Prepared for:

**CONTRACT #2058**

**SPECIFICATION FOR THE CONSTRUCTION OF**

**BUCHAN CAVES RESERVE – North Arm Drainage Redevelopment**

PRINCIPAL: **PARKS VICTORIA**

**Parks Victoria & Gunaikurnai Land and Waters Aboriginal Corporation**

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Version: Tender Issue 02

Technical Specification must be read in conjunction with Tender Issue drawings

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Document revision

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***Notice:***

*This Technical Specification:*

1. *Has been prepared by Crossco Consulting Pty Ltd for Parks Victoria (PV) and Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC).*
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# Summary of Inspections and Documents

1.4 Preparation of DRAFT CEMP for tender and approval of CEMP prior to execution of contract

1.5 Preparation and approval of OH&S Management Plan

1.7.23 Seven days notice to Superintendent and Council of intention to start work.

2.2.6 Removal of Soft Areas

2.3.7 Inspection of pipelines before backfilling

2.4.15 Inspection prior to placement of concrete

2.5.4 Inspection of Pavement Courses

2.5.6 Test Rolling of Pavement Courses

2.6.1 Damage to Existing Works, Properties and Fences

**Practical Completion**

Inspection prior to issue of Certificate of Practical Completion.

The Superintendent will not accept any works carried out without notification of the necessary inspections and approvals as detailed above or in the specification being carried out.

**Final Completion**

Inspection prior to issue of Certificate of Final Completion.

The Superintendent will not accept any works carried out without notification of the necessary inspections and approvals as detailed above or in the specification being carried out.

# GENERAL SPECIFICATION

## EXTENT OF CONTRACT

### The Requirement

Joint Managers Parks Victoria and GLaWAC, requires the construction of ***Buchan Caves Reserve – North Arm Drainage Redevelopment*** project, in accordance with the contract documents.

### Form of Contract

The works will be tendered as a Lump sum contract and shall be deemed fully inclusive of the whole works detailed as follows

|  |  |
| --- | --- |
| **Schedule** | **Description** |
| 2508 Schedule Tender Issue 01 (as amended) | Comprises all earthworks, site works and plantings |

### Description of Works

The principal items of work include the following:

1. The preparation and approval of a Construction Environmental Management Plan (CEMP);
2. Project Management, quality assurance, defect liability period and other obligations under contract.
3. The preparation and approval of an Occupational Health and Safety Plan;
4. Construction of a swale;
5. Supply and establishment of vegetation.

### Scope of Specification

The works covered by this specification consists of the supply of all documents, plans, labour, materials and equipment necessary to construct and complete the whole of the works in accordance with the accompanying plans and as herewith specified.

### Drawings, Specification and Schedules

1. The Specifications for each and every contract effected for the works shall consist of three parts:
	1. General Specification #2508 and
	2. Particular Specification #2508
	3. Specification for the Preparation of the Construction Environmental Management Plan
2. Revision F of the following drawings shall be used in each and every contract:



1. Schedules listed in 1.1.2.

The requirements of this specification are based on the Tender Issue drawings.

1. Not more than three copies of the Contract Documents and not more than four copies of the Drawings will be provided to the Contractor by the Principal if requested by the Contractor. Any additional copies which may be required and are supplied shall be paid for by the Contractor at a rate to be fixed by the Superintendent. The Contractor shall check all drawings carefully and advise the Superintendent of any discrepancies, errors or omissions and full instructions will be furnished to the Contractor should any discrepancies, error or omissions be found.

### Discrepancies

Should any discrepancy occur between: any plans, or between the plans and specification, or between the plans and the actual site conditions, or the plans and/or site conditions and electronic information, the Contractor shall refer such discrepancy to the Superintendent before proceeding with that section of work. This is regardless of whether the Contractor is undertaking pegged or pegless survey and/or whether the Contractor is undertaking a construction methodology approved by the Superintendent that allows for construction and survey to occur contemporaneously.

### Digital Information

Where digital information is provided to the Contractor:

* In the event of any discrepancies between information provided by *Crossco* in hardcopy format and Digital Information, the Superintendent must be notified immediately and prior to works continuing.
* Any conversion of Digital Information from the format supplied to another format, including a different version of the same software, may result in a loss or distortion of information.
* *Crossco* takes no responsibility for dimensions, levels, quantities or other information derived by the Contractor using any CADD files or any other electronic information provided.
* Prior to use digital file(s) must be scanned for viruses. *Crossco* accepts no responsibility for loss or damage resulting from the file(s) containing viruses.
* No part of the Digital Information may be used for the preparation of drawings for other projects.

## SITE INFORMATION.

### Location

The site of works is located at Buchan Caves Reserve, Buchan.

The Buchan Caves Reserve is managed jointly by Parks Victoria and GLaWAC, as the traditional owners of the land.

The project area is shown on Crossco Drawing No. 2508/1000.

### Geology of Project Area

Refer to Appendix 1.

### Access to Project Area

Access to the project area will be via Caves Road within the Buchan Caves Reserve.

To prevent unsafe trespass, immediately following handover of the site the Contractor shall erect approved construction site fencing as approved in the Construction Environmental Management Plan.

### Possession of Site

Possession of Site will be affected as nominated in Annexure A of the tender documents.

The Contractor is advised that Possession of the Site shall be limited to that which is reasonable (as determined by the Superintendent) to affect the work. The Superintendent may approve access to the site by owners of the land. Such access will be provided after advising the Contractor.

## statutory approvals

The works are conditional upon a number of statutory approvals.

The works must be executed in accordance with the requirements of all statutory approvals and relevant legislation.

Statutory approvals form part of the contract.

## Environmental Care and Protection

The project is situated in a sensitive area within the Buchan Caves Reserve. Cave/s within the precinct are known platypus nesting sites. There are several rare or threatened species present. The location of significance culturally and Joint Management Plan is in place with the traditional owners.

The execution of the Works shall be conducted in such a manner that at both completion and at all stages prior to completion impact on the cultural and environmental values is to be kept to a minimum to the satisfaction of the Superintendent.

In response to the sensitive nature of the project area and surrounds PART 5 of this specification series specifies the preparation of the Construction Environmental Management Plan (CEMP). This plan must be prepared in draft form by all tenderers. The preferred tenderer must prepare and obtain approval to a final CEMP before the contract is executed.

It shall be deemed that the Contractor has allowed in their rates and amounts for all necessary work required to:

* complete the required CEMP and finalise approval prior to execution of the Contract
* comply fully with the CEMP

Notwithstanding the provisions of the Specification for the preparation of the Construction Environmental Management Plan (CEMP) the following practices must be applied.

1. During wet weather the Contractor shall limit plant movement to established haul roads unless effective measures have been taken to prevent disturbance of the ground.
2. In dry weather the Contractor shall be responsible for the suppression of dust by watering, or by other accepted means. The Contractor shall introduce measures to the satisfaction of the Superintendent that will limit discharge of dust into the atmosphere. Lake water may be used for dust suppression on haul roads except in the vicinity of future allotment fills. Lake water cannot be used for moisture control in future allotment fills. Only fresh potable water may be used in this work.
3. Nuisance and inconvenience to occupiers of nearby properties from noise shall be reduced as far as possible by adopting such measures as:

(i) Fitting of silencers to machinery.

(ii) Construction of sound attenuation mounds along haul roads.

1. All proper precautions shall be taken by the Contractor to prevent the deposition of unnecessary excavated material in drainage lines.
2. Water from site excavation shall not be pumped directly into the existing designated waterway / drainage line but firstly into constructed stilling basins.

### Waste Minimisation

The Contractor shall carry out all works under the Contract to minimise waste materials and where ever possible recover, recycle or re-use any wastes.

## Occupational Health and Safety

### Principal Contractor

The Contractor is hereby appointed as “Principal Contractor” for the purposes of fulfilling the requirements of the *Occupational Health and Safety Regulations* 2017. The Principal authorises the Contractor to manage and control all activities being performed at the workplace to the extent necessary to discharge the duties of Principle Contractor under these Regulations.

### Occupational Health and Safety Management Plan

The Contractor shall plan, establish and maintain an Occupational Health and Safety Management Plan to cover all work under the contract. The OH&S Management Plan shall be developed in response to PART 4 Guideline for the preparation of the Occupational Health and Safety Management Plan.

It shall be deemed that the Contractor has allowed in his rates and amounts for all necessary work required to complete the required OH&S Management Plan and finalise approval.

The Contractor shall ensure their obligations under the *Equipment (Public Safety) Regulations* 2017 are fully addressed.

## CONSTRUCTION SERVICES

### Works Area

1. Only after formal approval and adoption of the CEMP, the Principal shall if requested make available to the Contractor from the Date of Handover of the site, works areas within the site. These areas shall be provided for the use of the Contractor in carrying out the works and no charge shall be made for use of the land.
2. The Contractor may erect construction facilities in these areas but shall not use such facilities for living accommodation.

### Office and Amenities

1. The Contractor shall, within 14 days of commencement of the contract, erect to the satisfaction of the Superintendent and relevant statutory authorities, suitable office accommodation including amenities on or adjacent to the works area. Such accommodation shall be made available to the Superintendent and other Contractors.
2. Telecommunications shall be made available by the Principal Contractor for the duration of the works.
3. The Contractor shall, prior to the commencement of the works and for the duration of the whole works, provide at a location approved by the Superintendent a chemical sanitary pan type toilet facility. Such facility shall be regularly emptied and maintained in a hygienic condition.
4. The Contractor shall ensure potable water is available for use in amenities.

### Water Supply

The Contractor shall be entirely responsible for the establishment of a temporary water supply for dust control, and any necessary site mixed concrete.

### Fire Prevention

The Contractor shall comply with all statutory provisions which may be in force from time to time in relation to fire danger or to restrictions on the lighting of fires in the open. All plant and equipment used on the works shall be fitted with the appropriate spark arrestor where applicable.

Where there is a particular fire hazard at any point of the works, the Contractor shall ensure that his employees engaged in the vicinity of such points are trained in the use of appropriate fire-fighting equipment and that such equipment is at hand.

### First Aid and Medical Facilities

The Contractor shall in all respects be fully responsible for all necessary first aid services to their employees in accordance with Occupational Health and Safety requirements.

### Safety

The Contractor shall at all times exercise all necessary precautions for the safety of his employees, appropriate to the nature of the work and the conditions under which the contract is to be performed, and in compliance with all statutory requirements and such directions as the Superintendent may from time to time consider necessary or desirable.

The Contractor shall promptly report to the Superintendent all accidents and incidents involving near-misses, first aid and/or medical care and/or serious injury to employees or the public.

### Safety of the Public

The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, and take all necessary precautions for the protection of the works and the safety of the public.

Roads closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning and detour signs. All barricades and obstructions shall be illuminated at night and all lights shall be kept burning from sunset to sunrise.

The Contractor shall take appropriate measures to exclude the public from the construction zones. The perimeter site fencing as approved by the Construction Environmental Management Plan shall be erected prior to the commencement of works.

## GENERAL OBLIGATIONS

### Contractors Qualifications

The construction works, as stated on the drawings shall be carried out by acceptably qualified and accredited personnel. The personnel shall hold minimum qualifications or specialist accreditation appropriate for the work to be undertaken.

### Co‑Ordination of Works

At the commencement of the work and from time to time, the Contractor shall confer with the Superintendent and persons engaged on separate contracts in connection with the work for the purposes of co‑ordination and execution of various phases of the work.

### Co‑operation With Other Contractors

The Contractor shall co‑operate with other contractors, property owners or with Public Authorities performing works on the site and shall facilitate their work as much as possible.

The Contractor shall be responsible for supervising and carrying out any precautions necessary to protect any of the works under this Contract from damage by any of the above contractors.

### Form of Contract

This contract shall be a Lump sum Contract.

The General Conditions of Contract, AS2124-1992, shall apply to the contract affected for the Works.

In the event of a discrepancy arising between the Specification and the General Conditions of Contract AS2124-1992, the discrepancy shall be referred to the Superintendent and the Specification shall take precedence.

### Nature of Ground – Examination of Site and Documents

1. The attention of tenderers is drawn to Clause 12 of AS2124.

Tenderers shall submit their tender upon the express condition that they have satisfied themselves by personal examination of the site of works and by such other works as they may prefer, as to the actual conditions and requirements of the works. Notwithstanding Clause 12.2 of AS2124, claims for additional costs or extensions of time, which are resultant from the Contractor’s failure to comply with Clause 12 of AS2124, shall not be entertained.

1. Prior to the commencement of works a full record of existing defects of adjoining infrastructure (eg. roads) shall be made by the Contractor and such record shall be agreed to and signed by Contractor and Superintendent.

