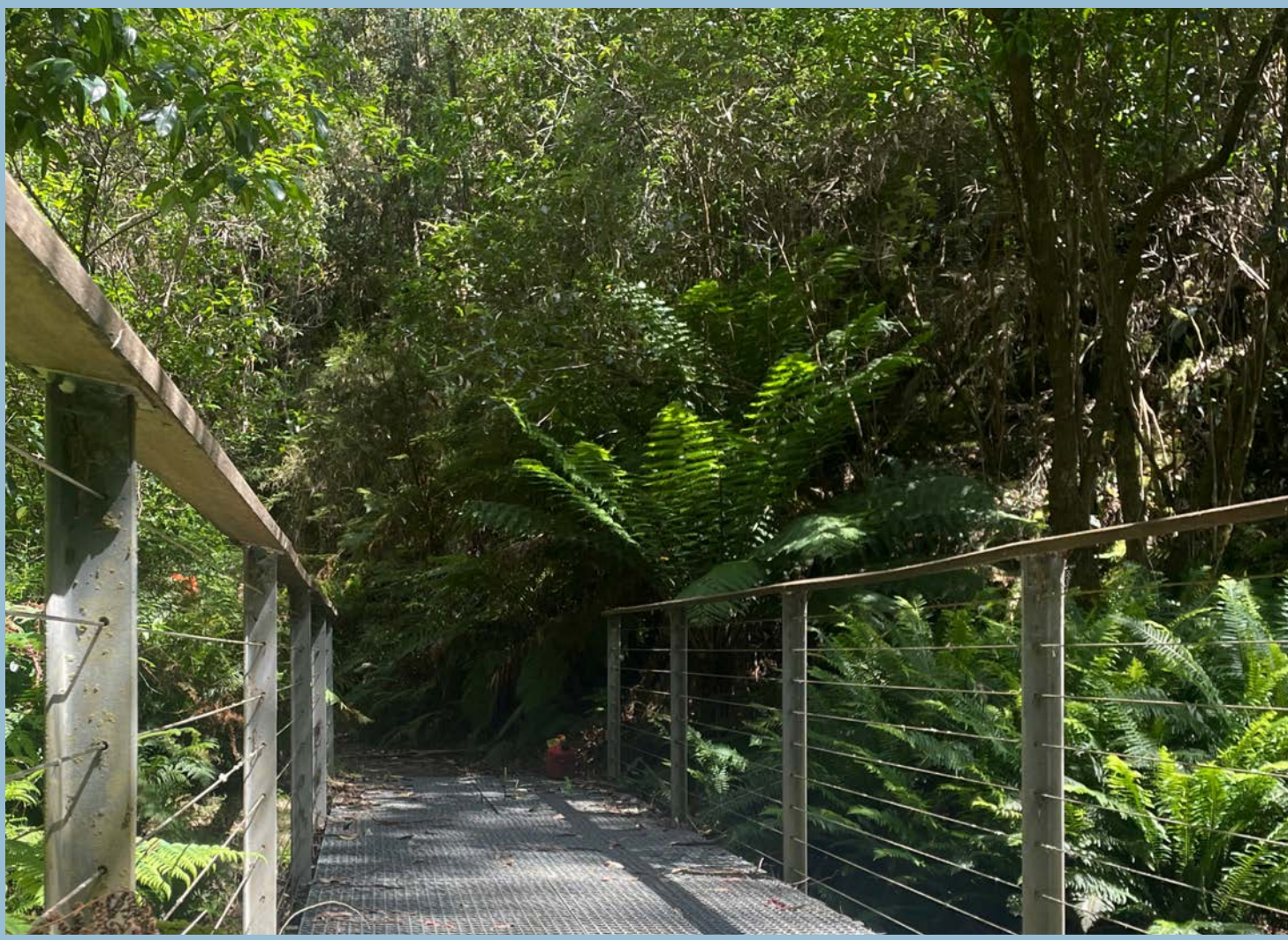
GREAT OCEAN ROAD COASTAL TRAIL

Style Guide & Construction Manual

May 2024



GREAT OCEAN ROAD
COAST & PARKS AUTHORITY

Eastern Maar
Aboriginal Corporation

Parks
VICTORIA

VICTORIA
State
Government

Energy,
Environment
and Climate Action

ACKNOWLEDGEMENT OF COUNTRY

Ngatanwarr djaambi
(Greetings to our Friends)

We, the Eastern Maar, are the Traditional Owners of Country that includes the Great Ocean Road Coastal Trail. We are the eastern landholding group of a larger Aboriginal nation - the Maar Nation - that includes the Gadubanud language group.

Our story extends for thousands of years before the arrival of the tall ships. Today we continue to possess a diverse, rich and strong living cultural heritage. Our Values for Country guided the development of the trail Master Plan and remain integral to guiding construction activities.

From the responsibility inherited through our Ancestral birthright as Custodians and Stewards of Country we have a critical role in the sustainability of our biocultural landscapes.

The Style Guide & Construction Manual supports a holistic approach to Caring For Country for the benefit of all.

We welcome implementation of the Great Ocean Road Coastal Trail and urge all to utilise this opportunity to:

Care for Country
Think about Country
Love Country
Protect Country

We invite all that choose to live on or visit our Country to slow down. To tread softly and listen to Country Speak.

Ngootjoon Ngootjoon
(All is Good, All is Healthy)

CONTENTS

1. PROJECT OVERVIEW

1.1 PROJECT DESCRIPTION

The Great Ocean Road Coastal Trail (GORCT) is a proposed 90km walking trail between Fairhaven and Skenes Creek, in accordance with the GORCT Master Plan completed in 2022, and an accompanying GORCT Planning & Design Report completed February 2023. These documents (and the associated digital spatial data) define the trail alignment.

The existing conditions along the proposed trail alignment vary. In some sections it follows existing trails, footpaths and management vehicle tracks (some of which will need to be upgraded), while in other sections new trail construction will be required.

The development of the trail also requires the construction of supporting infrastructure, including steps, bridges, boardwalks, lookouts, barriers/balustrades and seats.

The construction of the trail is being managed by the Victorian State Government Department of Energy, Environment and Climate Action (DEECA) on behalf of the Great Ocean Road Coast & Parks Authority (GORCAPA) who will be the manager of the completed trail. The State Government has commenced a process to transfer land management responsibilities from Parks Victoria to GORCAPA, however Parks Victoria will remain a critical stakeholder in all construction activities for the trail.

Traditional owners - the Eastern Maar Aboriginal Corporation (EMAC) - are key partners in the project. EMAC values, including Caring for Country, will need to be reflected in all construction activities.

Key background documents: the 2022 Master Plan and 2023 Planning & Design Report.

1.2 ROLE OF THIS DOCUMENT

This document forms a part of a suite of documents and data that defines the parameters of a Design & Construct tender for the construction of the trail and associated infrastructure.

The GORCT Master Plan and associated documents and data define:
- The trail alignment (including digital alignment data).
- Numbered segments along the alignment that define the nature of the works required for each segment.
- The quantities of works required (presented as a Bill of Quantities, referencing the numbered segments noted above).

This document supplements these, defining the requirements regarding:
- Materials
- Construction details
- Quality standards, and
- Other relevant specifications.

This document shall be read in conjunction with the Request for Tender and the Contract Documents. Refer to these for:
- Tender requirements
- Requirements regarding the insurance related to the works, including Public Liability Insurance and Workcover.
- Occupational Health & Safety (OH&S) Plan requirements
- Processes and timeframes for Practical Completion and Final Completion of the works.

Note that there are some elements of the proposed trail that are intentionally excluded from this document and will be addressed elsewhere. Excluded items are addressed under the ‘scope of works’ heading below.

1.3 SCOPE OF WORK

The scope of work includes the design and construction of works associated with the delivery of the Great Ocean Road Coastal Trail (GORCT). The works comprise the provision of design (including engineering), materials, plant, and labour necessary to complete the works to a high standard. The works covered by this document include (but are not limited to):

- Trail surfaces (including new trail construction, as well as works to existing roads/trails/paths) to deliver stable, compacted, all-weather trail surfaces meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System
- Rockwork (armouring and retaining)
- Steps
- Bridges & boardwalks
- Barriers/balustrades
- Seats
- Minor lookouts
- Foot wash facilities

Works intentionally excluded from the scope of works covered by this document are:

- Major/Premier lookouts
  (defined in the master planning work as being major attractions with significant investment in design and construction quality).
- Major bridges
  (defined in the master planning work as being bridges that are greater than 20 metres in length).
- Hiker camps
- Wayfinding and interpretive signage
- Accessible (Grade 1) trail construction

All of the above excluded items are to be addressed in separate documentation and tender packages.

2. DESIGN/CONSTRUCTION PHILOSOPHY

2.1 INTRODUCTION

The majority of this document addresses detailed requirements for the design and construction of trail infrastructure for the Great Ocean Road Coastal Trail (GORCT). (NB: This is a working title for the trail, and subject to change). This section provides information regarding the rationale behind those detailed requirements, and assisting tenderers to understand project expectations and requirements.

2.2 VISION, OBJECTIVES AND GUIDING PRINCIPLES

The GORCT Master Plan identifies a Vision for the project.

> ***Vision***
> *To create a series of memorable walking trails on Gadubanud Country, Eastern Maar Nation, stretching along the iconic Great Ocean Road from Fairhaven to Skenes Creek. These trails will link the Surf Coast Walk and the Great Ocean Walk.*

The Master Plan also identifies Objectives and Guiding Principles for the trail. Those that are particularly relevant to the design and construction of the trail are identified in the table below, along with the ways that they impact on construction activities.

Objectives	***Guiding Principles***	***Proposed design/construction response***
Walking on Gadubanud Country, Eastern Maar Nation	• *Maar knowledge will inform the design and construction of the trail.* • *The Great Ocean Road Coastal Trail will respect and celebrate the deep relationships between the Eastern Maar and the landscape.* • *The Great Ocean Road Coastal Trail will respect and acknowledge the rights of Eastern Maar and create opportunities to advance self-determination.*	• Engagement with the Eastern Maar has identified a desire to use predominantly locally-sourced natural materials. For natural materials (including quarry products & timber), preference should be given to materials sourced from Eastern Maar Country where possible, otherwise from the nearest practical local source.

Objectives	*Guiding Principles*	*Proposed design/construction response*
Conserving and protecting the Otway Coast	• *The Great Ocean Road Coastal Trail will take a landscape led design approach and be constructed in a manner that is sympathetic to and respectful of the landscape.* • *It will be managed to the highest level of environmental stewardship, protecting the environment for future generations to enjoy.*	• The trail design and construction is required to be highly responsive to the landscapes through which it passes. This includes finding design solutions to minimise the need for earthworks and vegetation disturbance/ removal. • The trail design and construction is required to create a robust trail that minimises the level of maintenance required, and proactively addresses potential issues such as erosion, vegetation disturbance, and infrastructure damage due to flooding or tree limb drop.
Encouraging All to be Active	• *The Great Ocean Road Coastal Trail will provide a wide range of user experiences, levels of difficulty and accessibility, with the aim of increasing participation, promoting healthier lifestyles for locals and visitors, and encouraging longer stays in the region.* • *The Great Ocean Road Coastal Trail will provide opportunities for people to enhance their physical, mental and emotional wellbeing through. A strong focus will be on Country and wellness.*	• The trail is required to be delivered as a Grade 3 trail using the Australian Walking Track Grading System. This grade of trail is intended to be suitable for most ages and fitness levels, however users may encounter natural hazards such as steep slopes, unstable surfaces, many steps, and minor water crossings. • Note: Accessible Grade 1 trails (referenced in the master planning documents) are not included within this scope of works.

Objectives	*Guiding Principles*	*Proposed design/construction response*
Showcasing the Landscape	• *The Great Ocean Road Coastal Trail will provide iconic walking experiences, showcasing the grandeur and diversity of the Great Ocean Road's natural and cultural landscapes.* • *The Great Ocean Road Coastal Trail will provide an opportunity for short walks or to be undertaken as a long-distance walk linking the Surf Coast Walk and Great Ocean Walk.*	• The trail design and construction is required to facilitate a high-quality experience that showcases the landscapes through which it passes. • In order to showcase the landscape, trail infrastructure shall be designed to be visually unobtrusive and environmentally sensitive.
Providing Economic Benefits	• *The Great Ocean Road Coastal Trail will provide tangible economic benefits by cementing the Great Ocean Road region as a leader in the nature-based tourism sector.* • *The Great Ocean Road Coastal Trail will strengthen the social wellbeing of the local community.*	• The trail design and construction is required to facilitate a high quality nature-based visitor experience.
Creating a Unique Visitor Experience	• *The Great Ocean Road Coastal Trail will create lifelong memories, through a walking experience that captures the essence of the Great Ocean Road through the seasons – the solitude, amazing views and scenery, relationship to cultural heritage, varied flora and fauna and the breathtaking wildness of the Southern Ocean.*	• The trail design and construction is required to facilitate a high-quality visitor experience, including consistency in use of materials and infrastructure design, that compliments the natural environment, character, and setting of the trail.

3. GENERAL REQUIREMENTS

3.1 GENERAL

3.1.1 Scope

This Section covers general requirements relating to the construction of the works and the performance of the Contract. It shall be read in conjunction with all other sections of this document.

The Contractor shall provide everything which is necessary for the execution and completion of the works, in accordance with the Contract Documents and supporting documents, and/ or instructions given by the Superintendent and deliver the works complete in every respect to the satisfaction of the Superintendent.

This document is divided into the following Sections:

- General Requirements, including sections related to materials and work quality. This section addresses overall requirements applicable to all aspects of the work.
- Requirements for individual trail infrastructure components, outlining specific aspects of material, construction and work quality that relate to specific works elements. Each individual works section is divided into the following sub sections:
    - General - outlining the works scope.
    - Materials & products - outlining details on the supply of materials and products, including requirements related to samples, shop drawings, and quality benchmarks.
    - Execution, installation & quality - outlining the requirements for execution and construction of the works, including setout, finishing and maintenance.

3.1.2 Precommencement documentation and planning

The following documentation and planning is required to be prepared to the satisfaction of the Superintendent prior to the commencement of any site works.

A. Occupation Health and Safety (OH&S) Plan

It is important that the work be carried out in a safe manner to ensure the safety of the Contractor's work force, the Principal's staff or agents who have access to the site as well as the general public.

The Contractor shall be responsible for ensuring that the requirements of the *Occupational Health & Safety Act 2004* and the *Occupational Health & Safety Regulations 2017* are adhered to. A project-specific OH&S Plan shall be prepared and submitted to the Superintendent prior to the commencement of works, and shall be acted and reported upon throughout the construction and Defects Liability periods.

The project presents a range of project-specific OH&S risks that need to be addressed as a part of the OH&S Plan, including but not limited to: Fire risk, working in remote and/or difficult to access locations, steep grades and dust generation.

B. Construction Environmental Management Plan (CEMP)

A Construction Environmental Management Plan (CEMP) is a site-specific plan developed to ensure that all necessary environmental protection measures associated with construction period activities are identified and implemented.

At a minimum, the CEMP must address the following:

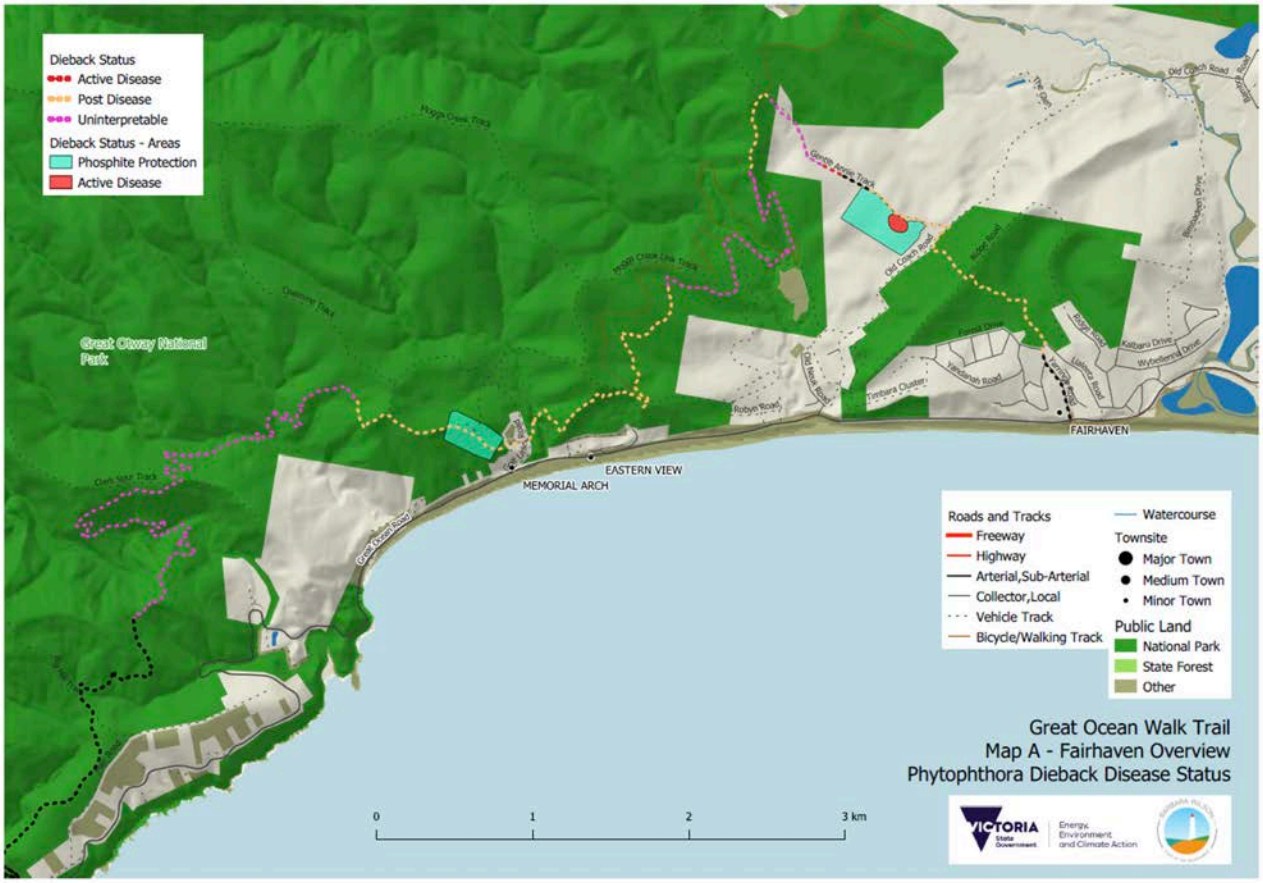
Issue to be addressed by CEMP	***Key requirements***	***Key reference documents (be be supplied by the Principal)***
Erosion & sediment control	• A plan for construction activities that addresses erosion & sediment control with reference to the key reference document.	• *GORCT Stormwater Management Considerations* report by Bligh Tanner, November 2022
Phytophthora management	• A plan for construction activities that addresses the recommendations of the key reference document, as summarised below. • The plan must include allowance for Phytopthora wash down facilities at the 3 high Phytophthora risk areas to ensure machine, vehicle, staff & contractor compliance with Phytopthora hygiene requirements.	• *Phytophthora Dieback Management Report 2023* prepared by *State of the Environment Pty Ltd* for DEECA.
Native vegetation removal	• A plan for native vegetation removal processes and reporting that complies with legislative requirements.	• *Great Ocean Road Coastal Trail: Desktop Ecological Values and Constraints Assessment*, Biosis 2022 • *Great Ocean Road Coastal Trail: Planning Desktop Assessment*, Biosis 2022 • *Flora and fauna assessment*, Biosis 2022
Flora & fauna protection	• A plan for the protection of flora to be retained (refer above for native vegetation removal) and native fauna. • Note that DEECA/PV Officers will be able to provide guidance on works planning related to specific species (eg. related to the Swamp Antichinus breeding period).	• *Great Ocean Road Coastal Trail: Desktop Ecological Values and Constraints Assessment*, Biosis 2022 • *Great Ocean Road Coastal Trail: Planning Desktop Assessment*, Biosis 2022 • *Flora and fauna assessment*, Biosis 2022

Phytophthora management

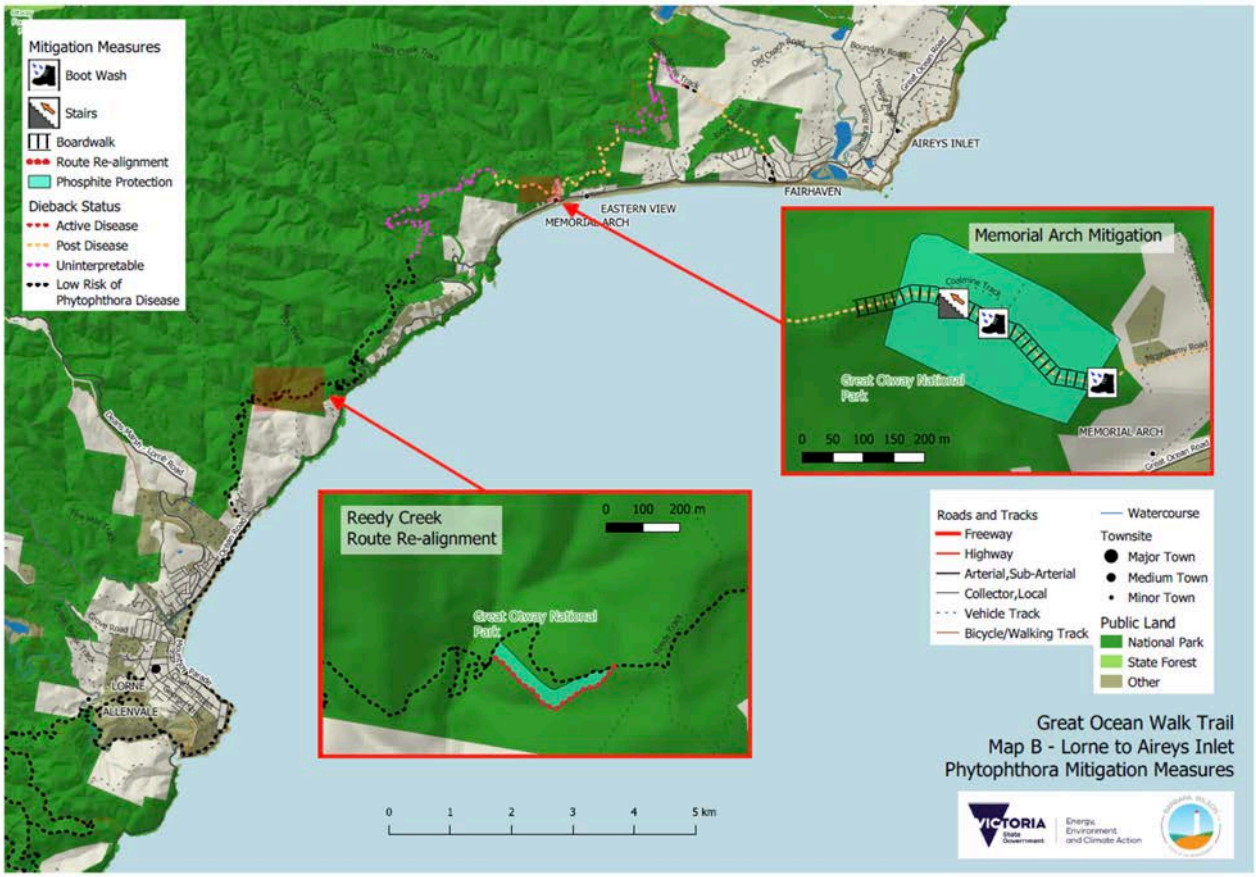
The plant pathogen *Phytophthora cinnamomi* causes the disease Phytophthora dieback in susceptible native plants. The pathogen and the disease it causes are a nationally listed threat to Australia's biodiversity (*Environment Protection and Biodiversity Conservation Act 1999*). The report identifies high risk areas along the trail alignment where specific requirements apply, as well as operational procedures that must be applied to all construction works under this contract.

