



Trail Maintenance Plan

Mount George Trail Network

George Town Mountain Bike Trail Development

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Contents

1.0	Purpose	1
2.0	Trail Inspections	1
2.1	Routine Inspection	1
2.1	Typical Defects or Changes	2
2.3	Inspections After Significant Weather Events or High-Usage.....	5
2.3	Triggers for Closure	6
2.4	Inspection Personnel.....	6
2.5	Landowner Authority	6
3.0	Trail Maintenance	7
3.1	Routine Maintenance	7
3.2	Urgent Maintenance	8
3.3	Maintenance Personnel	8
3.4	Landowner Authority	9
4.0	Maintenance Tasks Detail	9
4.1	Vegetation Pruning	9
4.2	Trail Sweeping.....	10
4.3	Trail Edge Brush-cutting.....	10
4.4	Tree Roots	10
4.5	Weed Control.....	10
4.6	Clearing Drains.....	10
4.7	Minor Drainage Works.....	11
4.8	Minor Trail Surface Repairs.....	11
4.9	Rectification of Detouring and Shortcutting.....	11
4.10	Structural Features.....	11
4.11	Illegal or Unauthorised Activities.....	11
4.12	Removal of Litter.....	11
4.13	Signage	12
4.14	Trail Head Infrastructure.....	12
5.0	Weed and Disease Hygiene	12
6.0	Reporting.....	12

7.0	Communication.....	12
7.1	Defects Register	13
7.2	Notification of Works and Closures	13
8.0	Conclusion	14
	Appendices.....	15
	Appendix 1: Trail Inspection Record Sheet (Draft)	15
	Appendix 2: Trail Maintenance Record Sheet (Draft)	16
	Appendix 3: Weed Inspection Record Sheet (Draft) (also found in the WDMP)	17

1.0 Purpose

Mountain bike trails and associated infrastructure are an asset representing a substantial investment, and like all assets will require routine maintenance to keep them fit-for-purpose, ensuring the safety of intended users, and protecting environmental values of the trail corridor.

A trail maintenance program requires as much care and attention as the initial construction, and should have several components – routine inspections, routine maintenance and the ability to respond to unanticipated events such as adverse weather or periods of high-use.

This document serves as the primary guide for trail inspections and maintenance for the George Town Mountain Bike Trails, the primary objectives being: -

- ✂ To ensure the trails are as resilient as possible to external inputs;
- ✂ To ensure that trails remain safe and predictable to intended trail users;
- ✂ To exercise the land manager's duty of care to intended trail users; and
- ✂ To minimise the legal liability to the land manager.

As the trails form part of an entirely new trail network, this plan should be reviewed every six months and the content adapted to accommodate conditions specific to the terrain, soil geology, and weather conditions of the area.

2.0 Trail Inspections

Even the most well-designed and constructed trails change over time, and the best way to manage those changes is to undertake trail maintenance. Maintenance works are determined by conducting routine trail inspections to identify any defects or changes to the trails that: -

- ✂ Pose a significant safety risk to the intended user;
- ✂ Are likely to lead to further significant trail damage if not rectified; and/or
- ✂ Renders the trail un-usable.

Trail inspections need to be undertaken regularly to be effective, with the frequency of inspections determined by resilience of the trail in coping with weather, water, and usage.

The difficulty rating of a trail can also contribute to the regularity of the inspection frequency, with the consensus being that the more difficult a trail is, the less frequent the inspections. The same approach can be used for priority scheduling rectification works for an identified defect/change.

2.1 Routine Inspection

Routine inspections will occur on a regular basis. Initially, all trails should be inspected monthly as a minimum until the inspectors become familiar with the normalised rate, likelihood, and level of changes occurring.

Common changes that occur include: -

- ✂ The accumulation of organic material (leaves, twigs etc) on the tread of the trail;
- ✂ The encroachment and eventual obscuring of the trail by vegetation growth;
- ✂ Trees and branches frequently falling across trails, especially after heavy winds;
- ✂ Trail users making unauthorised additions or alterations to trails;
- ✂ Local fauna digging holes in trails or damaging them with their hooves/feet;
- ✂ Landslips covering trails, especially in steep or wet environments;
- ✂ Heavy rain causing erosion; and
- ✂ Heavily used trails becoming compacted in the middle causing ineffective drainage.