### Hours of Work

Pursuant to Clause 31 of AS2124-1992, work under the contract shall be restricted to the hours between 7.00 am and 6.00 pm Monday to Friday and 9.00 am and 5.00 pm Saturday. No work shall be carried out on Sundays and public holidays.

### Programs of Work

1. The Contractor shall submit with his tender a draft construction program. This draft shall set out, but not be limited to, the sequencing and staging of the project activities and the installation timing of relevant environmental protection components.
2. Upon selection as preferred tenderer the Contractor shall review the draft program and advise of any required changes. The amended program shall become the contract program and shall be incorporated in to the contract documents. Thereafter the program shall be reviewed at the site meetings and updated for progress by the Contractor.
3. If the Contractor fails to update and maintain the construction program at least fortnightly, the Superintendent shall do so and the Principal shall recover the cost of such maintenance as a debt from the Contractor.
4. At the commencement of the work and from time to time, the Contractor shall confer with the Superintendent and persons engaged on separate contracts in connection with the work for the purpose of co-ordination and execution of various phases of the work.
5. The Contractor shall co-operate with other Contractors, cultural monitors, property owners or with Public Authorities performing works on the site and shall facilitate their work as much as possible.
6. The Contractor shall be responsible for supervising and carrying out any precautions necessary to protect any of the works under this contract from damage by any of the above Contractors.
7. The Superintendent shall arrange and convene as minimum, fortnightly site meetings, at which a representative of each Contractor shall attend. The purpose of these meetings shall be to discuss the interaction of all contracts and to monitor progress and modify the Construction Program as required. The Superintendent reserves the right to convene more frequent site meetings if necessary without additional cost to the Principal.

### Setting out Work

1. Pursuant to Clause 28 of AS2124-1992 the site of works shall be fully title pegged at the commencement of works. Final pegging shall be affected at the completion of site topsoiling. The cost of any pegging by a Licensed Surveyor other than the aforementioned shall be borne by the Contractor. It shall be deemed that the Contractor has allowed in his rates and amounts for all necessary set out to ensure the works are constructed in accordance with the design dimensions, profiles, levels and tolerances.

Suitably located reference benchmarks shall be provided to the Contractor.

1. The Contractor shall furnish all materials including stakes, templates, platforms, and special labour that may be required in setting out or laying out any part of the works.
2. The Contractor shall engage and nominate to the satisfaction of the Superintendent, an individual responsible for setting out of the works and this individual must have demonstrated competence and suitable experience in survey management in a construction environment.

### Checking Bench Marks and Setting Out Works

The Contractor shall set out the works for this contract in strict conformity with the plans. The Contractor shall check the difference in level between the Benchmarks and, prior to setting out the works advise the Superintendent if there is any discrepancy in level.

When setting out the works and during construction of the contract, the Contractor shall

1. use not less than two previously established bench marks;
2. line in the work both in horizontal and vertical planes over at least three set out points;
3. report to the Superintendent any apparent inconsistency or mistake or error between the set out and data supplied and shall not proceed with further construction works without the authority of the Superintendent.

The Contractor shall ensure that sufficient survey pegs or reference marks remain in position to allow the work to be checked by the Superintendent at any time.

Approved templates, spirit levels, straight edges, and boning and ranging rods as well as tapes of reliable types shall be kept on the job by the Contractor at all times to ensure the satisfactory execution of the work. Those items of equipment shall be available to the Superintendent for checking purposes whenever required with a person or people on the job as required.

Use of pegless survey construction practices using GPS must be approved by the Superintendent prior to construction commencing.

If pegless construction is approved:

* the Contractor shall provide the Superintendent a fully operational roving device of the GPS technology system being used by the Contractor. The roving device shall be for the Superintendent’s sole use and shall be provided for the duration of the Contract. Spare batteries and an appropriate battery charging unit shall be provided for the roving device.
* The roving device shall be fully calibrated and programmed with the most recent issue of the approved construction design at all times. The Contractor is responsible for all repairs, servicing, maintenance, recalibration, reprogramming and updating of designs on the roving device and ensuring the roving device is fully operational and fit for purpose.
* The Contractor shall train the Superintendent’s Representatives in the use, care and operation of the roving device, and shall provide ongoing user support for the duration of the Contract.
* All costs associated with the provision, maintenance, reprogramming, calibration, recalibration of and repairs to the roving device issued to the Superintendent, including all costs associated with the training of the Superintendent’s Representatives in the use of the device and all ongoing technical user support, shall be deemed to be included the Contract sum.

### As Built Drawings

Within 20 days after the Date of Practical Completion and prior to payment of Schedule item for “As Constructed” drawings, the Contractor shall provide as-built drawings to the Superintendent in accordance with the following:

* Final constructed levels;
* Drainage Structures and Pipe Invert Levels;

The Contractor shall provide the Superintendent with both a pdf copy together with a 3D Autocad file (and format otherwise acceptable to the Superintendent). The electronic file shall be on the same datum as that provided to the Contractor and to AHD levels.

### Roads and Traffic

Before any works are commenced which will in any way obstruct, endanger or inconvenience the traffic normally using the roadway or roadways adjacent to the works, the Contractor shall provide to the nominated Parks Victoria and GLaWAC representative, a Traffic Management Plan. This plan together must be approved by the authorities prior to any works been undertaken. The cost of the plan together with any necessary permits required to undertake the works shall be allowed for the tendered sum.

Any detours or temporary road closures shall only be affected after permits have been sought and gained from the nominated Parks Victoria and GLaWAC representative. The nominated Parks Victoria and GLaWAC representative shall require 14 days clear notice prior to issuing or otherwise of any permit.

The Contractor shall be responsible for the safety of traffic and pedestrians affected by the works and shall at all times operate and maintain the necessary warning signs, lights and barricades. Refer to Clause 1.6.7 of the Specification.

The Contractor shall be held responsible for any damage caused to any roads, bridges or other structures, any materials or rubbish deposited on road pavements, road reserves or other improvements, by any vehicle engaged on the works. The Contractor shall cart along and use such roads or portions thereof as the Superintendent may direct. The municipality shall be advised of all haul roads approved by the Superintendent.

### Transport

All road transport vehicles used in connection with the works of this contract shall comply with the provisions of the *Road Safety Act* (Vic).

Notwithstanding anything contained in the above Act, the Contractor shall observe any load or speed restriction which the VicRoads or the Municipality has fixed for any road or bridge.

In the case where the use of any vehicle operated in connection with this contract is subject to the requirements of the transport regulation Acts the Contractor shall hold the appropriate license to do the particular work.

### Mains and Services

The Contractor shall satisfy itself as to the location of all water, sewerage, gas, electricity supply and communications mains and services within the area, and shall take all necessary precautions to protect these lines and all services thereto, and prevent them from being interfered with or damaged during the execution of the works, and shall make good at his own expense occurring thereto during that time, and caused directly or indirectly by the works of this contract.

Mains ‑ If it is found that the position of any water main, sewerage main, or an electricity supply or communications main or poles requires altering, the Contractor shall notify the Superintendent in writing, and take steps to protect them pending alteration. The necessary alteration to such mains will then be made free of cost to the Contractor, who shall co‑operate with the Contractor/s making the alteration. No claim whatsoever for costs associated with delays due to service relocation shall be considered by the Principal.

Service Pipes ‑ The Contractor shall be responsible for lowering and/or raising as necessary all water service pipes so that the depth thereof will not be less than 300mm nor more than 600mm below the road bed and the footpath.

During the progress of the works, to the end of the maintenance period the Contractor shall be responsible for and shall repair at its own expense, all damaged water services whether any such damage is caused directly or indirectly by the works of this Contract.

Entering backfilling over existing mains and services under the road pavement or kerb and channel shall be completely excavated and backfilled with pavement material compacted in layers not exceeding 150mm. to a dry density of not less than 98% standard maximum dry density up to sub grade level.

The Contractor shall notify the Superintendent and the Authority responsible for such services of his intention to commence these works. Such works then being carried out under the supervision of the Responsible Authority.

All Authorities have powers to recover damages from the persons responsible for damage to their services.

The Contractor shall allow to obtain all necessary permits that are required when working in the vicinity of the existing services including Overhead electrical wires. The Contractor is deemed to have allowed for the cost of these permits in its tendered sum.

### Emergency Plumbing Works

The Contractor shall nominate a plumber who can be called by the Superintendent, to carry out emergency work on the Contractor's work.

### Keeping works clear of water

The Contractor shall, before commencing the works, submit to the Superintendent for acceptance, full details of temporary works for excluding water from the works and also managing any surface or ground water that may enter the site.

### Explosives

Where work requires the transport, storage and use of explosives, the Contractor shall comply with the *Dangerous Goods Act* (Vic), *Occupational Health and Safety Act* (Vic) and regulations made under these Acts. The Contractor will be held responsible for any claims for damage or injury resulting.

### Fires

When regulations permit, fires may be lit with the approval of the Superintendent, providing the Contractor takes precautions to prevent nuisance to adjoining property owners, and other persons, other contractors or traffic.

### Materials to be furnished by Contractor

1. The Contractor shall furnish all materials required for the carrying out of the works unless otherwise specified. All materials that will become part of the completed works shall be new and conform to this specification except where specifically approved by the Superintendent.
2. All materials not specified as to quality and standard therein shall comply with the Australian Standards Specifications where such exist, and in their absence, with British Standards Institute Specifications.

Where the Superintendent considers that there is a possibility that materials may be of an inferior quality, at the Superintendents discretion the Superintendent shall direct the Contractor to carry out suitable tests at the Contractor’s expense and in accordance with Clause 31, AS2124-1992.

### Cleaning up

1. Subject to this Specification and Clause 38 of AS2124, the Contractor, on the completion of the Works, shall remove from the site all plant, buildings, rubbish, unused materials, construction facilities and other material belonging to it or used under its direction and leave the site clean and tidy to the satisfaction of the Superintendent.
2. Before Practical Completion payment is made the Contractor shall produce written clearances from all landowners whose properties have been trespassed on or damaged in any way by the Contractor or his employees.

### Insurances

Clauses 19 & 20 of AS 2124 requires the Contractor to effect Workers Compensation and Public Liability Insurances each endorsed to indemnify the Principal, the Superintendent and the Municipality against liability.

Evidence of these insurances shall be required prior to commencement of works.

The Contractor shall also familiarise itself with other insurance requirements of AS 2124.

### Security

Where a security deposit is required by the Principal it shall be in addition to any retention monies and be equivalent to the sum nominated in Annexure A of the tender documents.

### Maintenance of works

The defects liability period referred to in Clause 38, AS2124-1992 is as set out in Annexure A and shall be:

**Schedule Works**

* + - 1. Earthworks / Construction of WLRBs --1 year
			2. Landscaping / Planting --1 year

If there is an inconsistency between the defects liability period above and AS2124-1992 Annexure A attached to the Contract, the periods in Annexure A will take precedent.

### Notification and Inspections

The following specification demands several inspections by the Superintendent (a list is included in this document).

Where the completed works are to be taken over by the Principal the Contractor is required to notify the Superintendent of each inspection as required. The Contractor shall provide a minimum 24 hrs notice of all inspections. Failure to do so shall constitute a breach of the contract.

The Contractor shall give the Superintendent seven (7) days clear notice of its intention to commence work.

Progress inspections/approvals by the Superintendent shall not in any way prejudice the right of the Superintendent with regard to Practical Completion.

Approvals by the Superintendent of materials, workmanship and so on do not imply conclusive acceptance of the works. The works on a whole shall be accepted at Practical Completion.

Prior to acting upon directions or requests issued by the Superintendent, the Contractor shall confirm the direction or request with the Superintendent and in so doing shall indicate whether a variation or extension of time is implied by the direction or request.

### Measurement of work

1. The Contractor shall furnish all personnel, equipment and material required to make such surveys as are necessary to determine the quantities of work performed or in place.
2. Except in so far as the Specification may expressly state to the contrary, all measurements for payment shall be to the neat lines and dimensions on the Drawings.
3. All original field notes and other records taken and computations made by the Contractor for the purpose of surveys and quantity surveys for progress claims shall be furnished promptly to the Superintendent, shall become the property of the Principal and shall be used to the extent necessary in determining payments due to the Contractor under the Contract.
4. Methods of measurement shall be determined by the Superintendent.
5. Survey work will be subject to periodic check and verification by the Superintendent, and all errors in survey work or the recording of same as found in such checking shall be immediately corrected by the Contractor at no cost to the Principal.

### Basis of payment

The basis of payment for work done or materials or services supplied under the Contract, shall be as set out herein.