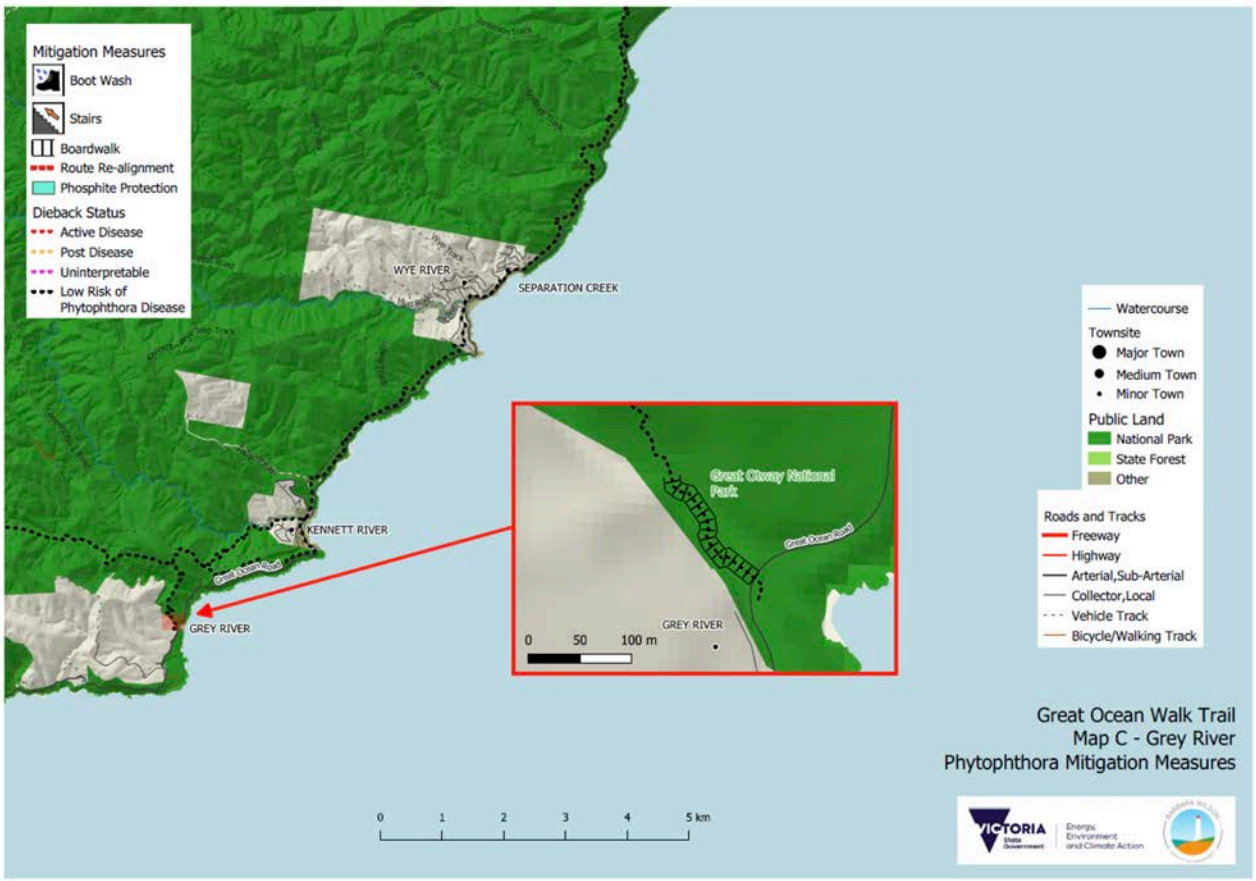
These recommendations relate to controlling the potential pathogen pathways, including:

- Use of infested gravel in road and track construction
- Infested soil adhering to earth moving equipment and other machinery, vehicles, equipment (such as shovels) and footwear for which adequate hygiene and wash-down procedures have not been taken.
- Use of contaminated water from dams or streams for construction activity. Spores may be present in streams and dams due to drainage from infested areas.



Map extract from Phytophthora Dieback Management Report 2023 *showing key management areas.*





Map extracts from Phytophthora Dieback Management Report 2023
showing key management areas.

The report makes the following recommendations regarding the management of the trail construction:

- *All construction must be undertaken following the Arrive Clean, Leave Clean Protocol for all personnel and equipment.*
- *Vegetation adjacent to the GORCT in the Coalmine Creek (Memorial Arch) HIGH PHYTOPHTHORA RISK section must be taped off from the GORCT Construction envelope.*
- *During construction, personnel must not walk off the GORCT Construction envelope into the surrounding bushland.*
- *All construction materials must be free from Phytophthora cinnamomi (i.e. all materials are Uninfested).*
- *All equipment and machinery entering the three HIGH PHYTOPHTHORA RISK sections must be Clean on Entry* (and exit) *and inspected* (and logged*) by DEECA/PV Project Management staff prior to commencement of construction works.*
- *All tools used within HIGH PHYTOPHTHORA RISK sections must be cleaned, disinfected, and allowed to dry at each designated work-break.*

C. Cultural Heritage Management Plan (CHMP)

An approved Cultural Heritage Management Plan (CHMP) complying with the *Aboriginal Heritage Act 2006* will be will be supplied to the Contractor by the Principal prior to the commencement of works. It will be the responsibility of the Contractor to fully comply with the requirements of the CHMP throughout all aspects and stages of the works.

The following table lists potential CHMP conditions that may apply to this project and how they should be addressed for this project.

CHMP condition examples	***Contractor responsibilities***	***Principal responsibilities***
A requirement for a copy of the approved CHMP to be held on site at all times.	• Allowance to be made by Contractor to fully comply with any such condition.	• CHMP to be procured and managed through the approval process by the Principal. • Principal to provide a copy of the approved CHMP to the Contrtactor prior to the commencement of construction works.
A requirement for cultural heritage inductions for contractors involved in ground-disturbing work. Note that separate inductions may be required at separate sites across the project.	• Allowance to be made by Contractor to fully comply with any such condition, allowing time for staff inductions and associated documentation/reporting as required.	• The Principal will engage the Heritage Advisor/archaeologist and the Registered Aboriginal Party (RAP)representative/s to conduct the inductions, and pay their costs.
Compliance inspections during construction.	• Allowance to be made by Contractor to fully comply with any such condition, allowing time for compliance inspections and associated documentation/reporting as required.	• The Principal will engage the Heritage Advisor/archaeologist and the Registered Aboriginal Party (RAP)representative/s to conduct the inductions, and pay their costs.

CHMP condition examples	***Contractor responsibilities***	***Principal responsibilities***
Sensitive information handling (eg. no unauthorised release/ distribution relating to cultural heritage fabric, information or photographs of sensitive objects or sites).	• Allowance to be made by Contractor to fully comply with any such condition.	• Principal to fully comply with any such condition.
Requirement for trail alignment or related infrastructure to be relocated based upon cultural heritage findings.	• Allowance to be made by the Contractor to work with the Principal during the works setout phase to find alternative locations/ alignments if required. • Provide evidence of any impacts upon contract sum, if required.	• The Principal will engage the Heritage Advisor/archaeologist and the Registered Aboriginal Party (RAP)representative/s to assess potential alternative locations/alignments, and pay their costs.
Conditions, such as a 'no dig' requirement, that prevent all, or parts, or the proposed trail being constructed as proposed.	• Allowance to be made by the Contractor to work with the Principal during the works setout phase to find alternative locations/ alignments/construction methods if required. • Provide evidence of any impacts upon contract sum, if required.	• The Principal will engage the Heritage Advisor/archaeologist and the Registered Aboriginal Party (RAP)representative/s to assess potential alternative locations/alignments/ construction methods, and pay their costs.
Conditions related to the unexpected discovery of cultural heritage during the construction works.	• Allowance to be made by the Contractor to comply with requirements to restrict access to the discovery site while assessment is undertaken. • Provide evidence of any impacts upon contract sum, if required. • Potential implications of assessment process covered above (eg. trail alignment relocation).	• The Principal will engage the Heritage Advisor/archaeologist and the Registered Aboriginal Party (RAP)representative/s to undertake the required assessment and pay their costs.

D. Construction Management Plan (CMP)

An approved project-specific Construction Management Plan (CMP) will be required to be prepared by the Contractor prior to the commencement of any works. It will be the responsibility of the Contractor to fully comply with the approved CMP throughout all aspects and stages of the works.

At a minimum, the CMP must address the following:

Issue to be addressed by CMP	***Key objectives***
Risks	• Identification of potential risks associated with the proposed construction activities, and the ways that these are proposed to be managed. • Note: Key health & safety and environmental risks will be addressed by the OH&S and CEMP plan requirements outlined above.
Works programming	• Demonstrate how the works will be delivered within the allowed time frames. • Demonstrate consideration of potential impacts of seasonal variation in weather. • Programming and staging of works in such as way as to minimise disruption to residents and visitors. • Avoiding construction-related impacts upon visitors in high use areas at peak visitation times where possible.
Extreme conditions planning	• Identification of responses to extreme weather conditions (eg. Catastrophic Fire Conditions, forecast extreme winds and/or rain). Note that the Superintendent may require the works to cease under such conditions.
Working hours & noise	• Adherence with EPA Victoria and Council requirements in relation to working hours and the level of noise generated by construction. • Minimisation of the amount of noise generated by the works.
Traffic/pedestrian management	• Identify statutory requirements relating to traffic and pedestrian management (including road and path closures) and a plan to comply with them. • Demonstrate a traffic management approach that seeks to minimise disruption to residents and visitors.
Construction access	• Identify a plan for access to the construction site, for workers and deliveries, that seeks to minimise disruption to residents and visitors.
Materials storage & stockpiling	• Identify appropriate, safe and non-damaging locations for materials storage and stockpiling.

Issue to be addressed by CMP	*Key objectives*
Construction methods	• Identify construction methods to be used appropriate to the conditions. This includes identifying areas where machinery of different types/sizes will and will not be able to be used.
Public access	• Identify a plan for controlling access to the construction site.
Site amenities	• Identify a plan for providing appropriate amenities for construction workers.
Asset protection	• Identify a plan for identifying and protecting existing assets.
Dust generation	• Dust generation minimised to ensure there is no health risk or loss of amenity.
Waste	• Identification of all waste that will generated by the works, and the proposed method of disposal. • Identification of methods proposed to minimise waste generation.
Airlifting (if required)	• Providing details of the locations and times where air lifting is to occur, and the type of equipment to be used. • Demonstrating consideration of safety, noise disturbance and the impacts of weather, and how these are to be managed. • Identification of potential risks and the ways that these are proposed to be managed.

3.1.3 Standards, Codes & References

A. Australian Standards

The works must comply with the current editions of all relevant codes and Australian Standards. Australian Standards shall be the governing standards for the works unless otherwise specified. Only where expressly stated in the Specification shall other standards be applicable to the works.

All reference to Australian and other standards, regulations and requirements of statutory bodies shall mean the latest published editions at the time of Contract award. Where such standards, regulations and requirements are amended after Contract award and affect the Contractor's responsibilities during the course of the works, immediately inform the Superintendent in writing.

Where there is in existence a relevant Australian Standard applicable to the design, execution or performance of the works or any part thereof, then the recommendations and requirements of such documents shall be considered a minimum standard for the work described and shall be complied with.

Should the requirements of a standard conflict with any other requirements of this document, the Contractor shall draw this to the attention of the Superintendent and state the proposed course of action, before implementing any related work.

Standards of particular relevance to this Contract may include:
- AS2156.1-2001 Walking Tracks Part 1: Classification & Signage
- AS2156.2-2001 Walking Tracks Part 2: Infrastructure Design
- AS1170.1-2002 Structural design actions, Part 1: Permanent, imposed and other actions

B. Statutory Authority codes & regulations

All materials, components, equipment and work quality shall comply with all Statutory Authority codes and regulations, and any other regulations, rules or by-laws applicable to both the design and execution of the Works.

Obtain and submit all approvals, certificates and any other documents required by the Statutory Authorities to permit use and/ or occupation of the Works.
The Contractor shall comply with any approval conditions imposed by Statutory Authorities to which the Works are subject.

The Contractor shall ensure that design work required to be undertaken as a part of this contract comply with all Statutory Requirements and relevant codes, and that they receive the necessary approvals in good time to ensure that there is no program delay caused by delay of such approvals.

Documents of particular relevance to this Contract may include:
- EPA Publication No. 272 ‘Construction Techniques for Sediment Pollution Control’

C. Non-compliance

If the Contractor is unable to comply with the governing standards or regulations and proposing to substitute other standards, they must inform the Superintendent within the summary of deviations. Provide fully detailed reasons for being unable to comply, together with any design and/ or technical implications. Failure to provide such notification prior to Contract award is deemed to be acceptance of the governing standards or regulations.

3.1.4 Services & benchmarks

- It is the Contractor’s responsibility to locate or confirm the exact location of all underground and overhead services affected by the works or within the work area.
- Service information shown in the drawings in no way absolves the Contractor’s responsibility of liaison with the various appropriate authorities and other contractors and having each authority accurately locate the services in the area of work.
- Services in close proximity to proposed works shall be exposed by hand before work is to commence.
- The Contractor is responsible to undertake all liaison with the relevant service authorities.
- In the event that the Contractor damages any existing service lines that are not shown, or the locations of which have not been made known to the Contractor, report immediately to the Superintendent.
- Report any benchmarks and other survey information found in areas where demolition is to occur. Do not remove or destroy them unless instructed otherwise

3.1.5 Works specifications

The GORCT works under this contract are to be delivered via a Design & Construct contract form.

This document provides information regarding the requirements and expectations of the Principal regarding the function, appearance, performance and other characteristics of the completed works.

The Contractor will be required to prepare design and details regarding some items, including providing structural engineering design and certification where this is required. In such cases, this document identifies a series of steps allowing the Principal to review and approve the designs proposed, based upon their conformance with the stated or implied requirements of this document.

Unless stated otherwise, all requirements specified by this document refer to work to be provided by, and obligations of, the Contractor and therefore all clauses are addressed to, and refer to, the Contractor.

3.1.6 Alternatives

References may be made in this document to particular materials, products, types of construction, dimensions, sizes or thicknesses, or particular methods of construction are implied or suggested. As a part of their responsibility under this Design & Construction contract, the Contractor shall warrant that these will be fit for purpose and meet the stated requirements of this document, based upon their proposed installation/implementation of them.

If a particular material, type of construction, dimension, size or thickness as indicated in this document is considered to be inadequate or inappropriate, or the Contractor has an alternative material or method of construction that meets or exceeds the criteria specified, the Contractor can make alternative proposals at the time of Tender and shall be subject to the approval by the Superintendent.

In making its submission to the Superintendent, the Contractor shall demonstrate that any alternative material proposed by the Contractor is in fact equal in quality, efficiency and performance to what is specified in this document. For such alternative products, the Contractor shall provide full technical literature to demonstrate that alternative proposals are of a standard at least equal to that specified and demonstrate compatibility with the design intent and construction philosophy.

Alternative products may be proposed but shall only be incorporated into the Works if accepted in writing by the Superintendent. The Superintendent’s acceptance or non-acceptance of the proposed alternative is final and binding upon the Contractor.

Acceptance of alternative proposals by the Superintendent will not relieve the Contractor from responsibility to provide suitable materials, components and assemblies fit for the purpose intended by the manufacturer and in compliance with the Contract.

Any costs incurred by the Superintendent relating to the evaluation of alternative materials proposed by the Contractor, shall be borne by the Contractor.

3.1.7 Shop Drawings

A. Requirements

Shop Drawings are to be prepared by the Contractor where required which identify construction and assembly methods and demonstrate compliance with performance and other contract requirements.

Shop Drawings must be provided in PDF digital format, and include clear and legible linework and text information (in English language) that show at a minimum:

- A title block clearly indicating the part of the works to which they apply.
- Full dimensions in metric, to an agreed scale appropriate to the detail.
- Details and graphic representation describing materials, components and equipment, construction, finishes, provision for movements, fabrication and erection tolerances.
- Layouts, locations and assemblies of all types of construction detail and junctions, details of materials, method of jointing, details of all Site connections and fixing and sealing methods, finishes and all pertinent information related to:
  - Method of fabrication and construction.
  - Proper relationship to any adjoining works.
  - Co-ordination with services, if required.

B. Review process

The Superintendent will review the Shop Drawings for compliance in visual and overall functional matters only. It is the responsibility of the Contractor to ensure that Shop Drawings provided detail elements that comply with relevant standards and are structurally sound and fit for purpose.

If during the preparation of the Shop Drawings it becomes clear that there will be discrepancies with any project requirements identified here, notify the Superintendent immediately.

The following review process will apply:

- Provide the Superintendent with a list of the Shop Drawings proposed to be provided within 30 days of the award of contract.
- Shop drawings submitted electronically to Superintendent.
- Allow a minimum of 10 working days between the first submission and receipt of comments. Allowance must be made for resubmissions to achieve an approved status. In some cases additional information may be requested by the Superintendent prior to assessment being undertaken.
- Approval of the Shop Drawings will be provided in writing by the Superintendent, at which point construction/fabrication can commence. The Superintendent's review of the Shop Drawings does not relieve the Contractor of responsibility for errors, or for supplying components and materials to the full satisfaction of the Superintendent.
- A copy of the latest versions of approved Shop Drawings shall be maintained at work sites relevant to the item detailed, for easy reference as required.

The receipt of approved Shop Drawings by the Contractor from the Superintendent does not constitute agreement of variation in any circumstance.

3.1.8 As Built / As Installed Drawings

As Built or As Installed Drawings are to be prepared by the Contractor providing accurate information regarding the completed constructed works where the works differ from the infromation provided as a part of the works tender.

Regaridng trail alignment, the Contractor is to provide an accurate recording of the final alignment of the installed trail and associated infrastructure where the alignment differs from the setout information provided. This information is to be delivered in a GIS-compatible digital file format (eg. Shape files, __.SHP).

3.1.9 Product data / certification / testing

Product data, certification and testing are required to be provided only where the product to be supplied is either not covered by this document, or where the product to be supplied varies from what is specified here. The Superintendent is to determine the works elements to which each of these requirements reasonably apply.

A. Product data & certifications

Provide technical information detailing the characteristics of each proprietary item, system component or material incorporated in the works. Where applicable, this shall include material schedules and manufacturer's literature, the chemical and physical properties of various materials, as well as engineering certification and / or calculations provided by the manufacturer confirming the proprietary item is fit for purpose.

B. Testing reports

Provide technical reports recording test results systems, components and materials as required, prior to commencement of installation. These reports shall state compliance with the technical requirements of this document and include, where appropriate, test certificates.

C. Technical calculations

These shall consist of technical engineering calculations which document technical performance of various systems, system components and/ or materials, as required by this document.

D. Material Safety Data Sheets

Provide Material Safety Data Sheets (MSDS) for relevant materials, including paint products.

E. Supplementary product literature

Such literature may include manufacturer's catalogue information, product specifications, standard illustrations, diagrams and standard details.
The supplementary product literature shall describe physical characteristics such as size, weight, finish, material analysis, electrical requirements and other information such as load tables, test results, assessments and industry quality standards.

3.1.10 Warranties

The Contractor shall provide to the Superintendent warranties from each subcontractor and supplier of materials except where that is not reasonably possible and where it has so notified the Superintendent in writing before the work of the relevant subcontractor/ supplier has been proceeded with or the particular item ordered.

The following shall apply to all warranties provided:

- Warranties shall name the Principal as the beneficiary.
- All warranty periods shall commence from the Date of Practical Completion and remain in force for the periods specified in the Contract, or if not specified for a period of twelve (12) months.
- The written warranties shall state:
  - That workmanship, materials and installation are warranted for the period as specified.
  - That any defects which may arise during the warranty period shall be made good.
  - Any work in other trades resulting from such making good shall be undertaken at the expense of the warranter upon written notice from the Superintendent.
  - The Contractor must not do anything which may impair, inhibit or void the provision of a warranty.

3.1.11 Site restoration

- On completion of the works, restore the ground surfaces of the Site to the condition existing at the commencement or as required by this contract or as required for subsequent construction as directed. Generally, disturbed surfaces will be required to be smoothed, stabilised, protected from eroision, and revegetated.
- Where-ever possible, earthworks cut and fill shall be balanced, avoiding the need for material to be removed from site. Where surplus excavated material does result from excavation activities, it shall become the property of the Contractor and shall be removed from the site to a legal disposal location at their expense.
- The site shall be left in a neat and tidy condition at the end of each days works. The Contractor shall remove all equipment and debris from the site at the completion of the works of the contract and at the end of the contract. The site shall be left tidy and ready for immediate use. At any stage the Superintendent may instruct the Contractor to remove any unsightly stockpiles of rubbish.

3.2 MATERIALS

3.2.1 Scope

This Section covers general information on the selection, use and performance of all materials and products used in the construction of the works, as well as the processes for providing material samples for review/approval. It shall be read in conjunction with the relevant Individual Works Section of this document.