When inspections are conducted, the condition of the trail should be assessed based on the likelihood of a risk occurring as a result of use by the intended user. The risk rating guide in the table below provides the risk profile and the associated timeframes for rectification works to occur.

Risk Ratings and Rectification Timeframes		
Low	Primary trail tread not compromised; easily avoidable; no change to TDRS; no likelihood of deteriorating further.	Rectification required within 4 weeks (20 working days).
Medium	Primary trail tread not compromised; hazard not easily avoidable; no change to TDRS; unlikely to deteriorate further.	Rectification required within 2 weeks (10 Working days).
High	Trail tread (primary or otherwise) compromised; hazard not avoidable; no change to TDRS; likely to deteriorate further.	Immediate isolation of hazard if not on primary trail tread; rectification required within 1 week (5 working days).
Extreme	Unavoidable hazard on primary trail tread; change to TDRS; will deteriorate further.	Immediate closure of trail until rectified; timeline based on the importance of that trail's functionality within the network.

2.1 Typical Defects or Changes

Typical defects or changes that could reasonably be expected to occur have been listed in the below table, noting that some of these defects are specific to certain classes of trails and not to others.

Defect / Change	Notes
Water damage	<p>All work undertaken by trail designers incorporates erosion protection measures that are designed to push water off the trail or protect the surface. Despite this, extreme weather events can occur which may cause damage to the trail.</p> <p>Extremely heavy rainfall events, due to the sheer volume of water unleashed, can overcome these erosion prevention measures and end up eroding the trail surface and batters. All trails should be inspected for water damage after excessively heavy rainfall events.</p>
Loss of outslope	<p>Where a trail traverses a side slope, it should be slightly tilted or 'cambered' towards the downhill side. This is called outslope and ensures that any surface water flowing onto the trail from above will flow across the trail and continue down the hill (sheet flow), instead of being diverted along the trail (channelling).</p> <p>Over time, outsloped trails can become flat or even slightly 'cupped' or concaved. This 'cupping' is caused by two things: -</p> <ol style="list-style-type: none"> 1. The downward force applied by the tyres of mountain bikes causing the soil to compact in the middle of the trail; and

	<p>2. The flow of water and the impact of trail users causing organic material to migrate towards the lower edge of the trail, where it accumulates, causing the edge of the trail to become higher than the middle of the trail.</p>
Blockage of grade reversal outlets	<p>A grade reversal is a point where the trail changes from downhill to uphill. At the lowest point of the grade reversal, the edge of the trail should be scalloped out to ensure that there is a wide, clear outlet for the water. This outlet must be kept clear of organic material (leaves, bark, sticks) and soil in order for it to continue functioning properly.</p> <p>This is a key maintenance task, as any organic material that falls anywhere on the trail will eventually be pushed towards the grade reversal outlet by the action of water and trail users. No matter how well constructed the trail is, in time the grade reversals will become clogged with organic material and soil. How quickly this occurs depends on the surface material of the trail, the amount of usage the trail receives, the volume and frequency of rainfall and even the surrounding vegetation.</p>
Build-up of sticks/branches/trees/leaves on the trail	<p>Over time leaf litter accumulates on the trail surface. A moderate amount of leaf litter is acceptable, as it can slow the flow of water, thus protecting the actual trail surface, and it can also provide an enjoyable riding surface and a natural appearance. However, large sticks, branches or trees must be removed as soon as possible. Such items pose a hazard to the trail users and also provide cause for users to detour around them, widening the trail or creating a new route.</p>
Usage by unauthorised users	<p>Mountain bike trails are sometimes used by unauthorised trail users, such as motorbike riders, 4WD vehicles and even horse riders. In some instances, the trail is robust enough to withstand usage by these other users, but in many cases trail damage occurs, especially from motorised vehicles. These users exert more pressure on the trail than and can damage the trail surface. Motorbikes in particular can cause substantial displacement of the trail surface. Once a rut appears it can affect the intended drainage patterns of the trail, causing water to pool. Water pooling on the trail can cause legitimate trail users to detour off the trail, and create softening of the trail surface.</p>
Damage to signage	<p>Signage plays an important role in aiding navigation along trails and risk management. Unfortunately, it is subject to damage, through natural causes or human intervention. Natural causes include branches/limbs of trees falling and damaging signs, bushfires, strong winds etc. In some areas, signage is often likely to suffer from some form of vandalism. Typically, signage may be defaced or graffitied, damaged or even stolen. As it forms a primary tool for communicating key information to the users, it is important that signage is maintained so that it remains clear and legible.</p>

