

# 5 Environmental management

Environmental management of the project will be based on DPI policy and contractual requirements as enforced through the EMP for the project. It is implicit in this project for the contractor to comply with all legislative and other relevant policy requirements. These include ESD principles and all matters relating to sound environmental management practices.

The EMP will be designed to effectively manage the impacts of the construction works. DPI requires that an EMP is prepared as part of its contractual requirements and obligations. Examples of its formal requirements for contractor contractual compliance are included in Appendix B.

The Draft EMP provided below outlines likely environmental management requirements and commitments. A final EMP will be prepared by the contractor appointed to undertake the works. The final EMP will take account of the comments on the PER and the final Assessment Report for the proposal.

## 5.1 POLICIES AND RESOURCES

DPI has a strong commitment to sustainable development and sound environmental management within its department and as a component of its projects.

The project will be obligated to follow the commitments made in the PER and the requirements of the Assessment Report from the NT Government. Statutory and contractual requirements applicable to the proposal and the works are discussed in Section 2.2.

The DPI environmental policy for roads is a component of its strategic statement 'Roads and the Environment A Strategy for the Sustainable Development, Use and Maintenance of Northern Territory Roads' (DIPE 2004), which is accessible on the DPI website:

[http://www.dpi.nt.gov/whatwedo/mvr/rgpolicies/pdf/roads\\_environment.pdf](http://www.dpi.nt.gov/whatwedo/mvr/rgpolicies/pdf/roads_environment.pdf)

The key elements of DPI's environmental policy for roads are (DIPE 2004, p.13):

The Department will demonstrate due diligence in the provision of its road network services and will strive for continual improvement by:

- Ensuring compliance with relevant environmental legislation and regulations
- Setting appropriate environmental management strategies
- Developing and implementing sound environmental policies and practices
- Minimising the environmental impacts of its activities

- Providing our employees with the skills to achieve environmental outcomes
- Improving the way we manage our contractors and suppliers
- Involving the community in planning and implementation issues
- Reporting publicly on environmental performance.

DPI will establish and implement a mandatory audit schedule to assess compliance of the contractor, especially in relation to potential impacts on all matters of national and NT environmental significance (DPI 2005a).

## **5.2 ENVIRONMENTAL MANAGEMENT PLAN**

An EMP will be prepared by the contractor prior to construction commencing. The EMP will outline all potential environmental impacts of the works and describe the proposed mitigation measures and techniques to be adopted during construction. An outline of the proposed EMP is presented in this document.

The final EMP will be developed and managed by the contractor undertaking the works and will be subject to DPI approval.

The objectives of the EMP will be to avoid or minimise the environmental impacts of activities associated with the planning, pre-construction, construction, and post-construction phases of the project. DPI has a legal and moral obligation to limit its adverse impacts on the environment and the contractor has the same obligations.

The general aims of the EMP are to:

- manage the processes and activities to ensure that adverse environmental impacts are avoided or minimised during all phases of the project
- establish monitoring protocols as a means of evaluating the success of the management practices and strategies developed
- review management strategies at regular and appropriate intervals against a set of benchmark criteria to determine areas requiring additional attention and success areas
- ensure that all environmental management aspects are fully documented and subject to review.

### **5.2.1 Development of the EMP**

The outline of the EMP in the PER (Draft EMP) provides a summary of issues and strategies that will be included and further developed in the preparation of the EMP. The purpose of the Draft EMP is to assist the development of the EMP and by no means encompasses all of the environmental management issues of construction, nor does it form the final version of the construction EMP.

It is expected that, in finalising the environmental assessment process and granting approval, the Minister for the Environment will establish a set of conditions for the project that must be adhered to. These conditions will be incorporated in the final EMP that is developed by the contractor responsible for the project. DPI will ensure that this happens through its RFT and contractual requirements process for the project.

In developing the EMP, the contractor will be required to address all of the Tender Specifications relating to environmental protection. These are contained in Appendix B.

The EMP will be developed so that a practicable working framework is established to avoid or minimise the project's impact on the environment. To ensure that this is achieved, management, monitoring and review phases will be established. A set of benchmark criteria will be developed and progress measured against these criteria to determine the overall level of success of the EMP and its sub-plan objectives.