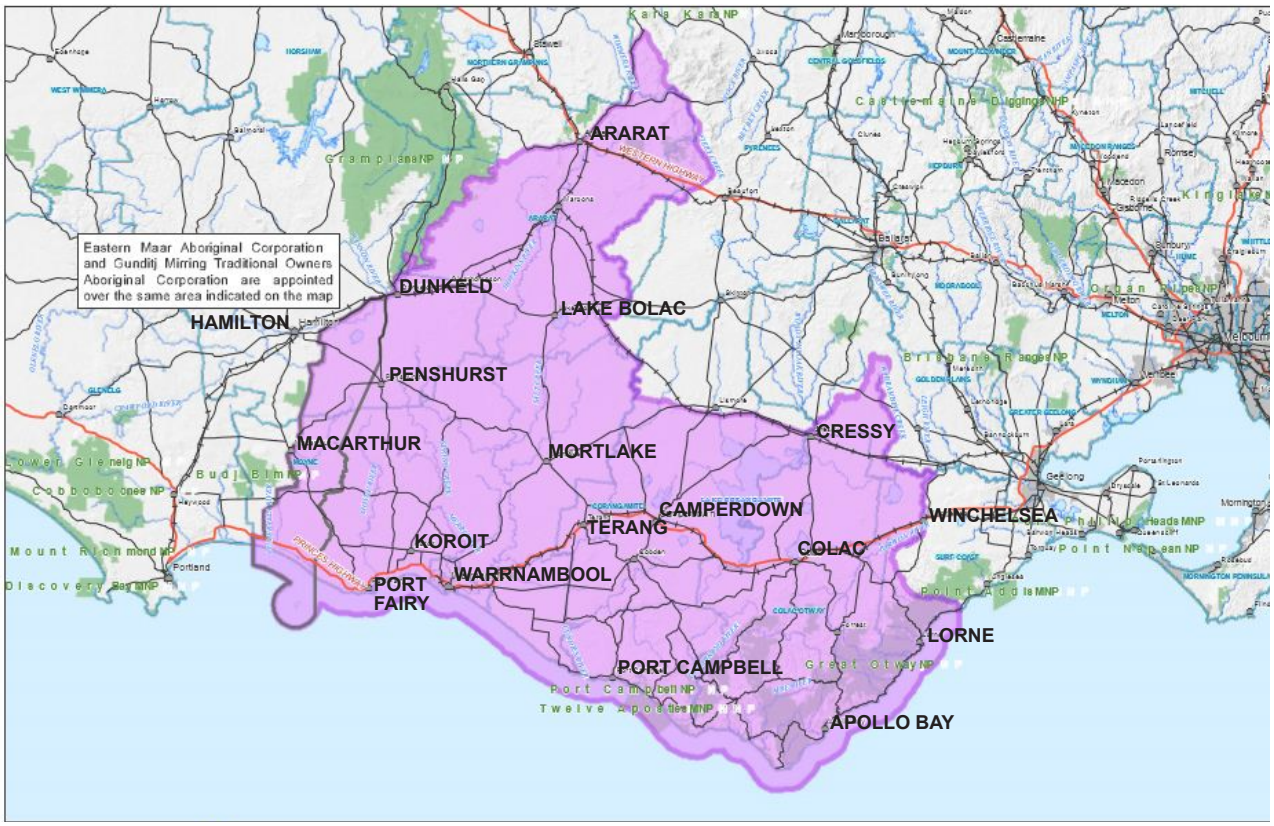
3.2.2 Hazardous materials

All proposed materials shall not in any way be a potential health hazard. The following materials shall not be used unless it can be demonstrated, to the satisfaction of the Superintendent, that they are safe during manufacture, installation and use:

- Asbestos or asbestos-containing products
- Lead, including lead based paints and primers.
- Urea formaldehyde foam or materials which may release formaldehyde beyond Australian Standard limits.
- Pitch polymer DPC.
- Materials which generally comprise mineral fibres, either man-made or naturally occurring, which have a diameter of 3 microns or less and a length of 200 microns or less, or which contain any fibres not sealed, encapsulated, or otherwise stabilised to ensure that fibre migration is prevented. Products that may contain these fibres include insulation, fire protection and air filters.
- Chlorofluorocarbons or hydrochlorofluorocarbons or any goods and or materials containing the same (e.g. materials in which HFCs, CFCs, HCFCs or HFA5 have been used as blowing agents).
- High alumina cement in structural elements.
- Calcium chloride in admixtures for use in reinforced concrete.
- Polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or any goods and or materials containing the same.
- Calcium silicate bricks or tiles.
- Sea dredged aggregates.
- Lindane (wood treatment insecticidal spray).
- Pentachlorophenol (POP) or timber treated with Pentachlorophenol - biocide wood preservative.
- Tributyltin (TBT).
- CCA (copper chromium arsenic) treatments.

3.2.3 Local materials

For natural materials (including quarry products & timber), preference should be given to materials sourced from Eastern Maar Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party, as shown on the accompanying map) where possible, otherwise from the nearest practical local source.



Eastern Maar Country - the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party. (Adapted from source: www.easternmaar.com.au)

3.2.4 Material quality

The Contractor shall ensure that all materials are of the best available quality. All materials or equipment shall be used with all cognisance of and according to directions of the respective manufacturers and out of their branded containers.

3.2.5 Environmental sustainability

As noted in this document, one of the guiding principles of the project relates to high levels of environmental stewardship. The following outlines how this principle is required to be reflected in material selection and use for the project, identifying mandatory and desirable Ecologically Sustainable Development (ESD) attributes.

Material type	*Mandatory ESD requirements*	*Desirable ESD attributes*
Timber and timber products	• Evidence of timber source and demonstrated compliance with the Australian Forestry Standard (AS4708:2021).	• Use of reclaimed timber (where the selected reclaimed material meets the required structural, functional and aesthetic requirements outlined in this document). • Locally sourced and processed materials (reducing transportation requirements).
Quarry products	• Evidence of quarrying having been undertaken in accordance with an EPA-issued operating license or evidence of a granted exemption. Reference document: EPA publication 1823.1 - *Mining and quarrying - Guide to preventing harm to people and the environment*.	• Locally sourced and processed materials (reducing transportation requirements).
Steel and steel products	• Evidence of materials and products having been sourced from a supplier who is Steel Sustainability Australia (SSA) certified, to any level. See www.steelsustainability.com.au for additional details and a list of certified suppliers.	• Use of recycled materials (where the selected recycled material meets the required structural, functional and aesthetic requirements outlined in this document).
Cement	• Nil	• Reducing the amount of cement used by substituition of other materials in the design phase (eg. no-dig footing systems). • Use of 'green' concrete products and processes that reduce the amount of portland cement used by incorporating supplementary cementitious materials (such as fly ash). • Locally processed materials (reducing transportation requirements).

3.2.6 Material handling/protection

Where relevant, provide necessary protective devices to protect all goods and materials incorporated into the works, at all stages through to Practical Completion, against damage arising from but not limited to weather conditions, construction, other contractors, warping, distortion, abrasion and other conditions which could have an adverse effect on any goods and/ or materials used in the works. Carefully remove all protection from the works immediately before Practical Completion and leave the works perfectly clean and fit for immediate use.

3.2.7 Material deterioration

The following kinds of material deterioration shall be avoided:

- All materials shall be treated / selected to prevent any damage / corrosion from all possible combinations of exposure to seawater, non-saline water, wet rot, dry rot, fungi, mould, soil, high humidity, low or high temperatures, chemical acids and alkalis, abrasion and impact, bacteria and all other deleterious effects including atmospheric pollution and pH factor of the adjacent elements.
- Ensure that no chemical or electrolytic action takes place where dissimilar metals and or materials are used together.
- With materials subject to surface treatment, special attention shall be given to the substrate to ensure that the preparation is compatible with the surface treatment.
- Ensure that all superficial dust and friable materials are removed and that adequate protection is provided during the process of the surface treatment and finishes to prevent contamination by dust and other debris.

3.2.8 Material ordering & delivery

Place orders as soon as possible and take all measures necessary to ensure that the supply of all materials so as to not impair the progress of the works.

Advise the Superintendent immediately if any supply difficulties are encountered. No extension of time will be granted if any material or product is not available because of late ordering.

The Contractor shall keep a written record in a suitable format of delivered materials, including supplier, date, item, quantity of each item, and details of rejected materials.

3.2.9 Samples

Samples of key materials are to be provided to allow the Superintent to review their conformance with the specified requirements as defined within this document.

A. Review process

The following sample review process will apply.

- Material/product samples sourced by Contractor and provided to the Superintendent via an agreed convenient method at an agreed convenient location. Two of each sample to be provided.
- Superintendent review of material and provision of written approval (or otherwise). Allow up to 5 working days for approvals.
- Return of one sample to Contractor, with one retained by Superintendent (both to be used for quality control and consistency checking).
- Bulk ordering of approved materials by Contractor. (Samples are to be approved by the Superintendent prior to bulk ordering).
- The Contractor shall keep a record of samples provided and approved, able to be reviewed by the Superintendent upon request.

Samples will be reviewed for their visual characteristics only. It is the responsibility of the Contractor to ensure that the samples comply with required non-visual characteristics and properties.

B. Sample sizes/characteristics
The Contractor is to submit representative samples of each material that are suitable for use as references for controlling consistency throughout the works.

Unless otherwise specified or requested, the minimum sizes of samples shall be:
- Sheet materials: 2 x 500mm squares
- Linear materials: 2 x 500mm long
- Bulk materials: 2 x 0.5kg samples
- Colours: 2 x representive colour swatches

Where there is intentional variation in a natrural product, a range of samples may be provided (or be requested by the Superintendent if not provided), demonstrating the kind of variation that may be expected. In this case, the selected samples should indicate the extremes of each nominated characteristic (eg. colour, graining, texture, smoothness or other characteristic).

C. Sample packaging & storage
Samples shall be clearly labelled, including key products details and supplier. Samples shall be packaged to prevent contamination or damage.

D. Accompanying information
Where necessary (or as reasonably requested by the Superintendent), samples shall be accompanied by supporting infromation regarding the testing or characteristics of the sample.

This includes:
- Documentation confirming that imported gravel/soil material is free from *Phytophthora cinnamomi* (refer to the requirements of the CEMP, previously addressed).
- Product/material data sheets
- Test reports

3.2.10 Manufacturers instructions
Where proprietary products, systems or items are specified and/ or included in the Works, ensure that the method of building, installing, handling, storage, protection, finishing, adjusting and preparation of substrates etc. is strictly in accordance with the manufacturer's printed instructions and recommendations and that copies of all such documentation are supplied to the Superintendent prior to commencement of the works.

3.2.11 Material storage
Store sufficient materials on site to allow works to proceed efficiently. Ensure materials are correctly stored and are protected from wind, heat, water, or other damaging factors.

The Contractor is to provide secure storage for delivered materials and materials stored on site. The Contractor is responsible for materials from the time of acceptance at point of supply until Practical Completion.

3.2.12 Material substitutions and alternatives
Do not make any substituions or alterations without the written approval of the Superintendent.

Refer to Alternatives heading earlier in this section (covering materials as well as construction methods, etc).

3.3 QUALITY

3.3.1 Scope

This Section covers general information on the quality and management of work quality in the construction of the works. It shall be read in conjunction with the relevant Individual Works Section of this document.

3.3.2 Contractor's responsibility

- The Contractor shall provide everything which is necessary for the execution and completion of the works, in accordance with the Design Drawings, the Specification and/ or instructions given by the Superintendent and deliver up the works complete in every respect to the satisfaction of the Superintendent.
- The Contractor shall satisfy all material and workmanship standards in accordance with the Design Drawings, the Specification and/ or instructions given by the Superintendent.

3.3.3 Quality Control / Quality Assurance

A. Quality Assurance and Quality Control System

- Establish, document and maintain a quality assurance and quality control system capable of verifying to the satisfaction of the Superintendent that all materials and work quality conform to the requirements of the Contract. Should the Contractor or any of his subcontractors be certified to the AS/NZS ISO 9000 family of standards the works shall be monitored accordingly.

B. Quality Control Manual

- The quality programme shall be defined in a quality control manual or similar document in which the organisation systems, inspection and test plan procedures are fully described to ensure that all essential inspection requirements are determined and satisfied throughout all phases of the works.
- Establish a tolerance quality control manual to cover all aspects of tolerance compliance relating to the works. A quality control proposal shall be prepared for submission to the Superintendent for acceptance. This shall describe, in detail, the various types of quality control checks that shall be carried out during each stage of the works; what means and methods shall be used; which personnel shall be employed, together with their qualifications, and how each type of tolerance check is to be recorded and kept for future reference.
- The Contractor's proposals for the quality control manual shall meet the requirements of this section as a minimum and be submitted to the Superintendent. Provide facilities in the event that the Superintendent wishes to examine these proposals at the works. Include details of any formal approvals held for the Contractor's or any subcontractor's quality system or any evaluations or assessments carried out by independent third parties.
- Include with the quality control manual an inspection and test plan for each major item of work or type of fabrication which details, in sequential order:
  - The principal activities to be carried out.
  - The type, method and frequency of inspections and tests to be carried out
  - The Statutory Authority.
  - The acceptance criteria.
  - The records to be kept.
- The inspection and test plan to contain sufficient space for the Superintendent to indicate on it the activities he wishes to inspect as either "hold" points.
- A "hold" point is defined as a point on the inspection and test plan beyond which the process may not continue until it has been accepted by the Superintendent.

3.3.4 Use of skilled personnel

Execute all Works using persons skilled in the processes to be adopted. Where requested, provide such documentation necessary to demonstrate an individual's ability and qualifications to carry out the work to which they have been assigned.

This includes, but is not limited to ensuring that the following are suitably qualified and experienced:

- arboriculturalist / horticulturalist
- crane operator
- dogging staff, including riggers
- backhoe/ front-end loader operator
- carpenters
- steelworkers and welders
- concreters
- stonemasons experienced in working with dimensional stone
- track builders
- track team leaders.

3.3.5 Supervision

The Contractor, or an approved representative, shall be present at the site of the works at all times. The representative shall have had experience in executing work equal in nature and magnitude to the work in this Contract.

The Contractor shall designate in writing to the Superintendent the name of their approved representative/s who shall have authority to direct work and to whom instructions will be given by the Superintendent.

3.3.6 Quality benchmarks

A. Definition

A quality benchmark is the first section of completed work and is used to evaluate the overall result, including fabrication, construction and installation technique, finishes, colour ranges and work quality.

B. Requirements

- Each nominated benchmark will be used as a quality benchmark for the remainder of the works until Practical Completion.
- Installations shall not commence in other areas of that particular trade until the Superintendent has examined and approved the quality benchmark.
- Carry out immediately any alterations or adjustments required by the Superintendent in order to achieve the required quality.
- Ensure all benchmarks are suitably protected and accessible for the duration of the works, to allow ongoing evaluation.

3.3.7 Testing

Provide testing, evidence / results on samples and materials incorporated in the works that demonstrate compliance with the requirements of the Specification as required (eg. Testing required as a part of *Phytophthora* management processes).

- Unless otherwise specified, all tests shall be undertaken by a qualified person in accordance with the appropriate Australian Standard test method.
- All test results shall be retained by the Contractor and made available to the Superintendent upon request.

3.3.8 Managing work quality

A. Programming of works

The Contractor shall be responsible for the programming of the works to ensure that works proceed in a logical construction sequence, and that works installed early in the sequence do not prevent or hinder works to be installed later in the sequence.

B. Damage anticipation

Other than damage through terrorist attack or similar activity, anticipate the possible sources of damage to the works and take active and positive protective measures to maintain them in pristine condition until Practical Completion.

3.3.9 Preceding work

- At the appropriate time check all preceding work, including checking line, level and fixing points and report immediately to the Superintendent if any are considered to be unsuitable and propose remedial action if so requested by the Superintendent.
- Prior to manufacture of components, where possible, inspect the Site and check measurements of the preceding works while completing the Shop Drawings and co-ordinate all Site dimensions.
- The Shop Drawings shall include full details of all interface conditions, demonstrating full compatibility with adjoining items of work and that the Detailed Design takes into account all such conditions.

3.3.10 Set out

- All works are to be set out from an approved digital (GIS) track alignment file, issued for construction, as supplied by the Superintendent. Do not set out any works from information other than this supplied information.
- The setout shall be undertaken in general accordance with the alignment file provided, acknowledging that the exact alignment will need to address site conditions including trees and other natural features. Deviations from the alignment of up to 5 metres for these purposes are acceptable.
- All works to be set out using appropriate instruments and methods suitable for achieving the necessary accuracy.
- Should any error or discrepancies be encountered during setout, the Contractor shall immediately notify the Superintendent before proceeding the work. Report any discrepancies to the Superintendent prior to commencing work.
- The Superintendent reserves the right to inspect trail setout prior to the commencement of preparation and construction works, particularly for new sections of trail where no trail or path currently exists, or where there is alignment risk or complexity.

3.3.11 Environmental conditions

- Ensure that the works conform to all aspects of the Specification, taking into account all local environmental conditions prevailing at Site. Refer to the work sections for specific performance data.
- Allow for the fact that the works will be erected in extremes of weather conditions throughout the year. Damage to materials as a result of Site conditions will be the Contractor's responsibility.
- All material grades, manufacturing methods and standards, corrosion protection, etc. are to be selected so that they are fully suited to the internal and external environmental conditions (to meet the relevant Australian Standards and all other relevant standards).

3.3.12 Line and level

- Where relevant, components shall be installed such that they are plumb or horizontal and shall line up with adjacent components, in all directions. Examples include:
    - all balustrades and barriers are to be installed true to vertical
    - seating surfaces are to be installed horizontally
    - boardwalks and bridges are to be installed horizontally, except where surface grading is required as an intentional part of the design.
- Where minimum and maximum grades are defined (eg. in order to achieve positive drainage from surfaces), these are to be consistently and accurately applied.

3.3.13 Vibration

Ensure that the works withstand all vibration caused by traffic, aircraft, plant and equipment, effects or any other shocks, slamming, strains, stresses and movement imposed, thus avoiding deterioration or fracture of any element, both during construction and after installation.

4. TRAIL INFRASTRUCTURE

The trail infrastructure elements covered in this section are:

- Trail surfaces (new and upgrades to existing) - note: includes both material information, as well as trail setout requirements.
- Trail drainage
- Rockwork (armouring and retaining)
- Steps
- Bridges
- Boardwalks
- Barriers/balustrades
- Seats
- Minor lookouts
- Foot wash

4.1 NEW TRAIL SURFACES

4.1.1 General

A. Scope of work

This section covers the design and construction of new 1200mm wide walking trails for the Great Ocean Road Coastal Trail (GORCT) that are stable, compacted, all-weather trail surfaces meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System.

New trails are those that will be constructed where no existing trail, path, track or road currently exists along the proposed trail alignment route. Where they exist, refer to the following section related to existing trail surface upgrades.

'New' and 'existing' trails are identified in the Bill of Quantities and the trail alignment mapping.

The trail alignment mapping also identifies sections of trail that are required to provide 1800mm wide maintenance access (using a 'side by side' Utility Task Vehicle, or UTV), confined to areas where there are no steps, bridges, boardwalks or other access impediments. In these cases, the trail surfacing will remain 1200mm wide, but will require a 300mm wide buffer suitable for UTV access each side of the trail.

Two types of new trail surfaces are proposed as outlined in the following table:

New trail type	*Application*	*Quantity to be allowed*
Natural Trails: Trails constructed using only site materials.	This method of construction shall be used for all trails where the existing site soil is able to be shaped and compacted into a trail suitable for all-weather pedestrian use.	Two thirds (66.6%) of all new trail surfacing.
Surfaced Trails: Trails constructed using imported material compacted to create the trail surface.	This method of construction shall be used where the existing site soil is not suitable for the formation of a fit-for-purpose walking trail. eg. where the material is too sandy, too wet, or too rocky.	One third (33.3%) of all new trail surfacing.

Natural trail example image (constructed without imported surfacing material).

Surfaced trail example image, constructed using compacted imported gravel.

4.1.2 Materials & Products

A. Material/product

For surfaced trails, the trail surfacing material is to be selected by the Contractor in accordance with the following checklist of requirements:

	Category	*Requirements*
☐	*Source*	Quarry materials are preferred to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
☐		All gravel is to be harvested / extracted utilising environmentally safe methods. Evidence is required of quarrying having been undertaken in accordance with an EPA-issued operating license or evidence of a granted exemption.
☐		Recycled crushed concrete must not be used.
☐	*Size/ performance*	All gravel to be fit for purpose, allowing for compaction into a hard-wearing surface suitable for intensive pedestrian use.
☐		Material to be appropriately sized and graded: maximum 20mm particle size, and including fines to allow for compaction.
☐		Selected material shall have a low clay content, to ensure that it remains trafficable in wet conditions.
☐	*Appearance*	All gravel to be a type, colour and texture that fits naturally into the environment into which it is to be installed.
☐	*Cleanliness*	All material to be free of weeds and other organic matter, soil and litter.
☐		All material to be tested for or certified free of Phytophthora cinnamomi (Cinnamon fungus).
☐	*Consistency*	Material is to be able to be provided at a consistent quality and type in the quantities required.

The Principal is aware of the following product type that has provided satisfactory outcomes on similar nearby projects, and may be considered for this project (noting that it is up to the Contractor to satisfy themselves that any products used meet the project requirements):

- 50/50 mix of crushed limestone and Gherang Gravel

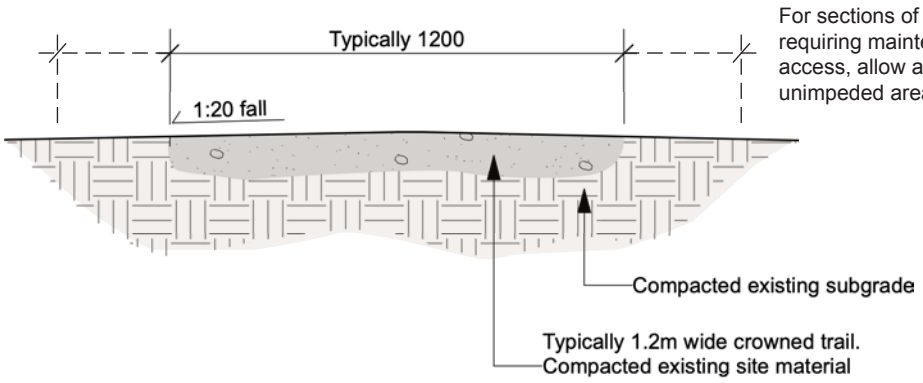
B. Shop drawings/certification/product data

- Product data relating the to the selected material must be provided, including detailed information regarding the material source and size/characteristics.
- All material will be brought onto site accompanied by a certificate indicating that it is free of Phytophthora and weed species.
- All machines and vehicles are required to be thoroughly steam cleaned of all mud, dirt, organic material and like material, and disinfected if coming from an area known to be infested with a forest pathogen such as Phytophthora cinnamomi (Cinnamon fungus) prior to being brought onto site.
- Keep written records in a suitable format of delivered materials, including supplier, date, item, quantity of each item, quarry tickets and details of rejected materials.

