



**COMMON
GROUND**

Waroona Community Precinct

Pump Track

Specification of Works

Shire of Waroona

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Table of Contents

| | | |
|----------|--|----------|
| 1 | Introduction | 6 |
| 1.1 | The Site | 6 |
| 1.1.1 | <i>Site Location</i> | 6 |
| 1.1.2 | <i>Site Access</i> | 6 |
| 1.1.3 | <i>Site Working Hours</i> | 6 |
| 1.1.4 | <i>Familiarisation of Site and Existing Conditions</i> | 6 |
| 1.1.5 | <i>Dilapidation Survey</i> | 6 |
| 1.2 | Scope of Works | 6 |
| 1.2.1 | <i>Preliminaries, Safety and Security</i> | 6 |
| 1.2.2 | <i>Site Preparation</i> | 6 |
| 1.2.3 | <i>Earthworks</i> | 6 |
| 1.2.4 | <i>Drainage</i> | 6 |
| 1.2.5 | <i>Asphalt</i> | 7 |
| 1.2.6 | <i>Timber Work and Carpentry</i> | 7 |
| 1.2.7 | <i>Stone and Masonry Construction</i> | 7 |
| 1.2.8 | <i>Concrete</i> | 7 |
| 1.2.9 | <i>Metalwork</i> | 7 |
| 1.2.10 | <i>Paint</i> | 7 |
| 1.2.11 | <i>Soft Landscaping</i> | 7 |
| 1.2.12 | <i>Usual, Incidental & Necessary Work</i> | 7 |
| 1.2.13 | <i>Supervision</i> | 8 |
| 1.3 | Documentation | 8 |
| 1.3.1 | <i>Drawings</i> | 8 |
| 1.3.2 | <i>On-Site Copies of Drawings</i> | 8 |
| 1.3.3 | <i>Dimensions</i> | 8 |
| 1.4 | Approvals, Engineering and Shop Drawings | 8 |
| 2 | Preliminaries..... | 9 |
| 2.1 | Occupational Health and Safety Requirements | 9 |
| 2.2 | Contractor Documentation..... | 9 |
| 2.3 | Insurances..... | 9 |
| 2.4 | Works Program | 9 |
| 2.5 | Site Meetings..... | 9 |
| 2.6 | Services..... | 9 |
| 2.7 | Adjacent Sites | 9 |
| 2.8 | Protection of the Public..... | 9 |
| 2.9 | Security | 9 |
| 2.10 | Traffic Management and Parking | 9 |
| 2.11 | Materials and Labour | 9 |
| 2.12 | Site Housekeeping and Cleanliness | 9 |
| 2.12.1 | <i>Progressively</i> | 9 |
| 2.12.2 | <i>Completion</i> | 10 |
| 2.12.3 | <i>Cleaning of Machinery and Site Vehicles</i> | 10 |
| 2.13 | Environmental Protection | 10 |
| 2.14 | Noise, Dust and On-Site Behaviour | 10 |
| 2.15 | Regulations..... | 10 |
| 2.16 | Supply of Water for Construction | 10 |

| | | |
|----------|---|-----------|
| 2.17 | Defects Liability Period | 10 |
| 2.18 | Communication Framework | 10 |
| 2.19 | Warranties..... | 10 |
| 2.20 | As Constructed Records | 10 |
| 2.21 | Execution of Work..... | 10 |
| 2.22 | Workmanship | 10 |
| 2.23 | Quality..... | 10 |
| 2.24 | Inspections and Hold Points..... | 11 |
| 3 | Protection of Existing Trees..... | 12 |
| 3.1 | General..... | 12 |
| 3.2 | Quality Assurance and Standards | 12 |
| 3.3 | Contractor Inductions | 12 |
| 4 | Site Preparation..... | 13 |
| 4.1 | Scope | 13 |
| 4.2 | Quality Assurance and Standards | 13 |
| 4.3 | Identifying Services | 13 |
| 4.4 | Temporary Site Fencing | 13 |
| 4.5 | Weed Control Program..... | 13 |
| 4.6 | Erosion Control..... | 13 |
| 4.7 | Set Out for Approval | 13 |
| 4.8 | Hold Points | 13 |
| 5 | Earthworks..... | 14 |
| 5.1 | Scope | 14 |
| 5.2 | Quality Assurance and Standards | 14 |
| 5.3 | Excavation (Where Applicable) | 14 |
| 5.3.1 | <i>General</i> | 14 |
| 5.3.2 | <i>Shoring</i> | 14 |
| 5.3.3 | <i>Tolerances</i> | 14 |
| 5.4 | Fill..... | 15 |
| 5.4.1 | <i>Material</i> | 15 |
| 5.4.2 | <i>Placement of Fill</i> | 15 |
| 5.4.3 | <i>Earth Batters and Mounding</i> | 15 |
| 5.4.4 | <i>Method</i> | 15 |
| 5.5 | Basecourse | 15 |
| 5.5.1 | <i>Material</i> | 15 |
| 5.5.2 | <i>Placement of Fill</i> | 15 |
| 5.5.3 | <i>Method</i> | 15 |
| 5.6 | Compaction | 16 |
| 5.6.1 | <i>Protection</i> | 16 |
| 5.6.2 | <i>Testing</i> | 16 |
| 5.6.3 | <i>Requirements and Method</i> | 16 |
| 6 | Stormwater Drainage | 17 |
| 6.1 | Scope | 17 |
| 6.2 | Stormwater Inlet Pit | 17 |
| 6.3 | Stormwater Drainage Pipe | 17 |
| 6.4 | Slotted Drainage Pipe and Aeration Points | 17 |
| 6.5 | Hold Points | 17 |
| 7 | Asphalt Pump Track Surfacing..... | 18 |
| 7.1 | Scope | 18 |
| 7.2 | Quality Assurance and Standards | 18 |