1. The Rate or Lump Sum set down against each Item in the Schedule of Quantities and Rates shall include and be deemed to include, the entire cost of provision of labour, materials, plant, cartage and services required for the completion of works to be carried out under that Item in accordance with the Drawings and this Specification, unless part of the whole of such cost has been provided for in a separate item or items.
2. The Rates or lump sums set down for the various items shall also include, as appropriate to the cost of carrying out all other obligations of the Contractor under the Contract, including, but not limited to, the costs of supervision, giving and receiving of notices, fulfilling the requirements of Statutory Authorities, preparation, implementation and compliance with CEMP, coordinating cultural monitoring, providing Worker’s Compensation insurance cover, restoration of property damaged as a result of carrying out the Works of the Contract, payment of royalties, provision for satisfying claims, demands, suits and actions arising out of, or incidental to, the execution of the Works, reimbursing living and messing charges, providing stores, offices and buildings required for the execution of the works, providing and maintaining of additional roadways, provision and use of telecommunications required by the Contractor, providing facilities for first aid and firefighting, and provision of programs, drawings, data and reports.

### Clearances

Before final payment is made the Contractor shall produce clearances from all landowners whose properties have been trespassed on or damaged in any way by the Contractor or his employees.

### Variations, Notice of Delay

#### Variations

No variation ordered by the Superintendent shall vitiate or violate this agreement.

Where the Contractor has accepted verbal instructions to vary the work the Contractor shall in writing within 7 days, confirm the instruction to establish its right to payment for the variation. If such confirmation is not objected to by the Superintendent within a further 7 days it shall establish that a variation exists to be valued as set out hereafter.

Upon request by the Superintendent in writing the Contractor shall within the seven days provide a quotation for any variation requested. Should the Contractor fail to respond within the time stated and continue the default for a further seven days after written reminder from the Superintendent it shall establish that no extra charge is involved.

#### Delays, Extension of Time

Should the Contractor be delayed or impeded in the execution of the Works comprising this contract the Contractor shall, when it considers an extension of time justified, make written application within seven days to the Superintendent for an extension of time for the completion of this Contract. Only extensions of time without cost shall be granted where justified. Under no circumstances whatsoever, shall the Superintendent accept any claim for extension of time with costs.

### Industrial Relations

A statement shall be included with the tender indicating the classification of labour and the various awards under which labour is proposed to be employed for the execution of work under the contract.

The Contractor shall advise the Superintendent of any impending hearings of the Australian Conciliation and Arbitration Commission in relation to any matters affecting the rates of pay and conditions of employees engaged on the site.

Nothing contained in this Clause shall remove from the Contractor their obligations to his employees to pay wages and provide conditions in accordance with any Awards or Determinations relevant to execution of the Works and Temporary Works under the Contract.

### Vibration machinery

Vibration machinery shall not be used within 50 metres of a building until a study has confirmed that no damage will result, having regard to the soil structure and vibration transfer.

### Unauthorised disposal

The Contractor is to ensure that the Site is properly signed and barricaded to prevent unauthorised disposal of waste material on the Site by others. Any rubbish or waste deposited is to be cleared from the Site immediately.

The Contractor is also responsible for all excess spoil to be removed and disposed off site except where detailed in the documents or directed by the Superintendent.

### Quality Control

The Contractor shall plan, establish and maintain a quality system to cover all works under the contract.

All non-conformances, which violate the contractual requirements, are to be immediately reported to the Superintendent for agreement via a non-conformance report.

The non-conformance report shall include the following:

* The cause of the non-conformance
* The proposed method of rectifying the non-conformance
* The proposed changes made to the work procedure to prevent recurrence.

The Contractor shall cease work when a non-conformance is reported and only when the Superintendent has been satisfied with the non-conformance report shall the Contractor re-commence work.

# PARTICULAR SPECIFICATION

## CLEARING AND GRUBBING

### General

This section specifies the removal and proper disposal of all trees, brush, stumps, timber and other rubbish and debris, and shall also include the removal and proper disposal of concrete paving, footings, kerbs and drainage pits, fences and any other incidental structures which shall interfere with the construction works and as hereinafter specified.

### Tree protection zones

Tree protection zones (TPZ) have been applied to the works area. No excavation or disturbance to soil is allowed within a TPZ. The TPZ to be applied in all cases is 12 x DBH (where DBH is diameter at breast height), unless otherwise directed by the Superintendent.

### Areas

The following areas shall be cleared and grubbed as specified:

1. Cut or fill areas, which is to be cut or filled in excess of 300mm, shall be completely cleared unless otherwise directed by the Superintendent.
2. Drainage work areas shall be completely cleared as necessary to construct the works. However, in no case shall the cleared area be of greater width than the drainage easement provided.

The Superintendent reserves the right to retain any trees or tree which may, in his opinion, be of aesthetic value and the Contractor shall, when so directed retain such a tree, take all necessary precautions to prevent damage to it or its root growths.

### Clearing

No clearing or vegetation removal shall be carried out unless approved by the Superintendent. Trees shall be felled within the area to be cleared in such a manner as to avoid damage to vegetation or any property outside the area to be cleared. Trees shall be felled one at a time and where they cannot be felled without danger to traffic or damage to other trees, shrubs, structure or property, communication lines, control lines, they shall be cut in sections from the top down. All trees within the fill site shall be removed by the Contractor.

Tree branches extending over any roadway within five (5) metres of the finished road level, shall be cut off close to the boles. All cuts on trees shall be made flush with the trunk so as to leave no stubs. All branches or long stubs shall be undercut so that the branches or stubs will not tear down the trunk when falling.

### Grubbing

The entire specified area shall be grubbed free from heavy grass, vegetation, decayed stumps, roots and other perishable matter, to the following depths: ‑

1. Within areas where excavations will be made ‑ to a minimum depth of 300mm below finished sub‑grade level or as specified in the Schedule, whichever is the greater.
2. Areas which are to be covered by embankments ‑ to a minimum depth of 600mm below finished sub‑grade level.

All holes shall be backfilled with similar materials so that obtained from excavations and compacted to the same density as the surrounding sub‑grade.

### Removal and Disposal of Materials

All tree trunks, cleared vegetation, rubbish and other debris removed in clearing and grubbing shall be removed from the site of the work. The work areas shall be left with a neat and finished appearance. No accumulation of flammable material shall be permitted to remain on or adjacent to the site area.

### Burning of materials

No burning of any material shall be allowed at the site without first obtaining the permission of the Superintendent in writing. Burning of material at the site prior to receipt of written permission from the Superintendent will constitute a breach of the contract.

### Removal and Disposal of Existing Constructions

Existing pits, pit slabs, grates, pipe or box culvert sections, concrete or pitched inverts, etc, which are not required for the works of this contract, are to be removed. All existing fences within the works site, including the fill site, shall be reinstated by the Contractor as part of the works.

The Contractor shall be held responsible for the excavation, and the lifting of, all such materials, and he shall be responsible for the safe delivery of materials from the project site. This material shall become the property of the Contractor, unless otherwise notified by the Superintendent, and must be removed from the site of the works by the Contractor at his own expense.

All buildings, structures and stored materials on the fill site will be demolished and removed from site by others prior to the Contractor commencing filling.

### Drainage of Area

All depressions in areas cleared and/or grubbed, shall be drained at all times.

## EARTHWORKS

### General

This section specifies the construction of earthworks consisting of stripping, excavation and filling by the Contractor, necessary to complete the works to the correct alignment, design levels, type cross sections and details shown on the drawings.

### Standards

The following Australian Standard shall form part of this Specification:‑

Australian Standard AS 1289 Part 5, "Methods of testing soils for engineering purposes – Soil compaction and density tests"

Australian Standard AS 1289 Part 6, "Methods of testing soils for engineering purposes – Soil strength and consolidation tests".

### Stripping and Stockpiling Topsoil

Before construction work is commenced, all areas which are to support pavements, or filling under such work, areas which are to be excavated or filled and areas on which fill may be temporarily stored, shall be stripped clear of all grass, root growth, wet or spongy natural soil, decayed vegetable matter and any other deleterious substances such that a natural, solid, undisturbed surface is exposed to provide a solid base for the works to be constructed.

Stripped topsoil shall be stockpiled in a clear area where directed by the Superintendent and used for topsoiling batters and nature strips.

Should construction methods and/or weather conditions prevent the winning of topsoil, or where there is insufficient suitable topsoil to be obtained from the stripping operation, the Contractor shall allow in his tender for:‑

1. Importing approved topsoil for lining of WLRB
2. Winning topsoil from adjacent sites as directed by the Superintendent

### Formation

The Contractor shall carry out all earthworks and trimming necessary to bring the formation true to lines, levels, cross‑sections and gradients, as shown on the accompanying drawings. These shall be accurately trimmed to template and level. Batters shall be neatly trimmed to the design shapes and slopes.

### Forming Allotments and Batters

Batters shall be formed by cutting and filling as required to bring them to the levels and/or grades shown on the drawings.

In all cases, filling batters shall be spread in successive layers not exceeding 150mm and compacted throughout to a dry density of not less than 98% Standard Maximum dry density.

### Removal of Soft Areas

Where directed and authorised in writing by the Superintendent, soft, wet or unstable areas below the design levels of the sub‑grade which exist or develop during earthworks, shall be excavated and replaced with approved, stable material in layers not exceeding 150mm loose thickness, compacted to a dry density not less than 95% Standard Maximum dry density, except that the top 450mm of replaced sub‑grade material shall be compacted to a dry density not less than 100% Standard Maximum dry density.

Soft, wet or unstable areas of the sub‑grade which, in the opinion of the Superintendent, have been caused by the Contractor's negligence or improper methods, shall be drained and compacted or excavated, and replaced with approved stable material spread and compacted as above, by the Contractor, at its own expense.

### Disposal of Surplus

All surplus material including topsoil not required for use in the works, shall be stockpiled or spread where directed by the Superintendent at a location within the works site, without additional cost to the Principal. Topsoil deemed to be not required is to be removed from site at the contractors cost.

All surplus spoil not required for site grading, or elsewhere in the works, shall be disposed of by the Contractor within 10km of the works site, as directed by the Superintendent, without additional cost to the Principal, unless otherwise specified.

All suitable excavated material shall be used initially in the works.

### Topsoil Surfacing

The surface of excavations and disturbed areas shall be finished parallel to the finished surface level to allow for the depth of topsoil surfacing specified hereunder.

No topsoil may be bought to the site without the prior approval of the Superintendent.

Topsoil surfacing shall be the best available material from the stockpiled topsoil, spread to a minimum depth of 150mm (or as specified in the drawings) and raked level to the profiles and levels detailed.

Should the stockpiled topsoiled contain stone greater than 15mm this shall be removed by screening.

### Erosion Protection

Where specified on the drawings or where directed in writing by the Superintendent, Erosion control matting or similar approved decomposing matting shall be installed in accordance with manufacturer's instructions. Such matting is to overlay the seeded topsoil and is to be lightly trodden in after pegging. Where placed to in the invert of drains the edges of the matting are to be secured under 100mm of lightly compacted topsoil to ensure the flowpath of water to the drain is not intercepted.

### Drainage of the Earthworks

Earthworks shall be kept clear of water at all times. The work shall be arranged so that all water will flow to one or more points, from which it shall be drained away by gravity, or be removed by pumping.

Existing drains shall be diverted during the construction of the new work if they cause interference, and connected to the new work later, as directed.

### Site Preparation

The areas to be filled within the works sites are to have all introduced species (blackberries, etc.) removed completely.

Filling or cutting of any site is not permitted except where shown on the plans or where agreed to in writing by the Superintendent. When a site is to have either fill or cut, the topsoil is to be stripped off and stockpiled. Filling shall then be placed and compacted in layers as specified elsewhere under this section of the specification. The Contractor shall ensure the fill site is free draining.

## DRAINAGE

### General

This section specifies the construction of all underground pipe drains, appurtenant works, including also subsoil, house, open earth drains and Drainage Structures (including gross pollutant traps) in accordance with the accompanying plans.

### Materials

Materials shall conform to the following Australian Standards:‑

AS 4058 Precast concrete pipes (pressure and non-pressure).

AS 1254 Unplasticised PVC (UPVC) pipes and fittings for storm and surface water applications.

Concrete for all works within this Section shall comply with

Clause 2.4 of this Specification ‑ "Concrete".

### Damage to Pipes

Any pipe which becomes chipped at the ends or damaged in any way, shall be liable to be condemned. Condemned pipes shall immediately be removed from the site of the works at the Contractor's expense.

### Clearing and Grubbing

Drainage works areas shall be cleared and grubbed in accordance with Section 2.1 of this Specification.

### Excavation

All excavation work shall be carried out in strict accordance with *Compliance Code Excavation, WorkSafe Victoria, May 2018* as amended.

The Contractor is responsible for all notifications, shoring, timbering and site management practices required to meet WorkSafe requirements.

The excavation for all drains, drainage pits and other appurtenant structures shall be taken out to the exact lines, levels, grading, cross‑sections and details shown on the plans, or as directed by the Superintendent.