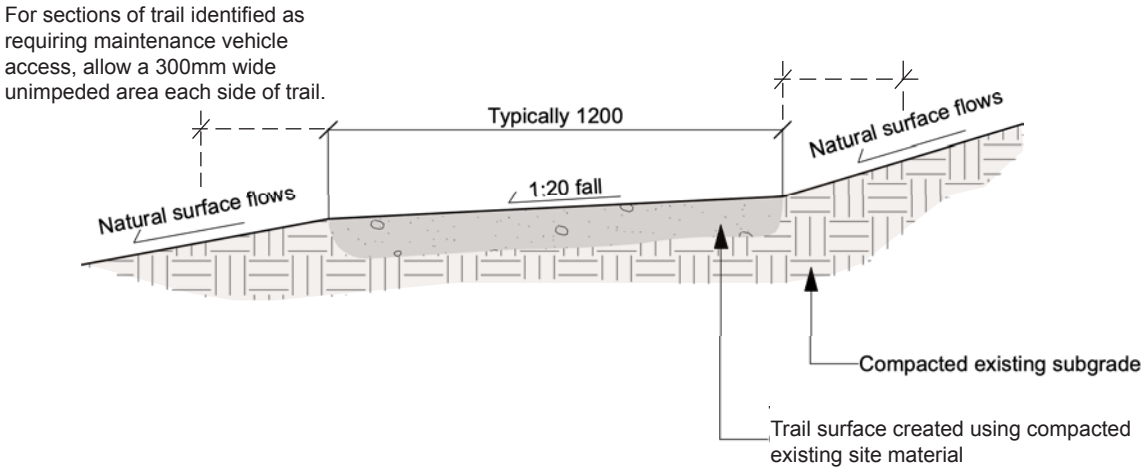
C. Samples/quality benchmarks

	Sample	***Assessment criteria***
☐	1kg sample of gravel	The sample will be assessed to ensure that the material meets key requirements, including: • material appearance (colour/texture) • material size/grading

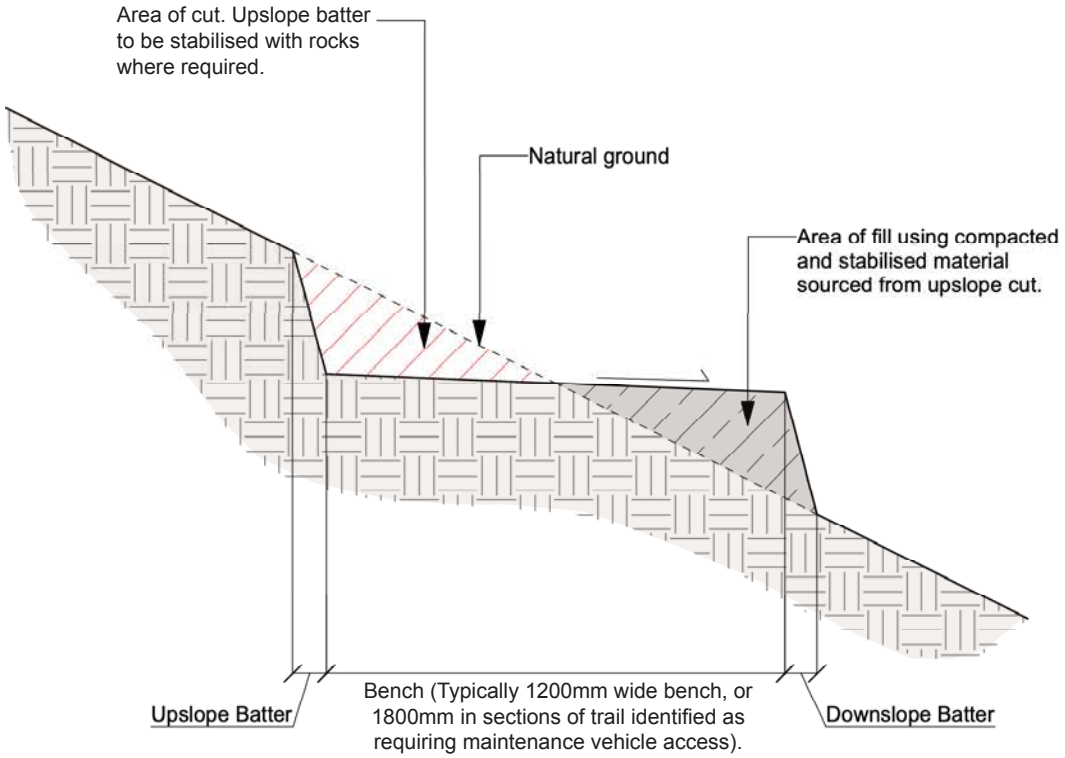
	Benchmarks	***Assessment criteria***
☐	The first 50 linear metres of walking trail in a location agreed with the Superintendent	The installed benchmark will be assessed to ensure that the material and installation method meets key requirements, including: • The ability of the material to be compacted into a hard-wearing surface suitable for intensive pedestrian use. • The performance of the material in wet conditions (eg. not being soft or sticky when wet due to high clay content).



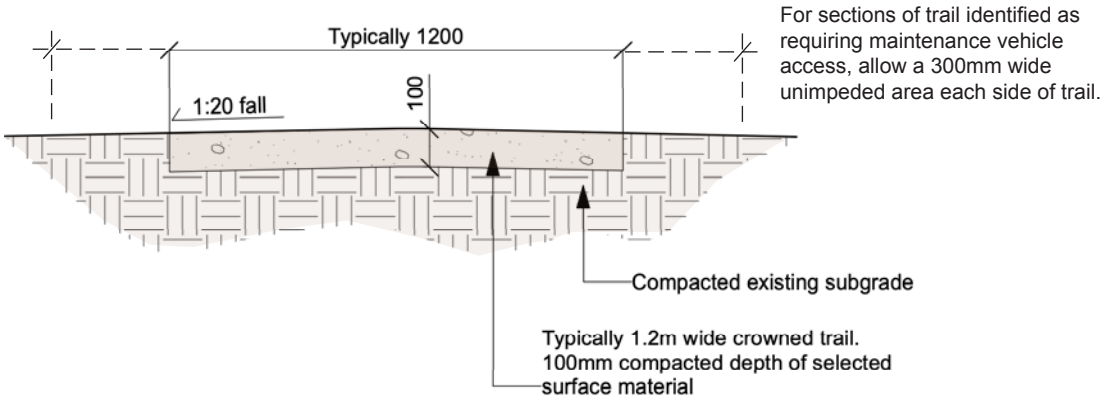
DETAIL 4.1A TYPICAL NATURAL CROWNED TRAIL



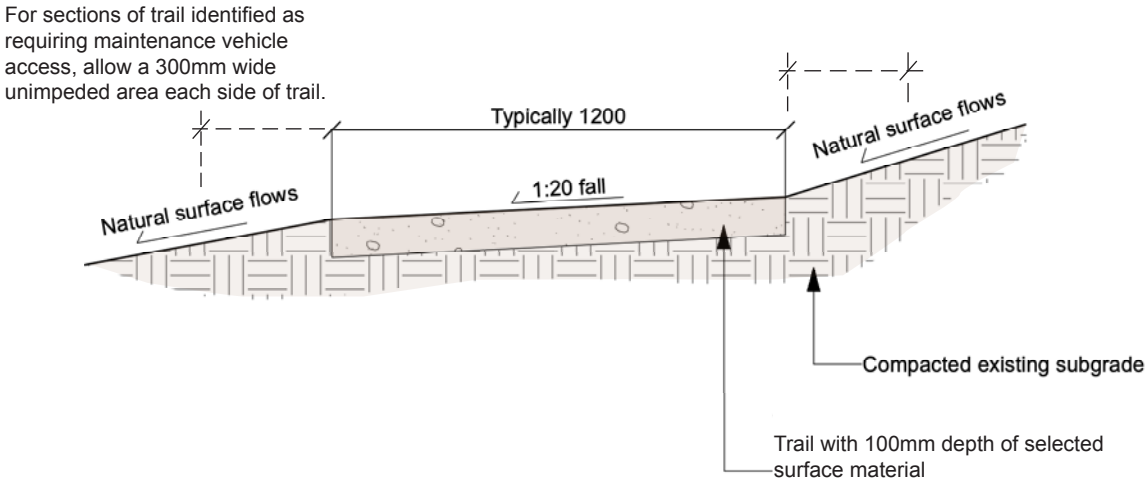
DETAIL 4.1B TYPICAL NATURAL CROSS FALL TRAIL



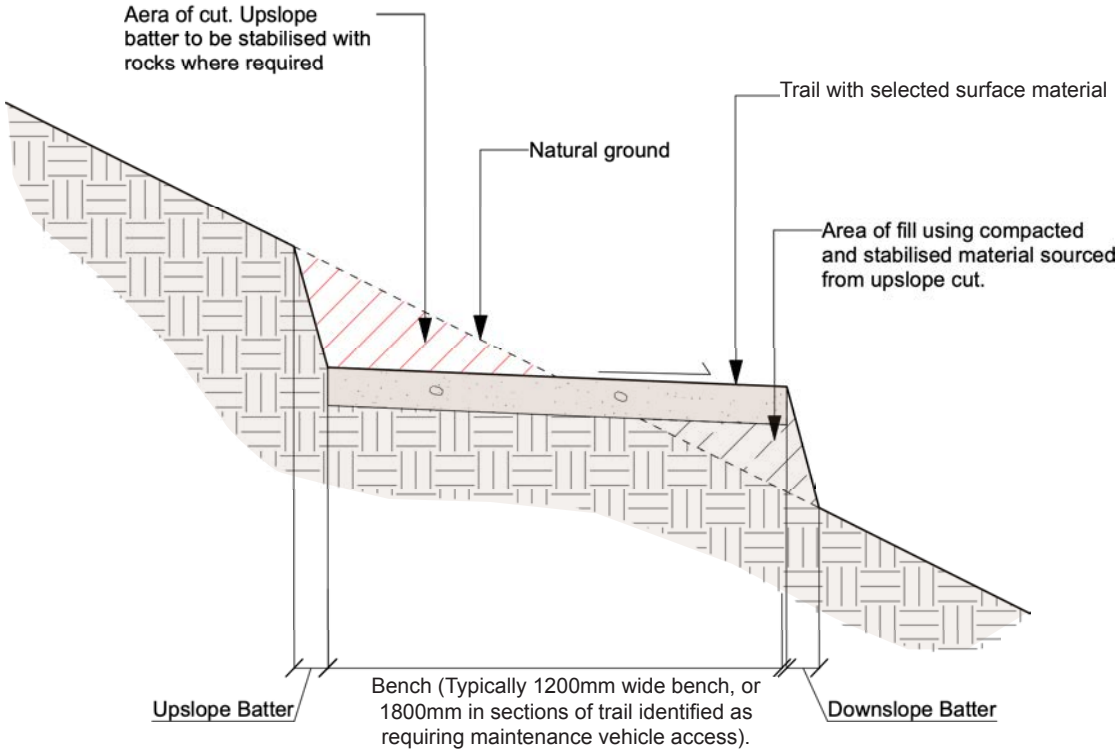
DETAIL 4.1C TYPICAL NATURAL BENCHED TRAIL



DETAIL 4.1D TYPICAL SURFACED CROWNED TRAIL



DETAIL 4.1E TYPICAL SURFACED CROSS FALL TRAIL



DETAIL 4.1F TYPICAL SURFACED BENCHED TRAIL

4.1.3 Execution, Installation & Quality

A. Site protection

Silt/erosion

- Methods of construction and drainage from the site during construction need to ensure minimal sediment loading occurs in watercourses.
- Operations shall be suspended whenever stream water quality is likely to be reduced following periods of wet weather, or under any circumstances where operations would result in stream turbidity (i.e. muddy water directly entering streams without first being adequately filtered through ground vegetation or other barriers).
- Soil/gravel stockpiles shall be minimised, and not located in areas where there is potential for the material to enter waterways.
- Fills and embankments shall be consolidated and stabilised using a technique approved by the Superintendent. All faces and slopes requiring stabilisation and drainage shall be treated prior to the removal of equipment from Site. Stockpiled top soil is to be re-spread on fills and embankments if the areas are to be revegetated.
- Earthworks are to undertaken in such a manner as to minimise any side-cast of material onto or beyond the downslope batter. Any side-cast material shall be spread level and not be placed where it can enter drainage lines or streams.

Vegetation

- All trees are to be protected within and adjacent to the works area. The Contractor will not:
    - Store, stockpile, dump or otherwise place under or near trees, bulk materials and harmful materials including oil, paint, waste concrete, boulders and the like;
    - Place spoil from excavations against tree trunks, even for short periods;
    - Attach stays, guys and the like to trees;
    - Allow wind-blown materials such as cement from harming trees and plants.
- Where native vegetation trimming/removal is unavoidable to achieve the construction of the trail, the following applies:
    - Vegetation trimming and removal is to be undertaken to the minimum extent possible. The trail construction corridor shall be no wider than 2400mm.
    - Any native vegetation trimming or removal will be in accordance with the project Construction Environmental Management Plan (CEMP, refer to General Requirements section of this document) including ensuring all works address relevant legislative requirements. Where these works deviate from the CEMP requirements, the Superintendent shall be notified and written approval sought.
    - Unless otherwise directed by the CEMP, vegetation removed is to be stockpiled in an approved area and, if directed by the Superintendent, mulched and spread over the area of the works to aid in the rehabilitation process.
    - The Contractor will obtain prior approval of the Superintendent for methods and locations for disposal of debris.
    - Removed vegetation is not to be windrowed beside the trail.
    - All stumps of removed vegetation are to be grubbed out.

B. Setout

General

- The alignment of all walking trails has already been determined. The Contractor is required to rigorously conform with this alignment at all times.
- All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction. Do not set out any works from information other than this supplied information and the on-ground flagging tape.
- The Contractor shall set out of walking trails with flagging tape and/or markers at sufficient centres to fully indicate the proposed alignment of the trail, prior to any excavation or other construction-related activities.
- The Contractor shall note any variation to the proposed alignment of the walking trail as provided. Minor modification (+/- 10 metres) may be considered to avoid existing site conditions, such as trees and rocks. The Superintendent shall be made aware of any minor modifications prior to construction.
- Where major amendment to the trail alignment is required for any reason including practical or constructibility issues, the Contractor shall alert the Superintendent prior to undertaking any works and await approval to proceed.
- The Contractor shall organise for the provision of alignment and flagging tape at own expense. Any additional setting out or the replacement of any tape or level marks destroyed by the Contractor will be carried out at the Contractor's own expense.
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.
- The Contractor shall make amendments to the set out as required by the Superintendent and shall seek approvals of such amendments prior to the application or excavation of the base course.

Switchbacks

- Switchbacks are included as a part of the designated trail alignment. Care must be taken to ensure that the site setout and construction of these addresses potential issues such as steep gradients and cross falls.
- Maintain a constant and shallow gradient and cross fall through the turn section. Avoid gradients in excess of 1:10 which may lead to drainage and erosion problems.
- Notify the Superintendent if gradients greater than 1:10 will result from switchbacks on the alignment proposed, and consider minor realignment options or the introduction of steps to address this.
- Utilise existing site features (such as large stones and fallen timbers) to block short cuts in the vicinity of switchbacks.
- Ensure drainage is taken around the outside slope of the switchback (not the inside bend) and that the trail is graded accordingly to achieve this. Provide rock beaching / armouring where drainage disperses to avoid erosion.

Trail drainage

- Elements associated with trail drainage (including grade dips and water bars) will need to be an integral part of the trail setout. These elements are addressed in detail in a separate section following.

Setout Hold Points

Due to the length of the trail to be constructed, and the high proportion of trail construction occurring along existing trail/path/road alignments, inspection of all setout works will not be required. Inspection may be required in the following situations:

- Where the setout deviates more than 5 metres from the trail alignment setout file provided for any reason.
- For the costruction of new sections of trail where no existoing path/trail/road exists.
- For sections of trail with significant complexity and/or risk associated (eg. sections with a lot of steps).

Where setout inspctions are required, it is expected that the trail will be set out for inspection in multiple trail sections. The Contractor shall make the Superintendent aware of the proposed set out schedule, and shall provide as much notice as possible (and a minimum of 48 hours) prior to the trail sections being ready of inspection.

C. Installation

Programming of works

The Contractor shall be responsible for the programming of the works to ensure the following:

- All materials arrive to site when required;
- Construction works occur in the correct sequence;
- Later works do not damage earlier works;
- Walking trails can be installed in a logical and efficient manner with no damage to the surrounding environment.

Trail profile

There are three typical trail profiles, as shown in the details within this section. The following is a brief description of each, and information about where each should be implemented.

- *Crowned trail profile*
  The crowned trail profile should be utilised where there is very little cross fall (flatter than 1:30), allowing water to be shed to both sides of the trail.
- *Cross fall trail profile*
  The cross fall trail profile should be utilised where there is a discernible cross fall on the trail alignment, but the cross fall is not steep enough to require benching (typically in the range of 1:30 to 1:10). The trail cross fall allows natural surface flows to run across the trail surface.
- *Benched cross fall trail profile*
  The benched cross fall trail profile should be utilised where the cross fall is such that cut and fill is required to achieve a bench on which to construct the trail surface (typically 1:10 or steeper). For steeper sites, stabilisation will be required on the upslope and downslope batters.

Trail alignment clearing

- Prior to subgrade preparation, remove foreign material or obstacles encountered along the trail alignment as required. This removal shall occur only within the trail construction corridor (max. 2400mm width).
- Non-natural materials (eg. litter) encountered in the vicinity of the trail alignment shall be removed from the site and disposed of at a legal tipping point.
- Any rock encountered that is required to be removed shall be salvaged for use in trail edge stabilisation, water bars, etc.

- Fallen timber shall be moved only to the extent absolutely necessary for trail construction. Any fallen timber moved shall be done carefully (ensuring that any existing habitat hollows are not destroyed), and replaced within the landscape within 20 metres of the original location.
- Prior to subgrade preparation, remove the existing humus layer and vegetation to the required trail width. The humus material shall be carefully and evenly spread on the downslope side of the trail, taking care not to damage existing vegetation or to create noticable mounding or barriers to drainage flows.

Trail surface formation for natural trails

- The Contractor is to determine a suitable compaction method (considering surface material and any access restrictions).
- Trail surface compaction is to be dependent upon the natural material present, but is expected to achieve a stable and firm surface suitable fit for purpose as a walking trail.
- The finished surface must be smooth, even, and free draining.

Subgrade for surfaced trails

- The subgrade is defined as the top 300mm of the natural earth beneath the trail and shall be deemed to extend 150mm beyond edge treatments.
- The subgrade shall be trimmed, filled and compacted in accordance with the required trail dimensions. All soft, yielding or unstable materials and other unsuitable material shall be removed and replaced by acceptable materials. The subgrade shall be thoroughly compacted.
- Compaction shall be achieved utilising appropriate methods based on the location and accessibility of the trail. The Contractor is to nominate appropriate methods of compaction.
- The subgrade compaction achieved shall be 98% of the Standard Maximum Dry Density in the top 150mm, unless otherwise approved by the Superintendent.
- All sub-surface services, including any drainage pipe work shall be installed and operational prior to the installation of trail surfacing.
- In preparing the subgrade ensure that the formed surface matches the required trail profile, and that there is a cross fall to the trail at all times to ensure that water flows across (not along) the path. Form the subgrade in a way that ensures there are no raised edges or other obstacles that may prevent water draining from the walking trail. Do not create gutters to the edges of the trail.

Trail surface formation for surfaced trails

- Avoid contamination of trail surfacing material with topsoil, organic matter or litter. Any contaminated areas are to be removed and made good at the Contractor's expense.
- Place gravel to 100mm depth in compacted 25mm layers to achieve a dense solid surface that is resistant to scuffing, slumping and scouring.
- The Contractor is to determine a suitable compaction method (considering surface material and any access restrictions). Determination shall be made in consultation and recommendation with the supplier of the material.
- Compaction shall commence only after wetting of the gravel profile, ensuring the material is moist, but not wet.
- Trail surface compaction is to be to a minimum density of 98% Modified Relative Compaction.
- The finished surface must be smooth, even, and free draining. Apply and compact additional gravel as necessary to deal with low or uneven areas. Scarify the area to be rectified with a steel rake, add the gravel and then level and compact.
- All trail surfaces shall be protected from all traffic until finished surface is completely dry and fully compacted.

D. Finishing

- The finished surface shall have a clean and neat appearance with no soft patches or areas with large loose particles.
- No pooling of water shall occur on the trail surface.
- Ensure edges of trail surface are sharply defined along an edge line conforming with the trail width requirements. Remove any excess areas of gravel.
- Gravel pavements that are not set, have subsided or are spongy underfoot shall be rectified immediately at the Contractor's expense. Immediately prior to Practical Completion, gravel surface shall be raked lightly to maintain even clean surface.
- The Contractor shall be responsible for all cleaning up of surplus material from the site. All materials removed from the site during these operations are the responsibility of the Contractor who shall be liable for the legal disposal of this material.

E. Maintenance

- Remove debris and clean areas disturbed or affected by the work.
- Areas that have eroded, subsided, or scoured shall be fully rectified to the satisfaction of the Superintendent.
- For sections of trail identifed as requiring maintenance vehicle access, ensure that a 1800mm wide access corridor is maintained.

4.2 TRAIL SURFACE UPGRADES

4.2.1 General

A. Scope of work

This section covers the design and construction of walking trail upgrades for the Great Ocean Road Coastal Trail (GORCT) that are stable, all-weather trail surfaces meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System.

Walking trail upgrades refer to where there is an existing trail, path, track or road currently existing along the proposed trail alignment route, but where upgrade works are required. Where no existing trail, path, track or road exists, refer to the previous section related to new trail construction.