| | | |
|-----------|---|-----------|
| 7.3 | Primer..... | 18 |
| 7.3.1 | Preparation..... | 18 |
| 7.3.2 | Application..... | 18 |
| 7.4 | Asphalt..... | 18 |
| 7.4.1 | Material, Delivery and Preparation..... | 18 |
| 7.4.2 | Tack Coat Preparation..... | 18 |
| 7.4.3 | Tack Coat Application..... | 18 |
| 7.4.4 | Asphalt Application..... | 19 |
| 7.5 | Hold Points..... | 19 |
| 8 | Timber Works and Carpentry..... | 20 |
| 8.1 | Scope..... | 20 |
| 8.2 | Standards..... | 20 |
| 8.2.1 | Preservative Treated Timber..... | 20 |
| 8.3 | Quality..... | 20 |
| 8.4 | Timberwork Execution..... | 20 |
| 8.4.1 | Decking Finish..... | 21 |
| 9 | Stone and Masonry Construction..... | 22 |
| 9.1 | Scope..... | 22 |
| 9.2 | Quality Assurance and Standards..... | 22 |
| 9.3 | Laterite Pitching..... | 22 |
| 9.3.1 | Material..... | 22 |
| 9.3.2 | Execution..... | 22 |
| 9.3.3 | Sample..... | 22 |
| 10 | Concrete..... | 23 |
| 10.1 | Scope..... | 23 |
| 10.2 | Quality Assurance and Standards..... | 23 |
| 10.3 | Concrete Footings..... | 23 |
| 10.3.1 | Material..... | 23 |
| 10.3.2 | Execution..... | 23 |
| 10.4 | Concrete Paving – Feature Rollers..... | 23 |
| 10.4.1 | Material..... | 23 |
| 10.5 | Concrete Edge Beam..... | 23 |
| 10.5.1 | Compaction of Sub-Grade..... | 23 |
| 10.5.2 | Concrete..... | 23 |
| 10.5.3 | Testing..... | 23 |
| 10.5.4 | Placement..... | 24 |
| 10.5.5 | Shape, Dimensions and Tolerances..... | 24 |
| 10.5.6 | Joints..... | 24 |
| 10.5.7 | Curing..... | 24 |
| 10.5.8 | Backfill..... | 24 |
| 11 | Metalwork..... | 25 |
| 11.1 | Scope..... | 25 |
| 11.2 | Quality Assurance and Standards..... | 25 |
| 11.3 | Steel Frames to Bike Feature..... | 25 |
| 11.3.1 | Handling, Delivery to Site and Storage..... | 25 |
| 11.3.2 | Steel Supply..... | 25 |
| 11.3.3 | Connections..... | 25 |
| 11.3.4 | Welding..... | 25 |
| 11.3.5 | Structural Steel Members..... | 25 |
| 12 | Pump Track Paint Work..... | 26 |

12.1 Scope..... 26
 12.1.1 *Paint product*..... 26
13 Soft Landscaping..... 26
 13.1 Scope..... 26
14 Definitions 26

1 Introduction

1.1 The Site

1.1.1 Site Location

Refer Request for Tender document

1.1.2 Site Access

Refer Request for Tender document

1.1.3 Site Working Hours

Refer Request for Tender document

1.1.4 Familiarisation of Site and Existing Conditions

Refer Request for Tender document

1.1.5 Dilapidation Survey

Refer Request for Tender document

1.2 Scope of Works

The extent of the works includes construction of all items as shown or implied in the drawings and the items contained within this specification

1.2.1 Preliminaries, Safety and Security

Refer Request for Tender document

1.2.2 Site Preparation

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set:

- Set out for approval
- Identifying services
- Best-Practice waste management

Note: Demolition and Temporary site fencing Refer Landscape Specifications

1.2.3 Earthworks

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set:

- Bulk earthworks and fill
- Grading and trimming
- Base course installation and shaping
- Compaction
- Earthworks required for installing drainage system

Refer Civil Works specification

1.2.4 Drainage

Refer Civil Works specification

1.2.5 Asphalt

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set:

- Asphalt surface to pump track

Refer Civil Works specification

1.2.6 Timber Work and Carpentry

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set.

Supply and install:

- Construct timber to wall ride

1.2.7 Stone and Masonry Construction

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set:

- Supply and install laterite rock pitching

1.2.8 Concrete

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set.

Supply and install:

- Concrete Footings to wall ride feature
- Concrete works to pump track entry platform and berm
- Concrete works to pump track Feature Rollers
- Concrete edge beam to pump track

1.2.9 Metalwork

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set.