Unless otherwise approved by the Superintendent, trenches shall only be opened sufficiently in advance of laying pipes to enable work to proceed without delay.

Each trench shall be of sufficient width to provide a clearance on each side of the pipe, equal to one‑sixth internal diameter of pipe, but not less than 100mm.

The clearance in the case of spigot and faucet joints, and also bandage and collar joints, shall be increased at the pipe joints to at least 300mm on each side. In all cases for whatever type of joint or connection required, sufficient clearance shall be left to properly join or connect the pipes. Trenches shall be deepened under faucets and at external flush joints and for anchor blocks where required.

Should the trench bottom be of unstable material, the Contractor shall excavate and replace such material with approved sand or fine crushed rock.

Where pipe drains are adjacent to other constructions, the Contractor shall take special care to prevent trenches being taken out wider than necessary to enable the drain to be laid.

### Laying of Pipes

The Contractor shall lay and joint accurately, all pipe lines shown on the plan, true to line, level and gradient and shall be particularly careful to lay all pipes with the top as indicated by the manufacturer, in its correct position. All pipes must be laid on a 100mm bed of approved, clean bedding sand or other approved bedding material.

(i) Spigot and Faucet Rubber Ring Jointed Pipes

Laying shall commence at the downstream end with the pipes being laid with faucets pointing upstream. The rubber ring shall be clean and dry and not twisted when placed on the spigot step.

(ii) Butt and Interlocking Jointed Pipes

Care must be taken to see that all the inverts of each pipe and culvert fit accurately with one another. The joints in all pipes shall be neatly rendered internally or externally (depending on size) with a 1:3 cement sand mortar finished flush with the wall of the pipe.

### Inspection of pipelines before backfilling

All pipelines and joints must be inspected and approved by the Superintendent or Council Engineer before any backfilling is placed in position.

### Backfilling

After the pipes have been laid, jointed and inspected as specified, the trenches shall be backfilled with selected excavated material, excluding all rock.

All backfilling shall be carried out in layers not exceeding 150mm and compacted throughout to a dry density of not less than 95% maximum Standard dry density; 150mm compacted depth topsoil or loam shall be laid on top as a final layer.

### Trenches Under Road Pavements

Where any stormwater drain is laid in such a position that the line of drain crosses any roadway, or the line of drain is running adjacent to and within 1.0 metre of any pavement, the whole of the trench shall be backfilled to sub‑grade level with cement stabilised crushed rock (4% by weight of unmodified material) and fully compacted.

Backfilling shall be carried out in layers not exceeding 150mm in depth and compacted throughout to a dry density of not less than 98% Standard Maximum dry density.

Both sides of trenches through existing concrete, bituminous seals and asphalt shall be cut to a sharp vertical edge with a saw. When reinstated, care shall be taken to ensure a sound watertight seal is achieved at the interface between new and old material.

### Trenches Across or Along Footpaths / Pedestrian Access

Where any stormwater drain is laid in such a position as it will be under any proposed or existing footpath, the whole of the trench shall be backfilled in accordance with Clause 2.3.8 Backfilling, except that in the case of excavations in concrete, bituminous or gravel type footpaths, the top 75mm of the excavation must be reinstated with similar paving material to that used in the surrounding footpath.

The Contractor shall maintain such backfilling in trenches to the specific levels in a safe, trafficable condition for the full term of the Contract.

### Trenches in rock

Where any stormwater drain is laid in such a position that it is in rock, where rock is defined as material that is unrippable using the hook of a 30 tonne excavator then the Contractor shall notify the Superintendent immediately. A joint survey shall be undertaken by the Contractor and the Superintendent to determine the extent of unrippable rock.

### Drainage During Progress of the Works

Before obstructing any waterway, channel, culvert or pipe, the Contractor shall make provision for its temporary diversion, to the approval of the Superintendent. The Contractor shall make provision for the safe discharge of drainage and stormwater at all times during the construction of the works.

All temporary diversions shall be made good before completion of the Contract.

### Details of Drainage Structures

Side entry pits, junction pits, grating pits, anchor blocks, endwalls and property inlets shall be built in concrete in accordance with the dimensions as detailed on the accompanying drawings and/or pit schedule.

Excavation for pits and other drainage structures shall be trimmed neatly to size so as to give the exact thickness of walls as specified. The Contractor may be required to form both the inside and the outside of structures in bad ground or where the excavation has been badly trimmed.

Forms for pits and other drainage structures shall be constructed in a workmanlike manner to the exact dimensions required.

All excavations and formwork must be approved by the Superintendent before any concrete is placed.

All floors of pits and drainage structure shall be laid on a bed of 75mm crushed rock or approved bedding sand.

Step irons of an approved type shall be built in all side entry and junction pits over 1200mm deep. Step irons are to be hot dip galvanised.

The top of the pit wall, if necessary, shall be rebated to receive the cover slab which shall seat flush with the surrounding footpath or road and conform to the slope thereof unless otherwise specified or shown on plans. The slabs to all side entry pits shall be Rocla, or other approved type. Covers for junction and property inlet pits to be approved precast covers.

Where any pipe enters or leaves a pit, all sharp edges shall be neatly rounded off with the cement mortar so as not to leave any obstruction to the free flow of water.

A semi‑circular section transitioning from the size of the outlet pipe to the size of the inlet pipe shall be carried through all pits with the bottom of the pits formed as indicated on the drawings as to slope from all directions to the outlet pipe to ensure that the pit shall be self cleansing.

The inside of all pits shall be rendered with cement mortar neatly trowelled to produce a smooth, impervious surface.

### Open Earth Drains

Open earth drains shall be constructed where shown on plans, true to line, level and section as detailed and the approval of the Superintendent.

### Tolerances

The following tolerances shall apply to works covered by this Section:

 1. Stormwater Pipe

 Plan position ‑ 100mm

 Invert level ‑ 10mm

 ‑ 20mm

 Line gradient 1.0%

### Guide Posts

Posts shall comply with VicRoads Standard Drawing No. SD3001-C “Guide Posts”, and shall be to the Superintendent’s satisfaction.

Guideposts shall be installed at culvert locations.

### Culverts

All culverts shall be minimum 300 diameter or as shown on drawings, rebate jointed, Class 2 reinforced concrete pipe unless otherwise shown. They shall be laid on a grade as specified on the drawings.

Trenches for culvert pipes shall be plumb with a level base. A minimum clearance of 100mm shall be provided on each side of the pipe.

Pipes shall be laid and accurately jointed on a 75mm bed of FCR or bedding sand.

Haunching and backfilling to sub-base level shall be carried out using FCR or bedding sand, thoroughly compacted in and around the pipes.

## CONCRETE

### General

This section specifies concrete for use in drainage work, concrete paving and other concrete structures.

### Standards

The latest editions of the following Australian Standard shall form part of this specification: ‑

AS 3600 Concrete structures.

AS 3972 Portland and blended cements

AS 2758.1 Aggregates and rock for engineering purposes - Concrete aggregates

AS 1012 Methods of testing concrete.

AS 1379 Specification and supply of concrete

AS 1303 Steel reinforcing wire for concrete

AS 1302 Steel Reinforcing bars for concrete

AS 1304 Welded wire reinforcing fabric for concrete

### Materials

(a) Portland Cement

Portland Cement shall comply with the requirements of Australian Standard AS 3972.

(b) Fine Aggregate

Fine aggregate for concrete shall be sand or fine gravel from an approved source to be thoroughly clean and free from clay, loam or organic impurity and shall comply with the Australian Standard AS 2758.

(c) Course Aggregate

Course aggregate for concrete shall be gravel or screenings from an approved source and shall comply with the Australian Standard AS 2758.

(d) Water

All water shall be free of matter harmful to concrete and its reinforcing.

(e) Reinforcing

Steel reinforcement shall comply with the respective Australian Standards AS 1302, AS 1303 and AS 1304.

### Storage of Materials

Any material that has deteriorated or has been damaged shall not be used for construction purposes. Cement and aggregates shall be stored separately in a manner such as will prevent deterioration and the inclusion of foreign materials.

### Mixture

The concrete shall consist of a mixture of cement, fine aggregate, course aggregate and water, mixed in such proportions necessary to produce concrete complying with the requirements of this Specification.

The proportion of fine aggregate to course aggregate will depend on the grading of the materials, but the amount of fine aggregate shall always be the minimum which, when combined with cement, will produce only sufficient mortar to fill the voids in the course aggregate and leave a slight excess for finishing.

The proportions of the mix will be determined by the Superintendent and shall be strictly adhered to by the Contractor.

### Pre‑Mixed Concrete

All concrete used on the Contract Works shall be premixed concrete, from sources approved by the Superintendent, mixed at a central mixing plant, delivered and placed in strict accordance with Australian Standards AS 1379.

It is the responsibility of the Contractor, not the concrete supplier, to ensure that requirements of this Specification are met. The concrete must be delivered to the site of the works and placed in its final position before initial set takes place and the addition of water or other retempering of the concrete before placing will not be permitted.

### Mixed On‑Site Concrete

Mixed on‑site concrete shall not be used except when specifically approved by the Superintendent where small quantities of concrete are required. When required and approved, mixed on‑site concrete shall be hand or machine mixed as specified by the Superintendent, to produce concrete complying with the requirements of this Specification.

### Cement Mortar

All cement mortar shall consist of: ‑

One (1) part cement

One and one quarter (1 and 1/4) parts sand

One and one quarter (1 and 1/4) parts screened bluestone dust.

The materials shall be thoroughly mixed with a proper quantity of water, by a method and to a consistency approved by the Superintendent.

### Additives

Additives shall not be permitted.

### Consistency

The concrete to be placed in the work shall be of such consistency that it can be readily placed and compacted in the forms without causing segregation of the materials or excess free water to collect on the surface.

The consistency of the concrete shall be determined by a slump test in accordance with Australian Standard AS 1012.

The maximum slump allowable for concrete used in the works shall be 75mm.

### Concrete Strength

Concrete shall develop minimum compression strength at seven (7) days of 14 Megapascals and at 28 days of 32 Megapascals.

### Standard Tests For Material and Concrete

The materials and concrete will be tested as and when directed by the Superintendent in accordance with Australian Standard AS 1012.

Test cylinders shall be prepared by the Contractor when directed by the Superintendent and shall be numbered and marked with dates. The Contractor shall keep a register of such test cylinders, which shall also show the dimensions and changes of the various concrete works executed on every day and in particular those executed on the day on which the samples were taken.

The Contractor shall be responsible for having the samples tested at an approved Laboratory.

Three cylinders will be prepared and disposed of as follows: ‑

No.1 Tested for 7 days strength, 14 megapascals.

No.2 Tested for 28 days strength, 32 megapascals.

In the event of No.2 not reaching the required standard, No.3 will be tested. The result of this test will be binding and final on the Contractor and the Superintendent. The Contractor is to take immediate steps to remove and reconstruct any work condemned by reason of this section of the Specification.

### Formwork

Formwork and framing for concrete shall be in accordance with the provision of Australian Standard AS 3600.

The forms shall be to the shape, lines and dimensions required by the Contract Drawings.

Forms shall be properly supported and braced to maintain position during and after the placing of concrete and shall not be stripped until the concrete has hardened and obtained sufficient strength to support its own weight and any construction loads, without injury to the concrete.

In no case shall the forms be removed before 12 hours after placing of the concrete.

### Reinforcement

Where detailed, reinforcement shall be accurately fixed in accordance with the accompanying drawings and the provisions of Australian Standard AS 3600.

Reinforcement shall be thoroughly cleaned of all loose scale, rust and other detrimental coatings and shall be accurately placed, secured and maintained in position until incorporated in the concrete.

### Inspection prior to placement of concrete

No concrete shall be placed before the formwork reinforcement and bedding, in place, have been inspected by the Superintendent.

### Placing of Concrete

After mixing, concrete shall be conveyed to the place of final deposit, without delay, and placed into its final position as rapidly as possible by methods which prevent the loss or segregation of materials.

Dropping concrete a greater height than one (1) metre, depositing large quantities at any point and moving or working it along the forms will not be permitted. A plastic surface shall be maintained until the completion of the unit.

Concrete placing shall be carried on continuously up to the construction points as shown on the drawings, or as directed by the Superintendent.

Wherever the work of placing concrete is delayed until the concrete shall have taken its initial set, the point of stopping shall be deemed a construction joint. The location of construction joints shall be planned in advance and shall be made only when approved by the Superintendent. The placing of concrete shall be carried on continuously from joint to joint. These joints shall be perpendicular to the principal lines of stress and in general, shall be located at points of minimum shear.

Before placing new concrete on or against concrete which has set, the form shall be re‑tightened and the surface of the set concrete shall be roughened as required by the Superintendent, thoroughly cleaned of foreign matter, laitance and loose or porous material, and saturated with water. The surface shall be then covered with a thin coat of stiff, neat cement to ensure bond and concreting shall then proceed immediately.