The management and monitoring strategies will be developed for pre-construction, construction, and post-construction. This will ensure that the objectives of the EMP are reached and sustained beyond the life of the project, and that the project's impact on the environment is minimal.

The EMP will be developed in consultation with staff of the NTPWS at Timber Creek (particularly in regards to native and pest species management and management and rehabilitation of borrow pits and construction sites), landholders, Traditional Owners and other stakeholders as appropriate.

The EMP will consider all environmental aspects of the project.

#### **5.2.2 Induction and training**

The induction of contractor personnel is an important component of the EMP and its success. All personnel working at the construction sites will be inducted and will be trained in the requirements and application the EMP, including their responsibilities under the EMP.

Induction and training will be incorporated in the development of the EMP, and will be conducted by the contractor prior to the personnel commencing work on site.

#### **5.2.3 Review and audit**

An audit schedule will be developed as part of the EMP that will allow an assessment of the EMP against a set of benchmark criteria. The benchmark criteria will be a set of quantified performance measures based upon the key issues and strategies. The project will be assessed against the criteria as being 'not met', 'met' or 'exceeded'. The contractor undertaking the works will 'self-audit'. In addition, third-party independent audits will be undertaken progressively by DPI for the whole construction project and by a competent biologist for impacts on threatened species, especially purple-crowned fairy-wren and its habitat.

Corrective action requests (CARs) will be issued where there are identified non-conformances of the criteria. The CARs will be monitored by DPI during the audit process.

Project reviews will be conducted at the commencement, half-completion and completion of construction, and at one year post-construction, as a minimum. Borrow material extraction sites, such as RG3, may have a longer life than the rest of the project (owing to the longer term pavement rehabilitation and widening works). The components of the EMP that are relevant to these activities will continue to apply.

Review at other times during construction may be warranted, but this will be subject to the audit findings.

#### **5.2.4 Licences, approvals and special conditions and requirements**

All necessary registrations, permits and licences for the project will be obtained and maintained by the contractor. Compliance with all relevant Standards, Codes of Practice and Guidelines is also a responsibility of the contractor. If DEH and NRETA permits and approvals for the collection of animal species are required, then these will be obtained by the specialist consultant employed for that purpose by the contractor.

#### **5.2.5 Contractor certification**

Only contractors certified under AS/NZS ISO 9001:2000 Quality Management Systems, AS/NZS ISO14001:2004 Environmental Management Systems and AS/NZS 4801:2001 Occupational health and safety management systems will be considered for this project. These qualifications and systems imply that the contractor has an understanding of the stringent quality requirements applicable to this project and that there is a concomitant reduction in risk associated with the works and the management of its impacts.

#### **5.2.6 Commitments**

‘Will’ is used throughout this document to indicate a specific commitment to undertake the action by DPI, or that DPI will ensure that the contractor is aware of the issue and addresses it.

### **5.3 MONITORING AND REPORTING STRATEGIES**

The contractor will develop and implement monitoring and reporting strategies and schedules as part of the Tender. The full details of these cannot be anticipated at this time.

In addition, monthly audits will be undertaken by DPI with annual reporting on the project to NT government authorities, probably through the EPA. It is expected that the PER conditions will indicate any reporting requirements.

Permanent environmental photo-monitoring points will be surveyed and established by GPS co-ordinates and with a numbered steel dropper at each construction site; that is, along the Highway and at all borrow sites. A minimum of three to four points/site will be established, with photos taken bimonthly, especially during the early wet and early dry seasons.

### **5.4 DRAFT EMP**

Management strategies proposed as part of the EMP are provided in Tables 5.1 to 5.11.

