Main Roads
Technical Standard

MRTS51

Environmental Management

April 11

Queensland Government

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Environmental Management

1 INTRODUCTION

This Technical Standard applies to environmental management requirements applicable to all activities relating to the Contract.

Where other contractual or statutory requirements (eg. *Environmental Protection Act 1994*) demand higher standards of environmental management, the higher standards shall be adopted.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards*, MRTS50 *Specific Quality System Requirements* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads Specifications and Technical Standards Manual.

2 DEFINITION OF TERMS

The terms used in Technical Standards shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Standards*.

Additional terms used in this standard shall be as defined in Table 2.

Table 2 – Definition of Terms

Term	Definition
Administering Authority	An authority with legislative jurisdiction.
Air blast overpressure	Maximum noise level in dB Linear Peak due to a blast measured anywhere on a sensitive site which is located at least 3.5 m from any building or other acoustic reflective surface. (Source: Vic NR&E)
Clean waters	Upstream (or run on) waters, the condition of which has not been affected by construction work or related activities.
Worksite	The area in which all works take place including sidetracks, hardstands, borrow pits, access tracks, vehicle turn around areas, camps, stockpile sites, plant etc.
dB(A)	The measure of sound pressure according to human response.
Dust or smoke sensitive place	Residential dwelling, industrial area or natural environment susceptible to adverse effects from dust or smoke.
Environmental harm	As defined by the EP Act, including nuisance, serious and material environmental harm.
EP Act	*Environmental Protection Act 1994*
Exclusion zone	An area not to be entered by any person or machine for the duration of the contract or otherwise designated period of time.
Noise sensitive place	As defined by the *Environmental Protection (Noise) Policy 1997.*
Pests	Both plants and animals as defined in the *Land Protection (Pest & Stockroute Management) Act 2002.*
Temporary Erosion and Sediment Control Measures	Measures implemented by the Contractor to minimise environmental harm from erosion and sediment control during construction that are removed.
Unacceptable levels of deterioration	Levels exceeding values prescribed in legislation or otherwise defined in the contracts, permits, licences and approvals.
Vibration sensitive receptor	Any structure or sensitive equipment (above or below ground) susceptible to damage or person subject / susceptible to discomfort caused by vibration.
VRmax	The maximum resultant particle velocity which characterises the vibration severity and is called the peak velocity.
Waste	As defined by the *Environmental Protection (Waste Management) Policy 2000.*

3 REFERENCED DOCUMENTS

Table 3 lists documents referenced in this technical standard.

Table 3 – Referenced Documents

Reference	Title
AS 2187.2	Explosives – Storage and use – Use of explosives
AS 1940	The storage and handling of flammable and combustible liquids

4 STANDARD TEST METHODS

Unless stated elsewhere herein, testing shall be carried out in accordance with the relevant Australian Standard.

5 QUALITY SYSTEM REQUIREMENTS

5.1 Hold Points, Witness Points *and Milestones*

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01 *Introduction to Technical Standards*.

The Hold Points, Witness Points and Milestones applicable to this standard are summarised in Table 5.1.

Table 5.1 – Hold Points,* Witness Points *and Milestones

Clause	Hold Point	Milestone
8.1	1. EMP(C) is assessed for suitability by Administrator	Submission of EMP(C)
8.1	2. Amendments to EMP(C) is assessed for suitability by Administrator	
10.2.1	3. Erosion and sediment control design is assessed for suitability by Administrator	

5.2 Compliance Testing

The Contractor is responsible for performing sufficient tests to ensure that the environmental management measures comply with the standards and requirements of the Contract.

However, the Contractor's testing program shall be such that the testing frequencies and number of tests are not less than those specified in Annexure MRTS51.1.

6 PROJECT SPECIFIC REQUIREMENTS

Project specific requirements are given in the Annexure MRTS51.1.

The Contractor shall take notice of and be bound by these requirements.

7 ENVIRONMENTAL INSPECTIONS, MONITORING AND REPORTING

7.1 Reporting Visits by Administering Authorities

The Contractor shall notify the Administrator of meetings with, inspections by, or visits from representatives of any administering authority within twenty four (24) hours of the Contractor being advised.

7.2 Environmental Inspections

The Contractor shall undertake and document daily site inspections for the purpose of verifying compliance with the EMP(C), licences, permits and approvals and the other environmental performance requirements specified within the Contract. Inspection records shall be submitted to the Administrator on a monthly basis.