Supply and install:

- Frame work to wall ride feature
- Reinforcing concrete paving and pump track elements
- Corten steel edging to pump track feature rollers

1.2.10 Paint

The following must be undertaken by the Contractor within the accepted works package with reference to its drawing set.

Supply and install:

- Line marking paint on pump track.

1.2.11 Soft Landscaping

Refer Landscape Works Specifications

1.2.12 Usual, Incidental & Necessary Work

Where an item or process is usual, incidental, can be reasonably or properly inferred, are not expressly indicated but necessary for the completion of the works, it shall be deemed to be included

as part of the construction works. This is irrespective of whether they are described or indicated on the drawings or in this specification.

1.2.13 Supervision

Refer Request for Tender document

1.3 Documentation

All drawings listed below should be read in conjunction with this specification

1.3.1 Drawings

| | |
|-----------|------------------------------|
| 2047-CD00 | Cover Page |
| 2047-CD01 | General Notes |
| 2047-CD02 | Site Plan |
| 2047-CD03 | Earthworks Plan |
| 2047-CD04 | Drainage Plan |
| 2047-CD05 | Set Out Plan |
| 2047-CD06 | Typical Details 1 |
| 2047-CD07 | Typical Details 2 |
| 2047-CD07 | Feature Roller Details |
| 2047-CD08 | Wall Ride Detail Plans |
| 2047-CD09 | Wall Ride Details |
| 2047-CD11 | Signage and Drainage Details |

1.3.2 On-Site Copies of Drawings

A complete set of the approved drawings in A1 format must be kept on site at all times with any current amendments. All on-site alterations from the drawings are to be marked up immediately for use in the preparation of 'As-Constructed Drawings'.

1.3.3 Dimensions

Figured dimensions shall be taken in preference to scale. The Contractor shall check all on-site dimensions before proceeding with construction.

The Contractor is to notify the superintendent of any discrepancies of dimensions for clarification and directions before commencing work.

The Contractor is to verify any discrepancies between the Contract documents during the tendering period. Under no circumstances will variations be considered for the Contractor's failure to confirm any detail.

1.4 Approvals, Engineering and Shop Drawings

The Contractor is to arrange for the shop drawings of all structures and be responsible for all costs associated in doing so.

2 Preliminaries

2.1 Occupational Health and Safety Requirements

Refer Request for Tender document

2.2 Contractor Documentation

Refer Request for Tender document

2.3 Insurances

Refer Request for Tender document

2.4 Works Program

Refer Request for Tender document

2.5 Site Meetings

Refer Request for Tender document

2.6 Services

Refer Request for Tender document

2.7 Adjacent Sites

Refer Request for Tender document

2.8 Protection of the Public

Refer Request for Tender document

2.9 Security

Refer Request for Tender document

2.10 Traffic Management and Parking

Refer Request for Tender document

2.11 Materials and Labour

Refer Request for Tender document

2.12 Site Housekeeping and Cleanliness

2.12.1 Progressively

The Contractor must at all times keep the work areas and adjacent public areas affected by the works clean and tidy. Clear and remove dirt and debris from the site progressively. Provide sufficient personal and equipment for cleaning operations.

Remove all waste and debris attributable to the works from the construction site, adjacent roads, paths and properties on completion of the works to the satisfaction of the Shire of Waroona

Set aside and clearly indicate any site loading and unloading areas where practicable.

Coordinate location of loading areas with the Shire of Waroona Do not store goods and materials on adjacent roads and paths unless approved in writing by the Shire of Waroona and relevant authorities. Keep loading areas in a clean and safe condition at all times.

Skip bins must be contained within the work site and not to be located on adjacent roads, paths or properties.

If clean-up work by the contractor is not to the Project Officer's satisfaction, the Shire will use other resources to make good the site and any cost incurred will be charged to the contractor.

2.12.2 Completion

Before arranging handover inspections, finish, clean, and make good the works including:

- Clear and remove surplus materials, dirt, debris and the like
- Repair damage and defects to adjacent properties resulting from the works
- Repair damage, stains and blemishes, or replace work where required
- Clean all surfaces

2.12.3 Cleaning of Machinery and Site Vehicles

Clean all machinery and vehicles thoroughly prior to arriving on site and before leaving the site to prevent the spread of weed seed.

2.13 Environmental Protection

Refer Request for Tender document

2.14 Noise, Dust and On-Site Behaviour

Refer Request for Tender document

2.15 Regulations

Refer Request for Tender document

2.16 Supply of Water for Construction

Refer Request for Tender document

2.17 Defects Liability Period

Refer Request for Tender document

2.18 Communication Framework

Refer Request for Tender document

2.19 Warranties

Refer Request for Tender document

2.20 As Constructed Records

Refer Request for Tender document

2.21 Execution of Work

Refer Request for Tender document

2.22 Workmanship

Refer Request for Tender document

2.23 Quality

Refer Request for Tender document

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2.24 Inspections and Hold Points

Refer Request for Tender document

3 Protection of Existing Trees

3.1 General

There are existing trees within and adjacent to the site that are to be retained. The Contractor is to undertake protection measures and practices through the construction period to ensure the protection of retained trees on and adjacent to the site. This includes damage both above and below ground.