## Physical environment

**Table 5.1 Environmental management strategies for the physical environment**

Issue	Management strategy	Key result area
Wet season. Monsoonal rains and flooding	The main construction activities, particularly those that cause surface disturbance (e.g. earthworks) will be undertaken during the dry season to eliminate the potential for accelerated soil erosion from storm events	Works calendar established identifying periods of high rain fall risk. Contractor's Erosion Management Plan has been established and is being implemented
	Surface water management strategies will be developed and used during the construction period to eliminate the potential for accelerated soil erosion	Surface water management plan and actions established as part of a specific plan for management of water run-off and reduction of accelerated erosion
	Areas of accelerated erosion will be stabilised and appropriately rehabilitated	No evidence of significant accelerated erosion and obvious signs of rehabilitation, including revegetation
Construction delays	All of the main construction activities will be undertaken during the dry season	Limited changes to the original construction schedule
Adjoining properties	Management strategies will be developed following consultation with adjacent land managers	Evidence of consultation being maintained. No unplanned disruptions to adjacent properties
Terrain & land systems	Cut faces will be stabilised to minimise the potential for accelerated erosion	All cut faces (batter slopes) and fill slopes are stable and designed to suit the material they are constructed on. All cut slopes have cut-off drains or similar protective measures, designed and constructed to prevent scouring and accelerated erosion. All cut and fill slopes are stabilised by revegetation prior to the rains starting in the wet season immediately following the construction of the slope
Soils	Surface water run-off is managed to prevent potential accelerated soil erosion incidences	Contractor Erosion Management Plan has been established, and is being implemented, updated and monitored; i.e. evidence of continuous improvement.
	Dry exposed surfaces, especially construction, track and access sites that are being impacted by traffic, are watered to minimise dust generation	No dust clouds reducing visibility on adjacent trafficked areas or adversely covering flora and traffic management signs
	Construction activities will be managed to avoid or minimise accelerated soil erosion, particularly in areas of high soil erodibility (e.g. unconsolidated alluvium adjacent to Victoria River)	No obvious signs of erosion on exposed and disturbed surfaces.
	Batter slopes will be stabilised as early as possible	All cut and fill slopes are stabilised by structures, techniques and revegetation prior to the rains starting in the wet season immediately following the construction of the slope
Borrow material	Rehabilitation and revegetation strategies will be progressive and will be commenced as early as possible to eliminate the potential for accelerated soil erosion	No evidence of accelerated erosion at sites undergoing rehabilitation. Evidence of successful revegetation available
	Final areas for terrestrial gravel and fill extraction will be determined in co-operation with Traditional Owners, AAPA and NLC	A record of evidence of gravel and fill extraction site location approvals from Traditional Owners, AAPA and NLC is available and kept on file. Evidence that Avoidance Areas are identified and that access to these sites is prohibited
	The environmental management of RG3 (gravel site) will comply with the requirements of Williams (2006) for water and substrate material in the Victoria River and de Lestang & Wedd (2005) for aquatic fauna	Environmental requirements stipulated in the reports completed by Williams (2006) and de Lestang & Wedd (2005) are implemented. Disturbance at the gravel site is kept to a minimum, in line with the project gravel

Issue	Management strategy	Key result area
	Areas of cane grass adjacent to RG3 will not be impacted. These will be delineated by construction of bunting fences (or similar). This will avoid adverse impact on purple-crowned fairy-wren populations	extraction requirements. Evidence of baseline conditions assessment of site topography is available Cane grass areas are suitably fenced (or avoided) and established as No Go areas prior to construction. Cane grass areas remain undisturbed (where possible) and fairy-wren population remains stable in the long term.
	Quarrying operations at RG3 (gravel source) will only be conducted during the dry season	Nil activity in the wet season
	Borrow pit sites will be operated and managed using best practice techniques according to the DPI Specification	Borrow pits are established and managed properly with minimal environmental impacts
	Borrow pit sites will be rehabilitated using best practice techniques as per NT requirements (DPI Specification in Appendix B and Applegate 1983)	Rehabilitation expectations and requirements are met
Flood events	A schedule of construction activities and timing will be developed to determine what activities can safely be undertaken during higher risk periods for flooding Weather conditions will be monitored by the contractor during the wet season to determine the potential for flood events to occur in the near future which could adversely affect construction sites	Construction activities in higher risk flood periods are limited to those specified in the construction schedule. Minimal delay to construction targets as a result of high risk or unexpected weather events.
	Construction sites will be inspected after floods and damaged areas repaired	Damaged areas are repaired and restored promptly following flood events
Remnant pools	All remnant pools of water outside the construction zone will be No Go areas	No evidence of contamination or disturbance to remnant pools outside the construction zone
	Remnant pools of water adjacent to the construction zone will be avoided by construction works and contractors	No evidence of construction or disturbance to remnant pools adjacent to the construction zone
	Remnant pools in creek lines will not to be used as sources for construction water	Pools declared as No Go areas. Evidence of nil impact
	The contractor will undertake an assessment of impacts, and consult with and seek approval from the Advisory and Regulatory Services (Water), Conservation and Natural Resources, NRETA regarding extraction rates and conditions of extraction for sourcing construction water from the Victoria River. Water extraction within the Victoria River will only take place when the river is flowing and as per Licence conditions.	Approval from Advisory and Regulatory Services (Water), Conservation and Natural Resources, NRETA regarding extraction rates and conditions of extraction for sourcing construction water. Self-compliance with conditions of approval to be documented
Underground water	Management strategies will be developed following an environmental assessment of and approval for any proposed water extraction from new or existing bores	NRETA Permit and conditions for extraction of water from new or existing bores obtained and complied with
Infrastructure	Management strategies will be developed following consultation with appropriate people and/or companies (such as Telstra or Coolibah Station) regarding impacts and mitigation measures	Management strategies developed and implemented prior to construction
Optical Fibre Cable	The exact location of all OFC will be known and marked in the field & on construction maps	No unplanned impact on OFC. Monitoring data available from Telstra
Fire	No fires will be lit by construction personnel, unless under a permit	Permits for lighting fires obtained. Use of fire to burn cleared and stockpiled vegetation is prohibited
	All plant and equipment will be maintained to minimise the potential for faulty equipment to start fires	All plant and equipment maintained according to legislation and manufacturers requirements. Servicing and maintenance log for all plant and equipment available and only this plant and