The Contractor's nominated environmental representative or other person acceptable to the Administrator shall undertake inspections.

The Administrator may require the Contractor to undertake an investigation of environmental management practices. Where inspection by the Contractor, Administrator or Administering Authority determines that measures are not effective the Contractor shall implement corrective and preventative measures.

7.3 Environmental Monitoring

Where required to undertake environmental monitoring, the Contractor shall report monitoring results, analysis and any corrective actions to the Administrator on a monthly basis except where there has been a breach of licence conditions or material or serious environmental harm as defined in the EP Act has been identified. These breaches or environmental incidents shall be reported in accordance with the licence conditions and the EP Act.

7.4 Reporting Environmental Incidents and Non-Conformances

In addition to the reporting requirements under the EP Act, the Contractor shall immediately notify the Administrator of incidents involving material or serious environmental harm. Incidents of environmental nuisance and non-conformance with the EMP(C) shall be reported to the Administrator on a monthly basis.

7.5 Records and Registers

All records and registers maintained by the Contractor shall be available for inspection by the Administrator on request.

8 ENVIRONMENTAL MANAGEMENT PLAN (CONSTRUCTION)

8.1 General

The Contractor's Environmental Management Plan (Construction) (EMP(C)) shall address –

a) administrative requirements (Clause 9); and

b) each environmental element (Clause 10).

Environmental elements shall include, but not be limited to management of water quality, erosion and sedimentation, cultural heritage, noise, vibration, air quality, acid sulphate soils, contaminated soils, fauna, vegetation, pest management, waste management, chemicals and fuels.

Submission of the EMP(C) shall be in accordance with the Conditions of Contract. Milestone

Works under the Contract shall not start until the EMP(C) is assessed for suitability by the Administrator. Hold Point 1

Any amendments to the EMP(C) shall be submitted on a monthly basis and be assessed for suitability by the Administrator. Hold Point 2

9 ADMINISTRATIVE REQUIREMENTS

9.1 Contractor's Environmental Licences, Permits and Approvals

9.1.1 General

The EMP(C) shall include a list of all environmental licences, permits and approvals relevant to the project. Details shall include –

a) name and type of licence, permit or approval;

b) administering Authority;

c) reference number; and

d) commencement and expiry date.

Copies of all environmental licences, permits and approvals shall be made available to the Administrator on request.

Clause 1 of Annexure MRTS51.1 details licences, permits and approvals that the Principal has obtained for the works and associated conditions and requirements. However this list may not include all licences, permits and approvals that are required by the Contractor. The Contractor shall be responsible for obtaining all licences, permits and approvals that are required.

9.2 Environmental Roles and Responsibilities of Personnel

The Contractor's EMP(C) shall document all specific environmental roles and responsibilities of personnel.

9.3 Project Records

The Contractor shall document its processes for managing and maintaining project records.

Records shall include but not be limited to –

a) induction register;

b) environmental incidents, non-conformances and complaints;

c) inspection reports, checklists, diary entries;

d) monitoring results;

e) meeting minutes;

f) formal letters;

g) cultural heritage activities;

h) waste measurement and tracking records; and

i) any other record identified within the Contractor's EMP(C).

9.4 Environmental Site Induction

The Contractor's EMP(C) shall describe the environmental site induction process for all persons working on the project including subcontractors.

The induction shall include, but not be limited to –

a) relevant legislation identified;

b) general environmental duty and duty to notify;

c) conditions of environmental licences, permits and approvals;

d) environmental management strategies contained in the Contractor's EMP(C);

e) identified site specific areas, such as: environmentally sensitive areas, limits of the construction, cultural heritage issues, etc;

f) definition and management of environmental incidents; and

g) refuelling, waste disposal, litter collection etc.

The Contactor shall maintain a register signed by those inducted. The register shall contain but not be limited to topics covered, the name of inductees, dates inducted, and the name of the facilitator.

Inductions shall be delivered to personnel prior to their commencement on any of the site works.

10 MANAGEMENT OF ENVIRONMENTAL ELEMENTS

10.1 Water Quality

10.1.1 General

Any works carried out shall not result in environmental nuisance or harm of waters adjacent to, or immediately downstream of the worksite, or permanent water bodies within the worksite.

