SCENIC RIM TRAIL MANAGEMENT PLAN

THORNTON TRAILHEAD TO SPICERS CANOPY NATURE RESERVE, QLD

EPBC 2016/7847
SPICERS RETREATS HOTELS AND LODGES PTY LTD
ACN 008 971 499

SCENIC RIM TRAIL
BY SPICERS

Produced by CTM Consulting (Qld)

EPBC Number

2016/7847

Project Name

Scenic Rim Trail – Thornton Trailhead to Spicers Canopy Nature Reserve, Qld

Proponent

Spicers Retreats Hotels and Lodges Pty Ltd

ABN 22 137 592 593

Action

Spicers Retreats Hotels and Lodges Pty Ltd (Spicers) is developing a 53 km multi-day walk from the privately-owned Thornton View Nature Refuge to the privately-owned Spicers Peak Nature Reserve, via the Main Range National Park and A Gondwana Rainforests of Australia World Heritage Area. The walk is to be known as the Scenic Rim Trail and will follow a series of existing tracks in the Park connected by a new series of tracks to be established by Spicers. Two EcoCamps will be constructed in the Park (outside of the World Heritage Area).

Location

Thornton Trailhead to Spicers Canopy Nature Reserve via Main Range National Park and Gondwana Rainforests of Australia World Heritage Area, Queensland

Date of Preparation

15 July 2019

Declaration of accuracy

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Benjamin O'Hara

Spicers Retreats Hotels and Lodges Pty Ltd

15 July 2019

Document Version Control

Version Number	Date Approved	Approved By	Description
1.0		Ben O'Hara, GM Land & Environment	Draft document provided to DoEE
1.1		Ben O'Hara, GM Land & Environment	Inclusion of Declaration of Accuracy; updating triggers and corrective actions; inclusion attachments to CoA
1.2		Ben O'Hara, GM Land & Environment	Reformatting CoA response
1.3		Ben O'Hara, GM Land & Environment	Response to DoEE comments
2.0		Ben O'Hara, GM Land & Environment	Submission for independent peer review and DoEE review
3.0		Ben O'Hara, GM Land & Environment	Final submission to DoEE

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Acronyms and Abbreviations

BDCP	Baseline Data Collection Plan
CoA	Condition(s) of Approval
DES	Department of Environment and Science (Queensland)
DNPSR	Department of National Parks, Sport, and Racing (Queensland)
DoEE	Department of Environment and Energy (Commonwealth)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act* 1999
GRAWHA	Gondwana Rainforests of Australia World Heritage Area
GRAWHP	Gondwana Rainforests of Australia World Heritage Place
MNES	Matters of National Environmental Significance
MRNP	Main Range National Park
MSES	Matters of State Environmental Significance
NC Act	*Nature Conservation Act* 1992
QPWS	Queensland Parks and Wildlife Service
QuEST	Queensland Eco and Sustainable Tourism policy
SRT	Scenic Rim Trail
SRTMP	Scenic Rim Trail (Environmental) Management Plan
WHA	World Heritage Area

Executive Summary

Spicers Retreats Hotels and Lodges Pty Ltd are developing a multi-day bushwalking experience called the Scenic Rim Trail that traverses the Main Range National Park. The Main Range National Park contains one of 42 reserves making up the Gondwana Rainforests of Australia World Heritage Area. The Scenic Rim Trail will start and finish on private property (Thornton View Nature Refuge and Spicers Peak Nature Reserve).

The Scenic Rim Trail project received approval under the *Environment Protection and Biodiversity Conservation Act* 1999 on 18 January 2019. The Conditions of Approval require the development of a management plan to protect Matters of National Environmental Significance from significant impact.

Development of the Scenic Rim Trail involves:

- Building two EcoCamps, with associated infrastructure
- Re-opening a portion of the Winder forestry track
- Forming a series of Grade 5 walking tracks with one crossing of Dalrymple Creek and one crossing of Blackfellow Creek

Operation of the Scenic Rim Trail involves:

- Servicing and operation of the EcoCamps, including wastewater treatment and disposal
- Guided walks for up to 12 guests at a time

This Scenic Rim Trail Management Plan (SRTMP) provides a practical plan of management measures designed to avoid or minimise environmental impact from the construction and operation of the Scenic Rim Trail (SRT) as per the EPBC Act Conditions of Approval (CoA). It provides a framework within which site-specific management measures will be implemented throughout the project, and that meet the CoA.

The SRTMP responds to the CoA and is in accordance with the requirements of the *DoEE Environmental Plan Guidelines*, the *Strategic overview for management of the World Heritage Central Eastern Rainforest Reserves of Australia* (2000), and the *Main Range National Park (MRNP) and Spicers Gap Road Conservation Park Management Statement* 2013.

1. Project Description

Spicers Retreats Hotels and Lodges Pty Ltd (Spicers) are developing a multi-day bushwalking experience called the Scenic Rim Trail (SRT) that traverses the Main Range National Park (MRNP) (Figure 1). The MRNP contains one of 42 reserves making up the Gondwana Rainforests of Australia World Heritage Area (GRAWHA). The SRT will start and finish on private property (Thornton View Nature Refuge and Spicers Peak Nature Reserve) (Figure 1)).

There are three construction activities required for SRT development that have the potential to significantly impact Matters of National Environmental Significance (MNES) in the MRNP and GRAWHA. These are:

- Constructing two EcoCamps
- Re-opening a portion of the Winder forestry track.
- Forming a series of Grade 5 walking tracks

There are two operational activities considered to have the potential to significantly impact MNES in the MRNP and GRAWHA. These are:

- Servicing and operating the EcoCamps, including the treatment and disposal of wastewater
- Customers walking through sensitive habitat of threatened species

1.1. Commonwealth Approval

The EPBC approval decision (EPBC 2016/7847) for the SRT was received, with CoA, on **18 January 2019**. These conditions were amended by variation on **2 July 2019**. Condition 10 requires the development and submission of a Scenic Rim Trail Management Plan (SRTMP). Condition 14 specifies the requirements of the SRTMP, being management, mitigation, and monitoring of potential impacts on:

- Hastings River Mouse (*Pseudomys oralis*)
- Fleay's Barred Frog (*Mixophyes fleayi*)
- Mountain Frog (*Philoria kundagungan*)
- Ecological integrity of World and National Heritage Area values

1.2. Purpose of the Scenic Rim Trail Management Plan

This SRTMP provides a practical plan of management measures designed to avoid, minimise, or mitigate environmental impact on Matters of National Environmental Significance (MNES) from the construction and operation of the SRT.

It is developed in accordance with the requirements of the DoEE *Environmental Plan Guidelines*, the *Strategic overview for management of the World Heritage Central Eastern Rainforest Reserves of Australia* (2000), the *Main Range National Park and Spicers Gap Road Conservation Park Management Statement* 2013, and the EPBC CoA.

1.2.1. Relationship to other SRT plans

The CoA requires the development of a Baseline Data Collection Plan (BDCP; CoA 4) prior to commencement of the SRT. The BDCP defines the baseline survey and data collection methods required to inform the 10-year monitoring program in the SRTMP.

CoA 8A requires the development of a Sewage and Wastewater Monitoring Plan (SWMP) and CoA requires a Plan for Wastewater and Sewage Management (PWaSM). The SWMP and PWaSM focus explicitly on management, mitigation, and monitoring of impacts from the disposal of treated

wastewater to ground on the listed species and ecological values of the MRNP and GRAWHA. These plans are not required to be approved prior to the commencement of the SRT. The SRTMP will be revised (CoA 27) if approval is given for the SWMP and PWaSM.

1.3. Objectives

The objectives of the SRTMP are to ensure that:

- There is no impact on populations of listed threatened species within the National Park because of establishment or operation of the Scenic Rim Trail
- There is no impact on the integrity of the Gondwana Rainforest of Australia World Heritage Area values because of establishment or operation of the Scenic Rim Trail
- There is no impact on the integrity of the Gondwana Rainforest of Australia National Heritage Area values because of establishment or operation of the Scenic Rim Trail

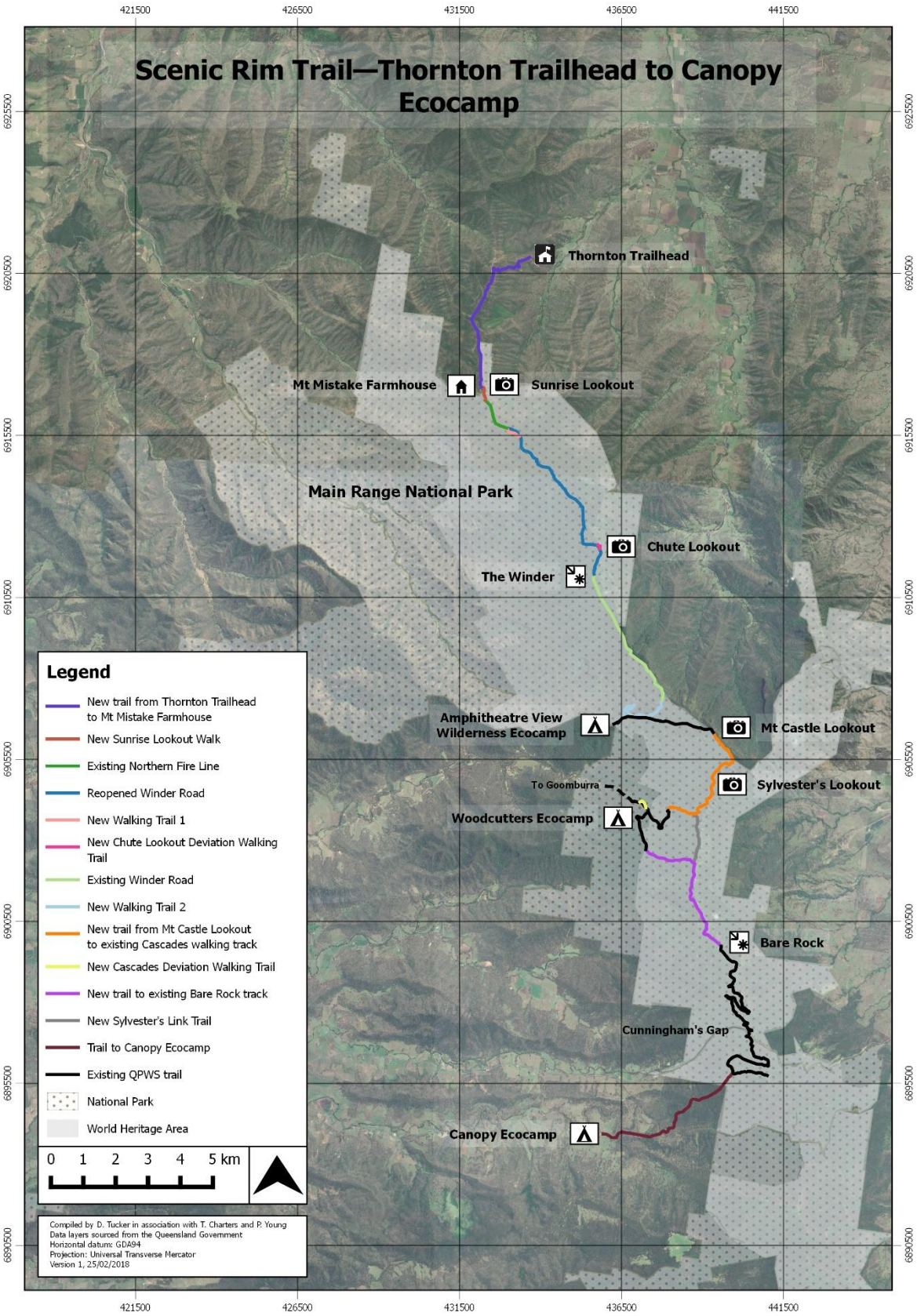

Figure 1 Location of the Scenic Rim Trail alignment with respect to the Main Range National Park and Gondwana Rainforests of Australia World Heritage Area, including existing and new tracks

Table 1 SRTMP Conditions of Approval reference table

Condition		Condition Requirement	Plan reference	Demonstration of how the SRTMP addresses condition requirements and commitments made in the plan to address condition requirements
14		The SRTMP required under conditions 10-13 must:		
	a.	describe measures to be implemented for the life of the approval to:		
		i. minimise vegetation clearance for the construction of **new trails**;	Section 3.3, 7.2.2, 7.3.1; Table 7	Trail alignment minimises need for vegetation clearance Brush cutting of groundcover vegetation may occur to create a track 60 cm wide (maximum) for Class 5 tracks, and 120 cm wide for short sections of Class 3 or 4 tracks
		ii. minimise, manage, and remediate erosion along the **Scenic Rim Trail**;	Section 3.3, 7.2.2; Table 7	Road and track alignment minimise erosion risk; engineering and hardening will be conducted where necessary and approved; diversion of walkers from erosion prone sites
		iii. reduce the risk of spread of existing vertebrate pests, weeds and pathogens, including chytrid fungus;	Section 6; Table 7	Contractors and staff follow DNPSR operational policy for pest plant and pathogen spread prevention during construction and operation; Walkers boots cleaned and sterilised; clients informed of need for environmental hygiene
		iv. reduce the risk of introduction and establishment of new vertebrate pests, weeds and pathogens, including chytrid fungus;	Section 6; Table 7, Table 10	Contractors and staff follow DNPSR operational policy for pest plant and pathogen spread prevention during construction and operation; Rodent exclusion practices implemented when supplying EcoCamps; walkers boots cleaned and sterilised; clients informed of need for environmental hygiene
		v. control any new and existing weeds and pathogens outside of the Main Range National Park along the **Scenic Rim Trail** and at any **camps**;	Table 7, Table 10	Spicers commits to developing and implementing operational weed control strategy for private land and EcoCamps when activity commences
		vi. ensure trail guides are trained to identify any new or existing invasive species of weeds;	Section 10; Table 7, Table 10	Trail guides will receive training in weed identification

Condition		Condition Requirement	Plan reference	Demonstration of how the SRTMP addresses condition requirements and commitments made in the plan to address condition requirements
		vii. report any new or existing invasive species of weeds, pests or pathogens to the Queensland Government agency responsible for the management of the Main Range National Park;	Section 12.2.1; Table 7, Table 10	Spicers will report through dedicated QPWS online tool
		viii. establish and implement a shoe cleaning and sterilisation facility at the **entry** point and protocols for **staff** and clients entering the **Scenic Rim Trail**;	Table 7, Table 10	A shoe cleaning and sterilisation facility will be implemented upon commencement of the activity. Staff will be trained in protocols for use.
		ix. minimise the impact of artificial light and noise on the **Hastings River Mouse** at **Woodcutters EcoCamp**	Table 7, Table 10	Construction will only occur during daylight hours; infrastructure lighting will be screened and/or directed from the perimeter; exterior lighting frequency is 590 - 610 nanometres in wavelength; interior lighting is low blue light emitting; facilities are noise dampening; EcoGuides will ensure low noise levels maintained.
		x. remove food waste and litter from the **Scenic Rim Trail** and at **Woodcutters EcoCamp** and **Amphitheatre View Wilderness EcoCamp** to outside of the **GRAWHP** and Main Range National Park	Table 7, Table 10	EcoCamp Service staff will remove food waste and litter to private off-site facilities for disposal.
	b.	specify protocols to ensure that any observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the **Scenic Rim Trail** are recorded and reported to the approval holder and subsequently to the Queensland Government agency responsible for the management of the Main Range National Park;	Section 12.2.1; Table 7, Table 10	EcoGuides will report all new observations of vertebrate pests, weeds, or pathogens to Spicers management in their trip reports; Spicers will report observations of vertebrate pests, weeds, or pathogens through the dedicated QPWS online tool.
	c.	specify the details of a 10-year annual ongoing monitoring program (including methodology, effort, timing, frequency and responsibilities) capable of predicting and detecting:	Section 9	
		i. a decrease of the population of **Hastings River Mouse** at the **Woodcutters EcoCamp** compared to the baseline population established under condition 8.a.;	Section 9.2	Monitoring will be conducted as specified in this section.

