement

Engagement of the community on environmental issues would continue during the design and subsequent phases of the project with government agencies, local governments, the local Aboriginal community, the community and individuals either directly or indirectly affected by the project.

23.5 Environmental management in the construction phase

A construction contractor will construct the Northern Connector. The contractor would be required to comply with general and project-specific environmental requirements in DTEI's construction specification. These include operating under an EMS, developing a CEMP and undertaking monitoring activities.

23.5.1 Contractor's EMS

The construction contractor would be required to establish, implement and maintain an EMS in accordance with the requirements of AS/NZ ISO 14001:2004 *Environmental Management System – Requirements with guidance for use*. Before tendering for infrastructure projects, contractors must pre-qualify under DTEI's criteria. This process requires contractors to have an established EMS.

The EMS would be used throughout the construction phase to ensure that the environmental aspects of the contractor's work comply with DTEI guidelines and environmental legislation, and that a process of continual improvement is adopted by the contractor.

23.5.2 Contractor's environmental management plan

The construction contractor would be required to develop a CEMP in accordance with DTEI's guidelines. The CEMP would detail how the environmental management requirements, as identified in the DTEI construction contract specification, would be

implemented and managed on-site. The CEMP must also detail how the contractor would mitigate construction impacts and must document the contractor's response to inspecting, monitoring, verifying, internal auditing, and correcting or improving environmental performance.

The main elements of the CEMP would be:

- a brief description of the project and the environmental objectives
- details of the contractor's EMS including environmental management schedules (including a SEDMP) specifically related to the requirements of environmental legislation, the EMP and the construction contract specification
- schedules detailing:
 - the environmental objective to be achieved
 - specific on-site actions to achieve the objective
 - on-site inspection frequency
 - responsible personnel.

Before any on-ground works begin, the CEMP would be submitted to DTEI's superintendent of the project.

23.5.3 Complaints management

A complaints hotline and complaints procedure would be established to deal effectively with community concerns about construction issues.

23.5.4 Environmental auditing

The construction contractor would be responsible for undertaking regular inspections/monitoring and internal audits to assess the effectiveness of the CEMP. Corrective action would be undertaken for any identified activities or conditions that do not conform to the standards and criteria set (i.e. non-conformances).

In addition, DTEI would arrange for external environmental audits to be undertaken during the construction phase. The audits would identify whether the environmental objectives were being met and compliance with the PEMP, CEMP, the construction contract specification and relevant environmental legislation. Where non-compliance is detected during the audit, action would be taken to rectify the situation.

23.6 Environmental management in the operational phase

DTEI would be responsible for the ongoing maintenance and environmental performance of the Northern Connector. All maintenance activities would be undertaken in conjunction with DTEI's *Environmental Management Workbook for Roadside Maintenance Activities* (DTEI 2009b), and DTEI's maintenance specification.

23.7 Summary of environmental management requirements

Table 23.1 summaries the preliminary environmental management and monitoring schedules for the Northern Connector. The schedules have been developed from the measures identified in the assessments detailed in Parts D and E, and include environmental requirements from DTEI's construction contract specification.

As the project is still in the planning phase, some issues are yet to be determined or resolved. This summary is not intended to be a complete list of specific actions but rather proposed measures to address the key environmental objectives and to assist in meeting the requirements of environmental legislation during the detailed design/pre-construction, construction and operational phases of the project.

The summary would be used to guide for developing the project's environmental management plans and ensure that, where required, issues are dealt with by construction contractors in their CEMP.

The responsibility for developing and implementing the proposed measures would ultimately rest with DTEI but may also be the responsibility of design and construction contractors.

Table 23.1 Summary of indicative environmental management, mitigation and monitoring activities

Aspect	Planning and design	Construction	Operation
Access	<p>Objective — minimise effects on community accessibility</p> <ul style="list-style-type: none"> ▪ where feasible, design bridges and overpasses to be built off-line with minimal effect on existing road network ▪ develop a community and stakeholder engagement program to advise of changes to local access patterns during construction and operation ▪ liaise with emergency services to determine required emergency vehicle access locations ▪ develop a traffic management plan to adequately manage traffic during construction 	<ul style="list-style-type: none"> ▪ engage the community to advise of potential delays or access changes during construction ▪ implement requirements of traffic management plan 	
	Property acquisition	<p>Objective — minimise effect on properties to be acquired</p> <ul style="list-style-type: none"> ▪ ensure property owners and occupiers are fully informed about acquisition process ▪ geometrically design the route to minimise property severance by locating corridor close to existing property boundaries where feasible ▪ based on discussions with affected property owners and occupiers, determine: <ul style="list-style-type: none"> - minor modifications to further minimise effects on property acquisition - fencing, access and noise mitigation measures 	<ul style="list-style-type: none"> ▪ implement measures as negotiated with property owners and occupiers