'New' and 'existing' trails are also identified in the Bill of Quantities and trail alignment mapping.

The trail alignment mapping also identifies sections of trail that are required to provide 1800mm wide maintenance access (using a 'side by side' Utility Task Vehicle, or UTV), confined to areas where there are no steps, bridges, boardwalks or other access impediments. In these cases, the trail surfacing will remain 1200mm wide, but will require a 300mm wide buffer suitable for UTV access each side of the trail.

There are two types of trail surface upgrades proposed as outlined in the following table:

Trail surface upgrade type	*Application*	*Quantity to be allowed*
Natural Trails: Trail upgrades achieved using only site materials.	This method of construction shall be used for all trails where the existing site material is able to be shaped and compacted into a trail suitable for all-weather pedestrian use.	Two thirds (66.6%) of all new trail surfacing.
Surfaced Trails: Trail upgrades achieved using imported material compacted to create the trail surface.	This method of construction shall be used where the existing site materials are not suitable or not available in adequate quantities for the formation of a fit-for-purpose walking trail. eg. where the site material is too sandy, too wet, or too rocky, or where the existing material has been eroded away.	One third (33.3%) of all new trail surfacing.

4.2.2 Materials & Products

A. Material/product

For surfaced trails, the trail surfacing material is to be identical to the material used for new trail construction (covered previously).

B. Shop drawings/certification/product data

The requirements are identical to those specified for new trail construction (covered previously).




There are a wide range of existing trail surfaces along the proposed alignment requiring upgrade works.

C. Samples/quality benchmarks

	Sample	*Assessment criteria*
☐	The requirements are identical to those specified for new trail construction (covered previously).	

The Contractor shall not proceed with the related work until the samples are accepted.

	Benchmarks	*Assessment criteria*
☐	The first 50 linear metres of walking trail in a location agreed with the Superintendent	The installed benchmark will be assessed to ensure that the material and installation method meets key requirements, including: • The ability of the material to be compacted into a hard-wearing surface suitable for intensive pedestrian use. • The performance of the material in wet conditions (eg. not being soft or sticky when wet due to high clay content).

4.2.3 Execution, Installation & Quality

A. Site protection

Silt/erosion

- The requirements are identical to those specified for new trail construction (covered previously).
- In addition, it is noted that along some existing trails, paths, tracks and roads required to be upgraded as a part of this contract, existing erosion and silting issues will be encountered. The Contractor is required to address these existing conditions when undertaking upgrade works. This may include temporary silt protection measures during construction, as well as regrading, filling and installing trail drainage infrastructure (as described in the following section).

Vegetation

- The requirements are identical to those specified for new trail construction (covered previously).

B. Setout

For trail upgrade works, the trail alignment is required to utilise the existing footprint of existing trails, paths, tracks and roads. As such, setout for these works will only apply where:

- issues are encountered with the existing alignment and an alternative is required to be found (eg. if the existing alignment does not allow conformance with requirements of this document). This includes situations where trail drainage infrastructure is required to be setout and installed to address existing drainage issues.
- if there are multiple potential trail alignments (eg. an existing trail that branches off into two parallel alignments, or if there is a wide existing footprint and it is not clear where within the footprint the trail upgrade should be undertaken).

Where setout is required, the requirements are identical to those specified for new trail construction (covered previously).

B. Installation

Programming of works

The requirements are identical to those specified for new trail construction (covered previously).

Trail profile

- If there are no evident drainage issues (eg. erosion, scouring or water ponding/pooling) the trail profile of the upgraded trail should match the profile of the existing trail, path, track or road that is being upgraded.
- Where drainage issues are observed with existing alignments, refer to the trail profile requirements specified for new trail construction (covered previously).

Trail alignment clearing

- The requirements are identical to those specified for new trail construction (covered previously), noting that minimal clearing is expected to be required given the presence of an existing access route.

Subgrade

- An assessment shall be undertaken regarding the condition of the existing trail, path, track or road. Where the existing surface does not conform to the subgrade requirements specified for new trail construction (covered previously), subgrade works shall be undertaken to achieve this.

Trail surface formation

There are three categories of trail upgrade works, with the required option to be selected based upon an assessment of the existing conditions, as described in the table below.

Upgrade works category	*Existing route conditions*	*Trail surface works*
Minor	• Existing route generally meets trail width requirements for much of the trail section. • A stable, compacted, all-weather trail surface with effective drainage is provided - meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System - or can meet these requirements with minor grading, shaping, or compaction works in selected locations. • There is no, or minimal, evidence of erosion, scouring or water ponding/ pooling.	• Minor grading, shaping and compacting of existing trail surface material as required to meet the performance requirements for the trail (as outlined in this document), including width, profile, drainage, and compaction.
Moderate	• Existing route does not meet <u>one</u> of the following key trail requirements: 1. Defined trail width 2. Free draining 3. Stable, compacted, all-weather trail surface, meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System (or being able to meet these requirements with minor grading/shaping).	• Works to address the area not conforming to requirements. eg. 1. Increasing trail width, as either a 'natural' or 'surfaced' trail as described elsewhere, depending upon conditions encountered. 2. Regrading of trail to address drainage issues (both their effects and causes), and installing trail drainage infrastructure. 3. Construct a stable, compacted, all-weather trail surface as either a 'natural' or 'surfaced' trail as described elsewhere, depending upon conditions encountered.
Major	• Existing route does not meet <u>two or more</u> of the following key trail requirements: 1. Defined trail width 2. Free draining 3. Stable, compacted, all-weather trail surface, meeting the requirements of a Grade 3 trail using the Australian Walking Track Grading System (or being able to meet these requirements with minor grading/shaping).	• To be identical to those for new trail construction (covered previously).

Regarding trail surface installation (including materials, compaction, drainage, etc), the requirements are identical to those specified for new trail construction (covered previously).

C. Finishing
The requirements are identical to those specified for new trail construction (covered previously).

D. Maintenance
The requirements are identical to those specified for new trail construction (covered previously).

4.3 TRAIL DRAINAGE

4.3.1 General

A. Scope of work

This section covers the design and construction of walking trails for the Great Ocean Road Coastal Trail (GORCT), including the following elements:

- ***Grade Dips***
  Grade Dips (also referred to as Grade Reversals) refer to the grading of trails in a way that allows water to leave the trail at the low point of the Grade Dip before it can gain enough speed and volume to cause erosion. Grade Dips divide the trail into continuous small watersheds - this means the drainage of one part of the trail won't affect another section. This reduces the potential for erosion while also minimising the effect the trail might have on the area's overall hydrology (adapted from the *Australian Mountain Bike Trail Guidelines*, Mountain Bike Australia Ltd, 2019).

- ***Water Bars***
  Water Bars are diagonal channels across the trail surface that divert surface water runoff away from the trail (typically into a vegetated trailside area for dispersion/absorption). Water Bars for the GORCT are to be constructed from stone.

This section shall be read in conjunction with other relevant sections of this Specification.

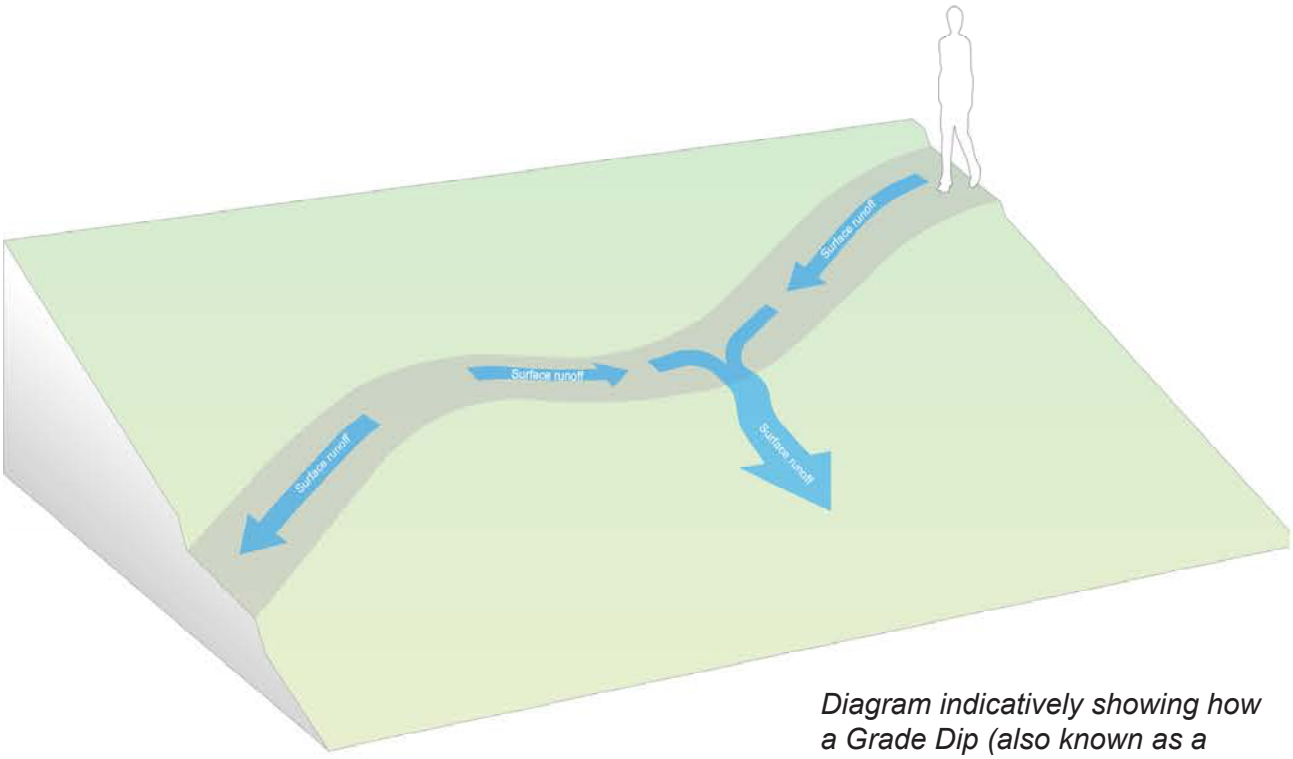
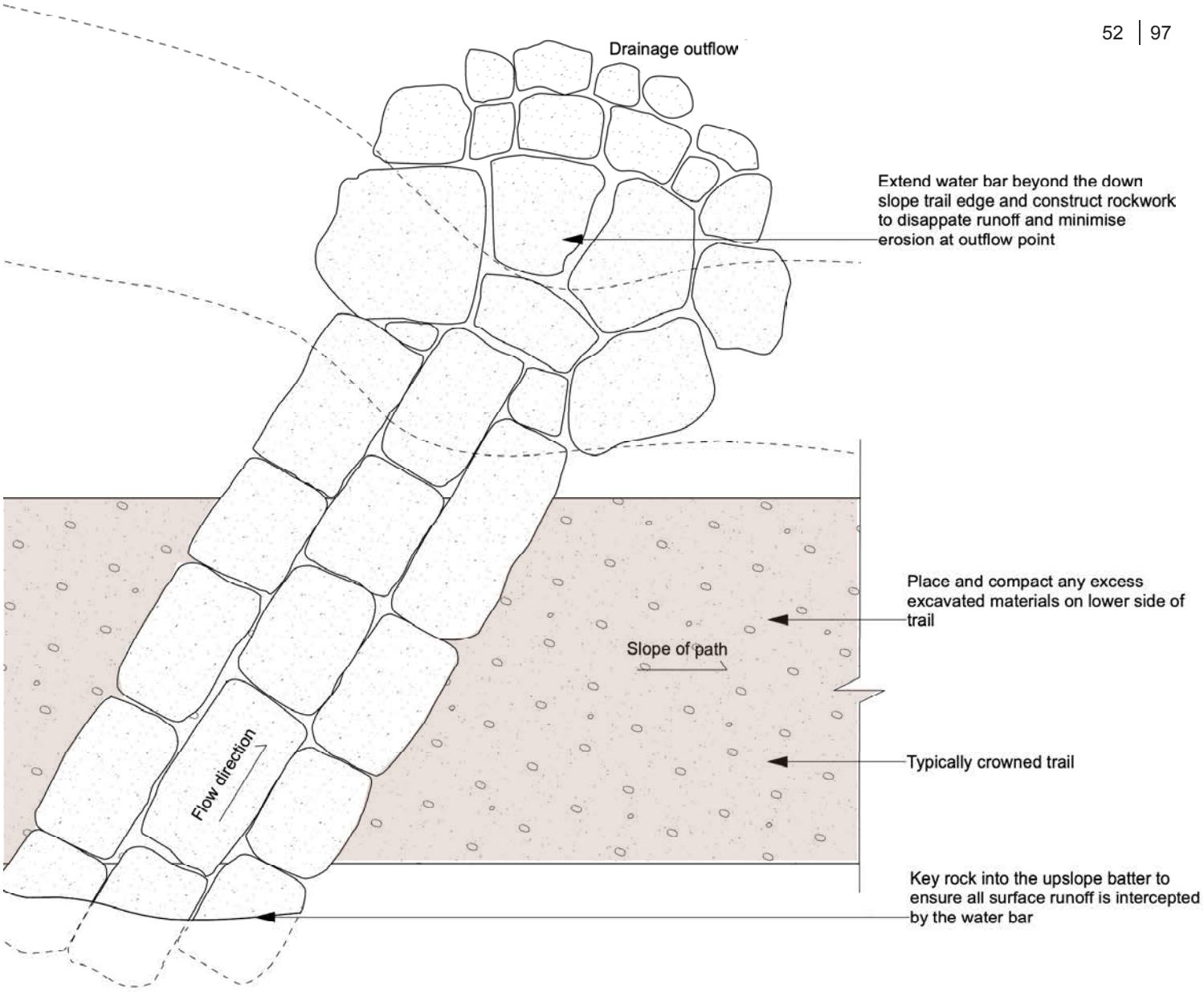
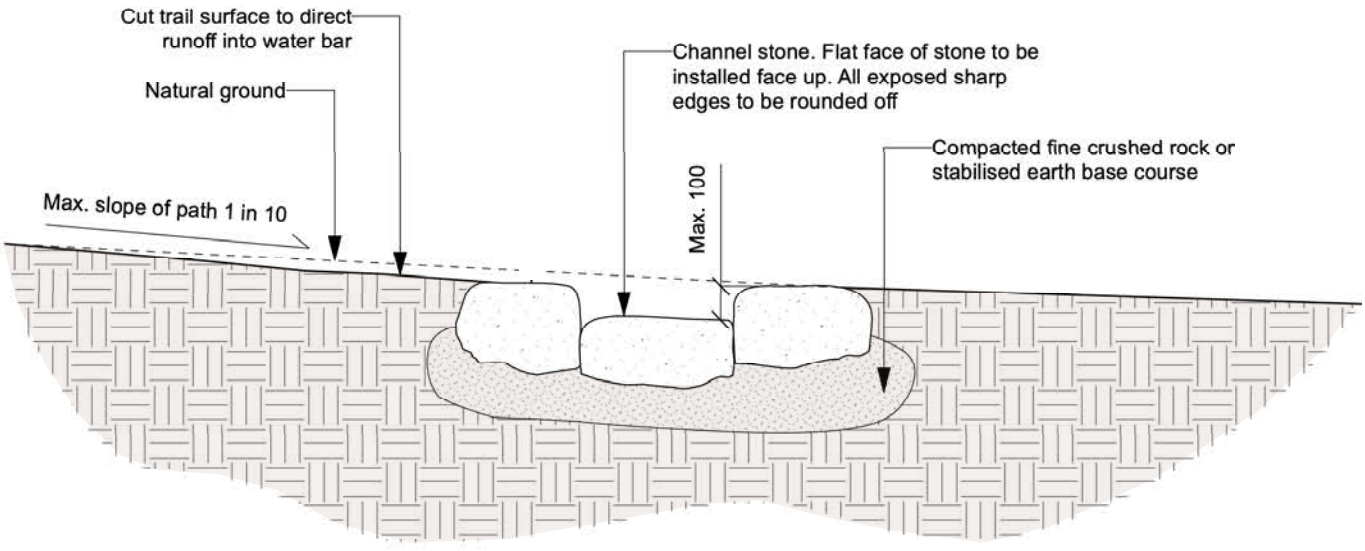


Diagram indicatively showing how a Grade Dip (also known as a grade reversal) works to remove water from the trail.



DETAIL 4.3A STONE WATER BAR - TYPICAL PLAN VIEW



DETAIL 4.3B STONE WATER BAR - TYPICAL SECTION

4.3.2 Materials & Products

A. Material/product

- Grade Dips are to be formed as a part of the trail construction. Refer to the relevant trail section of this document for trail surface material requirements.
- Water Bars as specified for this project require the use of stone. Use stone sourced from the immediate site where available, or use imported stone. Refer to Rockwork section of this document for more details regarding material sourcing.

B. Shop drawings/certification/product data

Nil

C. Samples/quality benchmarks

	Sample	***Assessment criteria***
☐	Not applicable	

	Benchmarks	***Assessment criteria***
☐	The first Grade Dip installed	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Meeting drainage objectives, including no pooling of water. • Meeting the trail access objectives (ie. a Grade 3 trail using the Australian Walking Track Grading System).
☐	The first Water Bar installed	• As for Grade Dips above

4.3.3 Execution, Installation & Quality

A. Setout

The setout of Grade Dips and Water Bars is to be integrated with the trail setout for both new trails and trail upgrade works, as covered previously.

B. Installation

Grade Dips

- Construct Grade Dips at periodic intervals as determined by the site along a sloping section of trail to remove excess surface water from the surface of the track and to avoid erosion. Steeper slopes may require grade dips every 10 to 15m.
- When setting out a Grade Dip, the walking trail gradient will typically be reversed for a distance of approximately 5 metres before the descent is continued.
- Assess existing site conditions (including terrain and trees) when setting out Grade Dips along the trail, with the goal of utilising the existing topography to make the Grade Dip easier to construct and to sit naturally within the landscape.
- It is particularly important to place Grade Dips before or after steeper sections of trail where water volumes and speed are most likely to cause erosion issues.
- Ensure all grade dips are constructed as part of the initial trail construction, as retrofitting is difficult.
- Grade Dips shall be installed in preference to Water Bars where possible, as they require less on-going maintenance.

Water Bars

- Use shallow path gradients and Grade Dips instead of Water Bars wherever possible. Water Bars are to be used where incorporating Grade Dips is difficult, such as where drainage is required to be retrofitted to existing trails to address erosion issues.
- Water Bar setout shall take account of the trail gradients. The steeper the trail, the more Water Bars will be required. Typical spacing on sustained steeper slopes should be approximately every 10 metres.
- Locate Water Bars to trap surface run-off at the top of slopes before erosion can occur.
- Angle Water Bars between 30 and 45 degrees to the path of travel.
- Water Bars are to be constructed from stone.

C. Finishing

- For Grade Dips, the finished trail surface will comply with the trail construction requirements previously addressed.
- Drainage features will be free drainage with no pooling of water.
- Interfaces between the finished trail surface and stone Water Bar edges will be flush.
- The Contractor shall be responsible for all cleaning up of surplus material from the site. All materials removed from the site during these operations are the responsibility of the Contractor who shall be liable for the legal disposal of this material.

D. Maintenance

- Remove debris from drainage inverts and low points as required to ensure the drainage function is maintained.
- Areas that have eroded, subsided, or scoured shall be fully rectified to the satisfaction of the Superintendent.

4.4 ROCKWORK

4.4.1 General

A. Scope of work

This section covers the design and construction of rockwork elements as a part of the Great Ocean Road Coastal Trail (GORCT), including the following elements:

- Stone Water Bar
- Stone Beaching (to dissipate drainage flows)
- Stone Edging
- Stone Retaining Wall
- Stone Steps
- Stone Creek Crossings

4.4.2 Materials & Products

A. Material/product

Objective

The intention is for constructed rockwork on the site to appear as natural as possible so that it disappears into the landscape. All constructed rockwork shall as much as possible avoid appearing too regular, constructed or artificial. This applies to both the material selection and the installation.

Site-sourced rock

- Where trail construction occurs in rocky landscapes, the construction of the trail will require the moving or removal of natural rock. In these cases, this rock shall be carefully extracted in a way that allows it to be usefully salvaged for reuse. Rock removal shall not occur outside a 10 metre wide trail construction corridor.
- In particular, where-ever possible, site-sourced rock shall be extracted in a way that maintains a natural weathered appearance (rather than fresh clean breaks).
- Salvaged site-sourced rock shall be reused in the trail construction as close as possible to the location from which it was sourced.
- Variation in the type and colour of site-sourced rock is expected. Distribute different rock types/colours throughout the work so that local concentrations of similar variations do not occur.
- All stone shall be fit for purpose and free of cracks, chips, saw marks or any other feature that may impact its structural integrity or aesthetic function.

Imported rock

Imported rock refers to all rock that has not been salvaged from the trail construction works (refer to site-sourced rock section above). Imported rock is to be selected by the Contractor in accordance with the following requirements:

- Quarry materials are preferred to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- The selected rock is to be fit for purpose, being hard-wearing and stable material available in sizes and shapes suitable for the proposed use types.
- All rock is to be of a type, colour and texture that fits naturally into the environment into which it is to be installed.

- All rock is to be harvested / extracted utilising environmentally safe methods.
- Should rock be drilled and split to create rocks of an appropriate size/shape, drill holes from splitting shall be removed and/or placed to be out of sight, leaving a rough natural face.
- All stone shall be fit for purpose and free of cracks, chips, saw marks or any other features that may affect its structural integrity or natural appearance.

Mortar

Generally, the use of mortar is not to be used in the works (as it introduces a less natural appearance to rock structures and is subject to damage during bush fires). Only use mortar with approval of the Superintendent, and in locations where it is not readily visible.

Where mortar is required to secure stonework, it shall comply with the following:

- Mix - Mortar mix to be standard 6:1:1 mix (6 parts sand, 1 part cement, 1 part lime).
- Colour - to be selected to match rock type
- Sand - fine aggregate with a low clay content and free from efflorescing salts, selected for colour and grading. Colour, grading and source shall be determined so as to closely match the rock background material colour; and subject to approval of samples.

B. Shop drawings/certification/product data

The Contractor will be required to provide details regarding the type, origin and characteristics of the stone to be provided for this project.