<p>Loose rocks</p>	<p>The movement of bike tyres and water can occasionally cause large rocks embedded in the trail tread to become loose. On the surface of the trail, such loose rocks can pose a hazard to riders. Rocks pulled out of the trail surface can also leave significant holes, which in turn become hazards or hold water. Holes should be filled with soil and compacted. The urgency of this defect is dependent on the class of the trail. A large hole in the middle of an 'Easy' trail is a significant issue, whereas on a 'Difficult' trail it is not so urgent.</p>
<p>Exposed tree roots</p>	<p>Exposed tree roots can often be very slippery and thus present a hazard to some users on some classes of trail. Over time roots can become exposed by the gradual removal of soil from the trail tread. They only become hazardous when they stick up substantially above the surrounding trail tread, threatening to catch a tyre. The best treatment is to use soil to re-cover them as this avoids doing damage to the tree.</p>
<p>Vegetation protruding into the trail corridor</p>	<p>A well-maintained trail should have a clear corridor, free of vegetation. The trail corridor should be as wide as the trail and approximately 2-3m high. Although heavy trail use tends to discourage vegetation growth, over time vegetation lining the trail is likely to grow into the trail corridor. On trails that are rarely used, new plants can even become established in the trail tread itself.</p> <p>Overgrown vegetation poses the following defects: -</p> <ol style="list-style-type: none"> 1. It can be dangerous to users if it protrudes into the trail corridor near eye height; 2. It can be annoying to trail users, detracting from the overall trail experience; 3. Some vegetation can be sharp or hard and can be extremely painful to push past; 4. It can block the line of sight for trail users; 5. It can push riders towards the outside edge of the trail, instead of the middle part of the trail. This part of the trail is often less stable than the middle and can lead to potential slumping of the lower batter.

These are just some of the changes that can occur to trails over time, although is not an exhaustive list. The actions of water, wind, animals and trail users are difficult to predict over long periods of time, hence the need to monitor and inspect the trails on a regular basis.

In some cases, the simplest way to rectify a defect on a trail is to do so while undertaking the inspection. However, many defects requiring rectification works may require more people, equipment or materials than is practically available during an inspection. A more efficient approach is to record the works required, and add them to a list of works to be carried out at the next scheduled trail maintenance day.

2.3 Inspections After Significant Weather Events or High-Usage

Additional inspections may be required after significant weather events or periods of high use, some examples of which are in the table below.

Defect	
Heavy or consistent rain	Heavy rain or periods of extensive rain can cause significant damage to the trails, which can be exacerbated from use before water has sufficiently drained from the tread. This, and wet conditions in general, can create safety risks to the user. Consideration should be given to closing the trails to prevent trail damage from occurring. Consideration should also be given to closing wet weather susceptible trails over the wetter, winter months.
Heavy winds or storms	Heavy winds can cause trees and tree limbs to break and fall across the track. Broken tree limbs can also only partially break, or break entirely but get caught in neighbouring branches, leaving them suspended in the air and creating a future hazard.
Trail slip	In areas of dynamic soils types, movement is possible and in extreme cases can cause trail slip. Trail slip can be caused by weather events, heavy use, or from underground springs.
User-caused erosion	Users will inevitably create impact of the trail by skidding tires and skirting around objects, usually fallen trees or limbs, puddles or muddy sections, or shortcuts. This can alter the intended line, increase the width of the trail tread, and impact negatively on surfaces not intended of use. Heavy usage from an event or from unprecedented popularity can also impact the trail tread, and warrants additional inspections after periods of high use.

2.3 Triggers for Closure

In some cases, closing a trail or even the entire network may be the most appropriate means of preventing damage to the trails. Closing a trail immediately prevents further damage to the trail occurring, and entirely isolates the hazard from the user. Some triggers that may prompt closure include: -

- ✘ Unavoidable hazard on primary trail tread;
- ✘ The defect changes the trail difficulty rating;
- ✘ The trail will inevitably further deteriorate creating unavoidable hazards and/or change the trail difficulty rating; and/or
- ✘ After periods of significant rainfall rendering the trail un-useable.