Aspect	Planning and design	Construction	Operation
Transport			
Objective — minimise the effects of the Northern Connector on the transport network			
Road closure and traffic disruption	<ul style="list-style-type: none"> ▪ determine alternative routes for roads required to be closed 	<ul style="list-style-type: none"> ▪ prepare and implement traffic management plan that includes: <ul style="list-style-type: none"> - identification of public roads to be used - temporary traffic arrangements - access to construction sites - monitoring, review and amendment mechanisms 	<ul style="list-style-type: none"> ▪ monitor Northern Connector and surrounding road network to determine if operating as predicted and identify unforeseen problems with the network
Noise			
Objective — minimise the effects of traffic and rail noise on the local community			
Road traffic and rail noise	<ul style="list-style-type: none"> ▪ design road to incorporate measures to minimise traffic noise (including pavement selection) ▪ finalise noise mitigation treatments, noise barriers or acoustic treatments for isolated dwellings requiring noise mitigation ▪ work with local councils to prevent noise sensitive developments adjacent to the corridor 		
Construction noise	<ul style="list-style-type: none"> ▪ prepare a construction noise and vibration management plan (including a night works management plan) 	<ul style="list-style-type: none"> ▪ implement requirements of noise and vibration management plan including: <ul style="list-style-type: none"> - where possible, locate noisy equipment away from noise-sensitive receivers - maintain vehicles and equipment to minimise engine noise - engage the community to inform them of possible noise activities 	

Aspect	Planning and design	Construction	Operation
Vibration			
Objective — minimise the effects of vibration on structures and the local community			
Ground vibration	<ul style="list-style-type: none"> ▪ prepare a construction noise and vibration management plan ▪ undertake a building condition inspection where required 	<ul style="list-style-type: none"> ▪ implement the requirements of the noise and vibration management plan including: <ul style="list-style-type: none"> - vibration monitoring at selected residences less than 25 m from construction activities - engage the community to inform them of activities 	
Aboriginal heritage			
Objective — prevent or minimise disturbance to significant Aboriginal cultural heritage sites			
Aboriginal heritage	<ul style="list-style-type: none"> ▪ where possible design the route to avoid or minimise effects on Aboriginal heritage sites ▪ prepare and submit an s23 application under the <i>Aboriginal Heritage Act 1988</i> 	<ul style="list-style-type: none"> ▪ if approved, implement any conditions of the Ministers decision 	
Non-Aboriginal heritage			
Objective — prevent or minimise disturbance to significant non-Aboriginal cultural heritage areas			
Non-Aboriginal heritage	<ul style="list-style-type: none"> ▪ design the route to avoid or minimise the effect on non-Aboriginal heritage places ▪ if required, undertake a building condition inspection of heritage places affected 	<ul style="list-style-type: none"> ▪ manage vibration effects on heritage places (as identified in noise and vibration management plan) 	<ul style="list-style-type: none"> ▪ assess condition of buildings previously inspected and repair any damage caused by construction

Aspect	Planning and design	Construction	Operation
<p>Visual amenity</p> <p>Objective — minimise negative visual effects and enhance visual opportunities</p>	<p>Urban and landscape design</p> <ul style="list-style-type: none"> ▪ develop urban design framework to establish design objectives that consider visual effects and identify landscape character zones ▪ design and locate route and structures to reduce visual effect of structures of embankments and the visual intrusion of interchange lighting at night ▪ prepare vegetation management plan that visually integrates with land use and vegetative patterns ▪ collect local seed from regional remnant native vegetation to revegetate key locations along corridor as part of landscaping works 	<ul style="list-style-type: none"> ▪ implement the requirements of the landscape management plan including: <ul style="list-style-type: none"> - requirements of 9 identified landscape character zones - where possible, retain existing trees to retain amenity - protection of remaining vegetation - undertake landscaping works as soon as practicable after works are completed - plant screening plants on embankments and surrounding interchanges as soon as practicable to reduce views of construction activities and stabilise area 	<ul style="list-style-type: none"> ▪ maintain landscape plantings in road reserve and control weeds ▪ replant landscape areas where plants have died