C. Samples/quality benchmarks

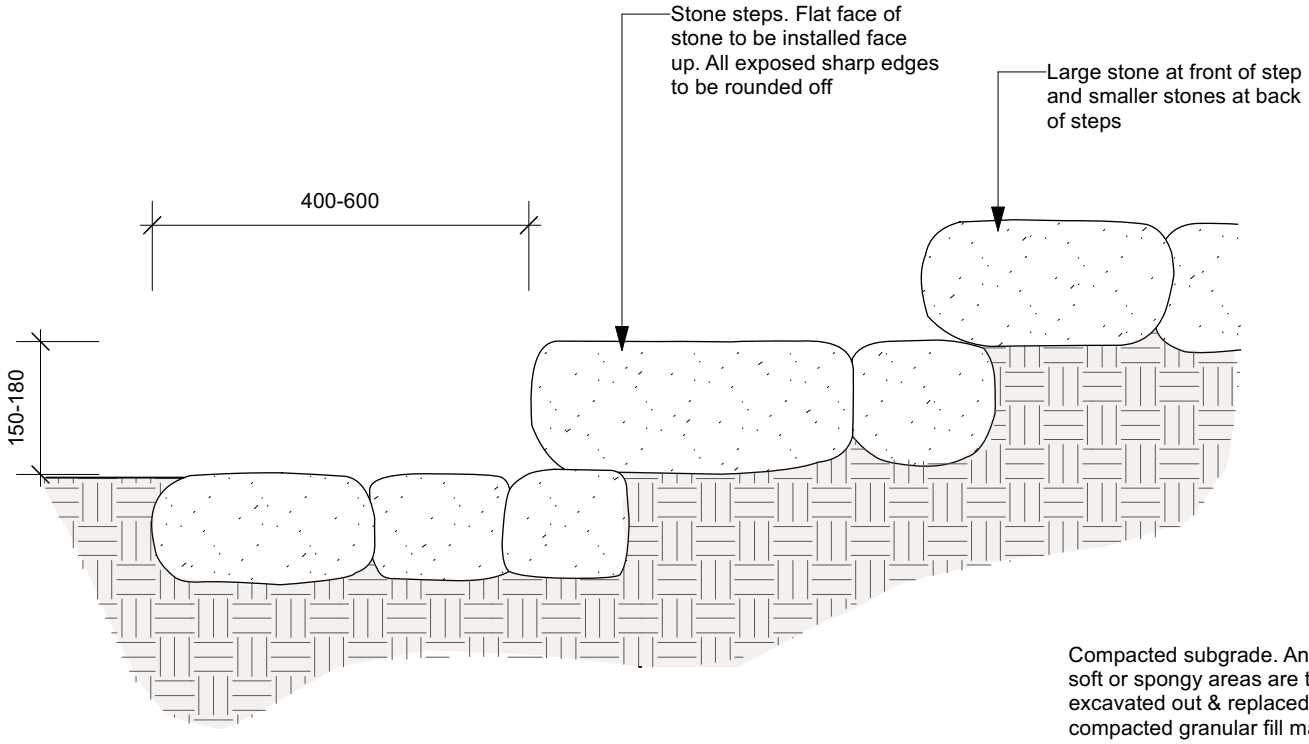
	Sample	***Assessment criteria***
☐	The rock type proposed to be used where rock is required to be imported to the site. Unless otherwise agreed, this sample will be inspected at the quarry from which the material is to be sourced, where any variation in the material can be observed.	The sample will be assessed to ensure that the material meets key requirements, including: • material appearance (colour/texture) • material size

	Benchmarks	***Assessment criteria***
☐	The first 2 lineal metres of each stone element	Each benchmark shall be used to evaluate all stone construction: • appearance • techniques • finishes • colour ranges • work quality, including the stone types and sizes to be used and typical corner and joint treatment.
☐	The first stone Water Bar installed	
☐	The first Stone Retaining Wall installed	
☐	The first stone steps installed (min. 3 risers)	

The approved benchmark will be used as a standard for the balance of the work. Do not proceed with remaining work until work quality and colour is approved by the Superintendent.

D. Hold Points

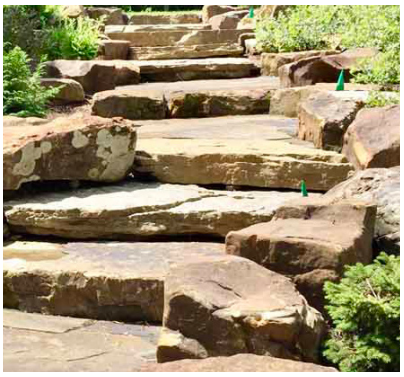
Rockwork inspections will be undertaken as a part of the processes for overall trail construction, rather than separately.



DETAIL 4.4A STONE STEPS - TYPICAL SECTION

Stone step example. Rockwork along the trail shall perform the required function (retaining, steps, etc), but appear as natural as possible.



Examples of acceptable stone steps. Rockwork along the trail shall perform the required function, but appear as natural as possible.




Examples of unacceptable stone steps, including rockwork with visible mortared joints (top left), sawn surfaces (top right), being too regular (bottom left), and taking the form of stepping stones, rather than stairs (bottom right).
Note that requirements including no visible mortar, no visible sawn stone surfaces, and a natural appearance apply to all rock work related to the trail construction.

4.4.3 Execution, Installation & Quality

A. Setout

Rockwork inspections will be undertaken as a part of the processes for overall trail construction, rather than separately.

B. Installation

General

- All rockwork is to be installed by people with suitable experience. Stone retaining walls shall be constructed by suitably qualified stone masons experienced in working with natural stone and skilled in dry stone walling construction methods.
- The setting and handling of all stone shall be undertaken by competent setter, riggers, and handlers, experienced in work of this type and scope.
- Avoid using site-sourced rock and imported rock together or in close proximity, particularly where there are marked differences in type/appearance between the two.

Storage and handling

- For site-sourced rock, salvage shall be in a sequential manner to the construction works, thereby minimising stockpiles of material.
- Where stone awaiting use is required to be stored, ensure minimal disturbance to the surrounding environment. Ensure stockpile areas are cleaned, repaired and reinstated after use, such that there is no visible sign of the former stockpile.
- The Contractor shall inspect all site-sourced rock to ensure compliance with the requirements specified in this document before installation. Any stone that fails to meet the criteria outlined shall be rejected.

Preparation

- Clean stone surfaces which are dirty or stained prior to setting. Clean stones by scrubbing with fibre brushes and drenching with clear water. Do not use any cleaning compounds.

Rock armouring/stablisation/beaching

- Provide rock armouring and beaching in any location where water is directed (particularly downhill slope drainage) sufficient to disperse energy and avoid erosion.
- Provide rock beaching and / or low stone retaining walls on steeper slopes to stabilise against erosion.

Stone edging

- Rock edging is placed along the out slope batter where the track edge may potentially erode or become unstable from walking along.
- A single line of rocks is placed to protect the track edge. It is constructed as a single tier retaining wall.
- Ensure stone edging does not hinder effective and adequate drainage of the trail surface.

Low stone walls

- Where stone retaining walls are required, walls shall not exceed 1000mm in height.
- All stone wall work shall be constructed by a person with experience in dry stone construction.
- All retaining walls shall be on a solid foundation consisting of either a flat rock shelf or an excavated flat earth shelf (full bench) on original undisturbed sub-soil or rock. Do not build footing on spoil (loose soil).

- Rockwork walls are to be angled back (rather than vertical), to create a more natural appearance and avoid the need for mortar.
- Build retaining wall using utilising dry stone wall techniques to produce a tight interlocking and self supporting wall.
- Do not use gabion cages to create downhill slope support.

Stone steps

- Stone steps shall be installed where site-sourced rock is available in the vicinity of the proposed steps, and where the site-sourced rock is of a suitable type/shape/form for the construction of steps.
- All stone steps shall be constructed on a solid foundation consisting of either a flat rock shelf or an excavated flat earth shelf (full bench) on original undisturbed sub-soil or rock. Do not build footing on spoil (loose soil).
- Rock used for steps shall be carefully selected and placed to ensure that step treads are relatively flat and step edges are well defined.
- Steps shall be installed in such as way as to discourage people veering off the defined path, which should include the use of strategically-placed edging/landscape rock.

Stone creek crossings

- As a part of the trail alignment work undertaken, waterway crossings have been minimised to avoid disturbance to riparian corridors, and have only been considered in the case of slow moving, small and narrow water courses.
- Align the trail to make use of any existing stone features and rock outcrops that may provide assistance with crossing and reduce the need for intervention.
- Allow the water course to continue unimpeded. No pipes or culverts shall be used in the construction of these crossings.
- Create stepping stones across the water course with larger stones, allowing water to continue to move freely past them without obstruction.
- Locate stone across the natural desire line for walkers (as people will use shorter or easier routes if they exist).
- If vegetation is required to be removed to facilitate the crossing, this shall be done in accordance with vegetation removal protocols covered elsewhere in this document.
- Extend the stepping stones beyond the water edge if required to help avoid erosion in an damp soils close to the water.
- Where no site stone is available, imported stone (in accordance with the requirements noted earlier in this section) shall be used.

C. Finishing

- Clean stonework progressively as the work proceeds to remove mortar smears, dirt, stains, discolouration and the like. Clean exposed faces after erection.
- Leave clean on completion.

D. Maintenance

- Review structural integrity of walls and rectify any defects.
- Review function of edging and beaching, and make modifications to rock layout where issues are identified (eg. erosion, lack of stability of path edge, etc).

Examples of acceptable stone creek crossings.

Examples of unacceptable stone creek crossings, showing crossings that impede the water course (left) and stones that are too regular (right).

4.5 STEPS

4.5.1 General

A. Scope of work

This section covers the design and construction of steps as a part of the Great Ocean Road Coastal Trail (GORCT).

The Bill of Quantities and trail setout identify locations and quantities of steps along the trail length.

Two step types are proposed to be used along the trail:

- Timber box steps with compacted gravel infill - this step type is to be used for the majority of the steps along the trail. These steps will be 1200mm wide.
- Stone steps - stone steps shall be used only where site-sourced rock is available in the vicinity of the proposed steps, and where the site-sourced rock is of a suitable type/shape/form for the construction of steps. Refer to the previous section (Rockwork) for details regarding these step types.

Timber step example, showing opportunity for natural rock edging to steps, where site rock exists.
(Source: GORCT Planning & Design Report, page 74)

Timber step example, showing timber box with gravel infill.

4.5.2 Materials & Products

A. Material/product

Timber

- There is a preference for timber used on the project to be sourced from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- All timber is to be from a known and reputable source. Evidence of timber source and demonstrated compliance with the Australian Forestry Standard (AS4708:2021) to be provided.
- All timber used is to be hardwood of Class 1 durability (as defined by AS 5604-2005). Only heartwood shall be used (sapwood has a lower durability rating).
- All timber used is to be free of significant visual or structural imperfections. All finished exposed timber work must be free of markings, staining or other imperfections or damage.

Fixings

- Fixings shall be selected by the Contractor to meet the requirements of the project. The selected fixings will provide durable and long-lasting fixings appropriate to the situation for which they are employed.
- Fixings must be either stainless steel or fully galvanised, regardless of whether this is noted on the Drawings.
- Where timber is to be affixed to timber, this shall be members are to be undertaken with screws. Nails shall not be used.
- Galvanised bars are proposed to be used as ground fixings.

Compacted gravel infill

- Compacted gravel infill is to match the requirements of the trail surface, as covered in previous sections.

B. Shop drawings/certification/product data

All timber is to be from a known and reputable source and evidence of all relevant certifications shall be provided, including:

- Documentation conforming timber species and location source (proving local origins, as required).
- Evidence of either Forestry Stewardship Council (FSC) or Australian Forestry Standard (AFS) certification, allowing tracking through the supply chain using chain-of-custody certification.

C. Samples/quality benchmarks

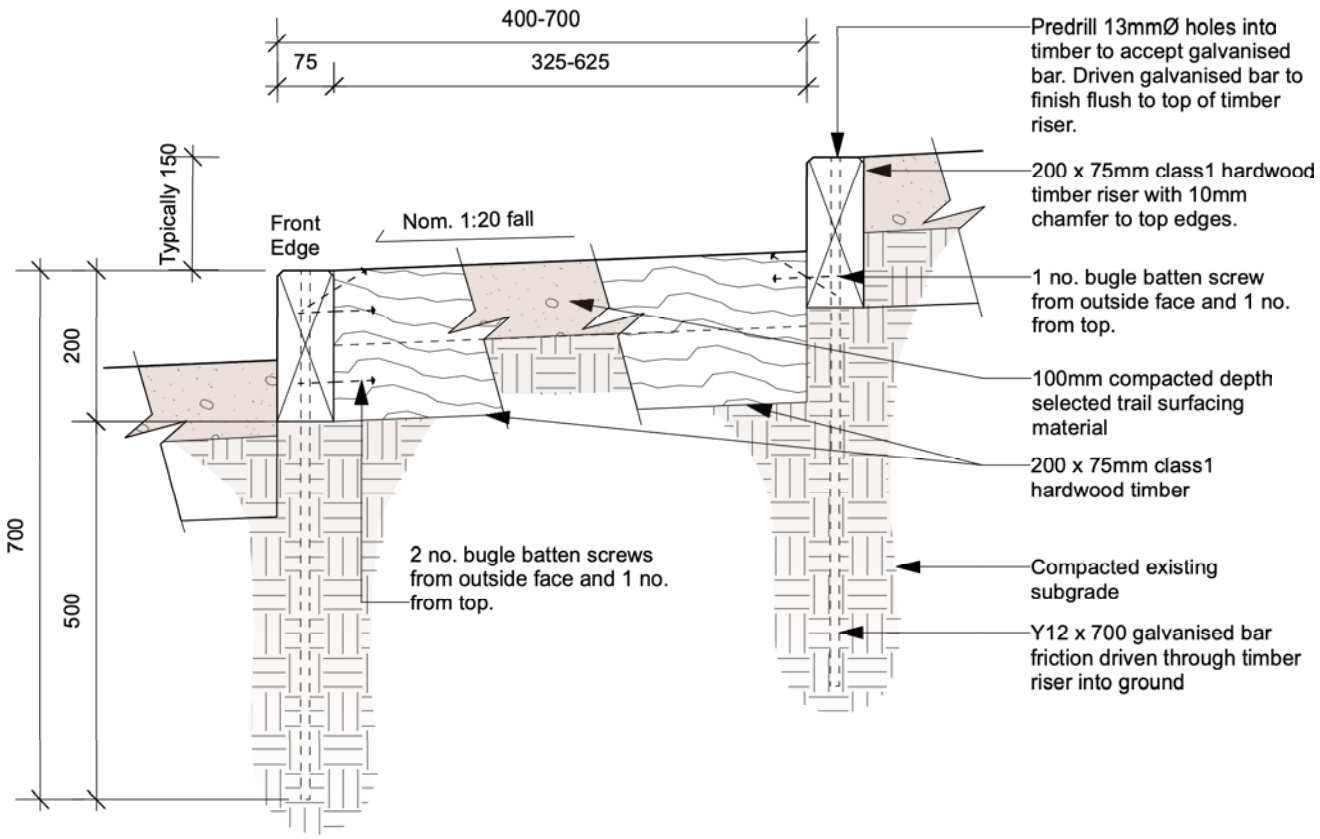
	Sample	***Assessment criteria***
☐	One of each timber profile to be used	The sample will be assessed to ensure that the material meets key requirements, including: • material appearance (colour/texture) • material size

The Contractor shall not proceed with the related work until the samples are accepted.

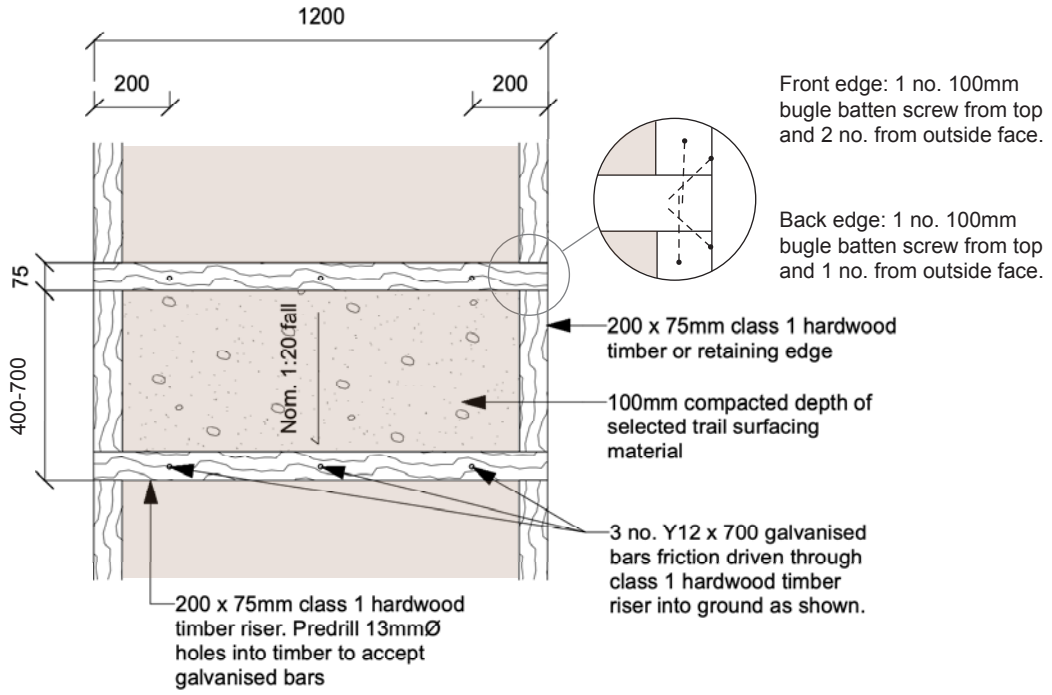
	Benchmarks	***Assessment criteria***
☐	The first timber steps installed (min. 3 risers).	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Robustness • Quality of work and finish • Meeting drainage objectives, including no pooling of water. • Meeting the trail access objectives (ie. a Grade 3 trail using the Australian Walking Track Grading System).

D. Hold Points

Step inspections will be undertaken as a part of the processes for overall trail construction, rather than separately.



DETAIL 4.5A TIMBER BOX STEP WITH COMPACTED GRAVEL INFILL - TYPICAL SECTION



DETAIL 4.5B TIMBER BOX STEP WITH COMPACTED GRAVEL INFILL - TYPICAL PLAN VIEW

4.5.3 Execution, Installation & Quality

A. Setout

- Step locations have been determined as a part of the trail alignment. All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- The Contractor shall set out the steps in general accordance with the track alignment file provided. In order for the steps to be fit for purpose in response to site conditions, more or fewer steps may be required than what is indicated in the alignment file and Bill of Quantities provided. Where step quantities vary from those specified by 10% or more in any trail segment (ie. the numbered segments defined in the alignment file and Bill of Quantities), these segments should be clearly identified to the Superintendent during the setout phase, allowing their inspection.
- Steps setout should be responsive to site conditions, including fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- Where there are longer flights of steps required, these should be set out with a maximum of 7 steps per flight with a minimum 1.2m length landing between flights.
- Where long flights of steps are required, the alignment of the steps shall be broken up by changes in direction of nominally 20 degrees every 7 risers (to avoid long straight flights).
- Where major amendment to the step locations are required for any reason including constructibility issues, the Contractor shall alert the Superintendent prior to undertaking any works and await approval to proceed.
- The Contractor shall organise for the provision of alignment and flagging tape at own expense. Any additional setting out or the replacement of any tape or level marks destroyed by the Contractor will be carried out at the Contractor's own expense.
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.
- The Contractor shall make amendments to the set out as required by the Superintendent and shall seek approvals of such amendments prior to any base course works.

B. Installation

- All timber steps shall be constructed on a solid foundation consisting of excavated flat earth shelves on original undisturbed sub-soil. Do not build steps on spoil (loose soil).
- The timber risers will be fixed in place using galvanised bar driven through pre-drilled holes in the riser. Should alternative fixing methods be proposed, these must be approved in writing by the Superintendent prior to works commencing.
- All fixings shall be counter-sunk or recessed to avoid the potential for injury (eg. by people coming into contact with exposed sharp metal edges).
- Exposed timber surfaces are to be finished so that all sharp, splintered or otherwise potentially hazardous exposed edges or surfaces are to be removed. Exposed edges are to be chamfered.
- The step surface infill is to match the compacted trail surface material, with the finished surface being free-draining and providing a hard-wearing trafficable surface.

C. Finishing

- No finishing shall be applied to timber surfaces.
- Timber surfaces shall be lightly sanded as required to remove construction-related markings or any sharp edges/splinters.

D. Maintenance

- Review structural integrity of timber step structures and rectify any defects.
- The compacted trail surface material shall be topped up as required to maintain an even tread surface and positive drainage.

4.6 BRIDGES

4.6.1 General

A. Scope of work

This section covers the design and construction of bridges (1.5m wide and up to 14m long) as a part of the Great Ocean Road Coastal Trail (GORCT).

The Bill of Quantities and trail setout identify locations and length of bridges along the trail length.

Note that works intentionally excluded from the scope of works covered by this document are:

- Major bridges (defined in the master planning work as being bridges that are greater than 20 metres in length).

The proposed bridges are to be similar in appearance to the steel-frame bridges existing around the Sheoak Picnic area near Lorne.

4.6.2 Materials & Products

A. Material/product

The design of bridges to be installed shall be similar in structure and appearance to the steel-framed bridges existing around the Sheoak picnic area near Lorne (refer photographs in this section). These bridges comprise a range of constituent material/product components, which are addressed individually below:

Concrete footing/abutment

Concrete footings/abutments for the bridges shall be designed and structurally certified by a qualified structural engineer, and should be designed to be as visually recessive as possible. Where areas of concrete footing or abutment are exposed and visible to path users, rocks shall be placed to minimise the visual impact to a level acceptable to the Superintendent.

Steel structure

- The Contractor must organise for the steel structures for each bridge to be designed and structurally certified by a qualified structural engineer.
- The structural design will be required to take into account site conditions, the bridge span, and a load bearing capacity appropriate for a Light Vehicle, not exceeding 2.5 tonne (as defined in AS 1170.1). It is noted that the design and width of the bridges should preclude larger maintenance vehicle access.

Steel mesh

The steel mesh trafficable surface to be used on bridges shall be selected by the Contractor, complying with the following requirements. The selected product shall:

- provide load bearing capacity appropriate for a Light Vehicle, not exceeding 2.5 tonne (as defined in AS 1170.1). It is noted that the design and width of the bridges should preclude larger maintenance vehicle access.
- provide a high-grip textured surface, providing very good grip for pedestrians in all weather conditions at all approach angles.
- includes a fixing system that securely fixes the decking panels in place, but allows individual decking panels to be removed and replaced if required.
- comprise components that are all galvanised or stainless steel.