Pre-emptive closures over the wetter months may be the most appropriate means of preventing damage to the trails. The table below shows the average recorded climatic conditions for George Town and a recommendation for possible periods of pre-emptive closure.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Avg Temp (C°)	17.2	17.6	16.2	13.8	11.4	9.3	8.4	9.1	10.4	12	13.7	15.6	
Min Temp (C°)	12.5	12.6	11.4	9.3	7.4	5.5	4.6	5.2	6.3	7.7	9.4	11.1	
Max Temp (C°)	22	22.7	21.1	18.4	15.5	13.1	12.3	13	14.6	16.4	18.1	20.1	
Avg Rainfall (mm)	36	35	47	72	85	77	102	88	66	64	55	54	
						Possible Closure Period							

Even if a trail is pre-emptively closed, damage from weather and native animals may still occur, possibly resulting in extensive rectification works required to re-open the trails. For this reason, pre-emptive closure should be carefully considered, and only used if the level of maintenance required for the trail greatly exceeds the level of works required to re-open a trail after a period of closure.

2.4 Inspection Personnel

Trail inspections will always be conducted in team of two, with at least one team member being experienced enough to: -

- ✘ Possess a sound knowledge of trail construction;
- ✘ Be familiar enough with the trails to be able to identify issues;
- ✘ Be familiar with plant identification, particularly of declared and environmental weeds;
- ✘ Be familiar with the Trail Difficulty Rating System (TDRS); and
- ✘ Have the safety of the intended trail user always in mind.

2.5 Landowner Authority

As parts of the trail network are located on private land, the landowner(s) may need to be notified before inspections can commence.

3.0 Trail Maintenance

Through the process of undertaking the inspection, defects or changes that require rectification works are identified. These works could be considered as either urgent or non-urgent, and requires the person undertaking the inspection to make a subjective (but informed) assessment as to the timeframe within which the rectification works are required. Whether a defect is urgent or not may also depend on the difficulty rating of the trail, the level of usage it receives, or the level of importance that trail has to the functionality of the trail network.

3.1 Routine Maintenance

Routine trail maintenance days are planned to occur on a regular basis and not considered urgent in nature. The nature and location of the works will be dictated by the information recorded during the inspections. For example, during an inspection it is recorded that grade reversals have become clogged with organic matter and are not draining properly. This defect is not deemed especially urgent and so it is placed on the works program for the next scheduled trail maintenance day.

By grouping all the non-urgent maintenance works into scheduled trail maintenance days, efficiency and cost effectiveness is maximised. A small team of personnel (2-3 people) with the appropriate skills, equipment, materials and qualifications to undertake the required works can be determined and allocated in advance.

Most of the tasks undertaken are likely to be minor in nature, requiring only basic tools and minimal personnel – trimming the trail corridor, removing organic matter and soil from grade reversal outlets, using leaf blowers to remove leaf litter from the trail etc. Sometimes more labour-intensive tasks may be required, such as replacing some rock armouring or resurfacing a small section of trail. These tasks may require additional personnel, equipment and materials.

By implementing regular trail inspections and having predetermined trail maintenance days, it is possible to effectively plan and ensure the appropriate resources are available for required works.

Typical tasks that would likely be undertaken during a scheduled trail maintenance day relation to the identified defect that was identified are shown in the table below.

Defect	Solution	Tools Required
Organic material and/or soil is blocking the egress of water off the track.	Remove soil and organic matter blocking the grade reversal outlet.	Shovel; Rake hoe
Fallen sticks/ branches/leaves obscuring the trail surface, making it slippery and hard to see the trail surface.	Remove sticks/branches/ leaves from trail surface.	Leaf blower; Grass rake; Hand saw
Important directional or advisory signs graffitied.	Use a chemical solvent to remove spray paint.	Solvent;
Important directional signposts removed.	Install new signposts or symbols (arrows, trail identification numbers etc) as required.	Shovel; Auger; Drill
Plants growing beside the trail are blocking the trail corridor, making it difficult to pass.	Prune/cut any vegetation protruding into the trail corridor. Pull out any plants growing on the actual trail surface.	Hand saw; Chainsaw; Hedge trimmer
Loose rocks in trail tread Remove any loose or unstable rocks from the trail surface.	Fill hole with soil and compact.	Shovel; Mattock; Rake hoe
Trail has become cupped instead of outsloped.	Remove soil that has built up on the lower edge of the trail.	Rake hoe; Shovel; Mattock
Handrail on bridge is showing signs of decay.	Remove old rotten handrail and fastenings and replace with a new handrail and fastenings.	Drill; Saw; Carpentry tools

3.2 Urgent Maintenance

Scheduled trail maintenance will account for the bulk of all maintenance works, occasionally there may be a need to undertake urgent maintenance works. Works to rectify a defect would be considered urgent if it undoubtedly: -

- ✘ Poses a significant safety risk (e.g. a tree across a trail, a large dislodged rock on the trail, broken timber on a bridge structure);
- ✘ Will result in further trail damage if not rectified (e.g. a spring has appeared above the trail and is causing erosion of the trail tread); and/or
- ✘ Renders the trail un-usable.