Precautions shall be taken in placing concrete when air temperatures are above 30oC and below 5oC. No concrete is to be placed under water unless methods used are approved by the Superintendent.

### Compaction of Concrete

The concrete shall be thoroughly compacted to the satisfaction of the Superintendent, whilst it is being placed in the works. Compaction shall be by means of continuous tamping, spading and vibration with approved vibrators.

Care shall be taken to fill every part of the forms, to force the concrete under and around the reinforcement without displacing it, to work back coarse from the face and to remove all air bubbles and voids.

### Curing

Concrete and rendering shall be cured so as to prevent excessive loss of moisture from the surface for at least seven (7) days continuously, following the time of placing.

In hot weather the Superintendent may direct the curing period to extend up to fourteen (14) days.

Curing shall be accomplished by one or more of the following methods: ‑

1. Covering with Hessian, plastic sheeting or similar material maintained in a wet condition.
2. Covering with at least 25mm thickness of sand or earth maintained in a damp condition.
3. Coating with approved curing compound.
4. New surfaces shall be effectively protected from rain until hard set has occurred.

### Defective Concrete

The Contractor shall be fully responsible for employing effective methods of mixing, placing, protecting and curing concrete; and for the adequacy of falsework and forms. Approval of any such work or methods by the Superintendent will be tentative only and shall not relieve the Contractor of this responsibility. Concrete which is not placed and completed in accordance with this Specification or which is, in the opinion of the Superintendent, defective, shall be removed within the limits assigned by the Superintendent and replaced to his satisfaction.

## ROAD PAVEMENT

### General

This section specifies the supply, delivery, spreading and compaction of road making gravel and crushed rock, to depths and levels as detailed on the accompanying plan.

### Standards

The following Australian Standard shall form part of this Specification.

Australian Standard AS 1289 parts 5 & 6 ‑ “Methods of testing soils for engineering purposes".

### Materials

**(1a) SUBBASE GRAVEL**

The gravel shall consist of natural or artificially mixed aggregate or granular material of hard, durable particles and soil, or other binder, such that the mixture complies with the requirements for grading and physical properties set out below.

Oversize material encountered in deposits from which gravel is produced, shall be removed by screening or shall be crushed to the required size.

The composite material shall be free from vegetable matter and lumps or balls of clay.

Grading Requirements for Sub base gravel (by mass)

Table 1(a)

|  |  |
| --- | --- |
| Sieve Size AS (mm) | Limits of Grading(% Passing) |
| 26.519.013.29.54.752.360.4250.075 | 10085 - 10070 - 9060 - 8042 - 6528 - 5414 - 305 - 17 |

The percentage passing the 0.075mm sieve shall not be greater than two thirds of the percentage passing the 0.425 sieve

Liquid Limit Maximum 30

Plasticity Index Maximum 8

**(1b) BASE GRAVEL**

The gravel shall consist of natural or artificially mixed aggregate or granular material of hard, durable particles and soil, or other binder, such that the mixture complies with the requirements for grading and physical properties set out below.

Oversize material encountered in deposits from which gravel is produced, shall be removed by screening or shall be crushed to the required size.

The composite material shall be free from vegetable matter and lumps or balls of clay.

Grading Requirements for Base (by mass)

Table 1(b)

|  |  |
| --- | --- |
| Sieve Size AS (mm) | Limits of Grading(% Passing) |
| 26.519.013.29.54.752.360.4250.075 | 10010085 - 10070 - 9048 - 7234 - 6014 - 346 - 20 |

The percentage passing the 0.075mm sieve shall not be greater than two thirds of the percentage passing the 0.425 sieve

Liquid Limit Maximum 25

Plasticity Index Maximum 6

Linear Shrinkage Maximum 3

**2) GRADING OF UNCOMPACTED CRUSHED ROCK BASE**

Grading Requirements for Class 2, 20 mm Base (by mass)

**Table 2(a)**

|  |  |  |
| --- | --- | --- |
| Sieve SizeAS (mm) | Target Grading(% Passing) | Test Value before Compaction |
|  |  | Limits of Grading(% Passing) | % Retained between Sieves |
| 26.519.013.29.54.752.360.4250.075 | 10010085735439177 | 10095 - 10078 - 9263 - 8344 - 6430 - 4813 - 215 - 9 | 0 - 57 - 1810 - 1614 - 2410 - 2015 - 297 - 14 |

The Superintendent may revise the target grading requirements for the 2.36 mm, 0.425 mm and 0.075 mm sieves specified in the Table 2(a). The magnitude of the range of the limits of grading shall remain unchanged for the revised target grading and the range shall remain centred on the target grading. No additional payment will be made unless the change made to the target grading exceeds two percentage units for the 2.36 mm and 0.425 mm sieves or one percentage unit for the 0.075 mm sieve.

**(3) GRADING OF UNCOMPACTED CRUSHED ROCK SUBBASE**

**Grading Requirements for Class 3, 20 mm Sub base (by mass)**

**Table 3(a)**

|  |  |  |
| --- | --- | --- |
| Sieve SizeAS (mm) | Target Grading(% Passing) | Test Value before Compaction ‑ Limits of Grading(% Passing) |
| 26.5 | 100 | 100 |
| 19.0 | 100 | 95 - 100 |
| 13.2 | 85 | 75 - 95 |
| 9.5 | 75 | 60 - 90 |
| 4.75 | 59 | 42 - 76 |
| 2.36 | 44 | 28 - 60 |
| 0.425 | 19 | 10 - 28 |
| 0.075 | 8 | 2 - 10 |

**Grading Requirements for Class 3, 40 mm Sub base (by mass)**

**Table 3(b)**

|  |  |  |
| --- | --- | --- |
| Sieve SizeAS (mm) | Target Grading(% Passing) | Test Value before Compaction ‑ Limits of Grading(% Passing) |
| 53.0 | 100 | 100 |
| 37.5 | 100 | 95 - 100 |
| 26.5 | 85 | 75 - 95 |
| 19.0 | 77 | 64 - 90 |
| 9.5 | 60 | 42 - 78 |
| 4.75 | 46 | 28 - 64 |
| 2.36 | 35 | 20 - 50 |
| 0.425 | 15 | 7 - 23 |
| 0.075 | 6 | 2 - 9 |

The Superintendent may revise the target grading requirements for the 2.36 mm, 0.425 mm and 0.075 mm sieves specified in Tables 3(a) and 3(b). The magnitude of the range of the limits of grading shall remain unchanged for the revised target grading and the range shall remain centred on the target grading. No additional payment will be made unless the change made to the target grading exceeds two percentage units for the 2.36 mm and 0.425 mm sieves or one percentage unit for the 0.075 mm sieve.

 **(4) SAMPLING AND APPROVAL**

1. Three samples of materials proposed for use in this Contract shall be taken. Two should be delivered to the Superintendent for approval. The Superintendent reserves the right to have the material tested by a N.A.T.A registered laboratory prior to approval. The third sample shall be retained by the Contractor.
2. Should the Contractor wish to obtain material from a source other than the one from which a sample has been approved, samples shall be gathered and submitted for approval as described in (a) above.
3. If, in the opinion of the Superintendent, the material being used in this Contract varies from the sample approved, further samples shall be obtained and tested as in (a) above.
4. The Contractor will bear the cost of all testing.

### Inspection of Pavement Courses

Where required by the Superintendent the sub‑grade and each course of the road pavement shall be tested and approved by the Superintendent before placing of further courses is permitted.

### Delivery and Spreading

Pavement materials, in accordance with Clause Materials of this Specification, shall be spread to the widths and thicknesses shown on the accompanying drawings.

Pavement materials shall not be placed on a wet sub‑grade.

The material shall be spread direct from tipping trucks on the prepared base in an even continuous layer, or be use of an approved spreading device, in uniform layers, each of which shall not exceed 100mm compacted thickness.

Tipping of pavement materials in heaps on the sub‑grade to prevent pavement will not be permitted. Care shall be taken to prevent segregation of pavement materials into course and fine components.

### Test Rolling Of Pavement Courses

All pavement layers shall be compacted so that they are capable of withstanding test rolling without visible deformation, with a smooth wheel roller of approximately 12 tonne mass with a load intensity on the rear wheels of not less than 6 tonne per metre of width. Or alternatively, with a pneumatic tyred roller loaded to not less than 4.5 tonne per tyre, and tyres inflated to 700 KPa.

In addition to test rolling, the Contractor shall provide density tests on the completed subbase and basecourse layers to ensure the densities in **Error! Reference source not found.** are achieved. The cost of such tests shall be borne by Contractor and allowed for in the tender price.

Any unstable areas detected by test rolling shall be rectified by the Contractor using methods agreed to be the Superintendent.

### Correction of High or Low Areas

Irregularities, deficiencies in level and high areas, shall be rectified by scarifying, adding or removing materials as necessary, reshaping and recompacting to grade and profile.

### Surface Preparation and Maintenance

The Contractor shall prepare the pavement surface for bituminous treatment, by scarifying, watering, grading and rolling, to produce a hard, dense surface capable of being swept with rotary brooms to leave a tight surface true to profile and free from loose material, corrugations and other irregularities.

### Tolerances

Base and sub‑base pavement courses, each consisting of one or more layers shall be finished to reasonably smooth and the following limits top the levels, lines, grades, thicknesses and cross sections shown on the drawings or specified or directed by the Superintendent.

1. Level
The top of each pavement course shall not differ from the specified level by more than 10mm. When pavements are constructed against a kerb and channel, the top of the pavement shall be constructed flush with the lip of the channel unless otherwise specified or shown on the drawings and no point on the finished pavement surface shall be lower than the design level.
2. Thickness
The thickness of the sub‑base course at any point shall be not less than the specified thickness by more than 15mm and where the sub‑base consists of two or more layers the thickness of the top layer at any point shall be not less than that specified by more than 10mm.
The thickness of the base course at any point shall be not less than the specified thickness by more than 10mm and where the base consists of two or more layers the thickness of the top layer at any point shall be not less than that specified by more than 5mm. The average thickness of base as determined from measurements at 6 sites selected at random by the Superintendent over any 100m on any lane shall be not less than the specified thickness.
The combined thickness of sub‑base and base courses at any point shall be not less than the specified thickness by more than 15mm.
3. Alignment
The edge of any layer of pavement not placed against an edging shall be not more than 50mm inside, nor more than 100mm outside, the designed offset from centre line or design line. Within these tolerances, the rate of change of offset of the edge of the layer shall be not greater than 25mm in 10m.
4. Width
All pavement layers situated below the bottom of the kerb and channel shall extend beyond the back of the kerb and channel by 150mm.
The width of any layer of pavement not placed between edgings shall be not less than the design width by more than 50mm, nor greater than the design width by more than 100mm and the average width over any 300mm shall be not less than the design width.
5. Shape
No point on the surface of each layer of base or sub‑base shall lie more than 10mm below a 3m straight edge laid parallel to the centre line of the pavement or from a template placed at right angles to the centre line.

## COMPLETION OF WORKS

### Damage to Existing Works, Properties and Fences

All damage to existing nature strips, footpaths, driveways, fences or other existing constructions shall be repaired and reinstated to the satisfaction of the Superintendent.

Damaged materials shall not be reused for repair and reinstatement works.

If by inspection prior to any works commencing, the Contractor feels that fences or other structures are already damaged or in a state of disrepair, he shall arrange for a joint inspection with the Superintendent, to determine the responsibility for reinstatement. Failure to do this will result in the Contractor having to accept reinstatement costs.

### Adjustment of Fire Plug, Valve Covers and Sewer Manholes

Where indicated on the drawings, the covers of fire plugs, valves and sewer manholes shall be adjusted and reset by the Responsible Authority at the Contractor's expense, with any surrounds, prior to the completion of the works, so as to correspond with the new surface level.

### Adjustment of Existing Drainage Pits

Where indicated on the drawings, the Contractor shall, at his expense, reconstruct in concrete the tops of any drainage pits requiring adjustment so as to correspond with finished surface level.

### Traffic Control Devices and Road Signs

Traffic control devices and road signs shall be constructed in accordance with the Contractors approved Traffic Management Plan and as directed by the Superintendent.

Control devices and signs shall comply with Australian Standard 1742

### Fencing

At Practical Completion (or as otherwise agreed to by the Superintendent) the Contractor must supply and erect the Standard Farm Fence and Chainmesh Fencing as specified on drawing #2234/1000-1018. Gates must be installed in the fencing as detailed on the drawings and to the approval of the Superintendent.

### Cleaning Up

The Contractor shall leave the whole of the site of the works and the locality clean and free from rubbish on completion of the job and shall at his own expense, remove and dispose of all rubbish, surplus materials, etc.