10.1.2 Performance Requirements

All waters released from the site shall comply with quality provisions of the *Environmental Protection (Water) Policy 1997*.

The Contractor shall comply with specific water quality performance requirements stated in Clause 2.1 and Clause 2.2 of Annexure MRTS51.1.

10.1.3 Site Inspections and Monitoring

The Contractor's daily site inspection shall include visual assessment of waters to determine the presence of sediment or chemical plumes.

The Contractor shall comply with water quality monitoring requirements stated in Clause 2.2 of Annexure MRTS51.1 and within licences / permits / approval conditions. Unless stated otherwise, monitoring shall be undertaken weekly and immediately following a rain event causing run off from the worksite. Such monitoring shall, unless stated otherwise, be undertaken 100 m upstream and 100 m downstream of the worksite. Monitoring shall be undertaken in accordance with the Water Quality Sampling Manual, EPA 1999. Water quality parameters shall comply with *the Environmental Protection (Water) Policy 1997*.

Monitoring shall be undertaken during times when construction activities have the potential to contaminate waterways.

10.1.4 EMP(C) Requirement for Water Quality

The EMP(C) shall include descriptions and /or diagrams of –

a) potentially affected water bodies;

b) construction activities and their potential contaminants;

c) water quality objectives (performance requirements); and

d) monitoring location/s and frequency.

10.2 Erosion and Sedimentation

10.2.1 General

Clause 10.2 applies where erosion and sediment control measures are to be constructed under the Contract or where the Contractor elects to use erosion and sediment control measures as temporary control measures.

The Contractor shall be responsible for the installation of measures for the control of erosion and sediment throughout the worksite to ensure construction works do not result in erosion and sedimentation that cause environmental nuisance or harm outside the worksite.

The Contractor shall consider at least the following erosion and sediment control strategies –

a) minimise clearing;

b) minimise the extent and duration of soil exposure;

c) divert clean waters from areas of disturbance;

d) early installation of all drainage, erosion and sediment control measures;

e) protect exposed soil surfaces from erosion;

f) on-site capture of sediment;

g) manage topsoil; and

h) progressive stabilisation and revegetation of disturbed areas.

Control practices for erosion and sediment control shall be determined by considering –

a) seasonal conditions;

b) soil types, particularly dispersive, sodic and saline soils;

c) local hydrology affecting the worksite; and

d) local drainage, including temporary and overland flow paths.

Before the natural surface is disturbed on a section of the Works, the Contractor shall submit a design for erosion control measures for that section. Erosion and sediment control work for that section shall not start until the design is assessed for suitability by the Administrator. Hold Point 3

The Principal has prepared a design for temporary erosion and sediment control measures. An outline of the design is given in the Contract. The Contractor's design shall adopt the standards given in the Principal's design. The Contractor may adopt the Principal's design but shall be responsible for all temporary erosion and sediment control measures.

The design shall also incorporate the requirements for erosion and sediment control given in Clause 3 of Annexure MRTS51.1.

10.2.2 Environmental Rock Structures

Clause 10.2.2 applies where rock structures are to be constructed under the Contract.

Rock or equivalent material employed to construct rock structures shall be of a size not less than 150 mm and not greater than 300 mm and well graded and shall be clean, hard, dense and durable to the satisfaction of the Administrator.

Rock structures shall be placed in a manner that ensures that the larger rocks are uniformly distributed throughout the protection work, and that the smaller rocks effectively fill the spaces between the large rocks without leaving any voids. The layers of placed rock shall be of even thickness and of even grading and include a defined spillway within the crest of the structure.

The placing operations shall minimise the chances of rock running loose and damaging adjacent areas. Rock deposited in areas outside the rock protection zone shall be recovered.

10.2.3 Sand Bag Structures

Clause 10.2.3 applies where sand bag structures are to be constructed under the Contract.

Fill material shall be clean sand or clean aggregate.

Bags shall be filled to approximately 2/3 capacity, and be stitched or tied so that the filling material does not spill or break from the bag during service.

Sand bags shall be placed in regular rows with a tapering vertical face, to form a stable structure. Sand bags shall also be placed to keep voids between the bags to a minimum.

10.2.4 Silt / Sediment Fences

Clause 10.2.4 applies where silt / sediment fences are to be constructed under the Contract.

Temporary silt / sediment fence systems shall be proprietary products manufactured for the capture of sediment expected to be generated from the worksite.