Condition		Condition Requirement	Plan reference	Demonstration of how the SRTMP addresses condition requirements and commitments made in the plan to address condition requirements
		ii. a decrease of the population of **Fleay's Frog** and **Mountain Frog** at each crossing of the **new trails** at **Blackfellow Creek** and **Dalrymple Creek** compared to the baseline population established under condition 8.f.;	Section 9.3	Monitoring will be conducted as specified in this section.
		iii. changes in water quality compared to the baseline established under condition 8.c. at either crossing of the **new trails** at **Blackfellow Creek** and **Dalrymple Creek**, as defined on the maps at Attachments 3 and 4[1];	Section 9.5	Monitoring will be conducted as specified in this section.
		iv. a decrease of riparian habitat quality at either crossing of the new trails at **Blackfellow Creek** and **Dalrymple Creek** compared to the baseline established under condition 8.f.	Section 9.6	Monitoring will be conducted as specified in this section.
	d.	specify criteria that will trigger corrective action and indicative correction measures, if any decrease or change in water quality, populations or riparian habitat quality referred to in condition 14.c. is detected;	Sections 9.5.7, 9.2.7, 9.2.8, 9.3.7, 9.3.8, 9.4.7, 9.4.8, 9.5.7, 9.5.8, 9.6.7, 9.6.8; Table 7, Table 10	Trigger criteria have been specified in the relevant sections and tables.
	h.	include an assessment of potential risks that may prevent successful implementation of the management measures, detail the control measures that will be implemented to mitigate these risks, and assess residual risk ratings;	Section 8; Table 10	Potential risks of management failure preventing successful implementation of SRTMP are assessed in this section
	i.	take account of relevant conservation advice, recovery plans and threat abatement plans for **Hastings River Mouse** and **Fleay's Frog** and provide information (for example in a table) as to where this has been addressed;	Table 5; Table 7	Relevant conservation advice, recovery plans and threat abatement plans for Hastings River Mouse and Fleay's Frog have been considered in the assessment of environmental impact of the SRT, consideration of mitigation measures and design of the 10-year monitoring program.

[1] Refer Appendix 2

Condition		Condition Requirement	Plan reference	Demonstration of how the SRTMP addresses condition requirements and commitments made in the plan to address condition requirements
	j.	take account of all relevant **management plans** for managing the **GRAWHP**	Table 5	All relevant management plans for managing the GRAWHP have been considered in the assessment of environmental impact of the SRT and consideration of mitigation measures and design of the 10-year monitoring program.

2. Relevant Policy and Legislation

2.1. Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment.

MNES relevant to this Project are:

- Listed threatened species
- World Heritage properties
- National Heritage places

This project was assessed by preliminary documentation (section 87 EPBC Act) and was approved with conditions on **18 January 2019** and amended by variation on **2 July 2019**.

2.2. State Planning Policy 2017 (Qld)

The State Planning Policy (SPP) identifies 17 State interests in land use planning and development. A state interest is defined under the *Planning Act* 2016 (the Act) as an interest that the Planning Minister considers:

- affects an economic or environmental interest of the state or a part of the state
- affects the interest of ensuring that the purpose of the Act is achieved.

There are five themes including an environment and heritage theme, and this aims to protect Matters of State Environmental Significance (MSES).

MSES relevant to this Project are:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act* 1992;
- Threatened wildlife under the *Nature Conservation Act* 1992 and special least concern animals under the *Nature Conservation (Wildlife) Regulation* 2006;
- Essential habitat for endangered or vulnerable wildlife under the *Nature Conservation Act* 1992
- Endangered or Of Concern Regional Ecosystems listed under the *Vegetation Management Act* 1999
- Wetlands and watercourses in high ecological value waters defined in the *Environmental Protection (Water) Policy* 2009

2.3. Queensland Eco and Sustainable Tourism (QuEST) Policy

The Queensland Eco and Sustainable Tourism (QuEST) policy provides a policy framework for ecotourism operators accessing high visitation national parks. Expressions of interest were called for sustainable ecotourism investment initiatives on national parks and state lands adjacent to national parks, in June 2013. A subsequent amendment to the *Nature Conservation Act* 1992 provides for ecotourism facility leases on national park and other protected areas.

The Scenic Rim Trail is a response to the call for expressions of interest.

2.4. Nature Conservation Act 1992 (Qld)

The *Nature Conservation Act* 1992 (NC Act) provides for the legislative protection of Queensland's National Parks and threatened species. No animals and plants within a National Park may be killed, harmed, or removed unless authorised (s88). Authorised activities must be consistent with the management principles for National Parks (s17) and the approved management plan for the National Park (s34(2)).

Spicers requires a permit to conduct a commercial ecotourist activity in a National Park (s34, s35, s35B),

2.5. Nature Conservation (Wildlife Management) Regulation 2006 (Qld)

The *Nature Conservation (Wildlife) Regulation* 2006 prescribes the status of threatened wildlife in Queensland and states the declared management intent for each class. The clearing of protected plants is regulated under the *Nature Conservation (Wildlife Management) Regulation* 2006 as is tampering with an animal's breeding place (s332).

2.6. Environmental Protection Act 1994 (Qld)

The *Environmental Protection Act* 1994 obliges any person in Queensland to exercise a duty of environmental care, i.e. a person must not carry out any activity that causes or is likely to cause environmental harm, unless measures to prevent or minimise the harm have been taken (s319). It also obliges any person in Queensland to inform the administering authority and landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm (s320-320G).

This applies to all Spicers SRT staff, contractors and sub-contractors.

2.7. Environmental Protection Regulation 2008

Under schedule 2 section 63, of the Environmental Protection Regulation 2008, an environmental authority is required for the treatment of sewage and disposal of treated wastewater, where the capacity exceeds 21 effective persons.

Spicers is not required to apply for an Environmental Authority for sewage treatment works because the capacity is less than 21 effective persons.

2.8. Biosecurity Act 2014 (Qld)

The *Biosecurity Act* 2014 places a 'general biosecurity obligation' on all Queenslanders to manage biosecurity risks that are under their control and that they know about or should reasonably be expected to know about.

This applies to all Spicers SRT staff, contractors and sub-contractors.

2.9. Public Health Regulation 2018 (Qld)

The Public Health Regulation 2018 provides, *inter alia*, quality standards for classes of recycled water and their application for irrigation to a reticulation system, with reference to Public Health Regulation (2005), Class A+ water.

2.10. Queensland Plumbing and Wastewater Code (2017)

The Queensland Plumbing and Wastewater Code (QPW code) has been designed to provide performance solutions to meet the statutory requirements of the Plumbing and Drainage Act 2002. Intent Performance Criteria have been developed to meet Objectives and Functional Statements.

3. Construction Activities

3.1. Staging

Construction activities will begin as soon as relevant approvals are granted. The EcoCamp accommodation, new tracks, and other infrastructure will be constructed concurrently, enabling the operation of the Trail to commence shortly after completion and commissioning and will be undertaken over a continuous period of 26 weeks (Figure 2) based on uninterrupted and safe access to sites.

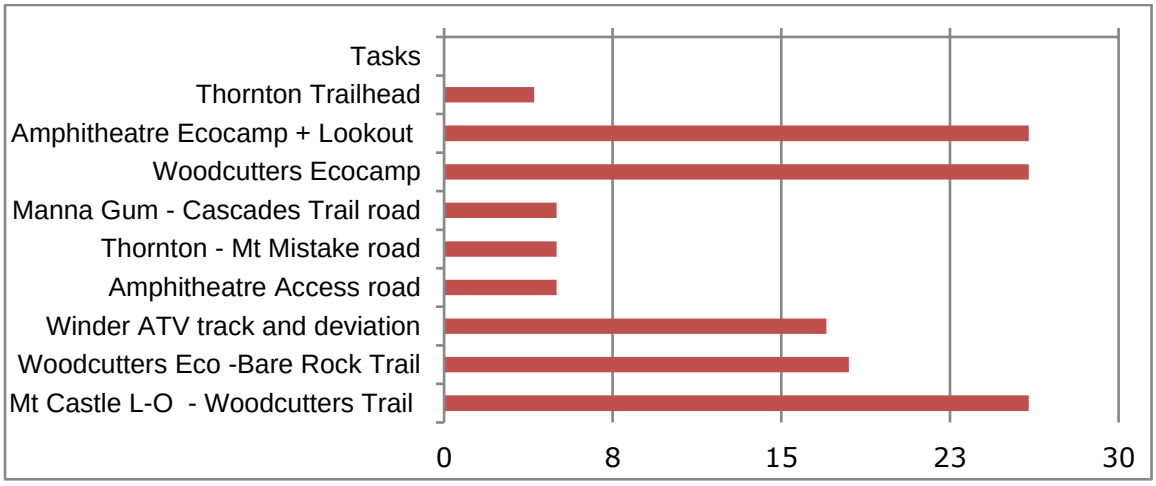

Figure 2 Gantt chart showing the staging of each component of construction over a period of 26 weeks

3.2. EcoCamp Construction

There are four EcoCamp construction phases:

Phase 1: Upgrade of QPWS access roads, vegetation clearance of no more than 0.16 ha within the permitted EcoCamp perimeter, and establishment of sediment control barriers

Phase 2: Establishment of set down pad, site preparation, excavation and establishment of the bush fire shelter and tertiary wastewater treatment system.

Phase 3: Installation of footings and erection of pre-fabricated buildings

Phase 4: Completion, testing, and commissioning of works, and deconstruction and removal of temporary site amenities and construction impact control measures

3.2.1. Vehicle Access Tracks

The MRNP has a network of snig tracks, logging access roads, and fire management lines from old forestry operations. A few of these are currently used for park and fire management, and the following will be part of the greater SRT (Figure 1):

- Mt Castle western fire line from Amphitheatre View Wilderness Ecocamp to Mt Castle lookout
- Northern fire line from northern boundary of Main Range National Park
- Banshee fire trail
- The part of the Cascade walking track from the Manna Gum campsite to Woodcutters Ecocamp

There will be minimal upgrades to the vehicle access trails as these will remain open for bush walkers. The vehicle trail to Amphitheatre View EcoCamp has three soft wet patches which will be

filled and stabilised with railway ballast. This will provide all weather access whilst allowing water to flow through the rocks and not interfere with natural drainage conditions. The vehicle access track to Woodcutters EcoCamp will be trimmed and battered where mutually agreed with QPWS.

The Mt Castle western fire line and the track from the Manna Gum campsite will be upgraded to allow safe access by construction vehicles. These are QPWS vehicle access and management tracks. Upgrading is likely to involve hardening and battering in some locations. The other tracks will be upgraded to allow safe access for small four-wheel drive all-terrain vehicle (4WD ATV) service vehicles.

3.2.2. EcoCamp Infrastructure

Each EcoCamp (Figure 3, Figure 4) will comprise:

- 1 x common building (Common Pavilion) providing for communal meeting for food preparation, dining, and other communal activities. The Common Pavilion will also provide storage and a basic bathroom.
- 2 x communal bathrooms (Wash Pavilions)
- 7 x individual cabins (Sleeping Pavilions) providing for sleeping accommodation
- 2 x bushfire bunkers to provide safe accommodation in the event of a bushfire
- 4 x 20,000 L water tanks to store captured rainwater
- 1 x 6,000 L elevated water tank
- Rooftop solar and battery storage to supply renewable energy
- 1 x sewage (blackwater and grey water) treatment system to provide onsite treatment and disposal

3.2.2.1 Wastewater Treatment and Disposal

In Queensland, on-site sewage treatment plants must have chief executive approval or its equivalent (type specification or model approval) in accordance with Part 5 of the *Plumbing and Drainage Act* 2002. An approved AdvanTex[2] wastewater treatment system will be installed at the two EcoCamps to take all blackwater and greywater and process it through advanced secondary microbial treatment to significantly reduce the total suspended solids (TSS) and nutrient levels, followed by tertiary treatment with UV light to reduce the pathogen load to near zero.

The system's storage tank has 10 days storage capacity at full load allowing for emptying and offsite disposal.

3.3. New and Recommissioned Tracks

3.3.1. Winder Forestry Road

The former Winder forestry track will be re-opened to connect the existing section of the Winder management track in the south, with the Northern fire line to the north (Figure 1). The former forestry road follows the crest of the Mistake Range, about 500 m inland from the scarp, and traverses through logged cool subtropical rainforest. The original road alignment has been colonised by a range of pioneer and edge species including stinging nettle (*Urtica incisa*), blackwood (*Acacia melanoxylon*), and native mulberry (*Hedycarya angustifolia*), with dense areas of shield fern (*Lastreopsis decomposita*) and vines at ground level.

The trail will require clearance of a linear footprint of 1.55ha over 5.7 km, comprised of 1.5 ha of rainforest regrowth and 0.05 ha of grasses and shrubs in *Eucalyptus* forest. This will involve clearing

[2] https://www.orenco.com/products/treatment-systems

regenerating vegetation along the old alignment to create a 2.5m wide management road and walking track. A 5-tonne excavator (2.2m wide) will be used to clear the track. Road base and railway ballast for permeable hardening of soft wet areas will be sourced from certified fire-ant and weed free quarries near the MRNP and will be of a similar provenance to the rock along the Winder Road (and other roads requiring hardening). Batters will be constructed where necessary to divert flood flows and minimise the risk of erosion.

3.3.2. New Tracks

The following new tracks are proposed to be established in the MRNP to create the SRT (Figure 1):

- 5.7 km of Class 5 track, and All Terrain 4WD access to the Ecocamps, via the retired section of the Winder forestry track. This includes two Class 5 deviation-tracks parallel to Winder forestry track to access sites of amenity.
- 1.2 km of principally Class 5 track linking the Winder Management Track to the Amphitheatre View Wilderness Ecocamp. This track will cross Blackfellow Creek at a new crossing. Sections of Class 3 track will be used in the descent to the creek and creek crossing to reduce the risk of erosion and provide direct safe access for walkers.
- 4.5 km of principally Class 5 track linking Mt Castle Lookout and the Cascades Trail. This track will cross Dalrymple Creek at a new crossing at its upper source. Sections of Class 3 track will be used in the descent to and from the creek and the creek crossing to reduce the risk of erosion and provide direct safe access for walkers.
- 1.7 km of principally Class 5 track linking Sylvester's Lookout and the Bare Rock Trail. This section provides the most direct access south for the public who will not be using Woodcutters Ecocamp. A section of Class 3 track will be used for the descent to and ascent from the creek to reduce the risk of erosion and provide direct safe access for walkers.
- 4.9 km of Class 5 track linking the Banshee Fire Line to Bare Rock
- 0.5 km upgrade of Mt Mitchell Track to Spicers Peak Nature Reserve

Most of the length of new tracks will be constructed to Class 5 standard, as per Australian Standard, AS2156.1., meaning that they are rough unformed tracks with steep sections, requiring minimal environmental modification for their establishment, and will be ≤600mm wide. Class 5 tracks are often indistinguishable from animal tracks as they have limited modification to natural surfaces and with minimal vegetation disturbance or debris removal. Where possible, new tracks will follow existing human or animal tracks, however some brushing of groundcover vegetation (e.g. shield fern) may be necessary to define the track.

Shorter lengths of these tracks may be constructed to Class 3 or Class 4 standard depending on the need to provide access over difficult terrain or to manage water flows and erosion. Class 3 tracks consist of a formed earthen track, with few obstacles. Sections of the track may be hardened, and the width is variable but less than 120cm (AS 2165.1). Class 4 tracks are generally distinct but without major modification to the ground. Walkers are likely to encounter fallen debris and other obstacles as these tracks are infrequently maintained (AS 2165.1).

3.3.3. Creek crossings

There will be one crossing of Blackfellow Creek (Figure 5) and one crossing of Dalrymple Creek (Figure 6). The riparian vegetation (including Rainforest Spinach *Elatostema reticulatum*) and instream areas are breeding habitat for Fleay's Barred Frog. The crossing point of Blackfellow Creek occurs on a narrow, shallow, run and riffle section of the stream with gently sloping banks on either side, and the creek will be crossed on a deposition bar of cobbles. The crossing point of Dalrymple Creek is bedrock and the creek will be crossed on a rock platform below a small waterfall. Dalrymple

Creek has multiple formal (and informal) crossings upstream and downstream of the new crossing (Figure 6). The new tracks will descend to and ascend from the crossings in an alignment that will prevent or dissipate channelised surface water flow during rainfall events and may be hardened if necessary, to protect against erosion.

4. Operational Activities

4.1. Guided Walking

Up to 12 guests will undertake a five-day guided walk with two Spicers' EcoGuides along the SRT. The walk will start at the Thornton Trailhead, with guests staying at the Mt Mistake Farmhouse on the first night (Figure 1). The second and third day of walking occurs within the MRNP with guests staying at the Amphitheatre View EcoCamp and Woodcutters EcoCamp, respectively. Prior to entering the MRNP, guests and EcoGuides will sterilise their footwear in an established and serviced footbath. On the fourth day, guests will walk from the National Park into private reserved land and will stay at the Canopy EcoCamp.

4.2. Amphitheatre and Woodcutters EcoCamps

4.2.1. Servicing

Each EcoCamp will be serviced in advance of the guided walkers, and then following their departure. The staff providing the servicing will travel via a dedicated 4WD ATV. The Amphitheatre View EcoCamp will be accessed via the Winder Management Track, and the Woodcutters EcoCamp will be accessed via Lookout Rd, Dalrymple Track, and other service roads to the public Manna Gum Campsite.