All drains shall be flushed clean. Drainage pits shall be cleaned out and waste removed and disposed of by the Contractor.

All sand spread on paths, roads, kerbs, channels and crossings shall be removed there from. If necessary, the concrete shall be swept down so as to leave the job clean and tidy in all respects.

### Maintenance

The Contractor shall be responsible for keeping the whole of the works of this Contract in proper repair to the satisfaction of the Superintendent from the date of practical completion for the duration of the maintenance period, as specified in the General Conditions of Contract and in the relevant clauses of the specification.

Any ruts, irregularities or damage that may occur during this period shall be reinstated or reconstructed by the Contractor at his own expense.

# LANDSCAPING AND PLANTING

## General

The Landscape Contractor is responsible for supply and establishment of all plantings and vegetation and associated works.

## Scope of works

The contractor shall carry out all works required to complete Landscaping including:

* Weed control
* Establishment and maintenance of landscape for 12 months from the date of Practical Completion
* Supply, preparation and planting of all plants identified in the schedule

## weed Control

Prior to any construction of planting areas commencing, the Contractor shall identify on site all exotic weed species and grasses to the approval of the Superintendent. Following agreement and approval from the Superintendent, the Contractor shall then remove all exotic plants and weeds and grasses by hand. The Contractor shall take care to at all times to minimize ground disturbance during manual weed removal.

## TOPSOIL PREPARATION

### General

 All site topsoil and imported topsoil to used for wetland, shall comply with Clause 2.2.8

### Topsoil Preparation

Following approval, the site topsoil shall be prepared for use to the approval of the Superintendent.

### Imported Topsoil

No topsoil shall be imported to the site.

## Terrestrial Soft landscaping

### Scope

Planting areas are to be constructed in the locations as shown on the Drawings.

### Construction

All planting areas should be deep ripped prior to construction. Form subgrades to the levels required by the drawings and surrounding surfaces. In proposed planting areas the Contractor is to form and smooth the subgrade where necessary to the levels nominated. Areas are to be cultivated to a depth of 200 mm, with subgrade adequately loosened. No compacted areas of subgrade are to remain, or depressions where water can pool under the topsoil.

### Topsoil

Place topsoil to depth indicated. Topsoil shall be in situ site topsoil and site topsoil from site stockpile or if not available in significant quantities to use, approved imported locally screened topsoil to the approval of the Superintendent.

### Fertiliser

Apply a slow release fertiliser to all plants (terrestrial) at time of planting (Osmocote ® Native Gardensor similar approved for type of plant – low in Phosphorous).

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### PLANTING TREES, GROUNDCOVERS & GRASSES

#### Scope

Trees: supply, plant, stake, fertilise & water

Grasses / Groundcovers: supply, plant, fertilise & water.

#### Materials

All plant materials shall be subject to the approval of the Superintendent.

Plants shall be true to species, vigorous and healthy and the best of their respective kinds. They shall have a well developed root system and be free from disease pests, scars and dead wood. Pot bound stock shall be rejected.

All trees, grasses and ground covers shall be from containers as specified on the drawings.

All plants set out to be approved by Superintendent prior to planting.

Care shall be taken to ensure that the roots are not exposed to the drying influences of sun, wind or frost.

#### Planting Procedure

Thoroughly soak plants on day before planting.

Prior to excavation, ascertain location of existing underground services. Notify the Superintendent should any problems with services arise.

Set out plant materials as per the Drawings and to the approval of Superintendent.

Dig hole sufficient for root ball.

Dig in slow release fertiliser at base of hole.

The removal from the container and the positioning of the plant is to be done with minimum disturbance to the roots. Set plants plumb in the centre of planting hole, avoid damaging or teasing roots. All stock shall be set plumb and placed to ensure a normal relationship between the crown and soil surfaces. Backfill hole with excavated material. Form a bowl around plant by molding topsoil above finished grade.

#### Staking

2 No. Stakes are to be provided to each tree. Stakes to be 50x50x1800mm durable hardwood, straight and free of knots or warping; pointed at one end. Black polypropylene webbing or flexible canvas at 50mm wide to be used for tree ties.

#### Watering

All stock shall be thoroughly watered immediately after planting. Ensure there is no soil or mulch built up around the trunk which will rot the trunk around plants. The stock shall be kept moist at all times during the contract period.

#### Plant Replacement

Any stock which becomes damaged, dies or is found to be unhealthy during the contract period shall be replaced. All stock replacements shall be planted as specified, at the contractor's expense, and shall be kept moist at all times and free from disease.

Immediately all planting is completed the contractor’s liability for plant replacement is limited to once only, in the case of loss by malicious damage or vandalism. The Contractor shall report any such malicious damage to the Superintendent who shall inspect the damage prior to replacement. Immediately after the replanting, notify Superintendent who will record any such replacement.

This clause does not limit the Contractor's responsibility for replacement if the loss is brought about by any other cause.

#### ORGANIC MULCH

The Landscape Contractor shall supply and spread a 75mm layer of approved 12mm Euca Mulch or as approved by Superintendent to all trees surrounds as detailed in the drawings.

The mulch shall be free from clods of soil, rock, vermin, toxins and any other extraneous matter.

The mulch shall be raked smooth to achieve an even and neat appearance and kept clear of stems of plants to avoid contracting collar rot.

## Maintenance

### Scope

The maintenance period has been specified as 12 months.

Maintain the soft landscape (planting, mulching and associated works) works for **1 year** from Practical Completion (as defined in the contract) and present site at all times until then in a clean and tidy condition.

This period will include any weeding, mowing, watering, plant replacement and any fertiliser, fungicide, insecticide or herbicide treatment required.

### Records

Maintain a log book of all maintenance work and which materials have been used on the site. Make the records available upon request.

### Execution

The Contractor shall undertake as a minimum the following maintenance tasks during the defect liability period. The undertaking of these maintenance period tasks must be included in the Contract sum.

* Regular site visits to monitor and rectify defects in planting and litter.
* Remove litter on a regular basis
* Removal of weeds
* Seasonal spraying to maintain plants pest free, according to manufacturer’s instructions
* Watering to maintain healthy growth
* Pruning of trees to maintain even dense foliage and removal of damaged material
* Replacement at no cost of damaged, failed or stolen plants
* Other works as necessary to maintain the works in the best possible condition.
* Urgent maintenance works as directed by the Superintendent.
* Provision of instruction as to the proper operation and maintenance of all aspects of the project to ongoing maintenance contractor to ensure seamless hand over with no detriment of the quality of the landscape.

# GUIDELINE FOR PREPARING HEALTH AND SAFETY PLANS

## 1 Introduction

Prior to the commencement of the contract the successful tenderer is required to submit a Health and Safety Plan detailing the health and safety systems and procedures which will apply during the term of the contract.

The Health and Safety Plan will be reviewed by The Superintendent prior to commencement of the contract and will be subject to approval by The Superintendent.

The Health and Safety Plan shall be reviewed at regular intervals throughout the contract to ensure that it is maintained in an up to date condition. The Contractor's Health and Safety Plan will also form the basis by which its management systems will be audited by The Superintendent.

This document outlines the general requirements and elements of Health and Safety Plans to provide guidance to Contractors when preparing the plan.

## 2 Health and Safety Plan Elements

## 2.1 Contract Description

A brief description of the scope of work associated with the contract should be documented. The description should be sufficiently detailed to provide persons unfamiliar with the contract an overview of the type of work being carried out and under what conditions.

* The scope of work should include as a minimum requirement the following details:
* Summary of major activities and types of work to be performed.
* List of tasks or specialist procedures that may require detailed health and safety work procedures and training.
* List areas of contract requiring special consideration from a health and safety perspective e.g.:
	+ presence of public
	+ traffic management
	+ work restrictions (worktimes, excavations, confined spaces)
	+ exposure to hazards (noise, dust, elevated heights)

## 2.2 Contract OHS Structure and System

The Contractor's Health and Safety Plan should be established around existing OHS management systems and associated procedures and controls. Reference should be made to existing procedures and documentation in the Health and Safety Plan. This will also assist in minimising the size of the document.

The Contractor should outline the management structure, responsibilities, standards and control systems applicable to the contract to ensure OHS requirements are addressed. The following information should be included:

* Company health and safety policy, to be displayed at worksites.
* An outline of the contract health and safety organisation and structure. i.e. names and/or positions of those with specific health and safety responsibilities.
* Summary of OHS roles and responsibilities of Contractor staff involved in the contract.
* Position and/or name of senior person who will liaise with The Superintendent on health and safety matters.

## 2.3 ContractOR Induction and Safety Training

OHS legislation requires all employers to ensure that their employees have the skills and training required to carry out their work in a safe manner. The Superintendent requires that Contractors document their safety training program ensuring that they have appropriately skilled employees, suitable training programs and adequate supervision for the contract works.

The following information should be provided:

* An outline of contract induction procedures for employees and subcontractors.
* Details of induction course content.
* Register of personnel who have satisfactorily completed the contract induction.
* Details of employee health and safety training which has or will be provided relevant to the contract requirements.
* Provide a register of names and/or positions of contract employees with authorisations, permits, competency certificates, licenses etc who may be required to supervise or undertake specialist work activity.

## 2.4 Safe Work Practices and Procedures

Relevant safe work practices and procedures should where appropriate be developed for the contract. Where possible, existing health and safety company procedures should be used. However, contract specific safe work procedures may need to be developed on the basis of particular contract hazards. These may be identified when undertaking the Risk Assessment.

* The following information should be provided:
* Provide a list and copies of company safe work procedures or instructions relevant to the contract.
* Provide a list and copies of contract specific safe work procedures or instructions.
* Detail site operations which will be subject to permit to work systems.
* Provide details of employees and/or subcontractors issued with copies of safe work procedures and instructions.
* Safe work procedures and instructions should be recorded on Safe Work Procedure/Instruction Register.

## 2.5 Risk Assessment

The Risk Assessment is an integral part of the Health and Safety Plan and considers the following:

* identifies hazards associated with contract tasks and activities
* determines the level of risk
* establishes appropriate risk control measures

Each major or significant task or activity associated with the contract shall be assessed in terms of the associated hazards. When all hazards have been identified the most likely outcome as a result of an incident shall be determined.

Risks shall be classified according a recognized hierarchy such as the following:

Class 1: potential to cause death or permanent injury to one or more people.

Class 2: potential to cause one or more lost time injuries.

Class 3: potential to cause an injury treatable with first aid.

A primary goal shall be to eliminate Class 1 and 2 risks associated with the contract and should be a major focus of the Risk Assessment. Contractors should detail risk control measures which adequately address all identified Class 1 and 2 risks. When determining risk control strategies, the hierarchy of controls summarised below should be considered:

e.g.: Off site cutting of panelwork

e.g.: Replace ladder with scissor lift, substitute solvent based paint with water based paint.

e.g.: Reverse alarms/lights fitted to plant, Exhaust Ventilation to remove fumes

e.g.: Job rotation, Work instructions and Safety inspections

e.g.: Hearing protective devices, Respirators, Hard hats:

Where safe work procedures or instructions are developed they must clearly spell out the work sequence, highlighting the procedures required to adequately control each Class 1 and Class 2 risk identified in the risk assessment. All employees involved in the activity shall receive appropriate training in the safe work procedure.

The Risk Assessment shall be completed on the Risk Assessment Form evaluating the full scope of work associated with the contract. Additional risk assessments may be undertaken during the course of the contract as required (ie work undertaken by subcontractors).

## 2.6 Workplace Health and Safety Inspections

Health and safety inspections play an important role in the identification of hazards at the workplace and in the development of control measures. The Health and Safety Plan should outline the procedures and methods by which contract workplaces will be inspected on a regular basis.

The following information should be provided:

* Details of how workplace health and safety inspections will be undertaken during the contract, considering:
* checklists to be used
* frequency of inspections > team members
* actioning of inspection findings
* Details of hazard reporting procedures for the contract, including hazard report forms.
* Details of specific activities or areas targeted for inspection ie plant, hazardous materials, electrical safety.

## 2.7 Health and Safety Consultation

Consultation with employees provides an important mechanism whereby health and safety issues can be dealt with in a manner that promotes ownership and prompt resolution.

The following information should be documented:

* List of current employer and employee health and safety representatives
* Details of the membership and operation of the Safety Committee
* Reference to company issue resolution procedures

## 2.8 Emergency Procedures

There is the potential for a range of emergency situations to occur both on site and off site in relation to contract works. These situations need to be identified and specific emergency procedures developed and made known.

The following information should be documented:

* Overall emergency plan and structure for the contract.
* Register of emergency equipment and locations ie first aid equipment, fire extinguishers.
* Register of current qualified First Aiders.
* Arrangements/co ordination with other worksite occupants in the event of an emergency.