Some likely types of works that would be considered urgent are listed in the table below.

Defect	Solution	Tools Required
Following extreme rain event, the trail is substantially damaged by water.	Run-off channels need to be filled in, compacted and smoothed over. Puddles need to be drained, allowed to dry, filled in, compacted and smoothed over.	Shovel; Rake; Rake hoe
After heavy winds or storms, trees often fall across trails.	Trees need to be cut into smaller pieces and removed. Assessments by qualified arborists may be required if trees adjacent to the trail appear to be damaged.	Chainsaw; Hand saw
Trail slip on trails contouring slopes and prone to slipping. Usually occurs after heavy rain and can be caused by the top batter slumping onto the trail, or the lower batter slipping down the hill.	Upper batter slips can be easily fixed by removing the fallen soil and rocks and re-shaping the trail tread and batter. If the lower batter slips down the hill, the trail may need to be re-built with rocks or a different alignment.	Shovel; Mattock; Rake hoe; Rake
Accelerated user-caused erosion from high-use period. Typical user-caused erosion culminates in the form of braking bumps (corrugations), tread widening, and short-cutting.	Rectification works may range from cleaning, to stripping, to an entire re-alignment.	Shovel; Mattock; Rake hoe; Rake

If an urgent defect cannot be rectified immediately, then the trail should be closed until it can be rectified.

3.3 Maintenance Personnel

When carrying out any trail maintenance works or inspections, all necessary safety precautions should be taken. Appropriate Personal Protective Equipment (PPE) is to be used for all works. Any tasks requiring machinery operation (excavator, chainsaw etc) must only be undertaken by suitably qualified and licenced individuals. All works should be undertaken to a thorough, professional, and industry level standard.

All personnel undertaking maintenance functions whether they are council employees, subcontractors or volunteers will be fully trained in skills pertaining to: -

- ✘ Plant identification - particularly the identification of declared and environmental weeds;
- ✘ Safe handling and use equipment;
- ✘ Correct and appropriate use of Personal Protective Equipment (PPE);
- ✘ Vehicle and equipment washdown and hygiene protocols;
- ✘ Specific instruction on how to undertake allocated tasks; and
- ✘ Correct and appropriate handling and application of fuels, chemicals, and herbicides.

Trail maintenance activities will always be conducted in team of two as a minimum, with one team member acting in a supervisory capacity to ensure compliance with workplace health and safety.

Safe Operating Procedures (SOP) will be developed for specific tasks to be undertaken to outline safe work practices for maintenance work on the trail network.

Material Safety Data Sheets (MSDS) will be available on site whenever chemicals are to be used with all appropriate handling and application risks identified in the associated Safe Working Method Statement.

Reference councils **Safe Operating Procedure Register** for specific documents prior to undertaking allocated tasks.

3.4 Landowner Authority

As parts of the trail network are located on private land, the landowner needs to be notified before maintenance works can commence. Major maintenance works involving significant changes to the landscape or vegetation may also require additional approvals or permits before works can be undertaken.

4.0 Maintenance Tasks Detail

All maintenance works should be undertaken in accordance with the following guidelines: -

- ✂ “Australian Mountain Bike Trail Guidelines” (Mountain Bike Australia, 2019);
- ✂ “Trail Solutions: IMBA’s Guide to Building Sweet Singletrack” (International Mountain Bicycling Association, 2004); and
- ✂ “Bike Parks: IMBA’s Guide to New School Trails” (International Mountain Bicycling Association, 2014).

The following list of maintenance activities should be undertaken as required on each trail during a routine trail inspection, dependant on available time and resources.

4.1 Vegetation Pruning

Any vegetation that is encroaching onto the trail tread should be pruned back to provide a clear and safe trail corridor.