Service staff will carry the walkers' luggage, food, and emergency equipment, and will take away food and associated waste. All equipment, food, and luggage will be packed in rodent-proof facilities and containers, and all food and human waste and litter will be brought back out in rodent proof containers and disposed of by composting at a Spicers facility, recycling, or formal landfill.

Treated wastewater will be contained in the treatment system's storage tank and will be pumped out every fortnight (if nearing capacity) by a small specialised tanker truck for disposal at an authorised facility outside of the MRNP.

Figure 3 Layout of the Amphitheatre View EcoCamp showing location of infrastructure, the proposed treated wastewater irrigation field, and boreholes drilled for soil characterisation

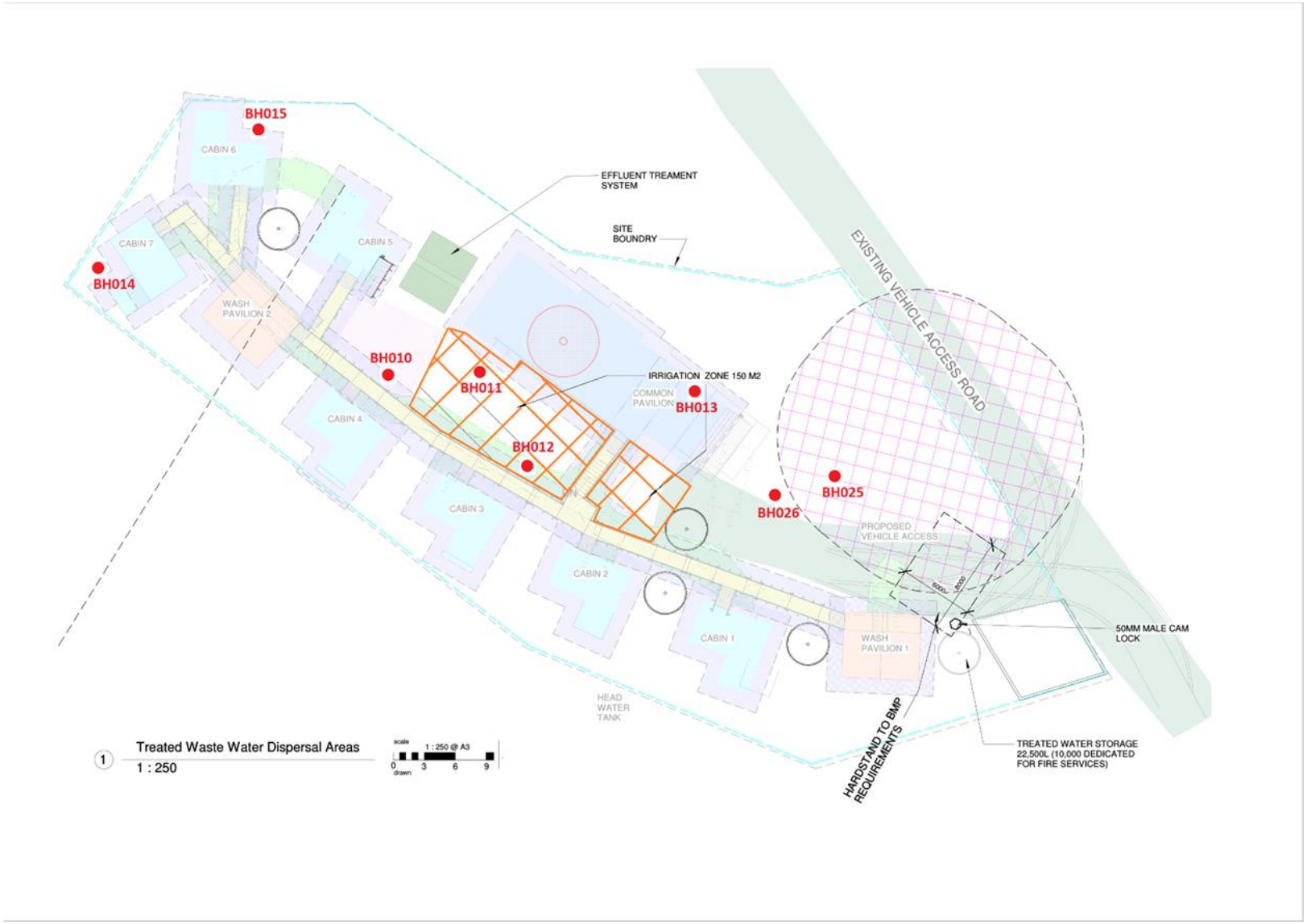

Figure 4 Layout of the Woodcutters EcoCamp showing location of infrastructure, the proposed treated wastewater irrigation field, and boreholes drilled for soil characterisation

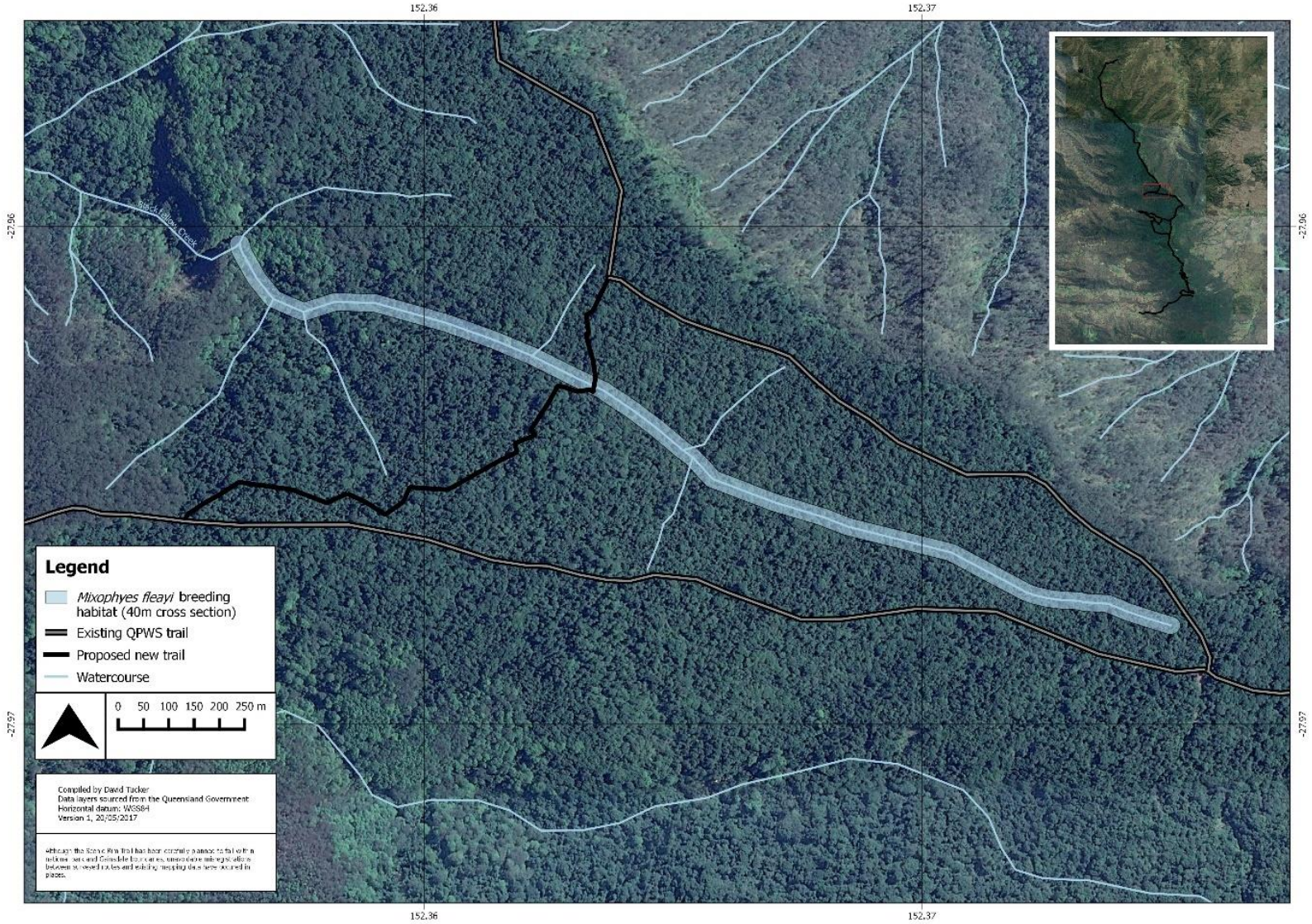

Figure 5 Location of the Blackfellow Creek crossing (black line) and frog breeding habitat

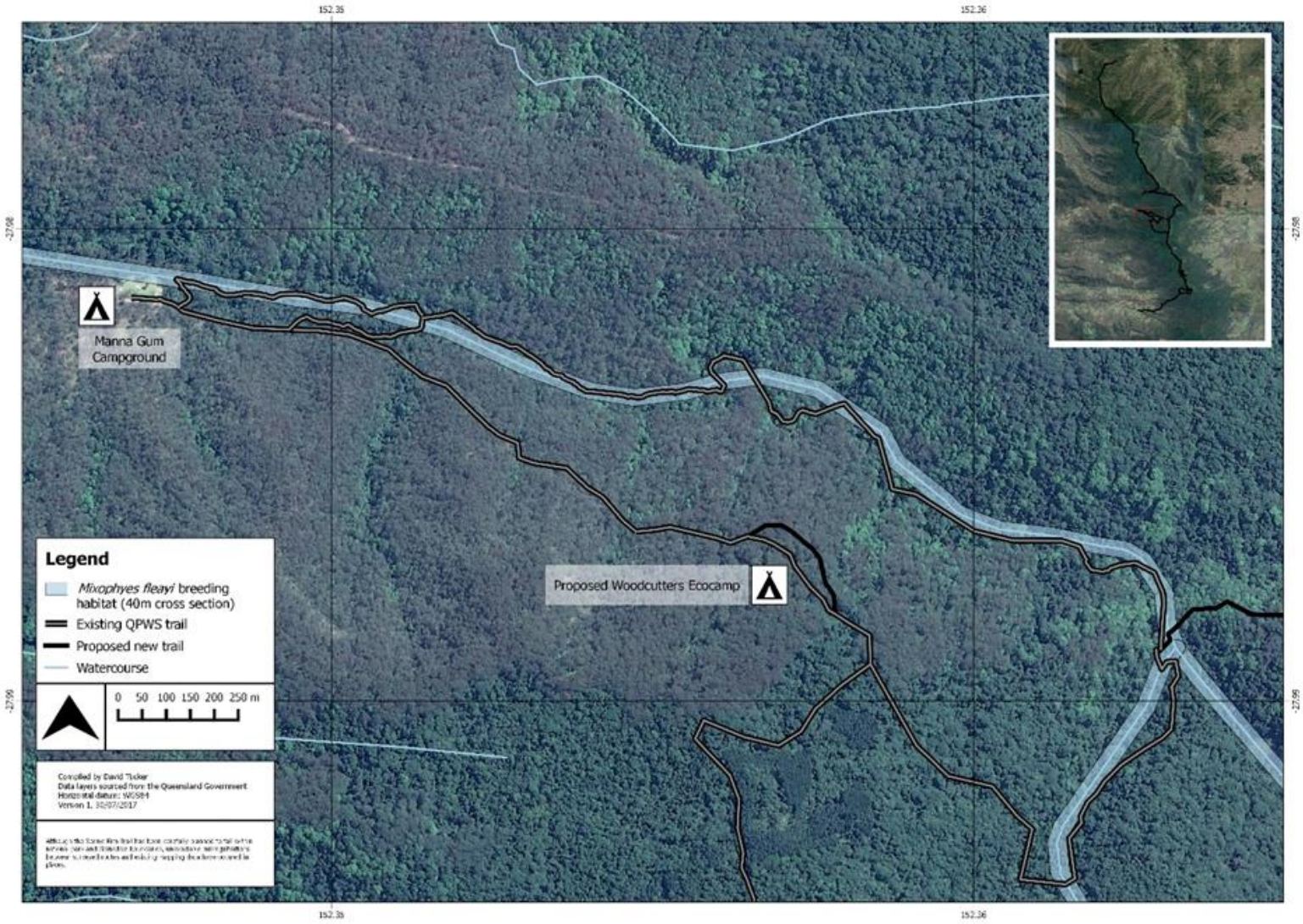

Figure 6 Location of the Dalrymple Creek crossing (black line, lower right of figure) and frog breeding habitat. The Cascade Trail (foraging and breeding habitat) is shown from Manna Gum campground along Dalrymple Creek to the new creek crossing.

5. Matters of National Environmental Significance

5.1. Hastings River Mouse

The Hastings River Mouse (*Pseudomys oralis*) is listed as endangered under the EPBC Act because of its reduced, limited, and disjunct distribution, small local population sizes, and low reproductive rate. Its modern distribution is thought to be limited by genetic, climatic and vegetation factors, occupying only a small part of the potential habitat. Current populations occur in isolated areas >500m above sea level, and are distributed from the Mount Royal National Park, NSW, through to the Gondwana Rainforests of Australia, Qld. It is thought that most localised populations are <10 - <50 individuals. (NSW DEC 2005).

The Hastings River Mouse recovery plan (NSW DECC 2005) considers that potential threatening processes for this species include:

- genetic isolation
- fire
- grazing
- loss of habitat
- predation
- forestry activities

Specific objectives of the recovery plan relevant to this SRTMP are:

- Increase understanding of the ecology and management of the Hastings River Mouse, particularly in relation to disturbance and threatening processes.
- Ensure that Hastings River Mouse populations and habitats are identified and managed to minimise impact from developments and activities.

Two individual Hastings River Mouse have been caught in suitable habitat adjacent to Woodcutters EcoCamp during baseline surveys (Section 9.2). These are the northern most record of this species and may represent transient individuals rather than members of an established population.

5.2. Fleay's Barred Frog

Fleay's Barred Frog (*Mixophyes fleayi*) is listed as endangered under the EPBC Act. It is one of five species of upland stream-dwelling frog which has declined in south-east Queensland in recent decades, and this species has disappeared completely from the Bunya Mountains and Mount Tamborine in Queensland (Hines *et al*. 2002).

This species has a narrow and disjunct distribution in rainforest, Antarctic Beech forest, and the wetter eucalypt forests, from the Great Dividing Range in south-east Queensland to Yabbra Scrub in north-east New South Wales. Fleay's Barred Frog are found from near sea level to approximately 1000 m altitude but are most commonly recorded at mid-elevation sites between 400 and 800 m (Hines *et al*. 2002).

The recovery plan for stream frogs of south east Queensland (Hines *et al*. 2002), the Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis, (DoEE 2016) and the most recent conservation advice (DoEE. 2017b) considers that the known and potential threatening processes for this species include:

- Chytridiomycosis caused by chytrid fungus
- Habitat damage by feral pigs

- Habitat damage by domestic stock
- Habitat clearing and disturbance (land management)
- Invasive weeds

The overall objective of the recovery plan is:

- To significantly improve the conservation status and long-term survival of each species through protection of its habitat, and through location of additional populations or expansion of existing populations into areas currently uninhabited.

Key conservation actions (Hines *et al*. 2002; DoEE 2016; DoEE 2017b) are:

- Minimising the spread of chytrid fungus by implementing suitable hygiene protocols
- Developing and implementing translocation strategies to create additional populations
- Controlling feral pigs in the Main Ranges
- Monitoring damage by feral pigs and implementing control measures
- Investigating and where appropriate applying assisted reproductive strategies such as captive rearing and translocation

Fleay's Barred Frog are abundant at the Blackfellow Creek crossing and the Dalrymple Creek crossing, and along the existing Cascade circuit trail. These are breeding populations as evidenced by the abundance of tadpoles. Chytrid fungus has been confirmed as present in these populations (hyperlink to BAAM report).

5.3. Mountain Frog

Mountain Frog (*Philoria kundagungan*) is not a listed species but represents the ecological values of the GRAWHA. It is not listed in the recovery plan for stream frogs of south east Queensland (Hines *et al*. 2002).

The Mountain Frog has a restricted distribution from the Mistake Mountains in south-east Queensland to Tooloom National Park, southwest of Woodenbong, in NSW. In NSW populations are known from Tooloom, Koreelah and Mount Clunie National Parks. In Queensland several populations occur in Main Range National Park (H. Hines pers. comm. 2019). Its habitat is mud, moss or in leaf litter along upland drainages and seepages which are usually typified by the presence of rainforest spinach (*Elatostema reticulatum*).

Threats to this species include habitat disturbance, degradation of water quality, and infection by chytrid fungus[3].

It is found in seepages adjacent to the SRT and in upland riparian margins but was not found along Dalrymple Creek.