The existing bridges referenced earlier as a precedent for these elements used a ‘Weldlok’ product, but products with similar attributes from other suppliers will be acceptable, providing they meet the stated requirements.

Steel cables

- The balustrades for bridges will comprise 3.2mm diameter tensioned stainless steel cables, using ‘marine-grade’ 316 stainless steel.
- Cables will be used in conjunction with a 316 stainless steel cable tensioning system to be selected by the contractor. The system selected:
  - must allow easy on-site tension adjustment for maintenance.
  - must not include bulky tensioning elements, such as turnbuckles.

Timber rail

- There is a preference for timber used on the project to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- All timber is to be from a known and reputable source (noting the evidence of source and relevant certifications will be required to be provided).
- All timber used is to be hardwood of Class 1 durability.
- Timber rail to have a 10mm chamfer to all edges, and be sanded to remove sharp edges and splinters.
- All timber used is to be free of significant visual or structural imperfections. All finished exposed timber work must be free of markings, staining or other imperfections or damage.

Fixings

- Fixings shall be selected by the Contractor to meet the requirements of the project. The selected fixings will provide durable and long-lasting fixings appropriate to the situation for which they are employed.
- Fixings must be either stainless steel or fully galvanised, regardless of whether this is noted on the Drawings.
- Where timber is to be affixed to timber, this shall be undertaken with screws. Nails shall not be used.

B. Shop drawings/certification/product data

Shop drawings

In accordance with the General section of this document, provide Shop Drawings of the following:

- Bridges (including separate drawings for each bridge type where there exist different lengths and/or site conditions).

Certification

The Contractor is to provide all engineering calculations and certification demonstrating compliance with relevant standards and the requirements of this document.

Product data

Detailed product data for all proprietary products including:

- steel mesh decking and associated fixing systems
- stainless steel cable tensioning system.

All timber is to be from a known and reputable source and evidence of all relevant certifications shall be provided, including:

- Documentation conforming timber species and location source (noting preference for local origins).
- Evidence of either Forestry Stewardship Council (FSC) or Australian Forestry Standard (AFS) certification, allowing tracking through the supply chain using chain-of-custody certification.

C. Samples/quality benchmarks

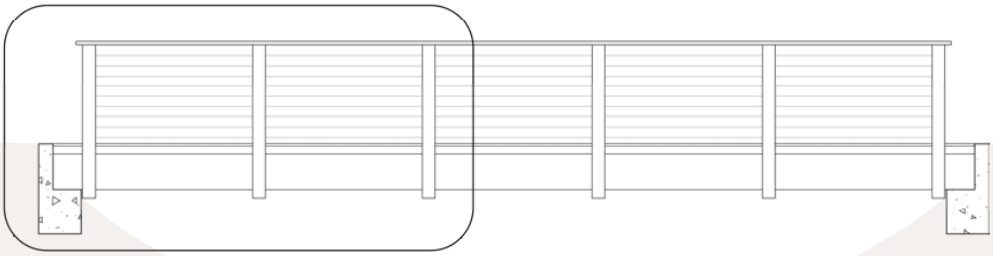
	Sample	***Assessment criteria***
☐	1 x steel mesh decking panel, and associated fixings.	The samples will be assessed to ensure that the materials meets key requirements, including: • material appearance • material size • robustness • material function (including being safe for public use)
☐	1 x sample of stainless steel cable tensioning system.	
☐	1 linear metre of timber rail	

	Benchmarks	***Assessment criteria***
☐	Not applicable	

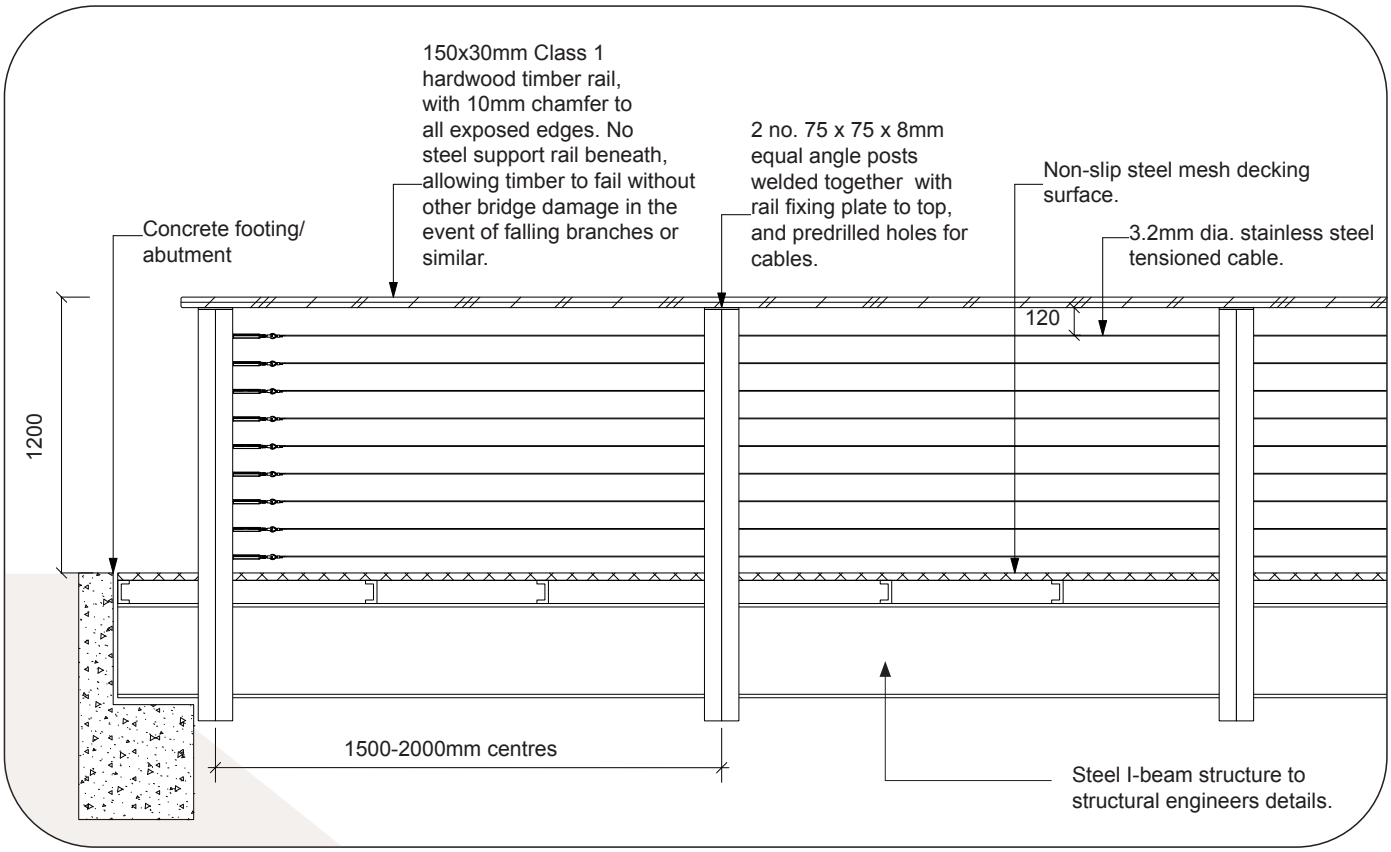
D. Hold Points

The Contractor shall notify the Superintendent when the following aspects of the works are ready for inspection. A minimum of 48 hours notice shall be given:

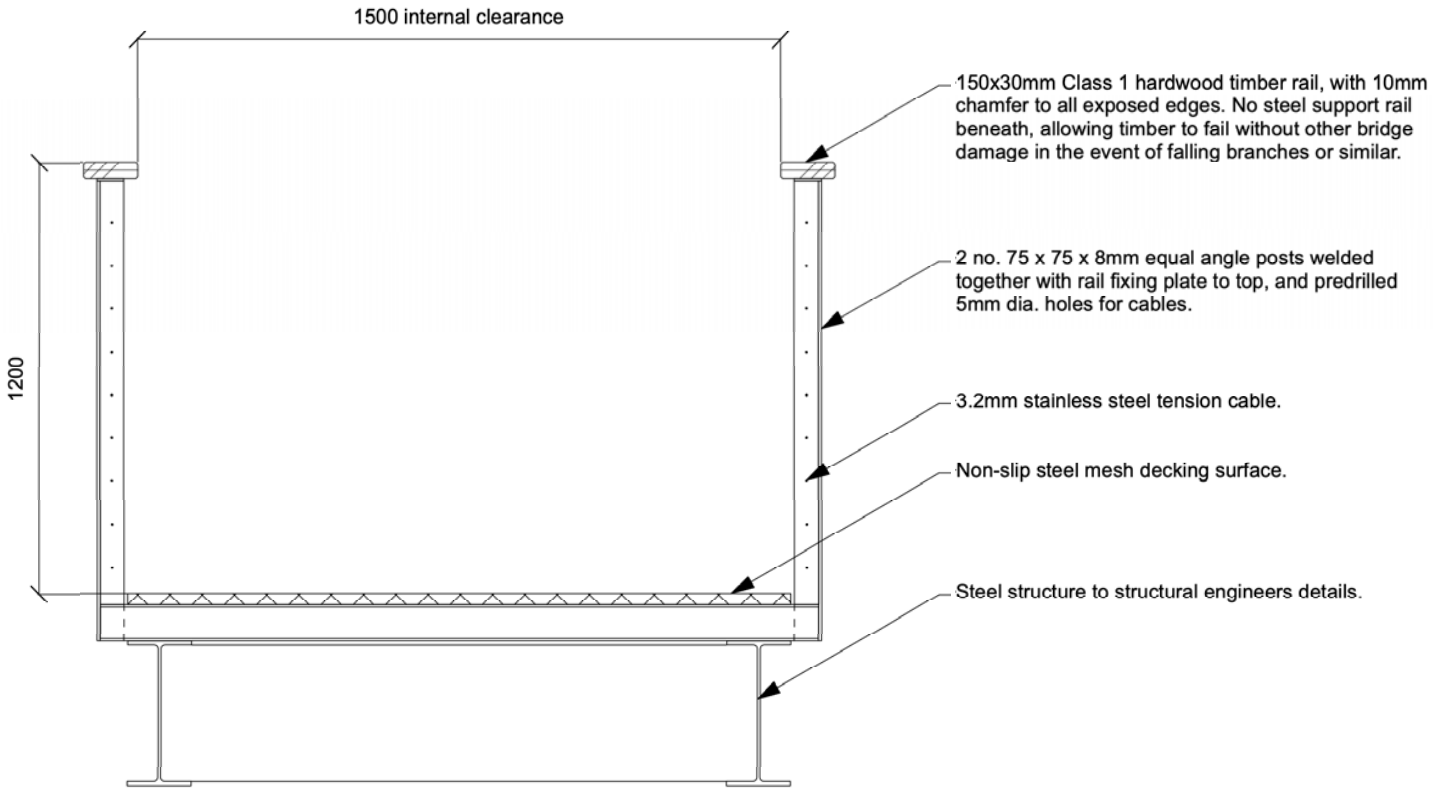
- Submission of shop drawings
- Setout on site of all bridges



Refer enlargement below



DETAIL 4.6A STEEL FRAME BRIDGE (2-14M LONG) - TYPICAL ELEVATION



DETAIL 4.6B STEEL FRAME BRIDGE (2-14M LONG) - TYPICAL SECTION






Detail images showing construction method of the reference bridges, located near the Sheoak Picnic area near Lorne.

4.6.3 Execution, Installation & Quality

A. Setout

- Bridge locations have been determined as a part of the trail alignment. All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- Setout of bridges should be responsive to site conditions, including fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- Where amendment to the bridge locations or quantity are required for any reason including practicality or constructibility issues, the Contractor shall alert the Superintendent prior to undertaking any works and await approval to proceed.
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

- Installation to be in accordance with approved Shop Drawings.
- Ensure a flush edge between the trail and the bridge to avoid the potential for tripping.
- Where site stone is available, consider providing a stone armouring at the beginning and end of boardwalks to help avoid erosion to the trail.

C. Finishing

- Remove all rough edges to the steelwork.
- Replace any damaged mesh panels.
- No finishing shall be applied to timber surfaces.
- Timber surfaces shall be lightly sanded as required to remove construction-related markings or any sharp edges/splinters.
- Adjust tensioned cables as required so that they remain taught.

D. Maintenance

- Review structural integrity of structures and rectify any defects.
- Adjust tensioned cables as required so that they remain taught.

4.7 BOARDWALKS

4.7.1 General

A. Scope of work

This section covers the design and construction of boardwalks (900mm internal clearance and less than 900mm above natural surface) as a part of the Great Ocean Road Coastal Trail (GORCT).

The Bill of Quantities and trail setout identify locations and length of boardwalks along the trail length.

4.7.2 Materials & Products

A. Material/product

The design of bridges and boardwalks to be installed shall be similar in structure and appearance to those installed as a part of the Grampians Peaks Trail (refer photographs in this section). These boardwalks comprise a range of constituent material/product components, which are addressed individually in this section.

An example of a boardwalk similar to the one proposed as a part of this project (Grampians Peaks Trail).

'No dig' footing system

A 'No dig' footing system is proposed to be used for all boardwalks for the following reasons:

- More suited for use in difficult ground conditions than concrete footings (eg. in boggy ground or in proximity to tree roots).
- Minimising environmental disturbance associated with excavation.
- Removing the need to have access to concrete in potentially remote or difficult-to-access locations.

There are a variety of proprietary 'no-dig' footing systems on the market. Contractors shall investigate suitable systems for use, or propose an alternative custom solution. Examples of product types include:

- Ground screws/screw piles (eg. Krinner Australia, www.krinner.com.au).
- Pile-based systems (eg. All Footings Solutions, www.allfootingsolutions.com.au).

These products and suppliers are provided here for reference only - any product from any supplier that meets the stated requirements will be acceptable.

The selected footing system shall:

- Not involve digging as a part of the footing installation.
- Be designed to accommodate the required load (being pedestrian use and maintenance access by small motorised maintenance vehicles up to a maximum loaded weight of 400kg). The footings shall not be over-designed/engineered.
- Be stable and not corrode or degrade over time.
- Be visually unobtrusive and generally hidden from view of trail users.
- Be able to be installed with minimal damage to the environment.
- Be able to be disassembled/removed if required with minimal damage to the environment.
- Avoid materials that have the potential to leach harmful materials into the surrounding soils.

Steel structure

The fabricated boardwalk structural frame shall be:

- Oxidised steel (ie. with a rusted appearance, as shown in the images within this section). Full oxidisation should occur off-site prior to installation to reduce leaching of rust and staining of surrounding surfaces.
- The boardwalk frame must be designed to cover the edges of the expanded steel mesh boardwalk surface, and ensure there are no exposed sharp edges. eg. by fabricating the frame from a Parallel Flange Channel (PFC) profile steel.
- Designed to be suitable for pedestrian use and maintenance access. Maintenance access may include small motorised maintenance vehicles such as a motorised wheelbarrow up to a maximum loaded weight of 400kg. It is noted that the design and width of the boardwalks should preclude access by larger vehicles.
- The boardwalk shall have a slender, lightweight appearance. Structural member profiles shall not be greater than 75mm thick.

Steel mesh

The steel mesh trafficable surface to be used on bridges and boardwalks shall be selected by the Contractor, complying with the following requirements. The selected product shall:

- Be oxidised steel (ie. with a rusted appearance, as shown in the images within this section). Full oxidisation should occur off-site prior to installation to reduce leaching of rust and staining of surrounding surfaces.
- Provide a high-grip textured surface, providing very good grip for pedestrians in all weather conditions at all approach angles.

- Provide load bearing capacity appropriate for pedestrian use and maintenance access. Maintenance access may include small motorised maintenance vehicles such as a motorised wheelbarrow up to a maximum loaded weight of 400kg. It is noted that the design and width of the boardwalks should preclude access by larger vehicles.
- Includes a fixing system that securely fixes the decking panels in place. Refer also to the need for anti-noise rubber grommets, covered separately below.

The boardwalk examples referenced earlier as a precedent use the following product, but products with similar attributes from other suppliers will be acceptable, providing they meet the stated requirements.

- Oxidised steel expanded mesh GRIDMESH® GR50080 with a typical panel size of 3000mm x 900mm

Timber

The following timber elements may form a part of the boardwalk design:

- Kick rail to boardwalk edges (required).
- Small sections of 'hinge' decking used to change boardwalk direction. (Note that this treatment is optional, with the alternative being to integrate changes in direction into the boardwalk structure fabrication. Refer to example images of these two options below).

The requirements for selected timber are:

- There is a preference for timber used on the project to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- All timber is to be from a known and reputable source (noting the evidence of source and relevant certifications will be required to be provided).
- All timber used is to be hardwood of Class 1 durability.
- Timber for kick rails is to be sanded to remove sharp edges and splinters.
- All timber used is to be free of significant visual or structural imperfections. All finished exposed timber work must be free of markings, staining or other imperfections or damage.

Boardwalk examples showing two acceptable methods of boardwalk direction change.

- *Left: Change in direction integrated into broadwalk fabrication (McKenzie Falls, Grampians National Park).*
- *Right: Change in direction using timber 'hinge' deck panel (Grampians Peaks Trail).*

Fixings and anti-noise rubber grommets

- Fixings shall be selected by the Contractor to meet the requirements of the project. The selected fixings will provide durable and long-lasting fixings appropriate to the situation for which they are employed.
- Rubber grommets shall be provided at all steel connections to ensure there is no discernible noise from the boardwalk structure (eg. from two metal components coming into contact) when walked upon. The effectiveness of this measure will be tested as a part of the benchmark installation, and may require the fixing to be revised if the anti-noise measures have not been effective.

B. Shop drawings/certification/product data

Shop drawings

In accordance with the General section of this document, provide Shop Drawings of the following:

- Boardwalks (including separate drawings for each boardwalk type where there exist different configurations and/or site conditions).

Certification

The Contractor is to provide all engineering calculations and certification demonstrating compliance with relevant standards and the requirements of this document.

The structural design will be required to take into account site conditions, required spans between footings, and a load bearing capacity appropriate for the intended (pedestrian only) use. It is noted that the design and narrow width of the boardwalks should preclude vehicle access.

Product data

Detailed product data for all proprietary products including:

- 'No-dig' footing system.
- Steel mesh decking and associated fixing systems.

All timber is to be from a known and reputable source and evidence of all relevant certifications shall be provided, including:

- Documentation conforming timber species and location source (noting preference for local origins).
- Evidence of either Forestry Stewardship Council (FSC) or Australian Forestry Standard (AFS) certification, allowing tracking through the supply chain using chain-of-custody certification.

C. Samples/quality benchmarks

	Sample	***Assessment criteria***
☐	1 x 'no dig' footing product.	The samples will be assessed to ensure that the materials meets key requirements, including: • Material appearance • Material size • Robustness • Material function (including being safe for public use) • No discernible noise from the boardwalk structure when walked upon.
☐	1 x steel mesh decking panel, and associated fixings.	
☐	1 linear metre of timber kick rail.	
☐	1 x anti-noise rubber grommet.	

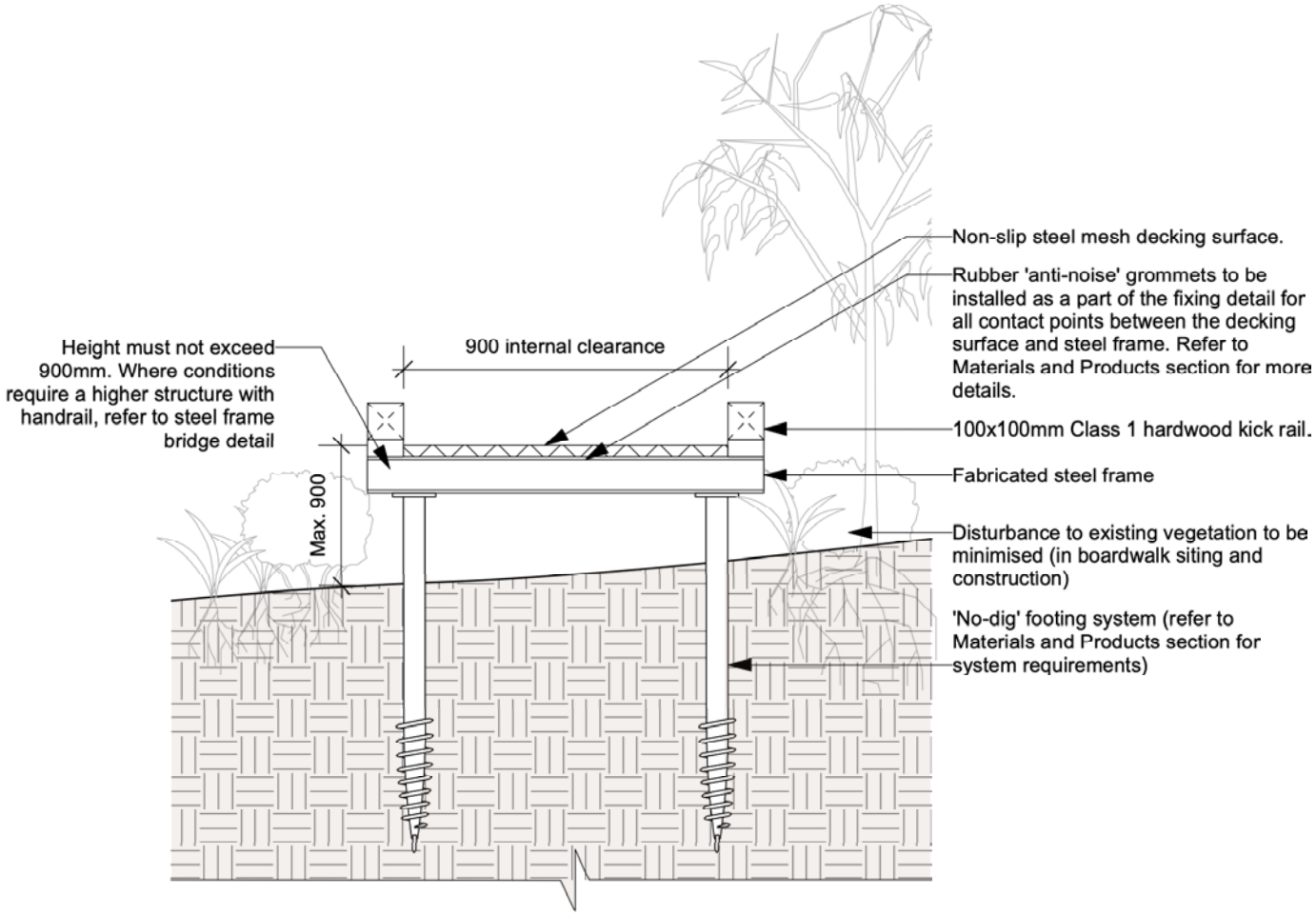
	Benchmarks	***Assessment criteria***
☐	The first section of boardwalk installed (min. 5m length).	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Robustness • Quality of work and finish • Effectiveness of anti-noise rubber grommets • Meeting the trail access objectives (ie. a Grade 3 trail using the Australian Walking Track Grading System).