Vegetation pruning should be undertaken using the appropriate tools (secateurs, loppers, or chainsaw dependant on vegetation size), and the operator must be trained to competency and possess any required certifications.

Vegetation pruning should consider the following: -

- ✂ Prune to the collar of branch stem to allow the wound to heal naturally;
- ✂ Under-cut larger and/or heavy and/or awkward branches first to prevent bark tearing and reduce risk of infection;
- ✂ Where tree branches require trimming, aim to achieve a nominal clearance height of 3 metres from the surface level;
- ✂ Any removed vegetation should be disposed of away from the track edge and ensure no sharp protrusions (e.g. cut stumps) are left within the track corridor or rider fall zone;
- ✂ Butt-ends of any sawed limbs must face away from the trail direction of travel; and

- ✂ Cut and scatter all branches and brush cut as part of the trail development. No debris shall be left within three metres of the trail.

Particular attention should be given to trail areas where users have a greater potential to leave the immediate trail corridor (such as adjacent to the base of descents, around or next to technical trail features, and high-speed corners), will be cleared of impact focusers by cutting or digging out any sharp objects, trimming tree branches, and dulling sharp point of logs and rocks.

4.2 Trail Sweeping

The trail surface should be swept and/or blown as required to remove any surface deposits and keep the trail surface clear and safe for users. Fallen branches/trees across the trail should also be removed, some of which may first require hand or chain sawing.

4.3 Trail Edge Brush-cutting

Any trail sections with grass edges should be mowed or brush-cut as required to keep grass from encroaching onto the trail corridor. Brush cutters may not always be appropriate.

4.4 Tree Roots

Roots of trees can become exposed over time causing risk to trail users. If exposure is severe enough the root can be covered with soil or removed if deemed appropriate following inspection by suitably qualified personnel.

4.5 Weed Control

Invasive weed species should be chipped or sprayed from the track edges or track surface. If removal is done by mechanical chipping (e.g. rake-hoe) care should be taken not to damage the trail surface.

Where spraying is used to treat weeds care should be taken to use herbicides registered for use near waterways (where relevant) and to avoid spraying in windy conditions and any collateral damage to surrounding vegetation.

The actual ride lines will typically be kept clear by the mechanical shearing action of riding over any germinating weeds. However, treatment is likely to be needed to keep weed species from encroaching on to the track edges.

An important part of weed management is monitoring of the trail network to identify new weed sites, monitor already identified weed sites, and review effectiveness of weed management controls. To assist with this, a Weed Inspection Record Sheet can be found in Appendix 3 of this document.

Full details on weed management can be found on the Weed and Disease Management Plan (WDMP).

4.6 Clearing Drains

Collections of silt or other materials should be cleared from drainage structures to ensure water can flow clearly through the drain and continue to operate effectively (i.e. the low point on grade reversals).

4.7 Minor Drainage Works

Minor drainage works should be undertaken where using hand tools can remove water that is pooling on the trail surface, i.e. Installation of knicks; maintenance of outslope gradient; de-berming of tread surface. However, careful inspection should be undertaken to ensure that the defect isn't an indication of a larger drainage issue.

Significant or persistent drainage defects that require substantial drainage measures should be noted and reported for consideration for inclusion in future trail upgrade/construction works.

4.8 Minor Trail Surface Repairs

Minor trail surface repairs should be undertaken during the regular inspections (or as needed and identified during the inspections). This should include patching depressions or removing protrusions on the trail surface, trail edges, and drainage structures.

Basic, small-scale surface repairs can often be done simply by reworking that direct area – i.e. breaking the surface up, reshaping, watering and re-compacting. A shovel and watering can often be sufficient for these minor repairs.

4.9 Rectification of Detouring and Shortcutting

Where users have cut corners, or created detours or shortcuts around features, rectification works should be undertaken at the time of inspection, or as soon as possible to maintain the substantiality of trail.

Sticks, logs, rocks or vegetation should be used as demarcations of the intended line. Care should be taken to ensure the demarcations subtly blend in with the surrounding landscape, but not so much that it becomes unnoticeable and catches the users unaware

4.10 Structural Features

Bridges and rock structures that make up part of the trail mainly around and through water courses will be inspected for structural integrity, wear points and vandalism; after larger rain events these structures will be assessed as a priority to ensure their condition is serviceable.