Issue	Management strategy	Key result area
	<p>The use of plant and equipment in dry long grass is to be carefully monitored for the start of fire, and fire-fighting equipment located on appropriate machinery to extinguish any fires that do start. Areas of dry grass in fire risk areas may need to be slashed.</p> <p>Discuss with adjoining property managers, especially NTPWS for Gregory National Park, any proposed controlled burns they are planning. Be aware of the timing, location and weather conditions of any burn-offs initiated by others</p> <p>Maintain regular contact with local fire authorities (Bushfires Council) to determine the risk of fires in construction areas</p>	<p>equipment is to be used in high fire risk areas.</p> <p>Fire breaks present. Zero incidence of accidental fires</p> <p>Evidence of ongoing consultation with landholders</p> <p>Evidence of ongoing consultation with fire authorities</p>

## Vegetation and flora

**Table 5.2 Environmental management strategies for vegetation and flora**

Issue	Management strategy	Key result area
<p>Management of native vegetation, including removal of vegetation</p>	<p>A Vegetation Management Plan (VMP) based on DPI Specifications will be established by the contractor. Impact areas will be minimised to that necessary to complete works. Delineation of impact areas and No Go zones will be undertaken on relevant construction drawings and in the field to ensure impacts are limited to the impact corridor or construction precinct. Areas of restriction will be identified during the induction program carried out by the contractor prior to any works commencing on-site</p> <p>All native vegetation removed will be stockpiled during clearing and grubbing. This vegetation will be re-used during rehabilitation and revegetation either whole or after being mulched and chipped</p> <p>The old road and bridge sites will be rehabilitated and revegetated with locally indigenous species similar to the adjoining vegetation communities</p> <p>Rehabilitation and revegetation works will be implemented progressively during the works programme; i.e. during and directly after construction</p> <p>Rehabilitated and revegetated areas will be monitored on a regular basis for up to one year following the completion of construction. Where necessary, additional works will be undertaken to ensure that areas are successfully rehabilitated</p>	<p>VMP compiled and agreed by DPI.</p> <p>Impact areas and No Go zones are clearly marked in the field and on construction drawings. No evidence of impact in prescribed areas</p> <p>All native vegetation stockpiled and used in rehabilitation (not burned)</p> <p>Seeds collection undertaken. Topsoil stockpiled and used. Few weeds present. Areas successfully rehabilitated.</p> <p>Schedule available and followed</p> <p>Monitoring data are comprehensive and available</p>
<p>Conservation significant communities and species</p>	<p>Threatened plant communities are unlikely to occur. Collections of Near Threatened or Data Deficient plant species (if present), as defined by the Territory Parks and Wildlife Conservation Act, be undertaken for any populations in impact areas and submitted to the Northern Territory Herbarium with full locality data</p>	<p>Herbarium has received plant specimens for Near Threatened and Data Deficient species (if present) as defined by the Territory Parks and Wildlife Conservation Act. Areas of these communities and species avoided by construction.</p>
<p>Introduction and spread of weeds</p>	<p>All declared and environmental weeds within the construction areas will be identified and adequately marked in the field prior to construction. This will need to be ongoing, but especially during and at the end of the wet season. Avoid these areas or control prior to disturbance</p> <p>Post-construction areas will be inspected. All weeds present will be controlled</p> <p>All plant and equipment is to enter the site(s) free of all plant and soil material</p> <p>All contractors and subcontractors will monitor vehicles and equipment for weed materials, and remove any seeds etc. that are attached prior to shifting into new sites</p>	<p>Weed Management Plan produced and implemented. Areas designated as No Go zones due to the presence of declared and environmental weeds are clearly marked in the field and on construction drawings. Control works undertaken and documented. If appropriate, No Go zones may be temporarily fenced during construction</p> <p>Areas where pre-construction controls have been implemented are recorded and marked in the field and on construction drawings.</p> <p>No significant increase in the presence of declared and environmental weeds in post-construction areas. Weed Management Plan procedures implemented</p> <p>Plant and equipment are certified as free of plant and soil materials prior to entering site</p> <p>No new weed species introduced to construction areas. Weed Management Plan procedures implemented</p>