## 2.9 Incident Recording & Investigation

All incidents associated with the contract involving personal injury, medical treatment or

property damage should be recorded and investigated.

The following should be documented:

* Details of incident reporting and investigation system and procedures
* Details of how Class 1 and Class 2 incidents shall be notified to The Superintendent
* Details of how incident statistics are to be compiled and distributed

## 2.10 Health and Safety Performance Monitoring

The following should be documented:

* Details of how health and safety performance statistics associated with the contract are reviewed
* Details of how monthly health and safety performance reports will be compiled for review by The Superintendent
* Nature of health and safety performance information presented to employees on a regular basis
* Outline of auditing program to evaluate Health and Safety Plan effectiveness

# SPECIFICATION FOR THE PREPARATION OF THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

## PART A: BACKGROUND AND SCOPE OF SPECIFICATION

## E1 Introduction

**E1.1 General**

This specification provides overarching environmental management principles and specifications for the preparation of a Construction Environmental Management Plan (CEMP) to be prepared and implemented by the successful Contractor.

**A Draft Construction Environmental Management Plan must be prepared by all Tenderers and submitted at tender stage.**

**Part A** of this document provides background information regarding:

* Purpose of the CEMP Specifications;
* How Tenderers should respond to the CEMP Specifications at tender stage.

**Part B** of this specification provides background information regarding:

* Objectives of the Contractor’s CEMP
* An overview of the relevant general requirements, statutory requirements and policies.
* How the successful Contractor’s CEMP will be approved prior to construction;
* Roles and responsibilities of the
* Contractor
* Superintendent and
* Principal

**Part C** of this specification outlines the specific issues and environmental performance criteria that the Contractor must address in their CEMP and comply with during all construction activities.

**Part D** of this specification considers aspects relating to:

* Implementation and staging of the CEMP by the Contractor;
* Monitoring, maintenance, recording and reporting requirements
* Compliance audits and potential improvements.

**This specification will form part of the final approved Construction Environmental Management Plan and must be read in whole and in conjunction with the CEMP, including all plans and drawings.**

**E1.2 Project History**

The project area is within an unnamed waterway. A rainfall event following the 2019/2020 bushfires caused significant scouring to the bed of the waterway, and resulted in overland flow through the existing camp ground adjacent to Spring Creek.

Joint managers, Parks Victoria and GLaWAC, are seeking to undertake remediation works and improve drainage through the gully.

**E1.3 Values of Project Area**

The project site is located in the Buchan Caves Reserve within a unnamed waterway. The unnamed waterway outfalls at the base of the gully and spreads through the camp ground before outfalling into Spring Creek.

There are a range of environmental values, both on the project site and in adjacent areas, which must be conserved by ensuring that environmental management practices are in place to minimise potential adverse impacts from construction activities. In summary, these values include, but are not limited to:

* Water quality in drainage lines (designated waterway) through the project area;
* Water quality to a known platypus nesting cave;
* Native vegetation;
* Air and noise values.

There are range of heritage values that are the subject of Cultural Heritage Management Plan and Heritage Victoria assessment. These permits form part of the contract documents.

The Contractor’s CEMP must indicate the type and nature of environmental safeguards, work practices and mitigating measures that will be adopted to minimise adverse impacts to these values within the context of the environmental performance criteria listed in Section E9 of this Specification.

## E2 Purpose of Specifications

The purpose of this specification for the preparation of a Construction Environmental Management Plan (CEMP) for *Buchan Caves Reserve – North Arm Drainage Redevelopment project* is to:

* Outline the overarching environmental management principles required to minimise potential adverse impacts from construction activities relating to the Project;
* Provide a guide for all tenderers to prepare their draft CEMP;
* Provide a guide for the successful contractor to produce their final CEMP, and
* Specify the environmental performance criteria that the Contractor must address in their CEMP and subsequently comply with before and during construction activities and the following rehabilitation phase.

## E3 Responding to Specifications

**E3.1 Contractor’s CEMP Prepared Prior to Construction**

Prior to execution of the contract documents and establishment on site the successful Contractor will be required to prepare a Construction Environmental Management Plan that details the type and nature of all environmental safeguards, work practices and mitigating measures that the Contractor intends to adopt to minimise potential adverse impacts to environmental values within and adjacent to the project site.

The Contractor’s CEMP must take the form of a detailed written document describing the exact type, design and nature of all safeguards and measures, together with a detailed staged implementation program related to project activities, plans/drawing illustrating the location and design of such safeguards and measures.

The Contractor’s CEMP must address at least all the issues identified in Part C of this specification, and any additional issues/safeguards the contractor considers necessary, in such a manner that demonstrates all the environmental performance criteria listed in Section E9 can be achieved through implementation of the Contractors proposed environmental safeguards, work practices and mitigating measures.

**E3.2 Draft Contractor’s CEMP at Tender Stage**

All Tenderers must prepare a Draft Construction Environmental Management Plan for submission with other associated tender documentation at tender stage.

The Draft Construction Environmental Management Plan submitted at tender stage will be considered along with price, track record and other selection criteria to determine the Preferred Tender and as such the Tenderers Draft CEMP must:

* Demonstrate the Tenderers understanding of the project site, the relevant environmental issues and an appreciation of the tasks required to minimise potential adverse environmental impacts during construction activities;
* Comprise a conceptual draft CEMP document that indicates the type, design and location of environmental safeguards and mitigating measures which the Contractor intends to adopt, and the timing of implementing such steps;
* Demonstrate how the Contractor will integrate implementation of the CEMP into their work practices, including indicative staging;
* Provide example illustrations of the type, design and location of environmental safeguards and mitigating measures.
* Include a copy of the drawings marked up to show the proposed location and types of treatments proposed with a notation of when they are to be installed in relation to the relevant project activities.

## PART B: CONTRACTOR’S CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

## E4 Objectives of Contractor’s Construction Environmental Management Plan

The Contractor shall prepare the CEMP in such a manner that it clearly conforms to the Primary Objective:

* **To prevent, or minimise to a defined acceptable level, all potentially adverse environmental impacts resulting from** *Buchan Caves Reserve – North Arm Drainage Redevelopment* ***project* construction activities.**

The Contractor’s CEMP must ensure that the Primary Objective is achieved by:

* Compliance with all Commonwealth Government and Victorian State Government legislative and policy requirements;
* Compliance with all local and regional planning policy and guidelines;
* Compliance with all Commonwealth State and Local Government approval’s issued for *Buchan Caves Reserve – North Arm Drainage Redevelopment project*;
* Compliance with Parks Victoria and GLaWAC’s Environmental Policy as provided to the Contractor;
* Adoption of environmental safeguards, work practices and mitigating measures necessary to prevent or minimise all potential adverse impacts to environmental values within and adjacent to the project site;
* Responding immediately and effectively to potentially adverse unforeseen environmental impacts that may arise from and during construction activities.
* Allocation of sufficient resources to implement and manage all necessary environmental safeguards, work practices and mitigating measures, including provision for emergency / unplanned events.

## E5 General Requirements

The Contractor’s CEMP must demonstrate, and result in, compliance with all environmental aspects of these CEMP Specifications and of the General and Particular Specification for construction of *Buchan Caves Reserve – North Arm Drainage Redevelopment project*.

In accordance with Specification Clause 1.4, it shall be deemed that the tendered price shall include the cost of all compliance.

The draft Contractor’s CEMP submitted by the Tenderer at tender stage shall be finalised by the Contractor, at the Contractor’s cost, to the satisfaction of the Superintendent and approval by all relevant Authorities, prior to execution of the contract documents and handover of the site. The site shall not be handed over until the CEMP is approved.

Should the Contractor fail to fulfill its compliance obligations, or its requirement to finalise the Contractor’s CEMP to the satisfaction of the Superintendent, the Principal shall carry out this work and recover any associated costs from payments otherwise due to the contractor.

This CEMP Specification and the approved Contractor’s CEMP, including all programs, plans and drawings, must be read in whole and will together form the basis for environmental management of *Buchan Caves Reserve – North Arm Drainage Redevelopment project* construction works.

The Contractor will be responsible for incorporating appropriate environmental protection clauses consistent with the CEMP into other subcontracts as necessary. The Contractor shall ensure compliance of other subcontractors, and be liable for any associated penalties due to non-compliance.

Penalties for infringement of environmental management responsibilities will be enforced through the contract. In the event of the Principal as owner of the development site being served with a penalty notice, the costs associated with defending the notice and/or settling the penalty shall be recovered as a debt from the contractor and deducted from payments otherwise due to the contractor.

## E6 Statutory Requirements

The Contractor’s CEMP must ensure compliance with all relevant Commonwealth, State and Local Government legislative, policy and approvals requirements, including;

* *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
* *Environment Protection Act 2018*
* *Planning and Environment Act 1987*
* Environment Protection Authority Publication 1834 *Civil construction, building and demolition guide*
* *Occupational Health and Safety Act, 2004 including regulations and Codes of Practice*
* *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
* *Archaeological and Aboriginal Relics Preservation Act 1972*
* *Water Act 1989* and issued Works on Waterways license as issued
* *Heritage Victoria* permit as issued

The Contractor’s CEMP must demonstrate how the Contractor will comply with all necessary statutory obligations relating to *Buchan Caves Reserve – North Arm Drainage Redevelopment project* construction works.

## E7 Approval of Contractor’s Construction Environmental Management Plan

Execution of the contract for *Buchan Caves Reserve – North Arm Drainage Redevelopment project* shall not occur until the Contractor’s CEMP is approved by the Superintendent. Construction cannot occur until the first stage of environmental protection measures is installed.

The draft Contractor’s CEMP submitted by the Tenderer at tender stage shall be finalised by the Contractor, at the Contractor’s expense, to the satisfaction of the Superintendent and submitted to the Superintendent for approval.

The Superintendent and the Contractor, in conjunction with and on behalf of the Principal, will seek approval of the Contractor’s CEMP from all relevant Authorities prior to handover of the site.

The Contractor, at their expense, will make any necessary amendments to the Contractor’s CEMP to enable it to be approved by all the relevant Authorities.

Once approved, the Superintendent will notify the Contractor in writing.

## E8 Authority Levels for Implementation and Compliance of CEMP

**E8.1 Roles and Responsibilities of the Contractor**

**E8.1.1 Implementation of and Compliance with CEMP**

The Contractor is entirely responsible for implementation of and compliance with all aspects of this CEMP Specification and the approved Contractor’s CEMP, including:

* Implementing and enforcing all environmental safeguards, work practices and mitigating measures necessary to minimise potential adverse impacts to environmental values within and adjacent to the project site;
* Reporting on the environmental compliance status of the construction program; and
* Overall management of the construction site in accordance with the Superintendent’s instructions.

The Contractor, through the CEMP Implementation Officer (refer Section E8.1.2) shall ensure that the overall management and organisation of environmental procedures, occurs at all times in close consultation with the Superintendent.

The Contractor shall respond immediately and effectively in the event that a potential adverse environmental impact is detected or observed which is in conflict with the objective and provisions contained in the CEMP.

The Contractor shall ensure that a copy of the CEMP, including all plans, drawings and other relevant information is made available to all senior construction personnel and site contractors.

**E8.1.2 Appointment of CEMP Implementation Officer**

The Contractor shall nominate or appoint a CEMP Implementation Officer to complete and implement the CEMP. The appointment must be approved by the Superintendent.

The CEMP Implementation Officer must have the appropriate level of experience to effectively implement and ensure compliance of the CEMP, including all necessary monitoring, record keeping and reporting obligations.

The CEMP Implementation Officer shall be in attendance at the project site during all construction activities that pose a potential threat to environmental values. When not present, the CEMP Implementation Officer must delegate his responsibilities to a competent person and obtain the Superintendent’s approval.

The CEMP Implementation Officer shall be responsible for:

* Constant liaison with the Superintendent on all implementation and compliance aspects of the CEMP;
* Supervising implementation by the Contractor (and sub-contractors) of all environmental safeguards, work practices and mitigating measures stipulated in the CEMP.
* Implementing environmental awareness training (refer Section E8.1.3);
* Preparation of environmental performance reports as part of the Contractors monitoring program.

**E8.1.3 Environmental Awareness Training**

The Contractor shall ensure that all personnel working on the site (including sub-contractors) attend environmental induction and awareness training at the commencement of their employment or upon their initial visit prior to the commencement of any work on site.

The environmental training shall be coordinated by the CEMP Implementation Officer (refer Section E8.1.2) and shall include a review of the key environmental values, threats and issues relating to the project site and immediate surrounds. All environmental safeguards, work practices and mitigating measures necessary to minimise potential adverse impacts to environmental values within and adjacent to the project site shall be described to construction personnel.

All construction personnel (including sub-contractors) shall be required to formally acknowledge their participation and understanding of their responsibilities with respect to implementation of the CEMP. An environmental awareness training record of all construction personnel (including sub-contractors) shall be maintained for audit purposes.