5.4. Gondwana Rainforest of Australia World Heritage Area

The Gondwana Rainforests of Australia reserves contain a wide range of plant and animal lineages and communities with origins in Gondwana, many of which are now restricted largely or entirely to the Gondwana Rainforests, and the region is regarded as a distinct centre of endemism for several families and genera. Key examples that were provided as evidence for world heritage listing include (Hunter 2004):

[3] https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10618

- Ferns from families having origins in Pangea, including tree ferns such as *Cyathea australis* and *Dicksonia antarctica* (Cyatheaceae and Dicsoniaceae), the club moss *Lycopodium deuterodensum* (Lycopodiaceae), and the coral fern *Gleichenia rupestris* (Gleicheniaceae).
- Pre-angiosperm groups such as the hoop pine and bunya pine, which are the sole representatives of the Araucarians (the most ancient and phylogenetically primitive of the world's conifers).
- Early angiosperm lineages which contribute to this property being a secondary centre of endemism for early angiosperm lineages that complements the Wet Tropics. Primitive families such as Winteraceae, e.g. *Tasmannia insipida*, Monimiaceae, e.g. *Wilkiea huegeliana*, and Atherospermataceae, e.g. *Daphnandra tenuipes*, have undergone little evolutionary change since Gondwanan times
- Families including Proteaceae, Nothofagaceae, Casuarinaceae, Berberidopsidaceae, Myrtaceae, Eucryphiacea, Cunoniaceae, Escalloniaceae and Pittosporaceae demonstrate the early radiation of the flowering plants.
- Several of the oldest lineage of Corvida, including the lyrebird *Menura alberti*.
- All frogs in families having Gondwanan origins, e.g. Fleay's Barred Frog.
- Crayfish in the family Parastacidae, e.g. *Eustacus jagara*.

More than 540 species of plants from over 250 genera occur within the Main Range National Park, and at least 20 of these are rare or threatened. Three hundred and thirteen species of vertebrate fauna have also been recorded, including 197 bird species, 53 reptile species, 47 mammal species, and 16 amphibian species. Twenty-nine of these are considered rare or threatened at international, national, or state level.

There are several threatening processes which have the potential to affect the integrity of the GRAWHA and MNES species, and which require management. The strategic overview for management of the Gondwana Rainforests of Australia World Heritage property (DEH 2000) identifies these as:

- Feral animals (i.e. pigs, foxes, cats, wild dogs, cane toads)
- Weeds (i.e. mistflower, lantana, camphor laurel, Madeira vine)
- Pathogens (i.e. chytrid fungus)
- Fire (i.e. uncontrolled or inappropriate application)

These threatening processes are common for most of the vulnerable and endangered species in the MRNP and GRAWHA, and management of these processes is expected to provide a wide range of benefits. The QPWS have developed a Pest Management Strategy and a Fire Management Strategy for the park (which includes prescribed burns) and this is progressively being implemented (DNPRSR 2013).

Inappropriate recreation and tourism activities, including the development of tourism infrastructure is also regarded as a potential issue, particularly if these cause a MNES to be significantly impacted. Consequently, the QPWS is managing the Park to ensure that opportunities for outdoor recreation are provided in a largely remote and natural setting, while protecting its nature conservation and heritage values (DNPRSR 2013).

6. Impact Assessment

A comprehensive assessment of potential environmental impacts and risks was conducted as part of the approval process (hyperlink). This included surveys for vertebrate pests, weeds, and the presence of chytrid fungus in the frog populations along the proposed SRT alignment (hyperlink).

The assessment applied the criteria in *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (DoE 2013) and considered the risk of direct loss of individuals or populations of a species, the loss of critical habitat, the introduction of competitor or predator species, and the introduction or spread of chytrid fungus, through construction or operational activities. This assessment has been updated for the purposes of the SRTMP using best current information and data.

Table 2 summarises the unmitigated risk of activities associated with the SRT causing a significant impact to MNES explicitly mentioned in the Conditions of Approval, and Table 3 summarises the unmitigated risk of activities associated with the SRT causing a significant impact to the ecological values of the World Heritage and National Heritage area of the MRNP.

Table 2 Summary of impact assessment for MNES species in the MRNP

	Hastings River Mouse	Fleay's Barred Frog	Mountain Frog
Long-term decrease in population size	There are no pathways to impact from activities associated with the SRT that would cause a long-term decrease in the population size of HRM in the MRNP.	There are no pathways to impact from activities associated with the SRT that would cause a long-term decrease in the population size of FBF in the MRNP.	There are no pathways to impact from activities associated with the SRT that would cause a long-term decrease in the population size of MF in the MRNP.
Reduced area of occupancy	Lighting and noise from EcoCamp construction and operation have the potential to disturb HRM in habitat at the perimeter of the Woodcutters EcoCamp. The small scale of this will not cause a significant reduction in area of occupancy.	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could reduce localised area of occupancy for FBF but is unlikely to be significant.	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could reduce localised area of occupancy for MF but is unlikely to be significant.
Fragmentation of population	There are no activities associated with the SRT that would cause fragmentation of the population of HRM in the MRNP.	The establishment of a Class 5 track and two creek crossings will not cause fragmentation of the population of FBF.	The establishment of a Class 5 track and two creek crossings will not cause fragmentation of the population of MF.
Adverse effect on critical breeding habitat	There are no pathways to impact from activities associated with the SRT that would cause an adverse effect on critical	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could have	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could have

	breeding habitat of HRM in the MRNP.	an impact on critical breeding habitat in the vicinity of the two crossing but is unlikely to be significant.	an impact on critical breeding habitat in the vicinity of the two crossings but is unlikely to be significant.
Disruption of breeding cycle	There are no pathways to impact from activities associated with the SRT that would cause disruption of HRM breeding cycle in the MRNP.	There are no pathways to impact from activities associated with the SRT that would cause disruption of FBF breeding cycle in the MRNP.	There are no pathways to impact from activities associated with the SRT that would cause disruption of MF breeding cycle in the MRNP.
Critical loss or degradation of habitat	There are no pathways to impact from activities associated with the SRT that would cause critical loss or degradation of HRM in the MRNP.	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could lead to localised degradation of riparian and instream habitat in the vicinity of the two crossings but this is unlikely to be significant.	Degradation of riparian vegetation through unregulated tracking and the introduction of weeds, and instream sedimentation through track erosion, could lead to localised degradation of riparian and instream habitat in the vicinity of the two crossings but this is unlikely to be significant.
Introduction of critical invasive species	Commensal rodents could be accidentally introduced to the local habitat with food or supplies at Woodcutters EcoCamp.	There are no pathways to impact from activities associated with the SRT that are likely to introduce critical invasive species.	There are no pathways to impact from activities associated with the SRT that are likely to introduce critical invasive species.
Introduction of critical disease	The accidental introduction of commensal rodents to the area of Woodcutters EcoCamp could bring in unknown diseases.	Track construction and hiking equipment could carry and spread chytrid fungus.	Track construction and hiking equipment could carry and spread chytrid fungus.

6.1. Reduced area of occupancy

6.1.1. Hastings River Mouse

Highly lit infrastructure in otherwise dark environments can directly and indirectly influence many biological and ecological processes including habitat use (Gaston *et al*. 2013). It is unknown how Hastings River Mouse will respond to lighting or light spill from the Woodcutters Ecocamp. They may avoid foraging in habitat subject to light spill, may be more cautious when foraging in light spill areas, or not be affected at all. The scale of Hastings River Mouse habitat relative to the potential scale of light spill from the Ecocamp footprint suggests that any reduction in available habitat would be negligible. It would only pose a significant impact if the reduction in habitat quality or extent reduced the reproductive fitness and viability of the local population.

One of the most common wildlife responses to loud noises is site abandonment, and evidence suggests that this usually occurs when frequent or chronic noise interferes with cue detection, or when more variable sounds are perceived as persistent threats (Francis and Barber 2013). It is

unknown how Hastings River Mouse will respond to construction or visitor noise from the Woodcutters EcoCamp. Noise from the Ecocamps may cause a startle response or avoidance of the site during a time of perceived threat. It will be a significant issue if the population is forced into lower quality habitat, and/or this leads to reduced reproductive fitness in the population.

6.1.2. Fleay's Barred Frog and Mountain Frog

Construction of the track and two creek crossings will not significantly reduce the area of occupancy of riparian vegetation or instream habitat for Fleay's Barred Frog and Mountain Frog. However, unregulated use of the track and crossing leading to the creation of new tracks through the riparian vegetation could lead to localised loss of that habitat for frog residence. Track erosion leading to chronic instream sedimentation (or acute sedimentation during the breeding season) could reduce localised habitat quality and therefore the area of occupancy for frogs.

6.2. Adverse effect on critical breeding habitat

6.2.1. Fleay's Barred Frog and Mountain Frog

Riparian vegetation and non-turbid flowing water are critical features for frog breeding. Construction of the track and two creek crossings will not have an adverse impact on this critical breeding habitat, however unregulated use of the track and crossing leading to the creation of new tracks through the riparian vegetation, or the introduction of weeds, could reduce the quality of this habitat for frog breeding. Track erosion leading to chronic or acute instream sedimentation could reduce the quality of frog egg laying surfaces and to instream conditions for tadpoles.

6.3. Critical loss or degradation of habitat

6.3.1. Fleay's Barred Frog and Mountain Frog

Construction of the track and two creek crossings will not have an adverse impact on this breeding habitat, however unregulated use of the track and crossing leading to the creation of new tracks through the riparian vegetation or the introduction of weeds could reduce the quality of this habitat.

6.4. Introduction of critical invasive species

Invasive species such as feral pigs (Figure 7), feral cats, feral dogs (Figure 7), foxes, and cane toads are present and spreading throughout the MRNP. These pose a threat to the biodiversity of the MRNP and GRAWHA and may use new trails for movement in the MRNP.

6.4.1. Hastings River Mouse

Construction and operation of the Woodcutters Ecocamp poses a potential risk to the Hastings River Mouse population through the transport and introduction of commensal rodents, i.e. black rat and house mouse. These species already exist in the MRNP but have not been caught near the Woodcutters site during baseline data collection surveys (hyperlink to BAAM report). The black rat and house mouse have the potential to be competitors with Hastings River Mouse, although published data suggest that the relative risk of invasion is low (Stokes *et al*. 2009; Law *et al*. 2016).

6.5. Introduction of critical disease

6.5.1. Hastings River Mouse

The accidental introduction of commensal rodents has the potential to introduce unknown diseases to the Hastings River Mouse population in the area of Woodcutters EcoCamp.

6.5.2. Fleay's Barred Frog and Mountain Frog

Chytrid fungus exists in the Blackfellow and Dalrymple Creek populations of Fleay's Barred Frog (hyperlink to BAAM report). It has been suggested that the disease may be spread through wet soil,

e.g. on the boots of walkers, but there is no evidence that it can survive outside water bodies (DEH. 2006). Cleaning or sterilising of boots is recommended as a precautionary measure (Phillott *et al*. 2010).

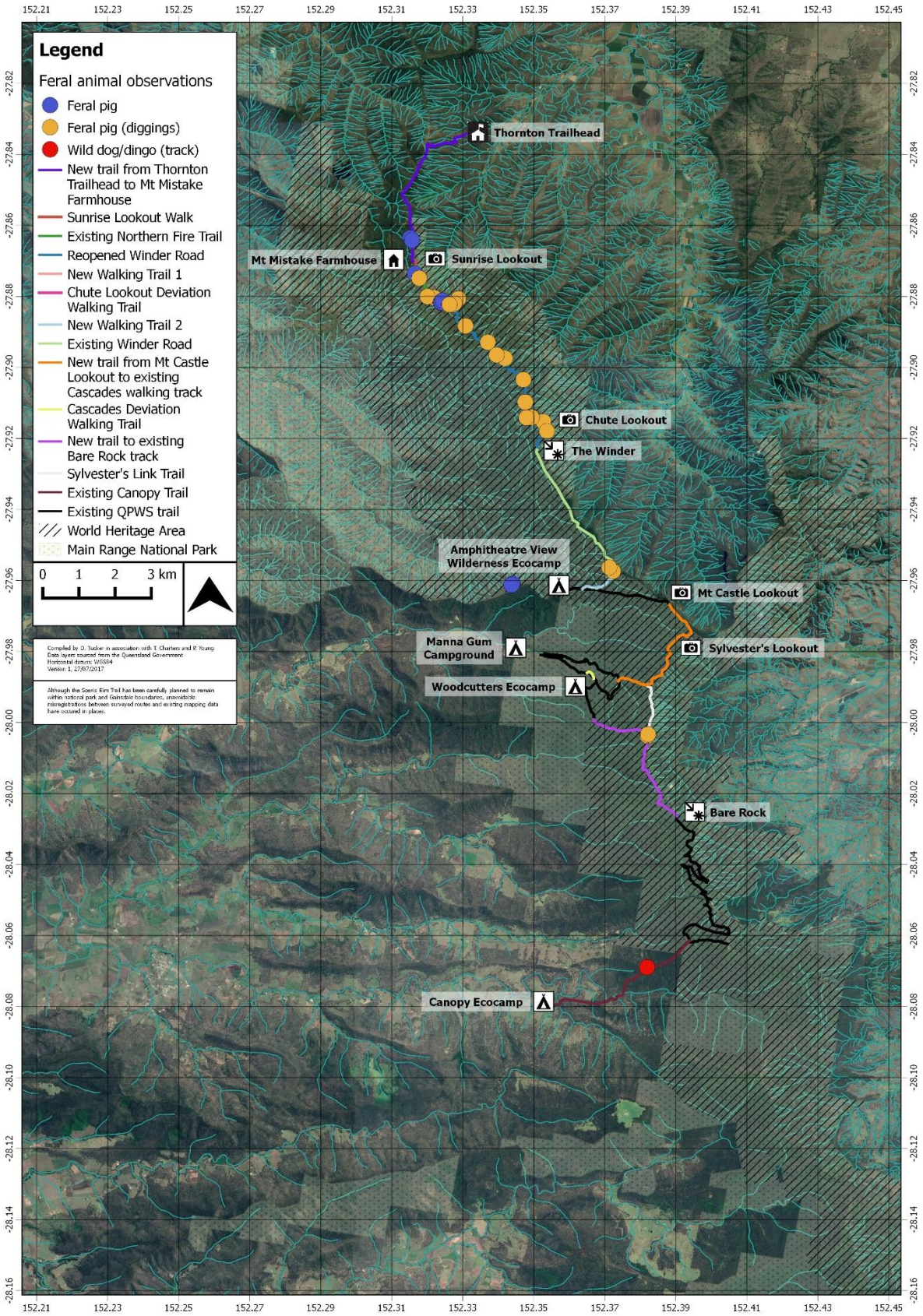

Figure 7 Feral Pig and wild dog observations and sign on the Trail alignment

Table 3 Summary of potential impact on the ecological values of World Heritage and National Heritage area

	World Heritage Values	National Heritage Values
Impact		
Modify or inhibit ecological processes of a National Heritage Place		The introduction or spreading of weeds or pathogens through construction or operation of the SRT could lead to modification or inhibition of ecological processes. The introduction of excess nutrient, enteric pathogens, or other contaminants through irrigation with treated wastewater could lead to modification or inhibition of ecological processes.
Reduce diversity or modify composition of plant and animal species	The introduction or spreading of weeds or pathogens through construction or operation of the SRT could lead to reduced diversity or modification of the composition of plant and animal species. The introduction of excess nutrient, enteric pathogens, or other contaminants through irrigation with treated wastewater could lead to reduced diversity or modification of the composition of plant and animal species.	The introduction or spreading of weeds or pathogens through construction or operation of the SRT could lead to reduced diversity or modification of the composition of plant and animal species. The introduction of excess nutrient, enteric pathogens, or other contaminants through irrigation with treated wastewater could lead to reduced diversity or modification of the composition of plant and animal species.
Fragment, isolate, or substantially damage critical habitat for biodiversity	There are no pathways to impact from activities associated with the SRT that will significantly fragment, isolate, or substantially damage critical habitat for biodiversity. There is the potential for localised indirect impact at the two creek crossings.	There are no pathways to impact from activities associated with the SRT that will significantly fragment, isolate, or substantially damage critical habitat for biodiversity. There is the potential for localised indirect impact at the two creek crossings.
Cause long-term reduction in rare, endemic, or unique species	The introduction or spreading of weeds and pathogens through construction and operation of the SRT could potentially cause a long-term reduction in rare, endemic, or unique species.	The introduction or spreading of weeds and pathogens through construction and operation of the SRT could potentially cause a long-term reduction in rare, endemic, or unique species.
Fragment, isolate, or substantially damage critical habitat for rare, endemic, or unique species	There are no pathways to impact from activities associated with the SRT that will significantly fragment, isolate, or substantially damage critical habitat for biodiversity. There is the potential for localised impact of riparian and	There are no pathways to impact from activities associated with the SRT that will significantly fragment, isolate, or substantially damage critical habitat for biodiversity. There is the potential for localised impact of riparian and

	instream habitat at the two creek crossings.	instream habitat at the two creek crossings.