Storage and handling of silt / sediment fence materials shall be in accordance with the manufacturer's recommendations.

Silt / sediment fences and supporting wire fences, where applicable, shall be installed and maintained with the main body of the silt/sediment fence on the contour with ends turned uphill in accordance with the manufacturer's recommendations.

Any tearing or puncturing of the silt / sediment fence material shall be repaired in accordance with the manufacturer's recommendations and to the satisfaction of the Administrator.

10.2.5 Erosion Control Matting

Clause 10.2.5 applies where erosion control matting is to be constructed under the Contract.

Erosion control matting shall be a proprietary product manufactured for the surface stabilisation of embankments.

The erosion control matting shall be installed in accordance with manufacturer's specifications.

Care shall be exercised to prevent disturbance of the finished surface during installation.

All obstructions and protuberances shall be removed prior to installation of erosion control matting.

Where used over planting media, erosion control matting shall be installed as soon as practicable after the installation of planting media to prevent erosion.

10.2.6 Erosion Control Blanket

Clause 10.2.6 applies where erosion control blanket is to be constructed under the Contract.

Erosion control blankets shall be proprietary products manufactured for the surface stabilisation of embankments.

The erosion control blankets shall be installed in accordance with manufacturer's specifications.

Care shall be exercised to prevent disturbance of the finished surface during installation.

All obstructions and protrusions shall be removed prior to installation of erosion control blankets.

Where used over planting media, erosion control blankets shall be installed as soon as practicable after the installation of planting media to prevent erosion.

10.2.7 Performance Requirements

Erosion and sediment control measures shall comply with the following requirements –

a) early installation of all drainage erosion and sediment control measures;

b) all erosion and sediment control measures shall be installed and maintained in good working order;

c) any runoff from the site shall comply with the provisions of the *Environmental Protection (Water) Policy 1997*; and

d) There shall be no erosion resulting from construction practices unless there are provisions within worksite to manage resulting sediment.

10.2.8 Site Inspections and Monitoring

The Contractor's daily site inspection shall consist of visual assessment of erosion and sediment control structures to verify their condition and effectiveness.

10.2.9 EMP(C) Requirements for Erosion and Sediment Control

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) features of the site, including any known contours and existing drainage paths where available;

b) location of sidetracks, borrow pits, hardstands, site office, amenity blocks, stockpile pads, vehicle/machinery maintenance areas, and other areas of disturbance;

c) location and construction details of all erosion and sediment control structures;

d) scheduling of works such as the installation of drainage structures, permanent and temporary erosion and sediment control measures; and

e) maintenance program for erosion and sediment control measures.

10.3 Cultural Heritage

10.3.1 General

The Contractor shall be responsible for the management (including protection and preservation) of Indigenous and non-Indigenous cultural heritage artefacts, sites and values within the worksite. The Contractor shall also ensure that activities within the worksite do not impact on cultural heritage artefacts, sites and values adjacent to the worksite.

In addition, the Contractor shall comply with the project specific requirements given in Clause 4.1 of Annexure MRTS51.1.

Identified areas of significance and related management requirements are listed in Clause 4.2 of Annexure MRTS51.1. The Contractor shall comply with the project specific requirements given in Clause 4.2 of Annexure MRTS51.1.

Prior to commencing ground disturbing activities, the Contractor shall ensure that all staff involved in, or supervising, these activities, have attended either the Transport and Main Roads Indigenous Cultural Heritage Induction or a Cultural Heritage Induction course nominated by the Principal. This includes, as a minimum, all site management staff through to plant operators and labours (including subcontractors) working on activities which disturb the natural ground surface.

10.3.2 Performance Requirements

Where, during construction, items of cultural heritage significance are discovered when monitors are present, construction work shall only proceed in co-ordination with the monitors' activities. Under some circumstances such as when a significant cultural heritage object and/or area is discovered, that area may be declared an exclusion zone by the Administrator for a period of time.

Where items of potential cultural heritage significance are discovered when no monitors are present, the Contractor shall immediately stop work and notify the Administrator. The Administrator will promptly arrange for the site to be inspected and assessed for cultural significance. The Administrator may declare the object and/or area an exclusion zone for a period of time.

The Contractor shall erect exclusion zones as directed by the Administrator and preclude access to those areas.