D. Hold Points

The Contractor shall notify the Superintendent when the following aspects of the works are ready for inspection. A minimum of 48 hours notice shall be given:

- Submission of shop drawings for boardwalks
- Setout on site of all boardwalks.

Boardwalk example image showing a boardwalk having minimal impact upon surrounding vegetation (Grampians Peaks Trail).



DETAIL 4.7A STEEL FRAME BOARDWALK - TYPICAL SECTION

Boardwalk example image showing stone armouring at the beginning/end of a section of boardwalk to help avoid erosion to the trail (Grampians Peaks Trail).

Boardwalk example image showing timber kick rails to both sides of the boardwalk deck (Grampians Peaks Trail).

4.7.3 Execution, Installation & Quality

A. Setout

- Boardwalk locations have been determined as a part of the trail alignment. All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- Setout of boardwalks should be responsive to site conditions, including fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- Where amendment to the boardwalk locations or quantity are required for any reason including practical or constructibility issues, the Contractor shall alert the Superintendent prior to undertaking any works and await approval to proceed.
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

- Installation to be in accordance with approved Shop Drawings.
- Ensure a flush edge between the trail and the boardwalk start and end to avoid the potential for tripping.
- Where site stone is available, consider providing stone armouring at the beginning and end of boardwalks to help avoid erosion to the trail.

C. Finishing

- Remove all rough edges to the steelwork.
- Replace any damaged mesh panels.
- No finishing shall be applied to timber surfaces.
- Timber surfaces shall be lightly sanded as required to remove construction-related markings or any sharp edges/splinters.

D. Maintenance

- Review structural integrity of structures and rectify any defects.

4.8 BARRIERS / BALUSTRADES

4.8.1 General

A. Scope of work

This section covers the design and construction of barriers and balustrades as a part of the Great Ocean Road Coastal Trail (GORCT).

Barriers and balustrades covered by this section include locations along the trail and at minor lookout points where the grade drops away. Barriers/balustrades are mandatory such drop-offs are 1 metre or greater, but may also be appropriate in other locations.

For balustrades to bridges and boardwalks, refer to the separate dedicated section of this document.

Note that works intentionally excluded from the scope of works covered by this document are:

- Major bridges (defined in the master planning work as being bridges that are greater than 20 metres in length).
- Major/Premier lookouts (defined in the master planning work as being major attractions with significant investment in design and construction quality).

Example of barrier with tensioned cables as proposed, existing along the trail route.

4.8.2 Materials & Products

A. Material/product

The design of barriers and balustrades to be installed shall be similar in structure and appearance to those existing at a number of points along existing parts of the trail (refer photos). These barriers/balustrades use tensioned wire cables (to minimise barriers to views, particularly for those at a lower level eg. people who are seated, or wheelchair users), combined with timber rails and posts. The constituent material/product components are addressed individually below.

Steel cables

- The balustrades for bridges will comprise 3.2mm diameter tensioned stainless steel cables, using 'marine-grade' 316 stainless steel.
- Cables will be used in conjunction with a 316 stainless steel cable tensioning system to be selected by the contractor. The system selected:
  - must allow easy on-site tension adjustment for maintenance.
  - must not include bulky tensioning elements, such as turnbuckles.

Timber posts & rails

- There is a preference for timber used on the project to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- All timber is to be from a known and reputable source. Evidence of timber source and demonstrated compliance with the Australian Forestry Standard (AS4708:2021) to be provided.
- All timber used is to be hardwood of Class 1 durability.
- Timber rail to have a 10mm chamfer to all edges, and be sanded to remove sharp edges and splinters.
- All timber used is to be free of significant visual or structural imperfections. All finished exposed timber work must be free of markings, staining or other imperfections or damage.

Fixings

- Fixings shall be selected by the Contractor to meet the requirements of the project. The selected fixings will provide durable and long-lasting fixings appropriate to the situation for which they are employed.
- Fixings must be either stainless steel or fully galvanised, regardless of whether this is noted on the Drawings.
- Where timber is to be affixed to timber, this shall be members are to be undertaken with screws. Nails shall not be used.

B. Shop drawings/certification/product data

Shop drawings

Not required.

Certification

The Contractor is to provide engineering calculations and certification where required demonstrating compliance with relevant standards and the requirements of this document.

Product data
Detailed product data for all proprietary products including:
- stainless steel cable tensioning system.

All timber is to be from a known and reputable source and evidence of all relevant certifications shall be provided, including:
- Documentation conforming timber species and location source (noting preference for local sourcing).
- Evidence of either Forestry Stewardship Council (FSC) or Australian Forestry Standard (AFS) certification, allowing tracking through the supply chain using chain-of-custody certification.

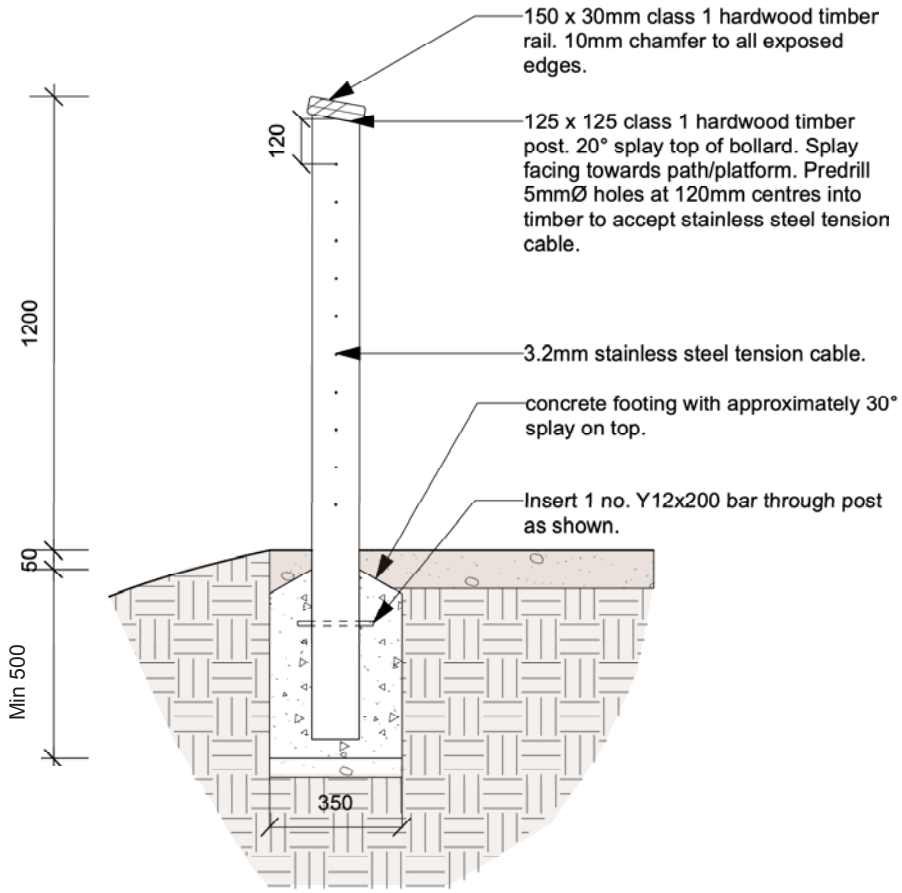
C. Samples/quality benchmarks

	Sample	***Assessment criteria***
☐	1 x sample of stainless steel cable tensioning system.	The samples will be assessed to ensure that the materials meets key requirements, including: • material appearance • material size • robustness • material function (including being safe for public use)
☐	1 linear metre of timber rail	
☐	1 x timber post	

The Contractor shall not proceed with the related work until the samples are accepted.

	Benchmarks	***Assessment criteria***
☐	The first barrier/ balustrade installed.	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Robustness • Quality of work and finish • Meeting funcrtional requirements, including preventing falls.

D. Hold Points
The Contractor shall notify the Superintendent when the following aspects of the works are ready for inspection. A minimum of 48 hours notice shall be given:
- Submission of shop drawings for barriers/balustrades.
- Setout on site of all barriers/balustrades



DETAIL 4.8A BARRIER / BALUSTRADE - TYPICAL SECTION

Example of barrier with tensioned cables as proposed, existing along the trail route.

4.8.3 Execution, Installation & Quality

A. Setout

- All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- Sites requiring barriers/balustrades will be identified as a part of the site setout, and will include:
  - all minor lookout locations
  - any areas of trail with a drop off to the path edge of 1 metre or more.
- Setout of barriers/balustrades should be responsive to site conditions, including fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

- Installation to be in accordance with approved Shop Drawings.
- Ensure barriers/balustrades are firmly installed, and are capable of supporting the intended use including people leaning and sitting on the rails.

C. Finishing

- No finishing shall be applied to timber surfaces.
- Timber surfaces shall be lightly sanded as required to remove construction-related markings or any sharp edges/splinters.
- Adjust tensioned cables as required so that they remain taught.

D. Maintenance

- Review structural integrity of structures and rectify any defects.
- Adjust tensioned cables as required so that they remain taught.

4.9 SEATS

4.9.1 General

A. Scope of work

This section covers the design and construction of timber seats as a part of the Great Ocean Road Coastal Trail (GORCT).

The Bill of Quantities identifies the number of seats to be installed as a part of this project. The exact locations are to be identified during the setout process, described below.

4.9.2 Materials & Products

A. Material/product

Timber

- Timber used on the project is required to be sourced locally, which is defined as being from being from Eastern Marr Country (ie. the area for which the Eastern Maar Aboriginal Corporation is the Registered Aboriginal Party), as detailed in the General Requirements section of this document.
- All timber is to be from a known and reputable source. Evidence of timber source and demonstrated compliance with the Australian Forestry Standard (AS4708:2021) to be provided.
- All timber used is to be hardwood of Class 1 durability.
- Timber rail to have a 10mm chamfer to all edges, and be sanded to remove sharp edges and splinters.
- All timber used is to be free of significant visual or structural imperfections. All finished exposed timber work must be free of markings, staining or other imperfections or damage.

Fixings

- Fixings shall be selected by the Contractor to meet the requirements of the project. The selected fixings will provide durable and long-lasting fixings appropriate to the situation for which they are employed.
- Fixings must be either stainless steel or fully galvanised, regardless of whether this is noted on the Drawings.
- Where timber is to be affixed to timber, this shall be members are to be undertaken with screws. Nails shall not be used.

B. Shop drawings/certification/product data

Shop drawings

Not required.

Certification

Not required.

Product data

All timber is to be from a known and reputable source and evidence of all relevant certifications shall be provided, including:

- Documentation conforming timber species and location source (noting preference for local source).
- Evidence of either Forestry Stewardship Council (FSC) or Australian Forestry Standard (AFS) certification, allowing tracking through the supply chain using chain-of-custody certification.

C. Samples/quality benchmarks

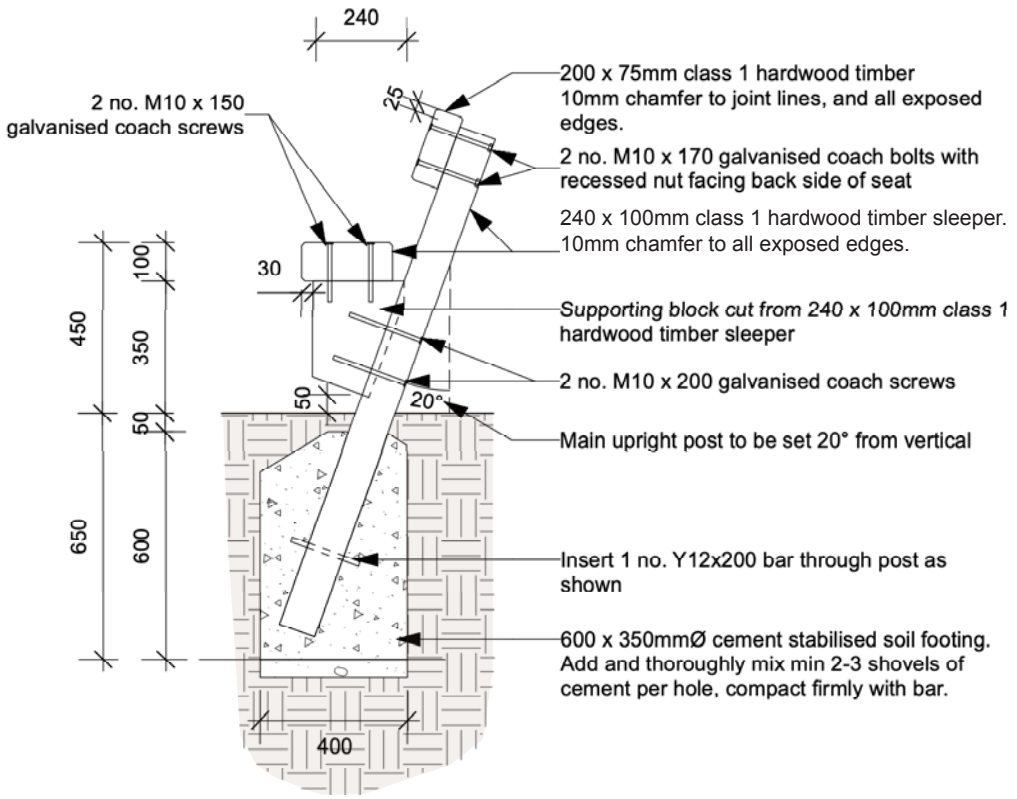
	Sample	***Assessment criteria***
☐	1 linear metre of typical timber profile	The samples will be assessed to ensure that the materials meets key requirements, including: • material appearance • material size • material function (including being safe for public use)

	Benchmarks	***Assessment criteria***
☐	The first seat installed.	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Robustness • Quality of work and finish • Meeting functional requirements, including being comfortable to sit on.

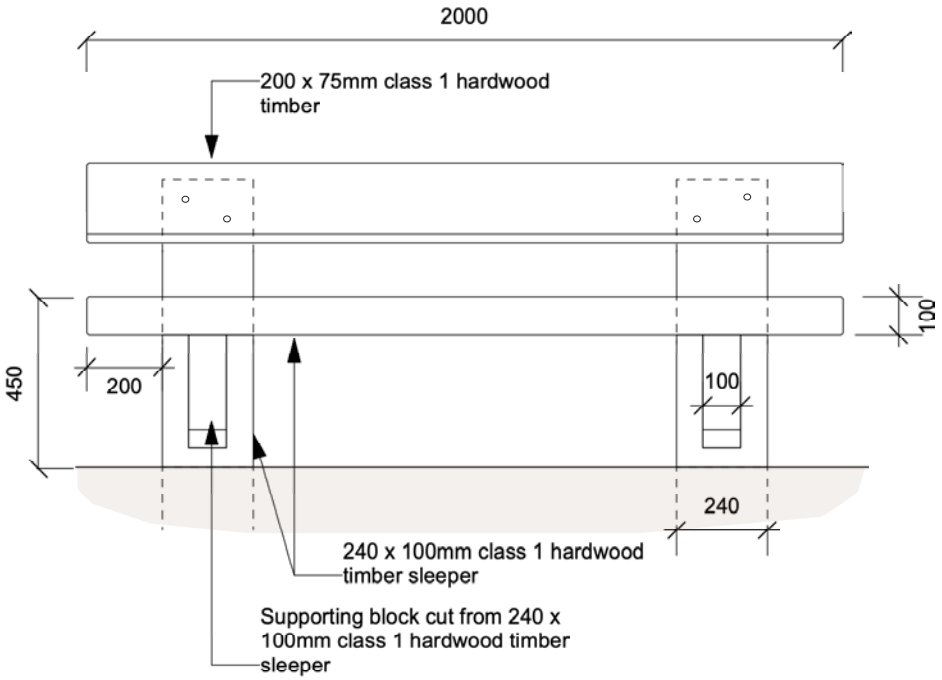
D. Hold Points

The Contractor shall notify the Superintendent when the following aspects of the works are ready for inspection. A minimum of 48 hours notice shall be given:

- Submission of shop drawings for seats.
- Setout on site of all seats



DETAIL 4.9A TIMBER SEAT - TYPICAL SECTION



DETAIL 4.9B TIMBER SEAT - TYPICAL ELEVATION

4.9.3 Execution, Installation & Quality

A. Setout

- All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- Sites requiring seats will be identified as a part of the site setout, and will include:
  - all minor lookout locations
  - other suitable locations along the trail where a seating/rest stop would be desirable (eg. where there is a view, and/or at the top of a steep hill).
- Setout of seats should be responsive to site conditions, including fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

- Installation to be in accordance with approved Shop Drawings.
- Ensure seats are firmly installed, and are capable of supporting the intended use.

C. Finishing

- No finishing shall be applied to timber surfaces.
- Timber surfaces shall be lightly sanded as required to remove construction-related markings or any sharp edges/splinters.

D. Maintenance

- Review structural integrity of structures and rectify any defects.

4.10 MINOR LOOKOUTS

4.10.1 General

A. Scope of work

This section covers the design and construction of minor lookouts as a part of the Great Ocean Road Coastal Trail (GORCT).

There are three types of minor lookouts defined by the master planning process.

Type	*Description/size*	*Characteristics*
Type A	• Minor clearing • Minimum size: 2 x 2.5m.	• Surface to match the trail material. • 2 x timber seats to be provided (suitable for at least 4 people).. • To utilize existing topography and vegetation clearing, avoid removal of vegetation.
Type B	• Clearing with fall protection requirement. • Minimum size: 1.5 x 3.0m.	• Surface to match the trail material. • 2 x timber seats to be provided (suitable for at least 4 people). • Fall protection barrier to be provided per the barrier section of this report. • Use existing topography and/or low retaining walls. • Avoid removal of vegetation.
Type C	• Raised structure such as decking with balustrade and seating. • Minimum size: 2 x 3.5m.	• Fall protection barrier to be provided per the barrier section of this report. • Avoid removal of vegetation. • 2 x timber seats to be provided (suitable for at least 4 people). • Materials and design to be consistent with project infrastructure as detailed in this document.

4.10.2 Materials/products

A. Material/product

Materials/products to be used within the different minor lookouts as defined above comprise a combination of different elements covered elsewhere in this document, including:

- either natural trail or surfaced trail finish.
- boardwalk (steel mesh surface)
- barrier/balustrade (timber post/rail with tensioned cables)
- timber seats

Refer to the relevant sections of this document for material/product requirements for each.

Example of a minor lookout, including fall protection barrier.
(Source: GORCT Planning & Design Report, page 15)

B. Shop drawings/certification/product data
Refer to the relevant sections of this document for material/product requirements for each component part.

C. Samples/prototypes
Refer to the relevant sections of this document for material/product requirements for each component part.

D. Hold Points
Refer to the relevant sections of this document for material/product requirements for each component part.

4.10.3 Execution, Installation & Quality

A. Setout

- All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction. This includes locations of all minor lookouts.
- The setout of elements within the identified space for a minor lookout must respond to the site conditions, including:
  - using existing topography, such as utilising existing flatter spaces.
  - identifying preferred view lines and locating barriers/seats in response. Consider the impacts of future vegetation growth on views, and avoid the need for future vegetation trimming to maintain veiws.
  - ensuring that trail through-traffic is not impeded by the lookout.
  - be responsive to site conditions, including avoiding disturbance of existing site features (such as trees and rocks).
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

Refer to the relevant sections of this document for material/product requirements for each component part.

C. Finishing

Refer to the relevant sections of this document for material/product requirements for each component part.

D. Maintenance

Refer to the relevant sections of this document for requirements for each component part.

4.11 FOOT WASH

4.11.1 General

A. Scope of work

This section covers the installation of foot wash facilities as a part of the Great Ocean Road Coastal Trail (GORCT). The foot wash facilties are to be supplied to the Contractor by the Principal.

The Bill of Quantities identifies the number of foot wash facilities to be installed as a part of this project. The exact locations are to be identified during the setout process, described below.

4.11.2 Materials & Products

A. Material/product

- Foot wash facilities are to be supplied to the Contractor by the Principal.

B. Shop drawings/certification/product data

Shop drawings

Not applicable.

Certification

Not applicable.

Product data

Not applicable.

C. Samples/quality benchmarks

	Benchmarks	***Assessment criteria***
☐	The first foot wash installed.	The installed benchmark will be assessed to ensure that it meets key functional requirements, including: • Robustness (related to installation only) • Quality of work and finish (related to installation only) • Meeting functional requirements (related to installation only).

D. Hold Points

The Contractor shall notify the Superintendent when the following aspects of the works are ready for inspection. A minimum of 48 hours notice shall be given:

- Setout on site of all foot wash facilities

4.11.3 Execution, Installation & Quality

A. Setout

- All works are to be set out from an approved digital (GIS) track alignment file, which will be issued to the Contractor for construction.
- Sites requiring foot wash facilities will be identified as a part of the site setout.
- Setout of foot wash facilities should be responsive to site conditions, including being easily accessed by trail users, fitting into existing topography and avoiding disturbance of existing site features (such as trees and rocks).
- Setout of foot wash facilities are required to direct all trail users across the unit, and opportunities for people to avoid or walk around it are required to be limited.
- The Contractor shall notify the Superintendent two working days prior to enable an inspection of the completed set out.

B. Installation

- Ensure foot wash facilities are firmly installed, and are capable of supporting the intended use.

C. Finishing

- Any required finishing to be applied prior to receipt of foot wash facilities from the Principal.

D. Maintenance

- Review structural integrity (relating to installation only) and rectify any defects.

Example image showing the style of foot wash to be supplied to the Contractor by the Principal. For this foot wash facility design, the unit is to be installed so that all trail users are funnelled across it (between the handrails visible in the image above left), and opportunities for people to avoid or walk around the facility are required to be limited.
Note that in the photos above, the access ramps at each end of the unit are shown folded up.