3.2 Quality Assurance and Standards

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

This is including but not limited to the following:

| Standard | Document Title |
|-----------------|--|
| AS 4970-2009 | Protection of Trees on Development Sites |

3.3 Contractor Inductions

The Contractor is to allow for the onsite induction of all personal in relation to the tree protection requirements for the project. All evidence of inductions must be retained and made available at the request of the Shire of Waroona

4 Site Preparation

4.1 Scope

Refer Request for Tender document, Civil Works Specification and Landscape Works Specification

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4.2 Quality Assurance and Standards

Refer Request for Tender document

4.3 Identifying Services

Refer Request for Tender document, Civil Works Specification and Landscape Works Specification

4.4 Temporary Site Fencing

Refer Request for Tender document

4.5 Weed Control Program

Refer Landscape Works Specifications

4.6 Erosion Control

Refer Request for Tender document, Civil Works Specification and Landscape Works Specification

4.7 Set Out for Approval

The final positioning of all items may be modified slightly, due to amendments in the design or to account for specific site conditions and to comply with the requirements of relevant Standards and Authorities. Any alteration to the final positioning must be approved by the Superintendent prior to excavation and or installation.

Item(s) can only be relocated (which differ from the original location(s) shown on the drawing(s) if directed and approved by the Superintendent prior to their installation.

The Setout Plans provided in the drawing set include set out points to allow accurate setting out of the bike facility. A licensed surveyor must be engaged by the Contractor to undertake initial and ongoing pegging and setting out of the works.

Notify any set out and drawing discrepancies to the Superintendent for clarification and directions before commencing work.

4.8 Hold Points

Refer Request for Tender document

5 Earthworks

5.1 Scope

The Contractor will supply all labour and equipment to provide earthworks to the dimensions and tolerances that meet design requirements for bulk earthworks and trimming, as documented on the drawings. This includes but is not limited to the following:

- Excavation
- Filling, batter and mounding
- Compaction

5.2 Quality Assurance and Standards

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

This is including but not limited to the following:

| Standard | Document Title |
|--------------------|---|
| AS 3798-2007 | Commercial and Residential Earthworks |
| AS 4744.1-2000 | Steel Shoring and Trench Lining Equipment |
| AS 1289.5.5.1-1998 | Methods of Testing Soils for Engineering Purposes |
| AS/NZS 3500.3 | Stormwater Plumbing and Drainage |

5.3 Excavation (Where Applicable)

5.3.1 General

Excavate existing site material to conform to the finished levels and profiles indicated on the drawings as the basis for structures, pavements, filling and landscaping. Make allowance for compaction, settlement or heaving. Excavate for footings, pits, wells and shafts, to the required sizes and depths. Confirm that the sub-grade conditions meet the design bearing capacity. Where filling is required, all available clean site fill shall be used before clean imported fill is brought on to site.

If excavation is required within the zone of an existing footing, use methods including (temporary) shoring or underpinning, which maintain the support of the footing and ensure that the structure and finishes supported by the footing are not damaged.

Excavate for all drains, sumps, units, service lines conduits etc., as necessary to complete the works. Excavations are to provide falls to points of discharge where so required. Trenches are to be kept clear of buildings and paths.

Separate the earth and rock material and stockpile in a preapproved location, for reuse in backfilling operations. Do not stockpile excavated material against tree trunks, buildings, fences or obstruct the free flow of water along gutters where stockpiling is permitted along the line of the trench excavation.

5.3.2 Shoring

Take proper precautions to ensure that the method of operation in embankment and/or excavation does not cause movement of or undue strain in any structure or trees.

Provide all shoring, planking and strutting to retain the sides of the excavations, and ensure safe working. Provide safety covers over any holes and carry out works in accordance with AS4744.1. Provide vertical support where necessary using piling or underpinning or both.

As determined on site, typically angles are 30° for granular material, 45° for stiff clay.

5.3.3 Tolerances

Finish the surface to the required level, grade and shape within the following tolerances:

- Pavement subgrades: Conform to MRTS04 General Earthworks, Clause 6 – Geometrics. In addition, subgrade crossfall to be within 0.5 % absolute of crossfalls specified on the drawings.
- Batters: No steeper than the slope shown on the drawings. Ensure flatter slopes do not impact on boundaries or required clearances to buildings, pavements or landscaping.
- Other ground surfaces: ± 50 mm provided the area remains smooth and free draining and matches adjacent construction where required.

5.4 Fill

5.4.1 Material

Refer Civil Works Specification

5.4.2 Placement of Fill

Refer Civil Works Specification

5.4.3 Earth Batters and Mounding

Supply all labour and equipment to form earth batters and mounds in the positions, grades and to the levels shown on the drawings to the approval of the Superintendent.

Batters and mounds shall be formed from an approved fill to the depths/heights as indicated on the drawings. The profile shall be such that the placement of topsoil, soil mix and/or mulch shall bring the batters and mounds to the finished levels shown on the drawings. Slopes to batters and mounds shall be no greater than 1:4 unless otherwise shown on the drawings. Ensure existing ground levels in locations of mounds are deep ripped 200mm prior to formation of mounds and rake over all mounds for smooth profile.