The Contractor shall notify all site personnel of the object and/or area and proposed treatment of that object and/or area as soon as possible, but prior to commencing work on the next working day.

10.3.3 Site Inspections and Monitoring

As a minimum, the Contractor's daily site inspections shall consist of a visual assessment of the exclusion zone/s and shall be recorded.

10.3.4 EMP(C) Requirements for Cultural Heritage

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) cultural Heritage Officer contact details;

b) location of known areas of cultural heritage significance;

c) exclusion zones; and

d) notification processes.

10.3.5 Site Category

If applicable, the likelihood of harm category in accordance with the *Aboriginal Cultural Heritage Act 2003* and/or the *Torres Strait Islander Cultural Heritage Act 2003* shall be as stated in Clause 4.3 of Annexure MRTS51.1.

10.3.6 Heritage Listed Locations

The heritage listed places located within the work area given in Clause 4.4 of Annexure MRTS51.1 are protected by the *Queensland Heritage Act 1992*.

10.3.7 Principal's Agreement with Aboriginal Parties

The department establishes agreements with Aboriginal and/or Torres Strait Islander parties for the appropriate management of cultural heritage values located within the work area. Where the department has entered into an agreement, the Contractor shall comply with the provisions of the agreement stated in Clause 4.5 of Annexure MRTS51.1.

A copy of the agreement is available from the location given in Clause 4.6 of Annexure MRTS51.1.

10.4 Noise

10.4.1 General

The Contractor shall at all times take measures to assist in minimising noise associated with construction activities so as not to cause environmental nuisance or harm.

The Contractor shall consider at least the following noise management strategies –

a) implementation of alternative work practices;

b) silencing / dampening; servicing or replacement of plant and machinery;

c) bunding, enclosures and screening;

d) advising the neighbouring community of expected construction noise;

e) temporary relocation of complainants / adversely affected noise recipients;

f) siting of noisy equipment away from noise sensitive areas; and

g) staging of the works to minimise noise and to provide noise protection.

10.4.2 Performance Requirements

The Contractor shall at all times take measures to assist in minimising the noise associated with construction activities.

Clause 5 of Annexure MRTS51.1 specifies requirements for minimising and monitoring noise. Unless specified otherwise, noise monitoring shall be undertaken in accordance with methods referred to in the *Noise Management Manual*, EPA 2000.

10.4.3 Site Inspections and Recording

Project records shall include all noise monitoring results.

10.4.4 EMP(C) Requirements for Noise

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of noise sensitive places; and

b) significant noise generating activities and locations (e.g. pile driving, drilling, blasting, excavation and earth moving plant, compressors and pumps, fabrication areas, workshops, concrete batching and mixing plants, and all other construction plant and equipment).

10.5 Vibration

10.5.1 General

The Contractor shall ensure that construction works do not result in vibration causing property damage or cause environmental nuisance or harm.

10.5.2 Performance Requirements

Prior to commencement of any activity, the Contractor shall undertake a risk assessment of the potential for damage to nearby premises, buildings and structures caused by vibration. The Contractor shall undertake a condition survey of premises, buildings and structures at risk of damage (including those listed in Clause 6.1 of Annexure MRTS51.1). The survey shall assess the current structural and architectural condition of buildings and structures and shall record all existing cracks and other defect. Photographs shall support the condition survey.

Unless stated in Annexure MRTS51.1 Clause 6.2, a registered structural engineer (RPEQ) shall carry out the condition survey.

The survey is to be carried out with the consent and in the presence of the owner or owner's representative.

A copy of the condition survey shall be given to the Administrator five (5) working days before any works that cause vibration start.

Identified vibration sensitive receptors are detailed in Clause 6.3 of Annexure MRTS51.1.

In managing vibration effects in nearby structures, the Contractor shall comply with the following –

a) air blast overpressure limits given in *Environment Protection Regulation 1998*;

b) ground vibration values in Table 10.5.2; and

c) vibration monitoring requirements stated in Clause 6.3 of Annexure MRTS51.1.