Aspect	Planning and design	Construction	Operation
<p>Geology, soils and contamination Objective — avoid contamination of soils and manage contaminated sites affected</p>	<ul style="list-style-type: none"> ▪ undertake preliminary site contamination investigation to further determine the risks associated with sites identified as medium and high risk affected by the route ▪ if required, undertake investigations to identify potential risks of sites determined to be affected by contaminating activities ▪ if required, develop a contamination management plan for identified contaminated sites and where potential risk to community and environment (liaise with EPA if significant site contamination identified) ▪ identify suitable low risk locations for encapsulation of contaminated waste soil in line with EPA requirements 	<ul style="list-style-type: none"> ▪ if required, implement the requirements of the contamination management plan including: <ul style="list-style-type: none"> - managing excavation of potentially contaminated soils - managing dust and odour emissions from contaminated soils - managing stockpiled sites and contaminated materials - handling and possible disposal of hazardous waste materials and off-site disposal of contaminated soils to licensed waste repositories - include details of contamination management plan in the CEMP 	<ul style="list-style-type: none"> ▪ if required, manage any areas of site contamination
<p>Site contamination</p>	<ul style="list-style-type: none"> ▪ undertake a thorough acid sulfate soil investigation and risk assessment ▪ if required, develop mitigation and management measures for controlling acid sulfate soil effects ▪ design embankments above the coastal plain to minimise excavation and dewatering during construction ▪ provide for maintenance of current tidal flushing regimes 	<ul style="list-style-type: none"> ▪ if required, implement any mitigation and management measures for controlling acid sulfate soils, including <ul style="list-style-type: none"> - neutralising excavated material e.g. with agricultural lime - strategically burying disturbed material below the watertable ▪ include details of acid sulfate soil management requirements in the CEMP 	<ul style="list-style-type: none"> ▪ if required, manage any areas of acid sulfate soils
<p>Acid sulfate soils</p>	<ul style="list-style-type: none"> ▪ undertake a thorough acid sulfate soil investigation and risk assessment ▪ if required, develop mitigation and management measures for controlling acid sulfate soil effects ▪ design embankments above the coastal plain to minimise excavation and dewatering during construction ▪ provide for maintenance of current tidal flushing regimes 	<ul style="list-style-type: none"> ▪ if required, implement any mitigation and management measures for controlling acid sulfate soils, including <ul style="list-style-type: none"> - neutralising excavated material e.g. with agricultural lime - strategically burying disturbed material below the watertable ▪ include details of acid sulfate soil management requirements in the CEMP 	<ul style="list-style-type: none"> ▪ if required, manage any areas of acid sulfate soils

Aspect	Planning and design	Construction	Operation
Soil treatment and preparation	<ul style="list-style-type: none"> ▪ include soil treatment and preparation details in the landscape management plan 	<ul style="list-style-type: none"> ▪ during construction, implement the topsoil management activities of: <ul style="list-style-type: none"> - topsoil removed during site clearing and earthworks preparation to be collected and stockpiled on site - condition topsoil (as required) using slow release fertilisers and water retention agents to improve growth rates, reduce watering requirements and support planting during establishment 	
Water quality, flooding and drainage (including erosion and sediment control)			
Objective — prevent the pollution of water and maintain existing natural surface water flows			
Erosion and sediment control	<ul style="list-style-type: none"> ▪ as part of the CEMP develop an SEDMP in line with EPA Code of Practice on Stormwater Pollution Prevention for Local, State and Federal Governments, including erosion and sediment control measures such as: <ul style="list-style-type: none"> - staging of clearing operations - location of diversion drains - location of erosion control devices such as hay bales and silt fences - location of stockpiles and management measures ▪ include road batter slope protection as part of the project's landscaping plan 	<ul style="list-style-type: none"> ▪ implement the requirements of the SEDMP including: <ul style="list-style-type: none"> - installing erosion and sediment control devices - inspecting erosion and sediment control devices during and immediately after rain periods/events and weekly during dry weather - where required, maintaining any erosion and sediment control devices - protecting stockpiles of potentially erodible material by temporary seeding and/or other erosion control measures - vegetate road batter slopes as soon as practicable to prevent erosion 	<ul style="list-style-type: none"> ▪ adequately maintain vegetation on road batter slopes to prevent erosion