Filling in layers approximately 150 mm thick compacted to 90% SMDD of the surrounding soil as determined by AS 1289, to minimise slumping and further internal packing down. Corners and intersections shall be rounded and given generous curves, while horizontal shoulders, minimum width 500 mm, shall be provided before any change of level

5.4.4 Method

Maintain at least one water source and appropriate compaction equipment while earthworks are in progress. Before placing subsequent fill layers, ensure that previously accepted layers still conform to requirements, including moisture content. Commence compacting each layer at the structure and proceed away from it. Prevent fill material from escaping beyond the embankment slope limits by erecting approved barriers of rock, boulder or earth. Partially completed structures are vulnerable to damage during compaction. Do not disturb or damage the protective covering of membranes during backfilling.

5.5 Basecourse

5.5.1 Material

Refer Civil Works Specification

5.5.2 Placement of Fill

Refer Civil Works Specification

5.5.3 Method

Basecourse is to be laid as per but not limited to the following:

- Basecourse to be laid in accordance with the design levels built in structures layers to achieve the desired compaction requirements. The minimum thickness of Base course shall be 200mm and this minimum thickness shall extend a minimum 300mm beyond the edge of the asphalt-wearing course.

- Basecourse material shall be spread to the required compacted thickness by means of an approved machine or lifting in continuous stacks deposited on the sub-base to achieve density requirements.
- Base course material shall be watered, compacted and cut to shapes as specified in the approved drawings.
- The base course shall be compacted to not less than 98% SMDD with OMC ± 3 of the maximum dry density (standard compaction) when tested in accordance with AS 1289: Method of Testing Soils for Engineering Purposes.
- Thickness of the base course after compaction shall be as specified on the approved drawings with a tolerance of ± 50 mm.
- Smooth transitions are of high importance in asphalt pump track construction, Contractor is to ensure the surface areas are reworked prior to sealing.
- All new and disturbed finished earth areas are to be neat, clean, presentable and evenly graded to tie into natural ground levels. Earth surface shall be graded away from hardscape to ensure no pooling of water occurs against hardscape edges.

5.6 Compaction

5.6.1 Protection

Protect the works from damage due to compaction operations. Where necessary, limit the size of compaction equipment or compact by hand.

5.6.2 Testing

Engage a NATA registered laboratory to carry out field dry density tests on the compacted material under asphalt areas before the asphalt is laid. Notify the Shire of Waroona of any tests that do not conform to the compaction density requirements. All testing shall be in accordance with AS 1289 Methods of Testing Soil for Engineering Purposes.

Cut-out, refill, re-compact and re-test areas of compacted fill, which do not achieve the required density under test.

5.6.3 Requirements and Method

Compact the subgrade and each layer of fill to the required depth and density, as a systematic construction operation and to conform to the compaction table. Shaped surfaces to provide drainage and prevent ponding.

| Compaction Table | | |
|---|---|--|
| Location | Cohesive soils. Minimum dry density ratio (standard compaction) to AS 1289.5.4.1 | Cohesion less soils. Minimum density index to AS 1289.5.6.1 |
| All subgrade, fill and associated earthworks. | 90% SMDD with OMC $\pm 3\%$ | Minimum density index of 80% |

After excavation and/or stripping, compact these surfaces in conformance with the compaction table to a minimum depth of 150 mm. Maximum rock and lump size in layer after compaction: 2/3 compacted layer thickness. Either compact separately or overfill and cut back. Trim batters neatly to the shapes specified and remove loose material.

6 Stormwater Drainage

6.1 Scope

Supply all labour and equipment to provide stormwater drainage works to the design requirements as documented on the drawings and complies with AS/NZS 3500.3.

Co-ordination with Civil contractor for connection to whole project drainage system.

Note: Pump track contractor only responsible for drainage installation within pump track Extent of Works.

6.2 Stormwater Inlet Pit

Refer Civil Works Specification

6.3 Stormwater Drainage Pipe

Refer Civil Works Specification

6.4 Slotted Drainage Pipe and Aeration Points

Refer Civil Works Specification

6.5 Hold Points

Refer Request for Tender document

7 Asphalt Pump Track Surfacing

7.1 Scope

The Contractor will supply all labour and equipment to provide asphalt sealing to the pump track to the dimensions and tolerances that meet the design requirements as documented on the drawings. This includes but is not limited to the following:

- Primer
- Red Asphalt Surface

7.2 Quality Assurance and Standards

| Standard | Document Title |
|----------|--|
| AS 2734 | Asphalt (Hot-Mixed) Paving-Guide to Good Practice |
| AS 1160 | Bituminous Emulsions for Construction and Maintenance of Pavements |
| AS 2150 | Hot Mix Asphalt |

7.3 Primer

7.3.1 Preparation

The surface of the base course shall be swept free from loose stones, dust, dirt and foreign matter so as not to damage the finished surface of the base course prior to application of the binder.

Sweeping shall be completed immediately before the application of the primer. All sweepings shall be completely removed from the track and disposed of in an appropriate manner.

7.3.2 Application

The surface of the base course shall be primer-sealed in accordance with Bituminous Surfacing Volume 1, Sprayed Works (Ausroads 1989) prior to application of the wearing course.