Table 10.5.2 – Ground Vibration Values

Type of Receptor	Particle Velocity (V_{Rmax}) for Construction Activity	Particle Velocity (VRmax) for Single Blasting Event	Method
Historical buildings, monuments and buildings of special value or significance.	2.0 mm/s	2.0 mm/s *	AS 2187.2
Houses and low rise residential buildings, commercial buildings not included below.	5.0 mm/s *	10.0 mm/s **	AS 2187.2
Commercial and industrial buildings or structures of reinforced concrete or steel construction including bridges.	5.0 mm/s *	25.0 mm/s **	AS 2187.2

* Source: Transport and Main Road Technical Notes 3: Measurement of Ground Vibrations and Airblast

** Source: AS 2187.

Note: Table 10.5.2 refers to pile driving, vibrating rollers and construction traffic.

10.5.3 Site Inspections and Monitoring

Where identified in Clause 6.3 of Annexure MRTS51.1, the Contractor shall undertake vibration monitoring at vibration sensitive receptors.

10.5.4 EMP(C) Requirements for Vibration

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of vibration sensitive receptors;

b) vibration and air blasting overpressure generating activities (e.g. pile driving, drilling, blasting excavation and earth moving plant, compressors and pumps and other construction plant and equipment) and their locations; and

c) The procedure for site inspections and monitoring.

10.6 Air Quality

10.6.1 General

The Contractor shall ensure that construction activities do not result in air quality impacts that cause environmental nuisance or harm.

The Contractor shall at all times take measures to minimise air quality impacts associated with construction activities.

The Contractor shall consider at least the following air quality management strategies –

a) regular watering or temporary sealing of the site and access roads;

b) avoiding works (e.g. stripping, excavation, etc) during dry and windy conditions;

c) fitting equipment with dust collection/suppression devices;

d) stabilising/covering all materials stockpiled for longer than 1 month (excluding pavement materials and screenings) by grassing, erosion blanketing, emulsion spray or other approved method;

e) covering loads; and

f) maintaining clean roadways to and from worksite.

All vehicles and plant shall be maintained to keep emissions within the limits set by Australian Design Rules.

10.6.2 Burning of material

Burning of material shall not be permitted unless specifically allowed by Clause 7.1 of Annexure MRTS51.1.

If burning is permitted, the Contractor shall –

a) obtain approval from the Queensland Fire and Rescue Authority (QFRA) prior to burning;

b) comply with additional conditions specified in Clause 7.2 of Annexure MRTS51.1; and

c) not burn tyres, oil, bitumen products, treated timber or other materials that shall create toxic or nuisance emissions.

10.6.3 Site Inspections and Monitoring

Clause 7.3 of Annexure MRTS51.1 specifies air quality monitoring requirements. Unless stated otherwise, air quality monitoring shall be undertaken in accordance with the *Air Quality Sampling Manual, EPA 1997*.

10.6.4 EMP(C) Requirements for Air Quality

The EMP(C) shall consist of documents and /or diagrams indicating the following –

a) location of dust or smoke sensitive places; and

b) activities likely to reduce air quality (e.g. pile driving, drilling, blasting, excavation, crushing, screening and earth moving plant, compressors and pumps, fabrication areas, workshops, concrete batching and mixing plans, and all other construction plant and equipment) and their locations.

10.7 Acid Sulphate Soils

The Contractor shall be responsible for the management of acid sulphate soils within the worksite. The Contractor's EMP(C) shall address the requirements of MRTS04 *General Earthworks* including the requirements concerning the management of acid sulphate soils.

10.8 Contaminated Sites

10.8.1 General

The Contractor shall be responsible for the management of contaminated sites (for example, contaminated soil, waste dumps, unexploded ordinances) within the worksite. The Contractor shall comply with the requirements of MRTS04 *General Earthworks*.

Known contaminated sites within the worksite and associated management requirements are described in Clause 8.1 of Annexure MRTS51.1.

The Contractor shall manage known contaminated sites in accordance with statuary requirements and any additional requirements stated in Clause 8.2 of Annexure MRTS51.1.

If an additional contaminated site is identified during construction works, the Contractor shall –

a) immediately notify the Administrator;

b) notify the EPA as per the requirements of the EP Act;

c) prevent spread of contamination; and

d) manage the site in accordance with statuary requirements.

10.8.2 EMP(C) Requirements for Contaminated Sites

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of known contaminated sites; and

b) known contaminants and the remediation measures.

10.9 Fauna

10.9.1 General

The Contractor shall take all due care to not harm native fauna.

The Contractor shall consider at least the following fauna management strategies –

a) preserving areas by prohibiting disturbance, clearing or construction activities;

b) preserving habitat logs, rock and other shelters;

c) minimising clearing within the worksite; and

d) placement of habitat logs (as per MRTS04 *General Earthworks*).