6.6. Modify or inhibit ecological processes of a National Heritage Place

There are two actions which may indirectly modify or inhibit the ecological processes of a National Heritage Place. These are a) the construction and operation of the EcoCamps and tracks which could lead to the introduction and spread of weeds or plant pathogens through poor equipment hygiene, and b) introduction of human waste which could lead to the spread of enteric pathogens and/or eutrophication in waterways.

6.6.1. Weeds

Listed or potentially significant weeds of relevance to the MRNP (Table 4) are present along or near the new trail alignment (Charters *et al*. 2017; Figure 8). Most of the weeds with the potential to invade the Rainforest are typically spread by birds or other animals, or wind and water, rather than human activity (Gosper *et al*. 2005), although they could be spread by vehicles and equipment involved in construction. A wide range of ruderal herbaceous species are growing in open conditions along the edges of 4WD, service, and fire access tracks in the MRNP and may be carried and spread by bush walkers.

Bush walkers may also create conditions for the establishment of weeds through increased nutrient levels from bush toileting (allowed in the MRNP).

Table 4 Weeds of significance for MRNP, and QPWS priority for control

	Threat	Dispersal mechanism	Class	QPWS priority for control
Madeira Vine (*Andredera cordifolia*)	Transformer species that can completely dominate and change intact native forest. Smothers small trees and shrubs and can cause canopy collapse. May also grow as ground cover, affecting seedling germination and growth	Spread by aerial tubers and sections of severed stem	WONS; 3	Extremely high
Mother of millions (*Bryophyllum* spp.)	Forms infestations in grassland and open woodlands and is toxic to livestock	Spread by floodwater and establishes if pastures are in poor condition. It may also be spread by vehicles and machinery	2	Extremely high
Japanese honeysuckle (*Lonicera japonica*)	Invades rainforest edges and disturbed sites and will also grow as a thick ground cover	Seeds are spread by birds, water, and machinery	ND[4]	Extremely high
Morning Glory (*Ipomoea*	Climbs high into canopies of native vegetation, smothering and choking other plants	Spread by water and machinery	ND	Extremely high

[4] ND = Non-declared

purpurea) (check sp.)				
Glycine (*Neonotonia wightii*)	Smothers grasses and low-lying vegetation and poses a significant threat to understorey vegetation	Prolific seeder. Can vegetatively reproduce	ND	Extremely high
Siratro (*Macroptilium atropurpureum*)	Can form dense infestations on forest edges and will smother grasses, shrubs, and small trees.	Spreads vegetatively and via seeds	ND	Extremely high
Archer Axillaris (*Macrotyloma axillare*)	Can form dense infestations on forest edges and will smother grasses, shrubs, and small trees	Spreads vegetatively and via seeds	ND	Extremely high
Silver desmodium (*Desmodium uncinatum*)	Can form dense infestations on forest edges and will smother grasses, shrubs, and small trees	Spreads vegetatively and via seeds	ND	Extremely high
Privet (*Ligustrum lucidum*)	Riparian and disturbed site invader	Seeds spread by birds. Vegetative regrowth	3	Extremely high
Moth vine (Araujia sericifera)	Woody creeper		ND	Extremely high
Crofton weed (Ageratina adenophora)	Invades riparian and grassy areas.	Water, wind, vehicles, animals, clothing and footwear	ND	Extremely high
Basket asparagus fern (*Asparagus aethiopicus*)	Invades rainforest understorey	Seeds spread by birds	3	Extremely high
Blackberry (*Rubus fruticosus*)	Invades bushland and outcompetes native species	Seeds spread by birds	WONS; 3	Very high
Easter cassia (*Senna pendula*)	Invades disturbed areas, smothers natives	Seeds		Very high
Chinese celtis (*Celtis senensis*)	Invades riparian areas	Seed spread by birds, flying foxes, water	3	Very high
Lantana (*Lantana camara*)	Invades understorey	Seed spread by birds	WONS; 2	High
Formosa lilly (*Lilium formosanum*)	Invades disturbed edges	Water	ND	High
Wild tobacco (*Solanum mauritianum*)	Invasive shrub	Seed spread by birds and flying foxes	ND	High
Crassula spp.	Invasion and exclusion of native ground cover	Vegetative or seed	ND	High

Tree of heaven (*Ailanthus altissima*)	Invasive shrub	Wind, water, vegetative	ND	Moderate
Rain tree (*Koeireuteria elegans*)	Invades riparian areas	Seed spread by water	ND	Moderate
Groundsel bush (*Baccharis halimfolia*)	Invades understorey and riparian areas	Seed spread by wind, water, and machinery	2	Moderate
Coolatai grass (*Hyparrhenia hirta*)	Invades grassy woodland	Seed spread by wind, water, and machinery	ND	Emerging threat

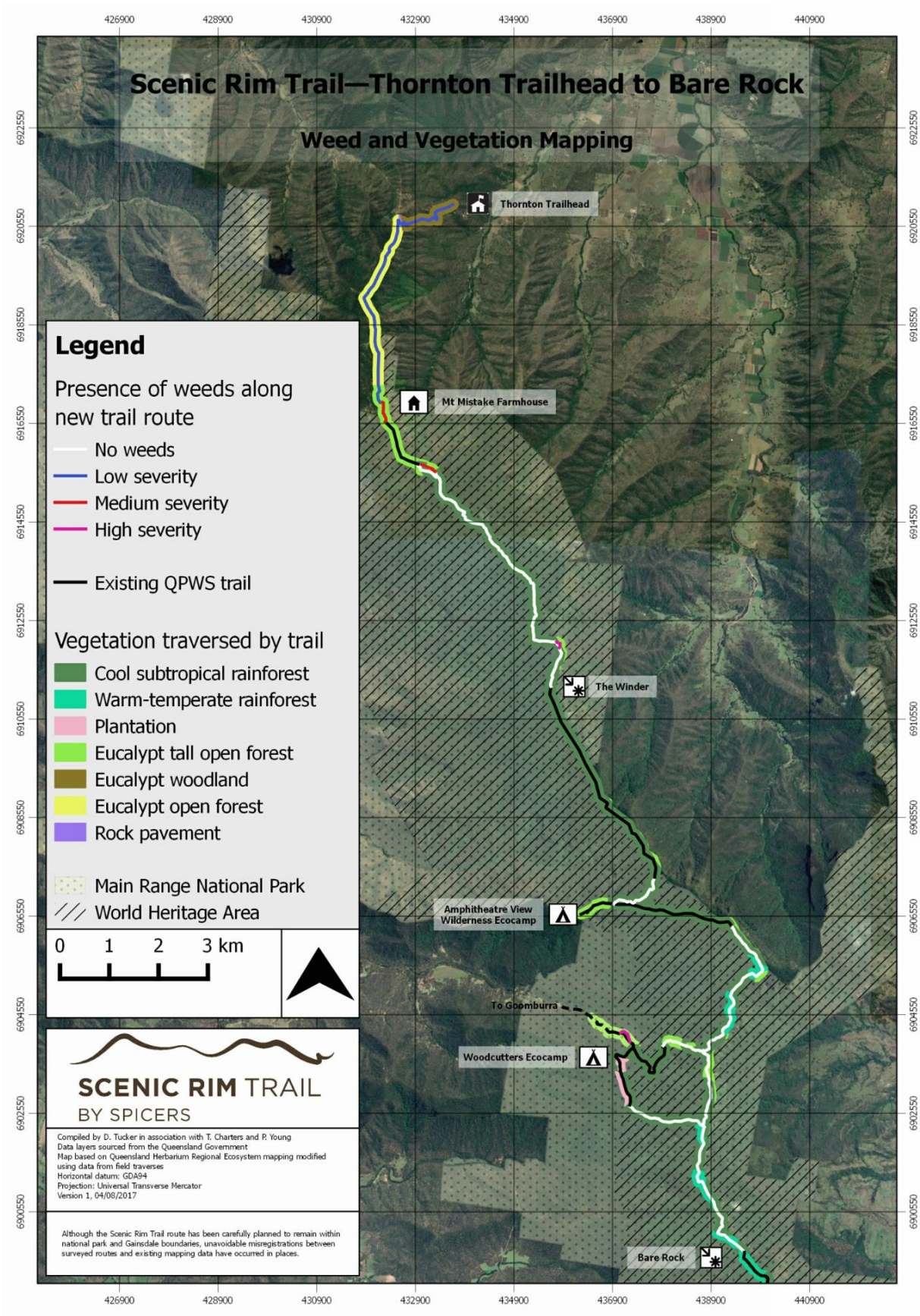

Figure 8 Presence and relative abundance of weeds along the SRT alignment

6.6.2. Pathogens

Pathogens may be introduced to this National Heritage Place on vehicles, construction equipment, bush walking gear (e.g. boots), and through human waste. Chytrid fungus is present in the MRNP frog population. It has been suggested that the disease may be spread through wet soil, e.g. on the boots of walkers, but there is no evidence that it can survive outside water bodies (DEH. 2006). Cleaning or sterilising of boots is recommended as a precautionary measure (Phillott *et al*. 2010). New variants of this fungus could potentially be introduced into the MRNP on construction tools or footwear and spread into waterways.

Phytophthora cinnamomi is a soil-borne organism listed by the EPBC as a key threatening process, but which does not appear to be present in the MRNP. It can cause dieback amongst some or all species of vegetation in the rainforest and sclerophyll forests although it can also be present without killing vegetation. The disease is spread by the movement of soil and water and it is suspected that soil disturbance or movement associated with the construction of a road or walking track may be a cause of virulent outbreaks. Vehicles, bushwalkers and pigs may also transport infected soil from one place to another and cause new outbreaks.

Escherichia coli is an enteric pathogen that is typically spread by cattle or inadequately treated sewage and greywater. It poses a risk to human health and its presence is used as an indicator of faecal contamination of waterways. *E. coli* can persist and become naturalised in waterways and soil (van Elsas *et al*. 2011).

6.7. Reduce diversity or modify composition of plant or animal species

There are two actions which may indirectly modify the composition of plant or animal species. These are a) the construction and operation of the EcoCamps and tracks which could lead to the introduction and spread of weeds or plant pathogens through poor equipment hygiene, and b) uncontrolled introduction of human waste which could lead to the spread of enteric pathogens and/or eutrophication in waterways.

6.8. Cause long-term reduction in rare, endemic, or unique species

There are two actions which may indirectly cause a long-term reduction in rare, endemic, or unique species. These are a) the construction and operation of the EcoCamps and tracks which could lead to the introduction and spread of weeds or plant pathogens through poor equipment hygiene, and b) uncontrolled introduction of human waste which could lead to the spread of enteric pathogens and/or eutrophication in waterways.

7. Environmental Management and Risk Mitigation Actions

7.1. Management and Mitigation Principles

Management measures to address potential pathways to significant impact on MNES caused by the SRT were assessed taking into consideration a set of hierarchical management principles that are outlined in State and Commonwealth policies.

This SRTMP has been developed considering these management principles (in order of preference) with relevance to potential impacts on MNES:

- *Avoidance*: Avoiding direct and indirect adverse impacts where possible through Project design;
- *Minimise*: Minimising direct and indirect adverse impacts, where impacts cannot be avoided, through modifying design, the timing of construction, or employing specialist technology and construction methods;
- *Mitigate*: Implement mitigation of unavoidable impacts, through design management actions

These principles are applied to Spicers management and mitigation actions through guidance provided by published recovery plans and conservation advice (Table 5).

Table 5 Recovery plans, conservation advice, and management options available to SRT in the event of population decline of Hastings River Mouse and Fleay's Barred Frog

	Recovery Plans, Conservation Advice, and Management Options
Hastings River Mouse	**Recovery Plan:** NSW Department of Environment and Climate Change 2005, Recovery Plan for the Hastings River Mouse (*Pseudomys oralis*), Department of Environment and Climate Change (NSW), Hurstville. **Recovery Objectives** focus on monitoring and research and avoidance of habitat loss. **Management actions possible for Spicers:** • Avoidance of excess vegetation clearance at Woodcutters EcoCamp • Minimisation of light spill and noise from Woodcutters EcoCamp onto adjacent HRM habitat • Avoiding introduction of commensal rodents • Population monitoring
Fleay's Barred Frog	**Conservation Advice:** *Mixophyes fleayi* (Fleay's frog) Conservation Advice (2017) **Recovery Plan:** National recovery plan for Stream Frogs of South-east Queensland 2001-2005 **Threat Abatement Plan:** Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis, Commonwealth of Australia (2016) **Management actions possible for Spicers:** • Application of published protocol for prevention of introduction or spread of weeds or pathogens on vehicles, work equipment, or clothing during construction and servicing of SRT • Cleaning and sterilisation of client footwear prior to SRT entering MRNP from Spicers private land • Avoidance of damage to riparian and instream habitat at creek crossings during construction and operation of the SRT

	• Avoidance or mitigation of sediment entering waterways from new tracks • Population monitoring
World Heritage and National Heritage	**Management Plan:** CERRA (Australia) (2000). Strategic overview for management of the World Heritage Central Eastern Rainforest Reserves of Australia / CERRA. Dept of the Environment and Heritage, Canberra. **Strategic Management Objectives** (include): • To ensure that the World Heritage values of CERRA[5] are conserved through both pro-active management and the control of threatening processes. • To ensure that the World Heritage values of CERRA are presented in the most appropriate and sustainable way to the community. • Through achievement of the above objectives, to transmit the outstanding universal values of CERRA to future generations. **Management actions possible for Spicers:** • Avoidance of excess vegetation clearance for construction of EcoCamps and new trails • Application of published protocol for prevention of introduction or spread of vertebrate pests, weeds, or pathogens on vehicles, work equipment, or clothing during construction and servicing of SRT • Avoiding introduction of commensal rodents to EcoCamps • Control of weeds at EcoCamps • Cleaning and sterilisation of client footwear prior to SRT entering MRNP from Spicers private land • Avoidance of damage to riparian and instream habitat at creek crossings during construction and operation of the SRT • Avoidance or mitigation of sediment entering waterways from new tracks • Reporting observations of new or spreading vertebrate pests, weeds, or pathogens to enable timely management by QPWS • Interpretation and promotion of GRAWHA and NHA values as key component of SRT

7.2. Environmental Management Objectives

The following environmental management and risk mitigation actions will be actioned by Spicers to ensure that:

- There is no impact on populations of listed threatened species within the National Park because of establishment or operation of the Scenic Rim Trail
- There is no impact on the integrity of the Gondwana Rainforest of Australia World Heritage Area values because of establishment or operation of the Scenic Rim Trail
- There is no impact on the integrity of the Gondwana Rainforest of Australia National Heritage Area values (EPBC Act) because of establishment or operation of the Scenic Rim Trail

The management actions proposed to avoid, minimise, or mitigate any potential adverse impacts of the SRT on the ecological and heritage values of the MRNP and GRAWHA (Table 7) are informed by relevant recovery plans, conservation advice, management plans, and published research.

7.2.1. Design phase - EcoCamps

The EcoCamps are designed to avoid or minimise impact on the local environment and to be self-sufficient with respect to energy, water, and waste management. All buildings are pre-fabricated for

[5] CERRA has been renamed the Gondwana Rainforests of Australia World Heritage Area (GRAWHA).

installation on site and will not have permanent embedded footings. The buildings will be connected by raised walkways, avoiding tracking in ground cover vegetation. All electrical and water services will occur above ground, slung to the underside of the walkways, leaving the ground plane intact. Subsurface excavation will be limited to the Fire Bunkers.

7.2.1.1 Water Conservation and Septic Safe Cleaning Agents

Washing and toileting facilities will be low water use or water conserving in order to ensure that as little sewage and wastewater as possible is produced. Showers will be WELS 4 Star[6] and limited to 4 minutes per shower via control timer and toilets will be WELS 5 Star minimum.

At maximum occupancy, each EcoCamp would be expected to produce < 3,200 litres of treated wastewater per week (Table 6).

Table 6 Modelled wastewater volumes (litres/week) produced at each EcoCamp contingent on the number of guests (and staff) and the number of trips per week

			Number of trips per week			
			1	2	3	4
People per trip	8	Blackwater	43	86	130	173
		Greywater	485	970	1,455	1,940
		Total	**528**	**1,056**	**1,585**	**2,113**
	10	Blackwater	48	96	144	192
		Greywater	530	1,060	1,590	2,120
		Total	**578**	**1,156**	**1,734**	**2,312**
	12	Blackwater	58	115	173	230
		Greywater	620	1,240	1,860	2,480
		Total	**678**	**1,355**	**2,033**	**2,710**
	14	Blackwater	67	134	202	269
		Greywater	710	1,420	2,130	2,840
		Total	**777**	**1,554**	**2,332**	**3,109**

7.2.2. Design phase – Tracks

The intent of the SRT is to provide a remote area experience. Consequently, the tracks will be mainly Class 5, as per Australian Standard, AS2156.1. Their alignment will avoid surveyed and mapped Mountain Frog habitat (hyperlink to report) and will avoid erosion prone sites where practicable. Where possible, new tracks will follow existing human or animal tracks, however some brushing of groundcover vegetation (e.g. shield fern) may be necessary to define a track up to 60 cm wide.