## Fauna and fauna habitat

**Table 5.3 Environmental management strategies for fauna and fauna habitat**

Issue	Management strategy	Key result area
Removal of vegetation	<p>The impact on vegetation (i.e. habitat) must be avoided (where possible) and minimised at all other places to that necessary to complete works</p> <p>Undertake a dry season fauna assessment</p> <p>Specific mitigation measures will be developed and incorporated in the construction EMP based upon the outcomes of the assessment</p>	<p>No evidence of impacts outside of the construction corridor.</p> <p>Fauna report completed and outcomes actioned</p> <p>Mitigation measures incorporated into the construction EMP. Mitigation measures are implemented on site.</p>
Threatened species	<p>Develop and implement management strategies for specific species as stated in PER</p> <p>The contractor is to employ a suitably qualified and competent person (as agreed to by the Biodiversity Conservation Unit) for undertaking environmental management of the project</p> <p>The construction EMP is to detail proposed contingency measures for sightings of conservation significant species within the impact area(s)</p> <p>Purple-crowned fairy-wren habitat to be removed by the proposal is estimated to be a maximum of 5 ha. These areas will be defined on all maps and in the field and the construction limits adjacent to this habitat will be strictly enforced at each of the relevant sites</p> <p>Management of cane grass habitat will commence before construction in order to provide suitable alternative habitat for purple-crowned fairy-wren populations.</p> <p>Rehabilitation of cane grass habitat will be detailed in the construction EMP, including areas disturbed by construction activities, and those areas targeted for restoration/improvement. This may include fencing of important areas of cane grass, transplanting of clumps of grasses from impact sites and establishing new and/or better quality areas of cane grass, including increasing the density and height of cane grass areas</p> <p>A specialist biologist (as agreed to by the Biodiversity Conservation Unit) will be employed to advise on fairy-wren habitats and to independently audit this component of the works</p> <p>The impact site will be limited to that necessary to complete works</p> <p>In order to minimise the duration of impacts, construction activities will be undertaken in a manner that ensures that major disturbance-producing activities are within the approved areas and efficiently completed</p> <p>Stringent development and implementation of strategies will be undertaken to ensure that water pollution is prevented, especially from accelerated erosion</p>	<p>PER requirements implemented via EMP and construction EMP.</p> <p>Biologist employed and data available, especially in relation to management of fairy-wren populations and their habitat</p> <p>No disturbance to populations or individuals of conservation significant species (other than that which has been approved) in the event that they are observed in the impact area.</p> <p>Contractor to appoint trained biologist as agreed to by the Biodiversity Conservation Unit.</p> <p>Areas defined and nil impacts in adjacent areas of cane grass</p> <p>Purple-crowned fairy-wren population is unaffected in the long term</p> <p>Rehabilitation of cane grass impact areas will commence as soon as possible following construction. Evidence of works and consultation with NRETA undertaken to approve the measures</p> <p>Appointment made, timely assessments undertaken, reports available and recommendations implemented</p> <p>No evidence of disturbance to areas outside of the impact site</p> <p>Approved works plans produced. Construction precincts defined</p> <p>No evidence of water pollution in construction corridor and sites. If water testing is carried out then results must meet ANZECC requirements</p>