Inspection: Give notice so that inspection may be made of the following:

- Surfaces before application of primer **HOLD POINT**
- Upon completion

7.4 Asphalt

7.4.1 Material, Delivery and Preparation

Prior to the delivery of asphalt to the construction site, the prepared base shall be cleaned of all loose or foreign material. The mixture shall be delivered on site in accordance with requirements of AS 2150-Hot Mix Asphalt and AS 2734-Asphalt (Hot-mixed) Paving –Guide to Good Practice, unless otherwise approved. Asphalt mix to be AC5-AC7 In laterite red colour, 5% oxide additive. Laterite aggregate as per main Roads WA Specification 504

7.4.2 Tack Coat Preparation

Surface preparation, which includes sweeping, chipping and burning off rich fat areas, shall be carried out immediately before applying the tack coat. No asphalt shall be placed upon any area, which contains an excess of binder in such quantity, that there is any possibility of the binder coming to the surface area of the new work

7.4.3 Tack Coat Application

The tack coat shall be laid in accordance with AS 2734: Asphalt (Hot-Mixed) Paving-Guide to Good Practice. The bituminous emulsion shall comply with the requirements of AS 1160: Bituminous Emulsions for Construction and Maintenance of Pavements.

7.4.4 Asphalt Application

No asphalt shall be laid on the tack coat until the emulsion has broken and the water has substantially evaporated.

Asphalt shall be laid upon a base, which is clean dry, and in dry weather conditions with the atmospheric temperature above 10°C

The mixture shall be spread to such line, level and camber detailed in the approved drawings in a single layer and compacted (AS 2734: Asphalt (Hot-Mixed) Paving-Guide to Good Practice) to give the required compactions and absolute minimum compacted thickness specified.

Mixing and placing asphalt will not be permitted when the surface of the track is wet, or cold winds chill the mix to the extent that spreading, and compaction are adversely affected.

The temperature of the mix when it is spread shall not be less than 135°C. Spreading shall proceed without undue delay and initial rolling of the mix shall commence at a temperature of not less than 120°C.

Uniform compaction to the required density shall be achieved before the temperature of the mix falls to 80°C. The contractor shall ensure that this complete operation from mixing to final compaction is maintained within the specified temperature ranges.

Asphalt shall be spread in such a manner as to minimise the number of joints in the surface.

7.5 Hold Points

Refer Request for Tender document

8 Timber Works and Carpentry

8.1 Scope

This section includes but is not limited to the following:

Timber wall ride boards

For all hardwood timber including but not limited to the use on the pump bike features salvaged or recycled Jarrah is to be sourced and used.

8.2 Standards

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

This is including but not limited to the following:

| Standard | Document Title |
|----------|--|
| AS 01 | Glossary of Terms Used in Timber Standards |
| AS 02 | Nomenclature of Australian Timbers |
| AS 1148 | Nomenclature of Commercial Timbers Imported Into Australia |
| AS 1648 | SAA Timber Framing Code |
| AS 1720 | SAA Timber Engineering Code |
| AS 1728 | Types of Timber Surfaces |
| AS2754 | Adhesives for Timber and Timber Products |

8.2.1 Preservative Treated Timber

| Standard | Document Title |
|-------------------|--|
| AS 1604 | Preservative Treatment for Sawn Timber, Veneer and Plywood |
| AS 1606 & AS 1607 | Water-Repellent Treatment of Timber and Joinery |

8.3 Quality

Timber is to be of the best quality of the species and grades specified.

Timber is to be straight, sound and well-seasoned, free from defects including white ant, borer, sap, shakes, loose knots, warp, twist, decay, pith, holes, splits, fractures, bruises. Condemned timber must be replaced.

The Superintendent may choose to reject any timber delivered to site that may be defective.

8.4 Timberwork Execution

Exposed timber edges where there is a chance of users falling against edges, must be rounded off.

All work is to be accurately constructed to details, lines and levels. All joints to fit neatly and closely. All work to be securely and correctly fixed in position.

Exposed surfaces to be scraped and sanded to remove machine and hammer marks and other blemishes.

All exposed edges of posts, decking, bearers and joists etc. must be bevelled or rounded off and splinters and sharp edges removed.

All posts must be placed in the ground rigid, plumb and true and according to the plans. Concrete footings must finish below ground level as described in the Section on Concrete Footings under Concrete in this Specification.

8.4.1 Decking Finish

Decking is to be rough sawn finish. All edges are to be rounded/eased/chamfered prior to fixing. All decking members to be butt jointed after edges have been rounded (this allows for some shrinkage – maintaining gaps between members under 6mm to prevent potential finger entrapments)

9 Stone and Masonry Construction

9.1 Scope

This section includes but is not limited to the following:

- Laterite pitching
- Laterite boulders retaining

9.2 Quality Assurance and Standards

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

9.3 Laterite Pitching

9.3.1 Material

Spalls shall consist of limestone boulders 250-500mm diameter unless otherwise approved by Shire of Waroona

Mortar shall be one (1) part Cockburn Cement 'Brickies Light' to two (2) parts brickies sand and one (1) part white sand

9.3.2 Execution

Laterite spalls to be laid on 100mm thick mortar bed. Spalling shall conform to the following requirements:

- Spalls shall be arranged to minimise large gaps and undulation in the surface finish
- Spalls shall consist of limestone boulders 250-500mm diameter unless specified.
- Maximum slope for spalling shall be 1:1
- Limestone is to be arranged so that the top face of the spalling surface has maximum 100mm variation
- All spalls to be laid on 100mm thick mortar bed and then grouted with additional mortar. The installation method of pushing spalls into a mortar bed will not be accepted
- Mortar shall be a maximum of 100mm wide and minimum 20mm between spalls where applied
- Spalling mortar shall be soft brushed smooth

9.3.3 Sample

The Contractor shall provide a 5m² sample panel for approval by the Shire of Waroona before proceeding.