The approach to and exit from a creek crossing may be hardened if necessary, to minimise the risk of erosion, and the approach will be offset to avoid channelling overland water flow directly into the creek.

[6] http://www.waterrating.gov.au/choose/water-rating-label

7.3. Environmental Management Roles and Responsibilities

7.3.1. All Personnel

All project staff, including contractors and sub-contractors, have a general duty of care as defined in the *Environmental Protection Act* 1994 (QLD) and are responsible for their own environmental performance whilst on the project. All project staff will be aware that they are working within a National Park and World Heritage Area and must:

- Only modify or remove vegetation that has been approved by permit
- Not bring domestic animals into the Park
- Remove all personal rubbish from the Park

As a minimum, project staff are required to:

- Comply with all requirements of applicable environmental legislation and environmental authorities including the specific requirements of the project approvals and supporting documentation
- Undertake all activities in an environmentally responsible manner
- Undertake all activities in accordance with the agreed environmental management plans and procedures, and any work method statements
- Report any non-conformances with environmental management, legislative, or approvals requirements
- Ensure that they are aware of the contact person regarding environmental matters and report any activity that has resulted in, or has the potential to result in an Environmental harm
- Ensure that they attend any environmental training provided, or any environmental briefing or toolbox talk provided that is relevant to their roles and responsibilities

7.3.2. General Manager – Land and Environment (GM LE)

- Obtain all Commonwealth and State approvals for the Scenic Rim Trail
- Develop the Scenic Rim Trail Management Plan (SRTMP)
- Monitor and audit the delivery of the SRTMP

7.3.3. General Manager – Scenic Rim Trail (GM SRT)

- Ensure that the SRTMP is implemented
- Ensure that staff are resourced to meet their environmental obligations
- Ensure that staff are trained to meet their environmental obligations
- Reporting non-compliance or environmental incidents to QPWS or the DoEE
- Ensuring that corrective actions are undertaken
- Maintain a system for recording and storing data associated with the SRT and conditions of approval

7.3.4. SRT Project Manager

- Administer all contracts
- Ensure that project activities are performed in compliance with all applicable legal, approval, and project environmental obligations
- Ensure that all project staff have a clear understanding of the environmental requirements relevant to their area or scope of work
- Ensure that all staff are competent to undertake their duties including fulfilment of the general environmental duty, regarding appropriate education, training, and experience

- Ensure that the necessary resources and processes are in place for implementation of required environmental controls
- Ensure that the Site Supervisor is familiar with environmental obligations, project approvals, SRTMP, relevant environmental management plans and associated documents, and their responsibilities within them
- Participate in and provide guidance for review of the SRTMP and associated documents
- Act in the event of an emergency by allocating the required resources to minimise environmental impact
- Ensure that any non-conformances are identified, recorded, and reported

7.3.5. QPWS Ranger

- Monitor any and all construction activities to ensure compliance with CoA and minimisation of construction footprint
- Stop, suspend or modify works, which has caused or are likely to cause material environmental harm or serious environmental harm

7.3.6. Construction Manager

- Ensure that construction activities are performed in compliance with all applicable legal, approval, and project environmental obligations
- Ensure that all project staff have a clear understanding of the environmental requirements relevant to their area or scope of work
- Ensure that all staff are competent to undertake their duties including fulfilment of the general environmental duty, regarding appropriate education, training, and experience
- Ensure that the necessary resources and processes are in place for implementation of required environmental controls
- Participate in and provide guidance for review of the SRTMP and associated documents
- Act in the event of an emergency by allocating the required resources to minimise environmental impact
- Ensure that any non-conformances are identified, recorded, and reported

7.3.7. All Construction Personnel

- Report any activity that has resulted in, or has the potential to result in an environmental incident immediately to the Site Supervisor, Construction Manager, and Spicers Environmental Representative
- Undertake all environmental inspections and keep environmental records
- Carry out all activities in accordance with the SRTMP
- Identify and report non-conformances
- Implement preventative and correction action
- Work with all required personnel in planning and implementing environmental requirements.

7.3.8. EcoGuides

- Ensure that customers follow instructions for appropriate environmental behaviour including cleaning and sterilisation of footwear at entrance to MRNP
- Reporting observations of weeds, feral pests, and threatened species

7.3.9. Service Staff

- Ensure that commensal rodents are not transported in supplies to the EcoCamps

- Ensure that food and human waste and litter is securely contained and removed from the EcoCamps
- Ensure that replacement lighting meets required specifications to protect nocturnal wildlife
- Ensure that weeds are controlled at the EcoCamp

7.3.10. Environmental Experts

- Provide best possible scientific evidence-based advice for protection of environmental values in the MRNP and GRAWHA
- Design and conduct rigorous monitoring programs to assess the impact of construction or operation on MNES

7.3.11. Contractors and Sub-contractors

- Contractors and sub-contractors must not assume that all activities undertaken comply with the relevant legislation. A contractor must not assume that approval of, and compliance with, a SRTMP means that all its environmental obligations are met.

7.4. Management and Mitigation Measures

Table 7 provides the management measures and performance criteria required by the CoA to avoid or mitigate significant impacts on MNES. It also includes monitoring of the measures and triggers for further corrective action, and the corrective actions proposed.

Table 7 Management measures to avoid or mitigate impacts to MNES in Main Range National Park and the World Heritage Area

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
1.a., 1.b. **The approval holder must not clear more than 0.16 hectares of vegetation for the construction of the [Woodcutters EcoCamp; Amphitheatre View EcoCamp]**	No more than 0.16 ha of native forest or woodland vegetation cleared for the construction of EcoCamps (Figure 3, Figure 4) (Appendix 1)	EcoCamp construction area and perimeter to be surveyed and clearly delineated prior to any vegetation clearance Trees within the EcoCamp area to be marked for clearance or no-clearance Construction Manager to ensure that all staff responsible for vegetation clearance know, understand, and acknowledge where the clear-no-clear boundary is located	Dedicated QPWS Ranger will observe clearance of forest or woodland for construction of EcoCamps Construction Manager will monitor clearance of forest or woodland to ensure compliance	Clearing of native forest or woodland vegetation outside of defined EcoCamp perimeter	Vegetation clearance will be immediately halted at site GM SRT will report non-compliance in writing to the DoEE within 2 business days of becoming aware of the non-compliance GM SRT will provide details of the non-compliance to the DoEE within 10 days of becoming aware of the non-compliance Remediation or other corrective action will be negotiated and agreed with QPWS
1.c. **The approval holder must not establish more than one crossing at Blackfellow Creek and one crossing at Dalrymple Creek by new trails**	One crossing to be established at Blackfellow Creek (Figure 5) and at Dalrymple Creek Figure 6) (Appendix 2)	Location of one crossing for each creek to be identified, mapped, and the grid reference logged Construction Manager to ensure that construction staff establish one crossing only at the mapped location	Dedicated QPWS Ranger to observe the establishment of the Blackfellow Creek and Dalrymple Creek crossings Construction Manager to monitor establishment of the Blackfellow Creek and Dalrymple Creek	Establishment of more than one crossing at Blackfellow Creek or Dalrymple Creek	Crossing construction will be immediately halted at site GM SRT will report non-compliance in writing to the DoEE within 2 business days of becoming aware of the non-compliance

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
			crossings to ensure compliance with directions		GM SRT will provide details of the non-compliance to the DoEE within 10 days of becoming aware of the non-compliance Remediation or other corrective action negotiated and agreed with QPWS
1.d. **The approval holder must construct Woodcutters EcoCamp and Amphitheatre View EcoCamp and new trails within the sites indicated in Attachments 2 & 6**[7]	EcoCamps and new trails to be established only within approved and designated area and corridor as shown in Appendix 1	Construction Manager to ensure that construction staff establish EcoCamps only within the approved and designated area as shown in Appendix 1 Construction Manager to ensure that construction staff establish new trails only within the approved and designated corridor as shown in Appendix 1	Dedicated QPWS Ranger to observe construction of EcoCamps and new trails Construction Manager to monitor construction of new trails to ensure compliance with directions	Construction activities occurring outside of designated areas or corridor	Construction activities will be immediately halted at site GM SRT will report non-compliance in writing to the DoEE within 2 business days of becoming aware of the non-compliance GM SRT will provide details of the non-compliance to the DoEE within 10 days of becoming aware of the non-compliance Remediation or other corrective action

[7] Appendix 1

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
					negotiated and agreed with QPWS
3.a. **The approval holder must ensure that construction of new trails does not clear, disturb or otherwise result in impacts on Mountain Frog habitat or Fleay's Barred Frog breeding habitat with the exception of portions of new trails that cross Blackfellow Creek and Dalrymple Creek**	New trails will avoid mapped Mountain Frog habitat and only disturb Fleay's Barred Frog breeding habitat and Mountain Frog habitat at the designated creek crossings as shown in Appendix 2	Spicers to map all rainforest spinach within 50m of new SRT trail alignment Project Manager to ensure that the alignment of new trails avoids mapped Mountain Frog habitat by at least 50m Construction Manager to ensure that construction staff establish new trails only within the approved and designated corridor and that one crossing only is established through Fleay's Barred Frog riparian breeding habitat Vegetation clearance for establishment of Class 5 tracks is limited to brushing of ground cover vegetation to a maximum width of 60 cm	Dedicated QPWS Ranger to observe construction of new trails and creek crossings Construction Manager to monitor construction of new trails and creek crossings to ensure compliance with directions Spicers will monitor Fleay's Barred Frog and Mountain Frog populations, water quality, and riparian habitat condition at the Blackfellow Creek and Dalrymple Creek crossings as part of the 10-year monitoring program (sections 9.3, 9.4, 9.5, and 9.6)	Construction activities result in clearance, disturbance, or other impacts on frog habitat other than for Class 5 trails and crossings of Blackfellow Creek and Dalrymple Creek The 10-year monitoring program indicates that the SRT is having an adverse impact on Fleay's Barred Frog and Mountain Frog populations, water quality, and riparian habitat condition at the Blackfellow Creek and Dalrymple Creek crossings	Construction activities will be immediately halted at site GM SRT will report non-compliance in writing to the DoEE within 2 business days of becoming aware of the non-compliance GM SRT will provide details of the non-compliance to the DoEE within 10 days of becoming aware of the non-compliance Remediation or other corrective action negotiated and agreed with QPWS
3.b. **The approval holder must ensure that the**	No significant impact to Mountain Frog habitat or Fleay's Barred Frog	Spicers will: • Develop and implement an	Spicers will implement the approved Sewage	Exceedance of thresholds established in the approved Sewage and	GM SRT will implement corrective actions established in the

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
construction and operation of Woodcutters EcoCamp and Amphitheatre View Wilderness EcoCamp, including onsite disposal of sewage and wastewater, does not result in impacts on Mountain Frog habitat or Fleay's Frog breeding habitat or the world heritage values of the GRAWHP	breeding habitat or the world heritage values of the GRAWHP as a direct or indirect consequence of the disposal of treated wastewater to land	approved Sewage and Wastewater Monitoring Plan before operation of a treated wastewater disposal system • Develop and implement an approved Plan for Wastewater and Sewage Management	and Wastewater Monitoring Plan Spicers will monitor Fleay's Barred Frog and Mountain Frog populations, water quality, and riparian habitat condition at the Blackfellow Creek and Dalrymple Creek crossings as part of the 10-year monitoring program (sections 9.3, 9.4, 9.5, and 9.6)	Wastewater Monitoring Plan The 10-year monitoring program indicates that the wastewater treatment and disposal is having an adverse impact on Fleay's Barred Frog and Mountain Frog populations, water quality, or riparian habitat condition at the Blackfellow Creek and Dalrymple Creek crossings	approved Plan for Wastewater and Sewage Management GM SRT will report any incidents of exceedance in writing to the DoEE within 2 business days of becoming aware of the non-compliance GM SRT will provide details of the incidents of exceedance to the DoEE within 10 days of becoming aware of the non-compliance
14.a.i. Describe measures to be implemented for the duration of the approval to minimise vegetation clearance for the construction of new trails	Groundcover vegetation may be brushed to a maximum of 60 cm wide to delineate a Class 5 track Groundcover vegetation may be brushed to a maximum of 120cm wide for short sections of Class 3 or Class 4 track	Construction Manager to ensure that construction staff establish new trails only within the approved and designated corridor and that vegetation clearance is kept to the minimum required for a Class 5 track Construction Manager will ensure that trail alignment follows existing informal human or animal tracks where practicable	Dedicated QPWS Ranger to observe vegetation clearance for construction of new trails Construction Manager to monitor vegetation clearance for construction of new trails to ensure compliance with directions	Clearance of groundcover vegetation in excess of 60cm width for Class 5 tracks or 120cm width for sections of Class 3 and 4 tracks	Vegetation clearance will be halted at site Track construction contractors will be re-instructed to comply with directions on track width

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
14.a.ii. Describe measures to be implemented for the duration of the approval to minimise, manage, and remediate erosion along the Scenic Rim Trail	Track alignments with potential erosion risk are avoided and/or the risk factors are mitigated	Spicers will assess the proposed SRT trail alignment to identify sites at risk of erosion Construction Manager will ensure that track alignment avoids erosion prone areas where practicable Erosion and Sediment Control protocols will be established in Construction Management Plan Track hardening and drainage will be conducted where required to mitigate erosion risk on Class 5 trails Track hardening, battering, and cambering will be conducted to mitigate erosion risk on the re-opened Winder Forestry Track	Dedicated QPWS Ranger will observe track construction Construction Manager will monitor implementation of the Erosion and Sediment Control protocols Spicers will monitor erosion on new tracks using methods developed for WHA tracks in Tasmania (DPIPWE 2011) Spicers will report new incidences of erosion along or within the vicinity of the SRT, within 48 hours of reporting by EcoGuides or Environmental Specialist, to QPWS using the QPWS online tool	Track erosion that is likely to increase sedimentation load in watercourses or seepages that are Fleay's Barred Frog or Mountain Frog habitat Track erosion that is likely to increase sedimentation in trackside vegetation	Spicers will undertake remedial track work, i.e. drainage, hardening, realignment, or revegetation to prevent erosion risk to MNES habitat or vegetation GM SRT will report incidences or likely incidences of significant erosion affecting MNES habitat or vegetation in writing to the DoEE within 2 business days of becoming aware of the incident GM SRT will provide details of the incidences or likely incidences of significant erosion affecting MNES habitat or vegetation to the DoEE within 10 days of becoming aware of the incident
14.a.iii. Describe measures to be implemented for the duration of the approval	No spreading of vertebrate pests, weeds, or pathogens in the MRNP during	Spicers will conduct surveillance for the presence and distribution of vertebrate pests,	Dedicated QPWS Ranger will observe implementation of DNPSR operational policy	Construction staff not adhering to DNPSR operational policy for	Halting of construction to reinforce requirement for compliance with DNPSR operational policy for

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
to reduce the risk of spread of existing vertebrate pests, weeds and pathogens, including chytrid fungus	construction or operation of the SRT Spreading of existing weeds in MRNP does not occur through SRT activities relative to baseline data	weeds, and pathogens (including chytrid) along the SRT Spicers will implement the DNPSR operational policy for pest plant and pathogen spread prevention[8], for all staff and contractors, namely: • All vehicles and equipment (including machinery used for field operations) are to be clean of soil and/or, organic matter that may contain pest plant and pathogen reproductive material prior to entering and leaving QPWS managed areas • Prior to leaving a site known to be infested with pest plants or pathogens, persons should clean themselves of any reproductive material on, or in,	for pest plant and pathogen spread prevention during construction The GM SRT will audit the implementation of the DNPSR operational policy for pest plant and pathogen spread prevention EcoGuides will monitor compliance with use of foot baths The GM SRT will audit the implementation of the weed control strategy on private land at the entry to and exit of the MRNP portion of the SRT EcoGuides will visually monitor the distribution and spread of existing weeds (Figure 8) on new SRT trails including the re-opened Winder forest track	pest plant and pathogen spread prevention EcoCamp service staff not complying with DNPSR operational policy for pest plant and pathogen spread prevention Guided walkers not adhering to requirement to use footbaths at the entry to the MRNP Spicers' land managers not implementing the weed control strategy on Spicers private land	pest plant and pathogen spread prevention Reminder training of EcoCamp service staff to ensure compliance with DNPSR operational policy for pest plant and pathogen spread prevention Halting of further progress on SRT until all guided walkers use the foot bath Specific instruction to land managers (and resourcing) by GM LE to ensure compliance with weed control strategy