<p>Water quality</p>	<ul style="list-style-type: none"> ▪ determine the level of monitoring required and prepare a surface water quality monitoring program ▪ ensure that the water quality treatment approach is considered in the design of the corridor through the wetlands 	<ul style="list-style-type: none"> ▪ implement the requirements of the surface water quality monitoring program, potentially including monitoring the following: <ul style="list-style-type: none"> - turbidity - suspended solids - any others including those required by EPA licences ▪ to protect water quality where possible, contain and treat site water and divert natural surface flows away from the construction site and provide spill containment and isolation structures in high risk locations 	<ul style="list-style-type: none"> ▪ maintain water quality improvement devices including swales and detention basins
<p>Flooding and drainage</p>	<ul style="list-style-type: none"> ▪ undertake all stormwater design in accordance with recommended principles in Pilgrim (1987) and consistent with DTEI standards ▪ develop flooding and drainage design with input from relevant local government representatives ▪ maintain existing natural surface water flow by providing openings in embankments (e.g. equalising pipes) ▪ include detention basins to assist in the drainage function ▪ develop the drainage design in accordance with water sensitive urban design principles 	<ul style="list-style-type: none"> ▪ maintain the existing drainage capacity and local minor drainage systems to allow natural flow paths to continue 	

Air quality	
Objective — minimise the effects of air quality on the community	
Dust	<ul style="list-style-type: none"> ▪ develop an air quality (dust) management plan to minimise dust creation
	<ul style="list-style-type: none"> ▪ include in the CEMP details on air quality management strategies including: <ul style="list-style-type: none"> - minimising the area of cleared land - providing a temporary seal by watering on haul roads - siting construction compounds away from residential areas - constructing wind fences as necessary ▪ monitor dust creation by installing real-time dust monitors and if an exceedance occurs, take measures to reduce dust levels
Greenhouse gas, sustainability and climate change	
Objective — reduce greenhouse gas emissions associated with the construction and use of the road, use sustainable resources and allow for climate change impacts	
Greenhouse gas	<ul style="list-style-type: none"> ▪ investigate options for minimising greenhouse gas emissions associated with the project
	<ul style="list-style-type: none"> ▪ incorporate energy efficiency considerations into: <ul style="list-style-type: none"> - purchasing goods and services - vehicle and construction equipment selection - fuel selection (e.g. use of biofuels to be considered where possible)

Sustainability	<ul style="list-style-type: none"> ▪ use local native plant species to minimise water use ▪ undertake a sustainability assessment of construction water sources ▪ investigate options for improved sustainability outcomes for the project 	<ul style="list-style-type: none"> ▪ using local materials and local staff wherever possible to reduce transport-related emissions ▪ using recycled materials to minimise the lifespan impact of greenhouse gas emissions in production ▪ where feasible, minimise water use and impacts on water sources ▪ where available, use sustainable water supply sources such as the water reticulation scheme at Virginia ▪ substitute low greenhouse-intensity materials where appropriate 	
Climate change	<ul style="list-style-type: none"> ▪ implement a strategy for adaptive management of climate change impacts that includes: <ul style="list-style-type: none"> - climate change and sea level rise predictions incorporated into the design - provision for later incorporation of management of sea level intrusion into the stormwater wetlands in the design of the road embankment, if required - provision of a road corridor and design that allows for later height increases of embankments as may be required 		

Flora			
Objective — prevent or minimise disturbance to native vegetation and the spread of weeds and disease			
Native vegetation	<ul style="list-style-type: none"> ▪ minimise impact to mangroves by reducing the construction footprint and allowing continued tidal flows ▪ design the road and rail to minimise the effect on native vegetation and retain appropriate vegetation in accordance with the urban and landscape design 	<ul style="list-style-type: none"> ▪ ensure site staff receive appropriate instruction in identifying native vegetation and weeds ▪ protect important native vegetation areas and identify these locations to contractors in site induction program ▪ where possible, carefully relocate any important native vegetation 	<ul style="list-style-type: none"> ▪ monitor and maintain any relocated vegetation to ensure its survival
Native vegetation offset	<ul style="list-style-type: none"> ▪ develop a vegetation management plan to offset the removal of native vegetation (including wetlands) and provide a significant environmental benefit as required under the <i>Native Vegetation Act 1991</i> ▪ include provision for wetland offsets/compensatory habitats during design activities 	<ul style="list-style-type: none"> ▪ implement the requirements of the vegetation management plan ▪ construct wetland offsets/compensatory habitat areas as required 	<ul style="list-style-type: none"> ▪ ensure remnant native vegetation is protected during weed control and maintenance works ▪ ensure revegetated areas become established by providing adequate maintenance