**E8.2 Roles and Responsibilities of the Superintendent**

The Superintendent’s role and responsibility is as set out in AS 2124.

**E8.3 Roles and Responsibilities of the Principal**

The Principal shall appoint an independent auditor to review implementation of the Contractors CEMP, compliance with these CEMP Specifications and the Contractor’s approved CEMP, and general on-site environmental performance. The Principal will from time to time attend site and will attend all site meetings.

## PART C: ENVIRONMENTAL SAFEGUARDS, WORK PRACTICES AND MITIGATING MEASURES

## E9 Environmental Performance Criteria

The Contractor shall prepare the CEMP in such a manner that it clearly conforms with the Primary Objective:

* **To prevent, or minimise to a defined acceptable level, all potentially adverse environmental impacts resulting from** *Buchan Caves Reserve – North Arm Drainage Redevelopment* ***project* construction activities.**

The Contractor’s CEMP must contain detailed information, both as text, programs and drawings/plans, demonstrating what measures will be implemented by the Contractor to achieve the above Primary Objective and:

* the following specific environmental management objectives and performance criteria;
* how and when such measures will be implemented; and
* where such measures will be implemented in relation to the project site.

##

**E9.1 Water Quality and Soil Management**

**Objective**: To maintain high water quality, prevent unnecessary disturbance to soil, and to minimise on-site movement of sediment and prevent off-site sediment transport.

**Issues**: Site disturbance will reduce soil properties, may lead to sediment transport and erosion, and will result in reduced water quality values if sediment is allowed to mobilise from a point source and be transported to surface waters.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate when and where measures will be implemented by the Contractor to achieve the following performance criteria**:

Minimisation of point source erosion

No export / transport of sediment from the project site.

**Compliance with State Environment Protection Policy: Waters of Victoria – Schedule F3, Gippsland Lakes and Catchment –Southern Lakes Segment D**

Acceptable pH Range = 6.5 – 8.5

Acceptable pH Variation = 0.5

Maximum Suspended Solids (50th percentile) = 25g/m3

Maximum Suspended Solids (90th percentile) = 80g/m3

No visible increase above prevailing background levels of turbidity in water bodies, drainage lines or canals (other than canals under construction), both within and adjacent to the project site.

**Compliance Monitoring**: Inspection, monitoring and auditing in compliance with Section 9 of EPA Publication #480 including but not limited to;

Daily visual assessment of all erosion and sediment control devices, with increased assessment during rain and storm events.

Maintenance of all erosion and sediment control devices at sufficient frequencies to ensure a maximum sediment retention of one third the total sediment retention capacity of the control structure

Weekly visual assessment of all ground stabilisation / revegetation areas.

**E9.2 Construction Management (Noise, Dust, Vibration & Operating Hours)**

**Objective**: To minimise construction dust and noise emanating from the project site.

**Issues**: Disturbed ground, stockpiles, construction activities, construction equipment, and vehicle / machinery movements all have the potential to generate unacceptable airborne dust and noise and vibration.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria:**

Stabilisation of disturbed ground and stockpiles as soon as practicably possible.

Haul road dust suppression in compliance with Sections 4.5, 8.5 and 9 of EPA Publication #480 as directed by the Superintendent

Adherence to Australian Standard AS 2436 (1981) Guide to Noise Control on Construction, Maintenance and Demolition Sites.

Adherence to approved hours of operation on a five-day week basis and restricted on any normal working day to the hours between 7:00am and 6.00pm Monday to Friday inclusive and 9.00am – 5pm Saturday.

**Compliance Monitoring**: Inspection, monitoring and auditing in compliance with Section 9 of EPA Publication #480 including but not limited to;

Adoption and use of Prestart Check lists

Daily confirmation of weather conditions and risk of excessive dust.

Weekly confirmation of noise suppression features (mufflers and sound baffling etc) on all construction equipment and machinery.

Compliance with all relevant plant regulations

Adherence to equipment maintenance schedules.

**E9.3 Vegetation**

**Objective**: To minimise adverse impacts to retained vegetation.

**Issues**: Areas of remnant vegetation comprising fringing Red Gums must be retained and not disturbed during construction activities.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Adherence to TPZ (12 DBH).

No felling, lopping of limbs, vehicle movements over vegetation, or compaction of surrounding soils within all areas designated for retention.

All Designated areas of remnant vegetation marked and fenced to prevent disturbance and restrict access by vehicles and construction equipment.

Clearing limited to approved areas of young regrowth.

No discharge of turbid water into designated areas of remnant vegetation areas.

No introduction of exotic weed species, via imported soil / material or construction vehicles / equipment.

**Compliance Monitoring**: Ongoing diligence.

**E9.4 Rehabilitation**

**Objective**: To rehabilitate and revegetate the construction site, including but not limited to spoil and stockpile sites, haul roads, fuel stores, plant and site office compounds.

**Issues**: Where spoil is directed to be placed on-site, spoil from construction activities will be placed in designated fill sites which must be shaped, rehabilitated and revegetated in accordance with the drawings or at the direction of the Superintendent.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Fulfillment of all obligations of the Contract

Compliance with all Landscaping / planting obligations of Specification PART 3.

**Compliance Monitoring**: Regular inspection throughout the 3 month maintenance period

**E9.5 Site facilities**

**Objective**: To provide all necessary site facilities and amenities to assist in minimising potential adverse environmental impacts.

**Issues**: Provision of appropriate site facilities and amenities during construction activities will increase the Contractor’s capacity to manage all aspects of the construction program, including minimising potential adverse environmental impacts

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Provision of all necessary site facilities and amenities in accordance with OH&S requirements and Specification Clause 1.6, including, but not limited to:

Dangerous Goods storage, including fuel & lube storage

Lime storage and transportation

Equipment and plant fuelling / servicing areas

Park-up areas

Site Access & egress

Construction vehicle / equipment wash down facilities

Ablution facilities

**Compliance Monitoring**: NA

**E9.6 Contaminated Soil Management**

**Objective**: To remove soil identified as Category C from the project site prior to the commencement of stripping and in accordance with EPA requirements.

**Issues**: 20 cubic metres of Category C soil has been identified (refer to Geoaquitards report dated 27 October 2012) and requires removal from the site.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

* + - * Identification of location of contaminated soil on-site.
			* Removal of 20 cubic metres of soil identified in the report by Geoaquitards Environmental dated 27 October 2012.
			* Demonstrated disposal at EPA approved facility.

**Compliance Monitoring**: Documentation demonstrating disposal at EPA approved facility.

**E9.7 Waste Minimisation and Management**

**Objective**: To minimise waste generated from the project site and as a result of construction activities.

**Issues**: Waste generated at and as a result of construction activities has the potential to pollute waterways and soil, and impact on fauna habitat.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Compliance with Section 6 EPA Publication #480

Fulfillment of all obligations under:

Section 1.6.4 – Office and Amenities

Section 1.7.19 – Cleaning Up, and

No visible accumulation of construction and equipment waste or garbage on-site other than in appropriate stage sheds / bins / containers.

**Compliance Monitoring**: Daily clean-up of loose waste materials.

Adherence to provisions of Section 6 EPA Publication #480

Weekly confirmation of remaining storage capacity in waste storage bins / containers.

**E9.8 Complaint Response**

(Incorporating response times, recording, improving work practices to avoid re-occurrence of problem)

**Objective**: To ensure an effective and efficient response to complaints regarding construction activities and the effects thereof.

**Issues**: An effective and efficient response to complaints regarding possible breaches of environmental safeguards and work practices will minimise the potential adverse impacts of any such breaches.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Immediate notification to the Superintendent of any complaint received by the Contractor.

Recording all details of the complaint and actions taken in response.

Once confirmed that a breach exists, the response time to start rectifying the breach must be within 3 hours of first being notified.

Confirmation to the Complainant that remedial action was taken.

Nature of breach and resultant actions included in review of work practices and environmental safeguards to avoid re-occurrence of similar event.

**Compliance Monitoring**: Up-to-date records of all complaints and resultant actions taken by the Contractor

**E9.9 Emergency Contingencies**

**Objective**: To anticipate and be prepared for a range of unforeseen or emergency events.

**Issues**: An effective and efficient response to unforeseen or emergency events will minimise the potential adverse impacts of any such events.

**Performance Criteria** - **The Contractor’s CEMP must demonstrate what measures will be implemented by the Contractor to achieve the following performance criteria**:

Appropriate planning for and provision of facilities to deal with events including, but not limited to:

Oil, fuel and/or chemical spills

Fire

Storm and heavy rain events

Flood

Waterborne sediment mobilisation and transport

Windstorms

Airborne sediment mobilisation and transport

Drought (ie prolong dry periods)

**Immediate notification to the Superintendent and Environment Protection Authority of any emergency or severe event that impacts on the Project Site.**

**Compliance Monitoring**: Weekly confirmation that emergency planning and response mechanisms are in place and able to be implemented immediately.

## PART D: IMPLEMENTATION

## E10 Implementation, Timing and Staging

The Contractor’s CEMP must demonstrate at what stage in the construction program and prior to what construction activities the Contractor intends to implement the environmental safeguards, work practices and mitigating measures. The timing, including stage implementation of both single and recurring measures must be detailed. This may be depicted either by a staged CEMP implementation program or illustrated on construction plans / drawings, or both.

Prior to commencement of any construction activities, the Contractor must as a minimum, establish/implement all environmental safeguards, work practices and mitigating measures relevant to the first stage of construction, and then continue to progressively implement the approved CEMP as construction continues.

## E11 Monitoring, Maintenance and Recording

The Contractor’s CEMP must include a schedule outlining the monitoring and maintenance regime that the Contractor will adopt to ensure continued compliance with all environmental safeguards, work practices and mitigating measures.

The Contractor’s monitoring and maintenance schedule should be consistent with the Environment Protection Authority’s Environmental Guidelines for Major Construction Sites (Publication 480) and the Compliance Monitoring requirements listed for each Performance Criteria in Part C of this CEMP Specification.

The Contractor’s CEMP must outline how all monitoring and maintenance actions undertaken by the contractor will be recorded for reporting purposes. The Contractor may wish to use a Proforma style report listing all the approved CEMP’s actions, monitoring and maintenance requirements for, but not limited to, each Performance Criteria.

All monitoring and maintenance records must be clearly legible, kept on-site by the CEMP Implementation Officer and produced for inspection by the Superintendent when requested.

Wherever the Contractor’s monitoring identifies a deficiency in the effectiveness of an environmental safeguard or work practice, the Contractor must immediately implement appropriate maintenance procedures and/or improvement programs.

## E12 Contractor’s Reporting

The Contractor’s CEMP must indicate how the Contractor will report on a fortnightly basis to the Superintendent regarding implementation of the approved CEMP, and monitoring and maintenance records for all environmental safeguards and work practices.

The Contractor’s monitoring and maintenance reports will be used by the Superintendent and Principal to review and identify, in conjunction with the Contractor, any potential improvements to environmental safeguards and work practices applicable to the Project Site.

## E13 Compliance Audits

The Principal shall appoint an independent auditor or the Superintendent to review implementation of the Contractors CEMP, compliance with these CEMP Specifications and the Contractor’s approved CEMP, and general on-site environmental performance.

Other Authorities may also determine compliance with the approved CEMP in relation any statutory conditions, guidelines and work practices that apply.

## E14 Review and Improvements

The Contractor’s monitoring and maintenance reports together with the Principal’s compliance audit results will be used to report to relevant Government Authorities and Agencies regarding implementation of and compliance with the approved CEMP.

The Contractor may be required to participate in a review of the CEMP undertaken from time to time by the Principal, the Superintendent and relevant Government Authorities and Agencies in order to identify any potential improvements to environmental safeguards and work practices applicable to the Project Site.

**E14.1 MEASUREMENT AND PAYMENT.**

Measurement for payment of development, of the approved CEMP shall be the full amount of the lump sum nominated in the schedule of quantities.

Measurement for payment of the implementation and maintenance of the CEMP requirements shall be prorated using the percentage of completed contract works as a function of the approved contract sum.

The rates and amounts for the development, implementation and maintenance of the CEMP in the Schedule of Quantities and Rates shall include but not be limited to all costs of preparation and documentation of the approved CEMP, appointment of the CEMP Implementation Officer, liaison with Superintendent, Principal and authorities, implementation, maintenance, monitoring and reporting, and improvement of all environmental safeguards detailed in the approved CEMP.

Payment for development of the CEMP shall be made under Item 1.7 *Construction and Environmental Management Plan* of the Schedule of Quantities and Rates.

Payment for the implementation and maintenance of the CEMP shall be made under Item 1.7 of the Schedule of Quantities and Rates.

# APPENDIX

# Appendix 1 - Geology