[8] https://parks.des.qld.gov.au/licences-permits/pdf/op-pk-nrm-pest-plant-pathogen-spread-prevention.pdf

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
		clothing, footwear and camping equipment to prevent the spread of reproductive material beyond the infested area • Contractors will provide QPWS with a weed hygiene declaration for Class 2 declared plants Spicers will establish a vehicle wash station outside of the MRNP for use prior to entry. Spicers will establish a boot cleaning station, including a boot sterilisation bath, at the vehicle entry for all contractors and staff to use prior to proceeding onto the National Park estate Spicers will establish a boot cleaning station, including a boot sterilisation bath, at the Trail Head for all trail	Spicers will report new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail, within 48 hours of receiving a report from the EcoGuides, to QPWS through the QPWS online tool		

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
		walkers to use prior to commencing the trail EcoGuides will brief clients on the importance of equipment hygiene and ensure use of boot cleaning and sterilisation prior to entering MRNP Spicers will develop and implement a weed control strategy on private land at MRNP entry and exit to SRT			
14.a.iv. Describe measures to be implemented for the duration of the approval to reduce the risk of introduction and establishment of new vertebrate pests, weeds, and pathogens, including chytrid fungus	No introduction or establishment of new vertebrate pests, weeds, or pathogens to the MRNP during the life of the project, specifically no introduction of feral rodents or weeds at EcoCamps:	Spicers will implement the DNPSR operational policy for pest plant and pathogen spread prevention for all staff and contractors Spicers will establish a boot cleaning station, including a boot sterilisation bath, at the Trail Head for all trail walkers to use prior to commencing the SRT EcoGuides will brief clients on the importance of gear hygiene and ensure use of boot	Dedicated QPWS Ranger will observe implementation of construction hygiene procedures during construction The GM SRT will monitor the implementation of the weed control strategy on private land at SRT entry to and exit from MRNP, and within EcoCamp perimeter EcoGuides will monitor compliance with use of foot baths	The observation of new vertebrate pests, weeds, and pathogens occurring in the MRNP because of SRT actions Observation of non-compliance with requirements of DNPSR operational policy for pest plant and pathogen spread prevention Observation of non-compliance with requirements	Halting of construction to reinforce requirement for compliance with DNPSR operational policy for pest plant and pathogen spread prevention Reminder training of EcoCamp service staff to ensure compliance with DNPSR operational policy for pest plant and pathogen spread prevention Halting of further progress on SRT until all guided walkers use the foot bath

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
		cleaning and sterilization prior to entering MRNP EcoCamp service staff will pack food and equipment in a rodent-controlled environment and transport these to the EcoCamps in rodent-proof containers EcoCamp service staff will pack food waste and litter into rodent proof containers for transport from the EcoCamps Spicers will develop and implement weed control strategy on private land at MRNP entry and exit to SRT Permit will be sought to euthanise any feral rodents caught at or near Woodcutters EcoCamp Spicers will cooperate with QPWS for any dog control actions required on private land	Spicers will establish video surveillance for commensal rodents in EcoCamp kitchens Spicers will monitor for commensal rodents as part of the 10-year annual HRM population monitoring program (section 9.2) Spicers will report new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail, within 48 hours of receiving a report from the EcoGuides, to QPWS through the QPWS online tool		Specific instruction to land managers (and resourcing) by GM LE to ensure compliance with weed control strategy Live trapping within the EcoCamp (if feral rodents recorded on video) Feral rodents euthanised if caught Live trapping extended for one week in habitat adjacent to Woodcutters EcoCamp (if feral rodents caught during Hastings River Mouse monitoring)
14.a.v.	Implementation of weed control strategy on	Spicers will develop a weed control plan for	GM SRT will monitor implementation of weed	Failure to implement weed control strategy on	Specific instruction to land managers (and

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
Describe measures to be implemented for the duration of the approval to control any new and existing weeds and pathogens outside of the Main Range National Park along the Scenic Rim Trail and at any camps	private land at SRT entry to and exit from MRNP, and within EcoCamp perimeter	implementation by Spicers' farm managers within six months of the action commencing Spicers farm managers will implement the weed control plan on Spicers' property within six months of the action commencing Spicers will develop and implement a surveillance and operational weed control plan at the EcoCamps within six months of the action commencing	control strategy on private land at SRT entry to and exit from MRNP, and within EcoCamp perimeter EcoCamp service staff will conduct surveillance for, and report, weed establishment at the EcoCamps	private land at SRT entry to and exit from MRNP, and within EcoCamp perimeter Establishment of weeds within the EcoCamp perimeters	resourcing) by Spicers to ensure compliance with weed control strategy Control of weeds using manual methods within the EcoCamp perimeter
14.a.vi. Describe measures to be implemented for the duration of the approval to ensure trail guides are trained to identify any new or existing invasive species of weeds	EcoGuides trained to identify weeds specified in this plan	EcoGuides will be trained in the identification of weeds specified in this plan	GM SRT will conduct annual audit of training of EcoGuides	New EcoGuides hired Existing EcoGuides request refresher course	Induction and annual refresher training for the life of the project
14.a.vii. Describe measures to be implemented for the duration of the approval to report any new or existing invasive species of weeds, pests or	Spicers to report any new or existing invasive species of weeds, pests or pathogens to QPWS	Spicers will require EcoGuides to report new observations of vertebrate pests and weeds or evidence of pathogens along or in the	GM SRT will review compliance at least three times per year	Reports of new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim	GM SRT will remind staff of their responsibility and will require compliance

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
pathogens to the Queensland Government agency responsible for the management of the Main Range National Park		vicinity of the Scenic Rim Trail in their trip reports Spicers will report new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail within 48 hours of receiving a report from the EcoGuides, to QPWS through the QPWS online tool		Trail not made in a timely manner	
14.a.viii. Describe measures to be implemented for the duration of the approval to establish and implement a shoe cleaning and sterilisation facility at the entry point and protocols for staff and clients entering the Scenic Rim Trail	Implementation and servicing of shoe cleaning facility and protocol	Spicers will establish and maintain a shoe cleaning and sterilisation facility at the entry point and require all staff and clients to use the facility prior to entry to MRNP EcoGuides will brief clients on the value and necessity of cleaning of equipment, including boots and clothing, for maintaining the ecological integrity of the GRAWHA EcoGuides will ensure that clients use the shoe cleaning and sterilisation	GM SRT will monitor implementation, use, and servicing of shoe cleaning and sterilisation facility at least three times per year EcoGuides will notify Spicers of need to replenish or replace shoe cleaning and sterilisation facility	Shoe cleaning and sterilisation facility requiring replenishment or replacement	Replenishment or replacement of shoe cleaning and sterilisation facility

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
		facility at the entry point to MRNP			
14.a.ix. Describe measures to be implemented for the duration of the approval to minimise the impact of artificial light and noise on the Hastings River Mouse at Woodcutters EcoCamp	Light and noise from EcoCamps maintained at lowest practicable level	Construction Manager to ensure that construction activities at EcoCamp sites do not occur before 7am or after 6pm/sunset. During EcoCamp operation: • Only the area requiring lighting for comfort or security will be lit • Lighting will be no brighter than required to provide for safety and comfort • Exterior lights will be long wavelength (590 - 610 nanometres; ~ 3000K) to avoid attracting insects or wildlife, and the interior lights will have low blue light emissions • Lighting maintenance and replacement specifications are understood by	Dedicated QPWS Ranger to observe hours of construction at Woodcutters EcoCamp to ensure compliance with conditions Construction Manager to monitor hours of construction at EcoCamps to ensure compliance with directions EcoCamp service staff and EcoGuides to assess lighting during operation or replacement EcoGuides to assess noise levels outside of infrastructure during night and early morning hours Spicers will monitor the local population of HRM near the Woodcutters EcoCamp for 10 years (section 9.2)	Construction activities occurring outside of specified hours Lighting design fails to prevent light spill outside perimeter Incorrect lights installed in external fixtures Clients making excessive noise	Construction will be halted, and contractors reminded of requirement to operate within specified hours Contractors will be contractually penalised if non-compliance continues The GM SRT will require redesign and reinstallation of lighting fixtures where required to minimise potential light impacts EcoCamp service staff will replace incorrect lighting with correct lighting EcoGuides will remind clients of requirement to keep noise levels down

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
		EcoCamp service staff • Purchasing agreement with supplier specifies required units • EcoCamp buildings will have window screening to minimise light spill • External lighting will be shielded from the camp perimeter EcoCamp infrastructure will be designed and constructed with noise dampening materials EcoGuides will inform clients of the potential impact of noise on Hastings River Mouse and will moderate conversational or other EcoCamp noise levels between dusk and dawn			
14.a.x. Describe measures to be implemented for the duration of the approval to remove food waste and litter from the Scenic Rim Trail and at	No litter or food waste from SRT activities to remain in MRNP and GRAWHA	EcoGuides will ensure that litter and food waste are collected and contained in rodent proof containers for removal from the EcoCamps and/or SRT	GM SRT will review EcoCamp servicing at least three times per year to ensure compliance	Litter or food waste from SRT occurring along trail or EcoCamps Litter and food waste not secured in rodent-proof containers for removal	GM SRT will require compliance and will resource new containers

Condition of Approval	Performance criteria	Management and mitigation measures	Monitoring	Trigger for further action	Corrective actions
Woodcutters EcoCamp and Amphitheatre View Wilderness EcoCamp to outside of the GRAWHP and Main Range National Park		EcoCamp service staff will remove litter and food waste in rodent-proof containers for appropriate disposal outside of MRNP/GRAWHA		from the MRNP/GRAWHA	
14.b. Specify protocols to ensure that any observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail are recorded and reported to the approval holder and subsequently to the Queensland Government agency responsible for the management of the Main Range National Park	Compliance with pest, weed, and pathogen reporting requirements	Spicers will require EcoGuides to report new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail in their trip reports (Appendix 3) Spicers will report new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail within 48 hours of receiving a report from the EcoGuides, to QPWS through the QPWS online tool	GM SRT will review compliance at least three times per year	Reports of new observations of vertebrate pests and weeds or evidence of pathogens along or in the vicinity of the Scenic Rim Trail not made in a timely manner	GM SRT will remind staff of their responsibility and will require compliance EcoGuides will receive refresher training in their reporting obligations

8. Residual Risk Assessment

A residual risk assessment was undertaken to assess the risk of management actions (Table 7) failing to avoid or mitigate impacts to MNES. For each identified risk, the likelihood of that risk occurring (Table 8) was assessed against the potential consequences of the risk (Table 8) to determine an overall residual risk rating (Table 9).

Table 8 Classification of qualitative measure of likelihood and consequences of management failure

Qualitative measure of likelihood of management failure to achieve SRTMP objectives	
1 Rare	Management failure unlikely to occur in all but exceptional circumstances
2 Unlikely	Management failure may occur but unlikely during the life of the project because of controls
3 Possible	Management failure might occur during the life of the project despite controls
4 Likely	Management failure is likely to occur during the life of the project despite controls
5 Highly likely	Management failure will occur during the life of the project despite controls
Qualitative measure of consequences of management failure to achieve SRTMP objectives	
1 Minor	Management failure will not result in significant impact on MNES
2 Moderate	Management failure could result in temporary impact on MNES without corrective actions
3 High	Management failure will result in temporary impact on MNES without corrective actions
4 Major	Management failure could result in significant impact to MNES without corrective actions
5 Critical	Management failure would result in significant impact to MNES.

Table 9 Residual risk rating matrix

		Consequence				
		Minor	**Moderate**	**High**	**Major**	**Critical**
Likelihood	**Rare**	**Low**	**Low**	**Low**	**Medium**	**High**
	Unlikely	**Low**	**Low**	**Medium**	**High**	**High**
	Possible	**Low**	**Medium**	**Medium**	**High**	**Severe**
	Likely	**Low**	**Medium**	**High**	**High**	**Severe**
	Highly likely	**Medium**	**High**	**High**	**Severe**	**Severe**

Table 10 provides the residual risk rating, the reason for that rating, and corrective actions that will be undertaken in the event of management failure.

Table 10 Residual risk rating of management failure, explanation for rating, and corrective actions

Risk	Residual risk rating			Reason for rating	Corrective action for management control failure
	Likelihood	Consequence	Risk rating		
Clearance of more than 0.16 ha of native forest or woodland during construction of EcoCamps	2	1	L	The controls include clear surveying and delineation of the perimeter and area of each EcoCamp and marking of trees for clearance. The Construction Manager and dedicated QPWS Ranger will supervise clearance and will be able to respond immediately to any non-authorised vegetation being cleared.	Immediate cessation of construction at site. Reporting to DoEE and QPWS. Negotiation with DoEE and QPWS for remediation
Establishment of more than one crossing at Blackfellow Creek or Dalrymple Creek	2	1	L	The controls include the clear delineation of a single track to and from each of the creek crossings and selection of the single most appropriate crossing spot at each creek. The Construction Manager and dedicated QPWS Ranger will supervise track construction and crossing establishment and will be able to respond immediately to any deviation from authorised crossing establishment.	Immediate cessation of construction at site. Reporting to DoEE and QPWS. Negotiation with DoEE and QPWS for remediation
EcoCamps and new trails established outside of approved and designated areas	2	1	L	The controls include clear surveying and delineation of the perimeter and area of each EcoCamp and of the alignment of new trails within an approved corridor. The Construction Manager and dedicated QPWS Ranger will supervise the construction of the	Immediate cessation of construction at site. Reporting to DoEE and QPWS. Negotiation with DoEE and QPWS for remediation

				EcoCamps and establishment of the trails and will be able to respond immediately to any non-authorised establishment.	
Clearance or disturbance of Mountain Frog or Fleay's Barred Frog habitat outside of the approved crossings of Blackfellow Creek and Dalrymple Creek	2	1	L	The controls include clear surveying and alignment of new trails within an approved corridor including explicit avoidance of potential Mountain Frog habitat adjacent to the SRT, and one crossing only being established on Blackfellow Creek and Dalrymple Creek. The Construction Manager and dedicated QPWS Ranger will supervise the establishment of the trails and will be able to respond immediately to any non-authorised establishment.	Immediate cessation of construction at site. Reporting to DoEE and QPWS. Negotiation with DoEE and QPWS for remediation
Construction and operation of onsite sewage and wastewater treatment and disposal system	2	1	L	Controls will be established in the PWaSM.	Corrective actions will be specified in PWaSM.
Excess clearance of vegetation during construction of new trails	2	1	L	Groundcover vegetation clearance along the trail alignment will be undertaken with a simple brush cutter.	Warning by Construction Manager to minimise brushing of groundcover vegetation
Significant track erosion into Blackfellow Creek or Dalrymple Creek	2	1	L	The controls include aligning the trails to and from each crossing to avoid the direct flow of water down or off the track into the creeks and hardening of the track surface or diverting and diffusing water flows off the track where required.	Reporting to DoEE and QPWS. Further hardening of track surfaces where required and installation or construction of sediment traps.
Construction or operation of SRT causing increased spread of existing vertebrate pests, weeds, and pathogens in the MRNP and GRAWHA	3	2	M	The controls include following the DPNSR protocols for controlling the spread of pests, weeds, and pathogens in National Parks. The likelihood of spread is greater by other users of the MRNP not adhering to these controls. Nevertheless, it is always possible that existing weeds and pathogens are spread inadvertently during construction or operation of the SRT.	Reporting establishment of existing weeds or pathogens in new locations to QPWS allowing for timely management. Weeds will be controlled by Spicers if they occur within the EcoCamp perimeter. Spicers will discuss and negotiate options for remediation if weeds, or pathogens are spread by SRT actions. Subsequently, Spicers will act on

					DoEE advice to control or eradicate weeds spread by SRT actions.
Construction or operation of SRT introduces new vertebrate pests, weeds, and pathogens into MRNP and GRAWHA	3	2	M	The controls include following the DPNSR protocols for controlling the introduction of pests, weeds, and pathogens to National Parks. The likelihood of introduction is greater by other users of the MRNP not adhering to these controls. Nevertheless, it is always possible that pests, weeds, or pathogens are introduced inadvertently during construction or operation of the SRT.	Rodent trapping will be initiated and/or extended if feral rodents are observed in video monitoring at the Woodcutters EcoCamp or are caught during Hastings River Mouse monitoring. Weeds will be controlled by Spicers if they occur within the EcoCamp perimeter. Spicers will discuss and negotiate options for remediation if weeds, or pathogens are introduced by SRT actions. Subsequently, Spicers will act on DoEE advice to control or eradicate weeds spread by SRT actions.
EcoGuides do not receive training in identifying weeds specified in this plan	2	1	L	The controls require that EcoGuides receive induction and refresher training in identifying weeds of significance. It is possible that training may be missed for individual guides or that there are delays in training. This is unlikely to lead to a significant impact on MNES.	The General Manager SRT will require training to be conducted as soon as practicable if EcoGuides have not been trained. If an EcoGuide is yet to be trained that EcoGuide will be accompanied by a suitably trained EcoGuide
Spicers fails to report any new or existing weeds, pests, or pathogens to the Queensland Government	2	1	L	The controls require that EcoGuides report new weeds, pests, or pathogens to Spicers management and that Spicers report these to QPWS. It is possible that reports may be delayed on not lodged, however incidences of new or existing weeds, pests, or pathogens will be picked up at other times and by other survey and monitoring.	The General Manager SRT will reinforce the reporting requirements and responsibilities to all relevant staff.
Spicers fails to establish and implement a shoe cleaning and sterilisation facility and protocols for use	2	1	L	The controls require the establishment of a shoe cleaning and sterilisation facility at the entrance to the MRNP SRT and that EcoGuides ensure that clients use the facility.	EcoGuides will contact the Service Staff to refill or maintain the facility if it requires servicing outside of scheduled servicing period.