Issue	Management strategy	Key result area
Low risk species	Management strategies for the freshwater sawfish, dwarf sawfish and other aquatic species will be developed based on the outcomes of surveys	Freshwater sawfish and dwarf sawfish populations are not affected by construction works. Sawfish and other species habitat is not disturbed significantly or at all
	Construction activities within the Victoria River will be undertaken outside of the potential freshwater sawfish and dwarf sawfish spawning season (i.e. beginning of the wet season)	Freshwater sawfish and dwarf sawfish populations are not affected by construction works. Additional survey after construction undertaken. Potential for translocation of sawfish (if present at Bridge site on the Victoria River)
	Undertake 2006 seasonal variation survey	Report available prior to award of construction contract
	Potential crocodile and turtle nest sites to be identified in the field and not impacted	Sites marked and not disturbed
Pest animals	A number of species may occur. These species will be listed in the EMP and contingency actions be available for each if it is encountered	EMP includes contingency mitigation measures for each of the low risk species of conservation significance that may occur
Pest animals	Wastes (particularly food) will be appropriately managed and disposed so as to avoid increasing the population of the species	No visible waste
	Control of cane toad is to be undertaken around construction campsites using approved traps and humane disposal.	Cane toad population does not spread due to construction activities
	Plant and equipment hygiene is to be maintained to prevent the accidental transportation of cane toads off the site	Cane toad population does not spread due to construction activities
	No artificial structure or object that may hold water is to remain at the site following construction within 5 km of habitation areas	Borrow areas within 5 km of habitation areas will be drained following construction

### Air quality, noise and vibration

**Table 5.4 Environmental management strategies for air quality, noise and vibration**

Issue	Management strategy	Key result area
Noise	Noise monitoring is not required for this project. A complaints register will be established by the construction contractor. Complaints will be actioned immediately	Complaints register shows that complaints are actioned on receipt and resolved within an appropriate timeframe
Vibration	Vibration monitoring is not required for this project A complaints register will be established by the construction contractor. Complaints will be actioned immediately Telstra monitoring data available for vibration impact on OFC	Complaints register shows that complaints are actioned on receipt and resolved within an appropriate timeframe. Contractor responsive to data and required changes made
Air quality	Air quality monitoring is not required for this project. Dust suppression procedures will be implemented to ensure that changes in air quality are minimal Excavation works, access roads and active borrow areas that generate dust will be watered regularly Reinstatement and revegetation works will be undertaken for all areas disturbed by road works A complaints register will be established by the construction contractor. Complaints will be actioned immediately	Reinstatement and revegetation works undertaken as soon as possible following construction. Dust mitigation undertaken at all relevant sites and water trucks used Complaints register shows that complaints are actioned on receipt and resolved within an appropriate timeframe.

## Waste management

**Table 5.5 Environmental management strategies for waste management**

Issue	Management strategy	Key result area
Fuel and chemical spills	A waste management plan will be developed as part of the EMP	Compliance with all permit requirements. Detailed performance indicators to be provided in the waste management plan
Hazardous waste, hard wastes, putrescible waste	A waste management plan will be developed as part of the EMP.	No visible waste within or adjacent to the construction site. Spill kits deployed and used
On-site sewage and sullage treatment systems	All systems will comply with the NT Code of Practice for Small On-site Sewage and Sullage Treatment Systems and Disposal or Reuse of Sewage Systems and the Public Health Act	No breaches of the Code of Practice or Public Health Act

## Biting insects

**Table 5.6 Environmental management strategies for biting insects**

Issue	Management strategy	Key result area
Increase in mosquito populations and mosquito borne diseases	Borrow pits within 5 km of the Victoria River Inn, Fitzroy Station and Coolibah Station to be rendered free-draining on completion of construction	Nil increase in diseases associated with biting insects within the construction impact area and adjacent area
	Borrow areas within 5 km of inhabited areas will be rehabilitated to ensure that they do not hold water for more than five days	Contractor Health & Safety Plan produced and includes all actions for the management of biting insects
	Culverts or drainage devices will be used where natural drainage lines can not be maintained	
	The construction of bridges will not result in the impoundment of water upstream	
	Road machinery and equipment capable of holding or ponding water will be provided with drainage holes and emptied regularly	
	Equipment that has been used in QLD will be treated to remove the possibility of introducing <i>Ochlerotatus (Aedes)</i> mosquito species	
	Open containers and receptacles will be managed to avoid holding water	
	Insect repellent will be supplied to minimise the risk due to biting insects. Workers will be encouraged to wear long sleeves and long pants to reduce the risk of biting insects	
An OH&S plan covering the risks associated with biting insects will be developed by the contractor.		