10 Concrete

10.1 Scope

The works include but are not limited to the supply and complete installation of concrete for:

- Concrete Footings
- Concrete to feature rollers
- Concrete paving to primary platform and adjacent berm section
- Concrete Edge Beam to pump track

10.2 Quality Assurance and Standards

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

10.3 Concrete Footings

10.3.1 Material

Concrete must be grey ready mixed unless approved otherwise by Shire of Waroona Concrete footings must have the required compressive characteristic strength at 28 days of 32Mpa.

10.3.2 Execution

Top of concrete footings must be no less than 200mm below the surface level unless shown differently in drawings. Tops of footings to be shaped to encourage water to run away from post.

10.4 Concrete Paving – Feature Rollers

10.4.1 Material

Main Concrete colour to match adjacent landscape finish. To be mix BCG A151. Refer landscape specifications for further details. Concrete must have the required compressive characteristic strength at 28 days of 32Mpa.

10.5 Concrete Edge Beam

The works include but are not limited to the supply and complete installation of:

150 x 150mm 32Mpa extruded concrete edging to pump track asphalt,

Set out with pegs the alignments of all concrete edges for the approval of the Superintendent.

10.5.1 Compaction of Sub-Grade

Uniformly compact sub-grade to a minimum degree of 8 blows per 300mm when measured with a falling weight penetrometer. Penetrometer to be a 9kg mass falling 610mm on a 16mm diameter rod.

10.5.2 Concrete

All concrete used shall be supplied by an approved firm in a ready mixed state and shall conform to the requirements of AS 3600 and shall be provided by an approved pre-mixed concrete supplier, conforming with AS 1379. All concrete shall have a minimum compressive strength of 32MPa at 28 days and shall be composed of a mixture of screenings, sand and cement to give the strength specified with a maximum slump of 90mm.

10.5.3 Testing

The Contractor shall bear the whole cost of obtaining concrete samples to demonstrate compliance with the above Specification, as required by the Superintendent.

10.5.4 Placement

Concrete edging shall be placed by means of an extrusion machine approved by the Superintendent. Any edging that cannot be placed using an extrusion machine may with the approval of the Superintendent be cast in-situ to the same cross section as that of the extruded edge except that cast in-situ edging shall be constructed with a 'key' 100mm deeper than the extruded edging and shall be embedded firmly in the sub-grade to this extra depth.

10.5.5 Shape, Dimensions and Tolerances

The final shape and dimensions of the extruded edging shall be as shown on the Drawings with the 100mm deep 'key' provided to sections on curves where the radius is less than 12m and where cast in-situ. The top surface of the edging shall be horizontal or parallel to the ruling grade of the land (as indicated on the Drawings) and shall be free from depressions exceeding 3mm when measured from a 3m long straight edge. The surface of the edging shall present a smooth, tidy appearance free from ragged edges.

10.5.6 Joints

The first 150mm of any new pour shall be cut away and removed. The gap between the previous and new work shall be filled by hand placing, rodding and shaping of the concrete until a satisfactory shape and finish has been obtained. Extruded edging shall be joined to existing garden edging by using the same method.

Contraction joints shall be constructed at 2.5m intervals by separation of 60% of the adjoining sections of the edging immediately after extrusion. Immediately after the contraction joints have been formed, the extrusion shall be finished by the application of a 2 part sand to 1 part cement slurry by means of an edge shaped screed. The finishing shall bridge over the contraction joints to form a continuous cover. Each contraction joint position shall be clearly marked by a cut in the finishing mortar on the entire exposed face of the edging before the mortar has set.

Not less than 24 hours after placing of the edging, expansion joints shall be constructed at minimum 5.0m intervals and at all horizontal curve tangent points. The expansion joints shall be formed by the sawing of a 6mm wide gap that completely severs the adjoining sections of the edging. The gap shall be closed with a 10mm diameter closed cell polyethylene foam rod gauged to a regular depth and pointed up with an approved one pack polysulphide sealant material after the Superintendent has inspected and approved the cut joints.

10.5.7 Curing

After initial set, concrete surfaces shall be cured for a minimum period of seven (7) days by either of the following methods:

- (a) Cover with PVC.
- (b) Spray with approved membrane.

10.5.8 Backfill

Backfilling to edging shall be placed after curing and acceptance of extruded edging. This filling shall not take place until at least 7 days after laying of extruded edging. The fill shall finish level with the top of the edging and shall be raked smooth to the specified grades and levels.

11 Metalwork

11.1 Scope

The works include but are not limited to the supply and complete installation of:

- Steel frames to wallride feature
- Reinforcing to footings, feature rollers and paving
- Corten steel edging to feature rollers

11.2 Quality Assurance and Standards

Steelwork can be completed on or off site. Fabrication must be by an experienced company and installation must be carried out under direct supervision of a capable foreman with experience in the work type.