4.11 Illegal or Unauthorised Activities

Defects caused by illegal use of trails by motorised vehicles (motorbikes, or 4WD vehicles) needs to be reported to the landowner, and rectified as soon as possible. If possible, the entry point should be identified and blocked.

Any unauthorised trail building or altering needs to be reported to the landowner, and rectified as soon as possible.

4.12 Removal of Litter

General litter and rubbish should be removed from within the trail corridor during each inspection as required. Significant incident of rubbish dumping should be reported to the land manager as soon as possible for rectification.

4.13 Signage

If any wayfinding signage is found to be missing, damaged, or graffitied, rectification should occur as soon as possible. Depending on the extent, this could be considered urgent maintenance works, as signage provides the primary means of navigation through the network.

4.14 Trail Head Infrastructure

Maintenance of the trail head access roads, carparks, and infrastructure (such as rubbish bins) will be undertaken via the standard council programs of maintaining similar municipal infrastructure.

5.0 Weed and Disease Hygiene

Weed and disease hygiene protocols that apply to trail construction also apply to maintenance vehicles and equipment. Whilst maintenance activities rarely involved excavation, the potential for the spread of weed and pathogens is still present, and therefore requires mitigation controls be implemented.

Weed and disease hygiene protocols are covered in the Weed and Disease Management Plan (WDMP) and should be read in conjunction with the Trail Maintenance Plan.

In short, ensure vehicles, tools, and clothing are free from soil and seeds before entering the trail network, and ensure the same items are thoroughly cleaned, disinfected (if required) and dried after each use.

6.0 Reporting

Inspection and maintenance activities are to be recorded as they are undertaken, to assist the trail maintenance team and landowners to: -

- ✂ Develop a long-term record of maintenance activities undertaken that will assist with future budgeting requirements; and
- ✂ Provide a record that will assist with risk management, where records will demonstrate trail inspections and maintenance have been undertaken in accordance with recommended practices.

Draft record sheets are in the appendices, with separate sheets for inspections and maintenance works respectively. Once complete, the record sheets should be filed logically, so they can be accessed and referred to at future dates. Filing of record sheets should correspond with electronic record keeping in an Excel sheet of inspections and maintenance works undertaken. This data will assist in developing long-term maintenance schedules that accurately reflect the specific requirements of each trail, the level of usage, and local weather conditions.

7.0 Communication

Maintenance works being undertaken, and closure of trails needs to be communicated to users for the purpose of: -

- ✂ Ensuring the safety of users;
- ✂ Ensuring the safety of maintenance personnel; and
- ✂ Avoiding disruption to user experience.

The communication channels will predominately be directed from council to the users, but a channel also needs to be established to allow for communication from the user.

The following sections detail those channels including their purpose, how they are utilised, and the outcomes they provide.

7.1 Defects Register

Whilst the intent is to identify and rectify any defects before the user encounters them, in some instances the user may encounter a defect before a routine inspection does. Instructions and details for users to report a defect will be displayed on the trail head information board for users to report a trail defect. When a defect is reported, council will record the details electronic and forward to the maintenance personnel to be incorporated into the routine inspection and maintenance schedule.

7.2 Notification of Works and Closures

There are three primary communication platforms for informing the users: -

- ✂ Website and social media;
- ✂ Information boards at the trail heads; and
- ✂ On-trail signage.

Using all three communication platforms ensures the maximum reach, although it is important to understand the intent behind each platform.

Website and Social Media

Website and social media offer a broad reach, has the advantage of sharing by other social media entities, and can effectively inform the user before they commit to travelling to the trail network (in turn avoiding disappointment).

Whilst maintenance works are being undertaken on a trail are significant enough to render the trail unusable, notification should be included on the website and social media, especially in the lead up to weekends, holidays or periods of anticipated heavy use.

Notification on the website and social media is not necessary where maintenance works being undertaken on a trail doesn't restrict user access.

Information Boards at Trail Heads

Notices on information boards is an effective way of directly informing the user of works occurring on a trail. Most users will look at the information before entering the network, and there is a dedicated place for trail condition notices to be displayed.

For all maintenance works being undertaken on a trail, notification should be placed on the information board at the trail head in the dedicated section for trail conditions.

On-Trail Signage

On-trail signage is the most effective way of directly informing the user of works occurring on a trail. Clearly visible signage, and in some cases barricading, leaves no room for misinterpretation or unnoticed.