## Infrastructure

**Table 5.7 Management strategies for infrastructure**

Issue	Management strategy	Key result area
Loss of communication facilities of the optical fibre cable	Location of cable alignments will be clearly marked on all construction drawings and discussed with the construction workforce prior to work commencing	Telecommunications infrastructure (OFC) to remain intact during construction works
Loss and/or disruption of the provision of services to the public	DPI will ensure that the contractor does not impede current access roads from the Highway to Victoria Highway Inn, Fitzroy Station and Coolibah Stations, and tourist areas within the Gregory National Park  Implementation of appropriate management strategies for access to the Escarpment Walk area of the Gregory National Park.	Adjacent properties and Escarpment Walk remain accessible at all times (unless otherwise agreed with NTPWS)

## Transport

**Table 5.8 Management strategies for transport**

Issue	Management strategy	Key result area
All road users, especially heavy transport through the construction area	A TMP will be compiled by the contractor. DPI will ensure that the plan meets the requirements of the specification.	Minimal delays and road safety issues during construction  No traffic accidents or incidences caused by the construction activities

## Fire

**Table 5.9 Environmental management strategies for fire**

Issue	Management strategy	Key result area
Loss of life and wildlife	Development of a fire management plan as part of the EMP. Liaise with Bushfires Council and NTPWS	No accidental fires within the construction area
	No fires will be lit without a permit	No loss of human life or property as a result of fire
	Discuss with adjoining property managers any controlled burns they may be planning	Permits for lighting fires obtained from the Bushfires Council
	Maintain regular contact with local fire authorities to determine fire risk	Evidence of regular liaison with NTPWS and other land managers
Loss of wildlife and fragmentation of habitat that may increase pressure on threatened species	Develop emergency evacuation and response procedures as part of the EMP and the ERP	No accidental fires within the construction area
	Use of plant and equipment near dry vegetation is to be avoided or, where necessary, carefully managed. Fire-fighting equipment located on appropriate machinery to extinguish any fires that do start	

## Socio-economic

**Table 5.10 Management strategies for socio-economic matters**

Issue	Management strategy	Key result area
Construction activities occur outside the road reserve	DPI and the contractor will maintain regular communications with adjoining landholders regarding potential issues associated with construction	Zero incidence of interference with adjoining properties
Access to adjoining properties and activities that conflict with the properties management practices.	DPI and the contractor will maintain regular communications with adjoining landholders regarding potential issues associated with construction A TMP will be developed by the contractor	Adjoining properties can be accessed at all times during the project
Breach of Territory Parks and Wildlife Conservation Act	DPI and the contractor will maintain regular communications with NTPWS at Timber Creek	No breaches of the Act

## Aboriginal, historical and cultural heritage

**Table 5.11 Environmental management strategies for heritage sites**

Issue	Management strategy	Key result area
Access and impact on sacred sites	Consultation through NLC, AAPA and with local Aboriginal communities be undertaken to determine the significance of known, registered sites of significance and other sites impacted upon by construction activities	No Aboriginal sites of significance disturbed as a result of construction works
	All significant sites will be delineated in the field and treated as no go areas	Significant sites are clearly marked and where appropriate fenced as No Go zones. Construction drawings are clearly marked with No Go zones
	Additional Sacred Site surveys of potential borrow areas undertaken and Clearance Certificates issued	Information available and works undertaken within the approval times and conditions
Access to and impact on archaeological sites	Where necessary, local Aboriginal community members will be employed during construction, to ensure that significant sites are not impacted on	Evidence of DPI policy requirements being obeyed
	All construction is to halt if Aboriginal artefacts are unearthed. No work is to commence until the significance of the artefacts have been determined and remediation measures developed and implemented	Consultant archaeologist available (through contacts register). If required, report prepared and implemented
	Additional archaeological surveys of potential borrow areas undertaken	Information available and restrictions in place (if required)