All materials and workmanship shall be the best of their respective kind and carried out in accordance with this Specification, the accompanying drawings, relevant Australian Standards, codes and any subsequent conditions given by the Shire of Waroona

| Standard | Document Title |
|-----------------|-----------------------|
| AS 1204-1980 | Structural Steels |

11.3 Steel Frames to Bike Feature

11.3.1 Handling, Delivery to Site and Storage

Steelwork must be handled and stored by methods and appliances that will not over-stress or deform members. Members must be stored above the ground surface. Members bent or buckled from handling or storage will be rejected.

11.3.2 Steel Supply

All steel must comply with AS 1204

11.3.3 Connections

Where end cleats, brackets and other connections are not specifically detailed on the drawings, they are to be of type and proportion to suit the location and forces shown thereon with gauge and distances in accordance with Australian Standards.

11.3.4 Welding

Manual and semi-automatic welding is to be in accordance with Australian Standards.

11.3.5 Structural Steel Members

Installation of structural steel members as part of the bike features as shown in the drawings.

Hollow sections Gr 350L0 to AS 1163.

Angles Gr 300 to AS 3679.1

Steel members to be Grade 300 to AS 3679.

All new steel to be hot dipped galvanised.

12 Pump Track Paint Work

12.1 Scope

The works include but are not limited to the supply and complete installation of:

- Supply and install painted linework to pump track as shown on drawings

12.1.1 Paint product

Ennis Flint *Pro Grip*, applied to manufacturer's instructions. Colours to be primary blue and green in locations as shown on plans and details.

13 Soft Landscaping

13.1 Scope

All landscaping by main contractor. Refer to Landscape Works specifications.

14 Definitions

AS: Australian Standards.

Asphalt: Bituminous Concrete (BC) and Asphaltic Concrete (AC).

BA: Building Application / Approval.

BCA: Building Code of Australia.

CPTED: Crime prevention through environmental design. Council:

DA: Development Application / Approval.

DDA: Disability Discrimination Act.

Delivery Milestone: the stage that the work has reached, such that payment for work done leading up to this stage may be made.

DERM: Department of Environment and Resource Management.

DPI: Department of Primary Industries and Fisheries.

EPA: Environmental Protection Agency (now DERM).

Equipment: Any tools, items of plant, apparatus or machinery used for performing the scope of work.

Experienced: Trained, competent, and having a minimum of 1000 hours of on-the-job current industry experience.

GIS: Geographic Information System, being a system for capturing, storing, analysing and managing data and associated attributes, which are spatially referenced to the earth.

GPS: Global Positioning System, being a global navigation satellite system that utilises satellites to transmit signals, which enable a receiver to determine its location, speed and direction within a given area.

Grass cutting: Any act to cut, mow, slash, edge-trim, brush-cut, line-cut (or similar) vegetation within a designated location.

Hold Point: The stage that the work has reached, such that it requires a review, comments, action or instruction from the Client / Principal prior to work continuing.

LED: Light emitting diode.

LGA: Local Government Act and Regulations.

Maintenance: Is the repair, replacement and upkeep of existing assets. Maintenance work keeps an asset functioning in its current operational state and does not enhance or change the initial design or function of the asset without extending its useful life.

Materials: Any consumables used to perform the scope of work. **MCU:** Material Change of Use (rezoning).

MCU / ROL: A combined application, called a POD.

MUTCD: DTMR 'Manual of Uniform Traffic Control Devices'. **NATA:** National Association of Testing Authorities

Operator: Individual(s) who are licensed, trained and experienced in the operation of equipment to be used to perform the scope of work.

OPW: Operational Works (application / permit).

POD: Plan of Development.

Principal: The person/body responsible for engagement of all parties in the contract of works.

Preliminary: The stage where a task has been partially or wholly completed, but the results have not been fully checked / verified, and the desired outcome has not been achieved or determined.

Primary Contractor (Supplier): The contractor to whom all work will be offered initially. **Qualified:** Having undergone formal training.

Rocky material: Material containing any monolithic material with a minimum diameter of 300 mm which cannot be removed by mechanical means using a 20T excavator with a single tine ripper, percussion tools or by using a rock drill.

ROL: Reconfiguration of Lot (subdivision).

Rotation: A (grass cutting) cycle for the whole of the contracted area.

Safety barrier: means guard rails, wire rope barriers and the associated end treatments.

SBR: Standard Building Regulations.

Secondary Contractor (Supplier): the contractor to whom work will be offered should the Primary Contractor (Supplier) be unable to provide the specified service.

Signage vehicle(s): Vehicles, which have the capacity to carry traffic controlling devices.

Traffic Controllers: Individual(s) who are trained, qualified and accredited in the controlling of vehicular and pedestrian traffic on public roads, and who are also capable of managing traffic around and through work sites.

Traffic control devices: Any traffic controlling devices, such as stop / slow signs, traffic cones, road signage, etc. and equipment that are used for performing this contract.

Virgin asphalt: An asphalt material consisting of components, which have never been used before, in an asphalt, or any other manner.

Work site(s): Any fixed or moving work sites.