Areas of significance and related management requirements are stated in Clause 9.1 of Annexure MRTS51.1.

Contact details for emergency wildlife care shall be included on the project's emergency contact list and within the fauna management plan.

10.9.2 Performance Requirements

The Contractor shall comply with the provisions of the *Nature Conservation Act 1992*.

Where stated in Clause 9.2 of Annexure MRTS51.1, the Contractor shall engage persons authorised by Queensland Parks and Wildlife Service to attend the Site to carry out an inspection of the Site and subsequent capture or relocation of any fauna.

Any injury or death of fauna within the worksite shall be included in the monthly report to the Administrator. Known cause of death of fauna shall also be reported.

Injury or death of fauna known as rare, endangered or vulnerable shall be reported immediately to the Administrator.

10.9.3 Habitat Management

The Contractor shall comply with the requirements of MRTS04 *General Earthworks*.

10.9.4 Site Inspections and Monitoring

The Contractor's daily site inspection shall consist of visual assessment of habitat preservation measures to ensure their integrity.

10.9.5 EMP(C) Requirements for Fauna Management

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of significant habitat;

b) management requirements included in Clause 9.1 of Annexure MRTS51.1; and

c) detailed procedures to treat fauna injured by the construction activities.

10.10 Vegetation

10.10.1 General

The Contractor shall be responsible for the management of vegetation within the worksite.

Significant vegetation known to occur within the worksite and associated management requirements are stated in Clause 10 of Annexure MRTS51.1.

The Contractor shall consider at least the following vegetation management strategies –

a) excluding access to significant vegetation areas;

b) selecting appropriately sized clearing machinery and equipment;

c) minimising worksite area;

d) protecting vegetation driplines;

e) locating ancillary activities (e.g. stockpile sites, camps, parking locations, vehicle hardstands) within existing disturbed areas; and

f) chipping or mulching cleared vegetation and using it on site.

Legislation that may be applicable includes the following –

a) *Environmental Protection and Biodiversity Conservation Act 1999*;

b) *Nature Conservation Act 1992*;

c) *Vegetation Management Act 1999*; and

d) *Land Act 1994*.

The Contractor shall comply with requirements of MRTS04 *General Earthworks* and MRTS16 *Landscape Works*.

10.10.2 Site Inspections and Monitoring

The Contractor's daily site inspections shall include visual assessment of vegetation management measures.

10.10.3 EMP(C) Requirements for Vegetation Management

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of significant vegetation;

b) location and dimensions of all areas to be cleared;

c) a program showing clearing stages;

d) means of excluding access to significant vegetation areas; and

e) methods of disposal or reuse of cleared vegetation.

10.11 Pest Management

10.11.1 General

The Contractor shall manage all declared pests (animals and plants) within the worksite by preventing their spread on and off site.

Declared pests known to occur within the worksite and associated management requirements are stated in Clause 11.1 of Annexure MRTS51.1.

Where the Contractor is required to control other (non-declared) plant or animal pests, these species and specific management requirements are stated in Clause 11.2 of Annexure MRTS51.1.

The Contractor shall at least consider the following pest management strategies –

a) treating infestations prior to the disturbance of the natural surface;

b) conserving weed free topsoil for reuse in site rehabilitation;

c) vehicle & infrastructure wash-down;

d) isolating and avoiding infested areas;

e) chemical control methods for plant species; and

f) burial or isolation of infested soil material.

10.11.2 Performance Requirements

The Contractor shall comply with the *Lands Protection Act (Pest & Stock Route Management) 2002*.

Where stated in Clause 11.3 of Annexure MRTS51.1, the Contractor shall undertake the following –

a) use vendor declarations to certify that imported topsoils and mulches are weed free;

b) certify that construction plant and vehicles used on Site are weed free; and

c) ensure construction plant and vehicles operating in contaminated areas are cleaned prior to movement in other areas.

Where temporary clean-down bays are used, they shall be –

a) located in areas easily accessible for ongoing maintenance;

b) located greater than 200 metres from a watercourse, drainage line or environmentally sensitive area;

c) designed to contain weed seeds, sediments, oils and greases; and

d) designed to prevent vehicle recontamination.

10.11.3 Site Inspections and Monitoring

The Contractor's daily site inspection shall include visual assessment of the site to determine the effectiveness of pest management strategies.