Weed, pest and disease control	<ul style="list-style-type: none"> ▪ develop a weed management plan ▪ investigate any areas of Phytophthora, and Phylloxera in the construction footprint ▪ if required, develop measures for managing Phytophthora and Phylloxera 	<ul style="list-style-type: none"> ▪ implement the requirements of the weed management plan including controlling declared weed species under the <i>Natural Resources Management Act 2004</i> and environmental weeds, by: <ul style="list-style-type: none"> - carrying out weed control works where required - preventing the spread of weeds through cleaning of earth moving equipment - preventing the import of infested topsoil - eradicating any outbreaks of weeds caused by construction activities ▪ if required, implement measures for managing Phytophthora and Phylloxera, including: <ul style="list-style-type: none"> - designated wash-down facilities - treatment of wash-down water - containing topsoil within any infected area 	<ul style="list-style-type: none"> ▪ implement a program to control declared and environmental weeds
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Fauna			
Objective — Prevent or minimise disturbance to native fauna and their habitat			
Protection of habitat and fauna species (including avifauna)	<ul style="list-style-type: none"> design the road to minimise the effect on native vegetation and habitat areas likely to be inhabited by native fauna and retain appropriate vegetation in accordance with the urban and landscape design as part of the vegetation management plan provide a significant environmental benefit for any habitat requiring removal design soil and erosion control measures to protect aquatic fauna habitats 	<ul style="list-style-type: none"> implement the requirements of the vegetation management plan to provide significant environmental benefit for any habitat requiring removal undertake a fauna inspection of the construction area before the removal of vegetation and relocate any affected fauna ensure site staff receive appropriate instruction in the identification of native fauna protect important habitat areas and identify these locations to contractors in site induction program implement soil and erosion control measures to protect aquatic fauna habitats 	<ul style="list-style-type: none"> minimise the use of herbicides along roadsides (particularly in close proximity to waterways) maintain soil and erosion control measures to protect aquatic fauna habitats
Offset wetlands/habitat areas	<ul style="list-style-type: none"> design freshwater and/or intertidal wetlands and/or rehabilitate/revegetate existing wetlands to offset impacts to Barker Inlet wetlands to provide similar avifauna habitats to those lost 		
Pests	<ul style="list-style-type: none"> plan provision for waste storage and removal to prevent attracting pest animal species during construction 	<ul style="list-style-type: none"> remove or securely store waste to prevent access of pest animals include details of waste management practices and requirements in the CEMP 	

Management of materials and construction facilities		
Objective — Manage construction facilities and materials to prevent pollution, minimise waste and minimise effects on local community		
<p> Ancillary construction activities, depots and stockpile sites</p>	<ul style="list-style-type: none"> ▪ for ancillary construction facilities (including batch plants if required) ensure they are located: <ul style="list-style-type: none"> - over 100 m from waterways and wetlands - in areas of low conservation significance of flora, fauna and heritage - away from residences or other sensitive receivers ▪ develop emergency spill response procedures for responding to chemical spills during construction, including notifying the EPA of any significant spill events 	<ul style="list-style-type: none"> ▪ if an EPA licence is required for batch plant establishment and operation, implement conditions (including monitoring) ▪ operation of plant and facilities not to affect land use and access of adjacent properties
<p>Chemical management</p>		<ul style="list-style-type: none"> ▪ store and use chemicals in banded areas (which meet the requirements of Australian Standard 1940–2004 <i>The Storage and Handling of Flammable and Combustible Liquids</i>) ▪ locate appropriate spill control and clean-up equipment in areas where chemicals are used or transported and ensure staff are trained in its use ▪ ensure mobile refuelling vehicles are equipped with spill control and clean-up equipment ▪ in the event of a spill ensure contaminated materials are disposed of to a licensed waste disposal facility
<p>Waste management</p>	<ul style="list-style-type: none"> ▪ identify potential uses of waste materials in road construction activities 	<ul style="list-style-type: none"> ▪ mulch vegetation cleared and reuse for batter slope stabilisation ▪ reuse topsoil removed from the corridor for areas to be landscaped ▪ provide adequate waste disposal facilities on site and remove regularly