Whilst maintenance works are being undertaken on a trail, but user access isn't restricted, signage should be placed at the beginning of the trail and 20m prior to the works site alerting riders that there are workers ahead.

Where the works are significant enough to render the trail unusable, or the trail has been closed for any other reason, signage should be placed at the beginning of the trail in such a way that the trail entrance is barricaded to prevent user access.

8.0 Conclusion

Importantly, whilst this document details the process for inspection and maintenance of trails, the process is dynamic and will need to be flexible in approach and methods. The level of maintenance required will not be known until the trails are operational and usage reaches a normalised status, and this document should be continually updated until such a stage when the normalisation of required maintenance is adequately achieved.

Appendices

Appendix 1: Trail Inspection Record Sheet (Draft)

Trail Inspection Record Sheet					
Date		Inspected By		Landowner	
Trail Name				GTC	BBA
				PWS	Crown
Location on Trail	Defect		Repair / Solution / Required Tools		
	Risk Rating	Low	Medium	High	Extreme
Location on Trail	Defect		Repair / Solution / Required Tools		
	Risk Rating	Low	Medium	High	Extreme
Location on Trail	Defect		Repair / Solution / Required Tools		
	Risk Rating	Low	Medium	High	Extreme
Location on Trail	Defect		Repair / Solution / Required Tools		
	Risk Rating	Low	Medium	High	Extreme

Risk Ratings		
Low	Primary trail tread not compromised; easily avoidable; no change to TDRS; no likelihood of deteriorating further.	Rectification required within 4 weeks (20 working days).
Medium	Primary trail tread not compromised; hazard not easily avoidable; no change to TDRS; unlikely to deteriorate further.	Rectification required within 2 weeks (10 Working days).
High	Trail tread (primary or otherwise) compromised; hazard not avoidable; no change to TDRS; likely to deteriorate further.	Immediate isolation of hazard if not on primary trail tread; rectification required within 1 week (5 working days).
Extreme	Hazard on primary trail tread; hazard not avoidable; change to TDRS; will deteriorate further.	Immediate closure of trail until rectified; timeline based on importance of trail.

Appendix 2: Trail Maintenance Record Sheet (Draft)

Trail Maintenance Record Sheet					
Works Order		Date / Time Started		Date / Time Completed	
Trail Name					
Location on Trail	Details of Rectification Works Undertaken				
Undertaken By	Member 1				
	Member 2				
Location on Trail	Details of Rectification Works Undertaken				
Undertaken By	Member 1				
	Member 2				
Location on Trail	Details of Rectification Works Undertaken				
Undertaken By	Member 1				
	Member 2				
Location on Trail	Details of Rectification Works Undertaken				
Undertaken By	Member 1				
	Member 2				

Appendix 3: Weed Inspection Record Sheet (Draft) (also found in the WDMP)

Weed Inspection Record Sheet						
Date		Inspected By		Landowner		
				GTC	BBA	
				PWS	Crown	
Trail Name	Weed Identified (or suspected)		Repair / Solution / Required Tools			
Location on Trail						
	Risk Rating	Low	Medium	High	Extreme	
Date		Inspected By		Landowner		
				GTC	BBA	
				PWS	Crown	
Trail Name	Weed Identified (or suspected)		Repair / Solution / Required Tools			
Location on Trail						
	Risk Rating	Low	Medium	High	Extreme	
Date		Inspected By		Landowner		
				GTC	BBA	
				PWS	Crown	
Trail Name	Weed Identified (or suspected)		Repair / Solution / Required Tools			
Location on Trail						
	Risk Rating	Low	Medium	High	Extreme	
Date		Inspected By		Landowner		
				GTC	BBA	
				PWS	Crown	
Trail Name	Weed Identified (or suspected)		Repair / Solution / Required Tools			
Location on Trail						
	Risk Rating	Low	Medium	High	Extreme	
Risk Ratings						
Low	Weed located outside the 20m trail corridor or 15m perimeter of the trail head areas Rectification required within 4 weeks (20 working days).					
Medium	Weed located within the 20m trail corridor or 15m perimeter of the trail head areas. Rectification required within 2 weeks (10 Working days).					
High	Weed located within 1.5m of the trail tread or high-trafficked area (bike, pedestrian or vehicle). Rectification required within 1 week (5 Working days).					
Extreme	Weed located within the immediate trail tread or high-trafficked area (bike, pedestrian or vehicle). Rectification required immediately.					