10.11.4 EMP(C) Requirements for Pest Management

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) location of pest infestations;

b) means of excluding access to areas of pest infestation;

c) location of nearest permanent clean-down facilities;

d) location and design of proposed temporary clean-down bays;

e) weed treatment schedule addressing method of control, chemicals, locations, timing of works; and

f) pest control operator qualifications.

10.12 Waste

10.12.1 General

The Contractor shall be responsible for management of wastes generated during construction.

The Contractor shall adopt a waste management hierarchy of waste avoidance, waste reuse, waste recycling, energy recovery from waste and waste disposal.

10.12.2 Performance Requirements

The Contractor shall comply with the *Environmental Protection (Waste Management) Policy 2000* and *Environmental Protection (Waste Management) Regulation 2000*.

No waste or litter shall be burnt on site unless allowed as specified in Clause 10.6.2.

No waste shall be buried on site unless approved by the Administrator and the administering authority.

The Contractor shall provide bins at common areas at all times. Bins shall be fitted with lids and serviced prior to being filled to capacity.

During construction, the Contractor shall maintain the site free of litter.

Waste management shall be highlighted in the Contractor's site induction process.

Upon completion of works, the Contractor shall ensure that all wastes have been removed from site or otherwise lawfully disposed of on-site.

10.12.3 Site Inspections and Monitoring

The Contractor's daily site inspection shall consist of a visual assessment of the site to determine the effectiveness of waste management controls.

A register of wastes shall be maintained by the Contractor and include –

a) type and quantity of waste generated;

b) when and where the waste is recycled, reused or disposed of; and

c) waste transporters details (including company name, licensed operator name and licence number).

The Contractor shall retain copies of all documents issued in relation to waste transportation and disposal processes.

10.12.4 EMP(C) Requirements for Waste Management

The EMP(C) shall consist of documents and / or diagrams indicating the following –

a) type and quantity of waste expected to be generated and their source;

b) waste management strategies (avoidance, reuse, recycling, energy, recovery, disposal);

c) containment location and receptacle type; and

d) destination and waste contractor.

10.13 Chemicals and Fuels

10.13.1 General

The Contractor shall be responsible for the management of all chemicals and fuels within the worksite so as not to cause environmental nuisance or harm. Spill response equipment shall be commensurate with the locality, time of the year that the works are to be undertaken and type of works to undertaken under the Contract.

10.13.2 Performance Requirements

In addition to satisfying the requirements of *Environmental Protection (Water) Policy 1997*, flammable and combustible liquid storage shall comply with AS 1940, *Dangerous Goods Safety Management Act 2001* and the *Workplace Health and Safety Act 1995*.

The Contractor shall ensure spill response equipment are available on site for use in emergency. Spill response equipment shall be commensurate of the type and quantity of chemicals and fuels being stored on site.

The Contractor shall remediate any contamination resulting from spills and leaks to the Administrator's satisfaction.

Unless otherwise stated in the Contract, no pre-coating of aggregates shall be conducted on site.

Refuelling of machinery shall conform to the following requirements –

a) no fuelling within 30 metres of a watercourse or drainage line;

b) fuelling activity to be supervised at all times; and

c) hoses to be fitted with a stop valve at the nozzle end.

Machinery shall be maintained to minimise the leakage of oil, fuel, and hydraulic and other fluids. During the servicing of machinery, the Contractor shall use measures to capture and contain oils, fuels, hydraulic and other fluids so as to minimise contamination of the servicing area. Servicing areas shall be remediated to the satisfaction of the Administrator.

10.13.3 Site Inspections and Monitoring

The Contractor's daily site inspection shall include visual assessments to determine the effectiveness of chemical and fuel management.

10.13.4 EMP(C) Requirements for Management of Chemicals and Fuels

The EMP(C) shall consist of documents and /or diagrams indicating the following –

a) type of chemical and fuels;

b) maximum quantity to be stored at any one time;

c) storage location;

d) management practices;

e) type and location of all spill response equipment;

f) topographic features of the site including locations of watercourses;

g) location of fixed-point machinery refuelling areas; and

h) location of machinery servicing areas.

11 SUPPLEMENTARY REQUIREMENTS

The requirements of MRTS51 *Environmental Management* are varied by the supplementary requirements given in Clause 12 of Annexure MRTS51.1.