				There is no likelihood that this will not be installed, however there is a possibility that maintenance or servicing of the facility falls behind schedule. There is a small likelihood that EcoGuides neglect to require guests to clean and sterilise their footwear.	The General Manager Land and Environment will reinforce the requirement to follow protocols for footwear cleaning and sterilisation with all relevant staff.
Excess lighting or noise from Woodcutters EcoCamp	2	1	L	The controls require that external light levels and noise from the Woodcutters EcoCamp be kept low and light not be directed onto Hastings River Mouse habitat.	EcoCamp Service Staff will ensure that lighting and fixtures are repaired or replaced to specification. Lighting and/or noise control provisions will be reviewed by a suitably qualified person under the direction of the General Manager Land and Environment. Recommendations of the review will be implemented.
Spicers fails to remove food waste and litter from SRT and EcoCamps	2	1	L	The controls require that all food waste and litter be removed from the SRT and EcoCamps as part of the servicing of the EcoCamps. It is possible that some food waste or litter is occasionally left behind, however this is unlikely and will be remedied in subsequent servicing.	The General Manager SRT will reinforce the requirement for EcoCamp Service Staff and EcoGuides to remove food waste and litter from the EcoCamps and SRT.
Spicers fails to follow protocols for recording and reporting observations of vertebrate pests, weeds, or pathogens	2	1	L	Protocols for the recording and reporting of these observations will be SOP for EcoGuides and the General Manager Land and Environment (and/or their delegate) and annual auditing will identify whether these protocols have been followed. It is possible that the protocols may inadvertently not be followed	The General Manager SRT will reinforce the requirement for all SRT staff to follow protocols for recording and reporting observations of vertebrate pests, weeds, or pathogens

9. 10-Year Monitoring Program

This section of the SRTMP specifies the 10-Year monitoring program required by the CoA to determine whether activities associated with the SRT cause a decline in the population of Hastings River Mouse, Fleay's Barred Frog, and Mountain Frog, or a decline in riparian habitat quality and water quality at the crossing of Blackfellow Creek and Dalrymple Creek that would affect Fleay's Barred Frog or Mountain Frog.

Monitoring data will be collected, analysed, and reported by suitably qualified environmental experts. Reports will be produced immediately after each annual monitoring period and will be published on the SRT webpage following approval by the GM SRT. The data will be published in a suitable database, e.g. excel, on the SRT webpage.

A separate approved Sewage and Wastewater Monitoring Plan (SWMP) and Plan for Wastewater and Sewage Management (PWaSM) provide the details of the 10-year monitoring program to determine whether treated wastewater disposed to land by subsurface irrigation will cause a decline in the ecological values of the MRNP and GRAWHA.

9.1. Baseline Data Collection

The Baseline Data Collection Plan (BDCP) establishes baseline data against which future changes in variables and parameters will be assessed. Prior to commencement of construction and operation of the SRT, suitably qualified experts have:

- Surveyed populations of Hastings River Mouse, Fleay's Barred Frog, and Mountain Frog following the method in the BDCP, to establish the baseline population against which future changes in populations will be assessed.
- Surveyed water quality and riparian habitat following the protocol in the BDCP and summarised below, to establish the baseline against which future changes in parameters will be assessed.

9.2. Hastings River Mouse

9.2.1. Location

Transects will be established within 100 m of the Woodcutters EcoCamp boundaries in Hastings River Mouse habitat and at a control site in habitat above Dalrymple Creek, approximately 600 m north-west of Woodcutters EcoCamp (Figure 9).

9.2.2. Survey Method

This survey method is in accordance with the Recovery Plan for the Hastings River Mouse (*Pseudomys oralis*) (NSW DECC 2005) and the Survey guidelines for Australia's threatened mammals – Guidelines for detecting mammals listed as threatened under the *Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth of Australia 2011).

A targeted trapping survey will be undertaken using size-A Elliott traps baited with peanut butter and rolled oats. Traps will be placed preferentially in local-scale habitat to maximise the likelihood of capture e.g. near fallen trees, adjacent to rock outcrops, trees with basal cavities, dense grass, and burrows of suitable size. Traps will be set in the late afternoon and checked again within two hours of sunrise to identify and release all animals live-trapped overnight. Trapping will not occur during cold or wet conditions. The total number of individuals of all rodent species trapped each night on each transect shall be recorded and the capture rate will be standardised as captures per 100 trap nights (C/100TN).

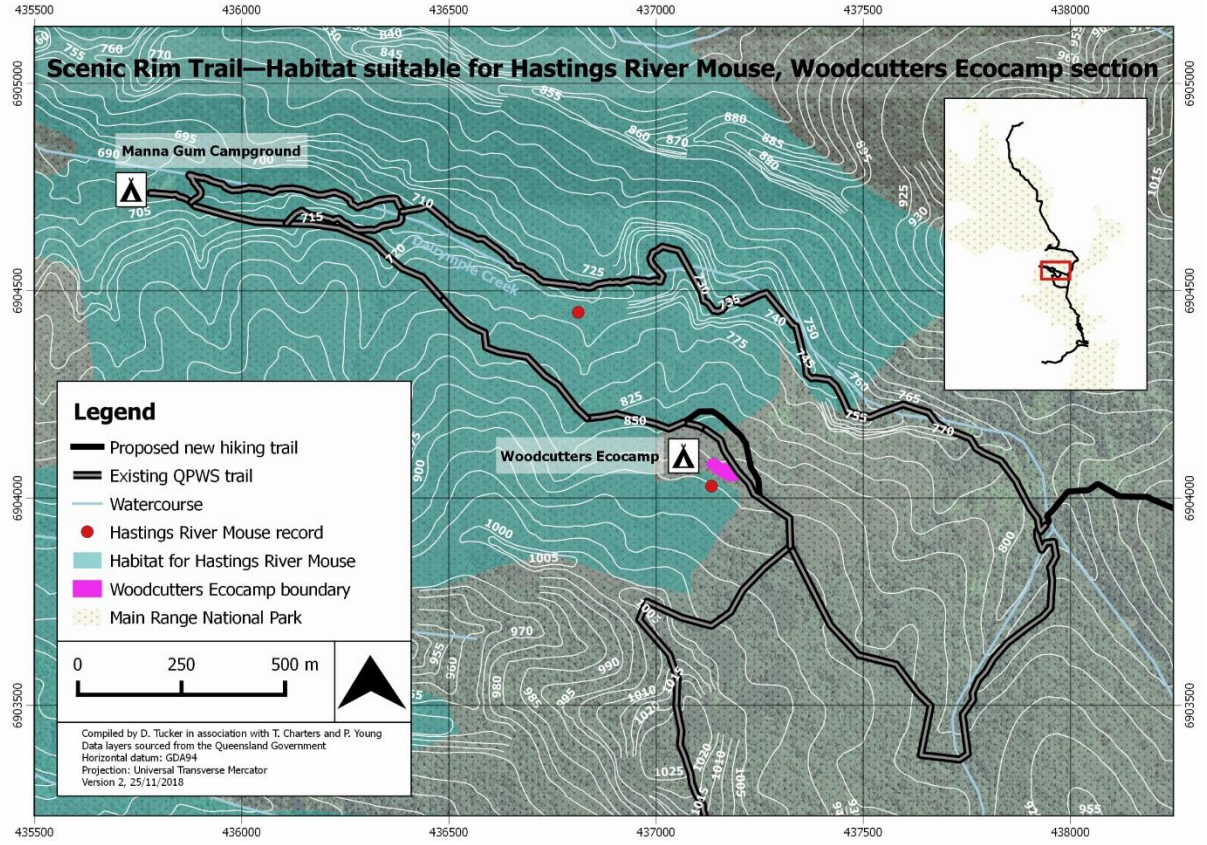

Figure 9 Hastings River Mouse surveys will occur in potential habitat within 100m of the Woodcutters EcoCamp

Habitat assessment will be undertaken at each of four habitat assessment sites, recording the following vegetation characteristics: (1) the canopy height range, median height and percentage canopy cover for each of the canopy, subcanopy, shrub and groundcover layers using a line-intercept method along a 50 m transect, and the dominant species in each layer; (2) the floristic species richness of groundcover vegetation within each of five 1 m x 1 m quadrats spaced at 10 m intervals along the 50 m transect; and (3) the general abundance of potential shelter sites for Hastings River Mouse

9.2.3. Effort

Trapping effort will comprise 400 trap-nights (4 transects of 25 traps over four consecutive nights) in habitat within 100 m of Woodcutters EcoCamp boundaries (Figure 9) and 400 trap-nights (4 transects of 25 traps over four consecutive nights) at a control site in habitat above Dalrymple Creek, approximately 600 m north-west of Woodcutters EcoCamp.

9.2.4. Timing

The survey data will be collected during November to minimise the risk of hypothermia, following three days of dry conditions and the forecast does not predict rain heavy rain. Traps will be covered with suitable material (such as a plastic freezer bag) if there is a chance of rainfall.

9.2.5. Frequency

The surveys will be conducted over one period of four consecutive nights, annually, for ten years.

9.2.6. Responsibility

Monitoring, data analysis, and reporting will be undertaken by a suitably qualified expert and responsibility for the conduct and reporting of the 10-year monitoring program is held by the Spicers GM SRT.

9.2.7. Correction Trigger Values

The trigger for a management response will be the absence of or significant reduction in the presence of Hastings River Mouse during any annual trapping period and/or the capture of feral rodents during the live trapping.

Figure 10 presents the baseline data collected for Hastings River Mouse and for two other native rodent species near the Woodcutters EcoCamp. Hastings River Mouse occurs in very low abundance at this site (0.14 C/100TN), which is the northernmost known extent of its range. The bush rat (*R. fuscipes*) and brown antechinus (*A. stuartii*) are in greater abundance. Possible habitat competition between these native species may keep the Hastings River Mouse population at very low levels.

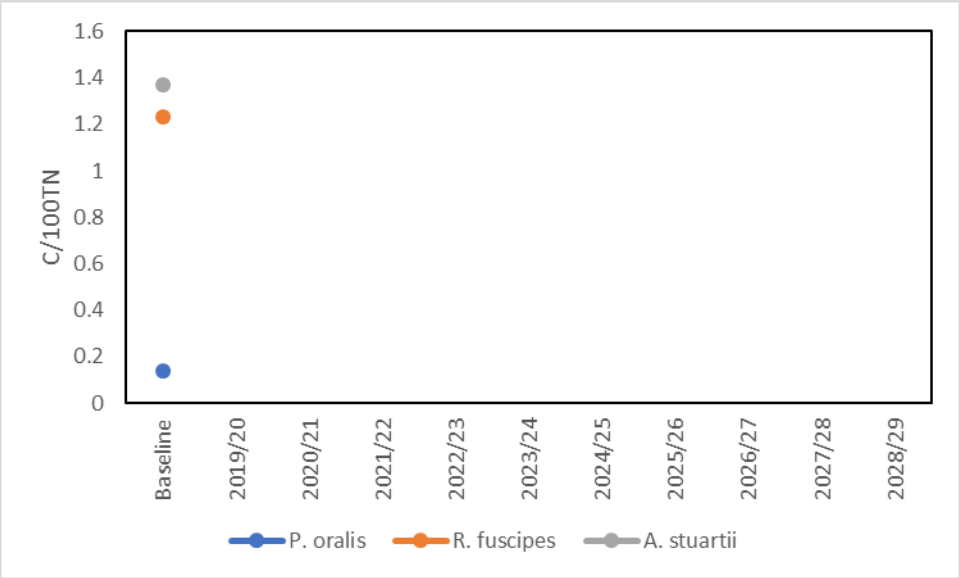

Figure 10 HRM and other rodent baseline data collected for the 10-year monitoring program

9.2.7.1 Supplementary Rodent Monitoring

Spicers will have motion sensor triggered wildlife video cameras installed in the Kitchen Pavilions to detect the occurrence of feral rodents. A wildlife expert will analyse the footage to determine the identity of any rodent species recorded. Data will be available for remote downloading if possible or collected by EcoCamp service staff. The wildlife expert will review the footage weekly.

9.2.8. Corrective Management Action

The management response by Spicers to an absence of or significant reduction in the presence of Hastings River Mouse will be to extend the sampling period and sampling area to confirm the presence or absence of animals in the area. Spicers will consult with the QPWS and relevant experts to determine whether the absence of or significant reduction in the presence of Hastings River Mouse is due to environmental factors, e.g. competition with other native rodents, changes to habitat, or activities associated with the SRT.

The corrective management response to captures of feral rodents during the live trapping surveys will be an extension of the current trapping program by a week to ensure that all feral rodents in the area are captured and euthanised (humanely and with necessary permits).

The corrective management response by Spicers to an observation of feral rodents at an EcoCamp facility will be an immediate live trapping program in and around the EcoCamp to capture and kill these animals.

9.3. Fleay's Barred Frog

9.3.1. Location

The location of the crossing of Blackfellow Creek is shown in Figure 5 and Figure 12; the location of the Dalrymple Creek crossing is shown in Figure 6 and Figure 13. The location of the Cascade Trail is shown on Figure 6.

9.3.2. Survey Method

The survey method outlined below is in accordance with the Threatened species survey and assessment guidelines: field survey methods for fauna – Amphibians (NSW DECC 2009) and Survey guidelines for Australia's threatened frogs – Guidelines for detecting frogs listed as threatened under *the Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth of Australia 2010).

A transect will be established upstream (100m) and downstream (100m) of the crossings of Blackfellow Creek (Figure 5, Figure 12) and Dalrymple Creek (Figure 6, Figure 13) providing a Before-After Control-Impact (BACI) design. Each nocturnal survey shall start at least 45 minutes after sunset and will involve walking slowly and quietly along the transect listening for calling frogs and searching for foraging frogs based on reflective eye-shine from the light of a head-torch, and pausing at intervals to use call-playback to stimulate calling (in accordance with the 'Audio strip transect survey' method). The position of all frogs seen or heard along the transects will be recorded using a hand-held GPS.

Supplementary monitoring will occur with the positions of all frogs seen or heard along the Cascades Track (Figure 6) from Manna Gum Campground to the Dalrymple Creek crossing point (a 2,700m long transect survey through prime foraging habitat) will be recorded using a hand-held GPS on each survey night, while walking slowly and quietly to the Dalrymple Creek crossing site.

The ongoing dynamics between chytrid fungus and adult frogs may confound the attribution of population declines to the SRT (H. Hines pers. comm 2019). Therefore, the presence and relative abundance of Fleay's Barred Frog larvae (tadpoles) will be determined by dip-netting in five pools per 100m transect (upstream and downstream of each crossing point) during the day. The total number of Fleay's Barred Frog tadpoles captured in each of two 5-second sweeps of the net at each pool will be recorded. Tadpoles will be captured, identified, and released at the same location. The tadpole surveys are intended to supplement the adult surveys given that larval abundance is less variable and larval abundance is an indicator of successful breeding.

9.3.3. Timing

The recommended timing for surveys to characterise population size of Fleay's Barred Frog is late summer (Quick *et al*. 2015) since Fleay's Barred Frogs are more active along creeks during the late breeding season (Stratford *et al*. 2010, Quick *et al*. 2015). This has been confirmed by the baseline data collection (Figure 11). At least two separate surveys for adult frogs will be conducted, both in the late breeding season within the period January-March, during ideal conditions, at each of the crossing points.

Ideal conditions for adult surveys are defined as when the substrate and leaf litter are wet after a rainfall event of at least 20mm, but not during strong stream flow conditions within the first week

after heavy rainfall. Ideal conditions for larval surveys are defined as base stream flow conditions, i.e. not during strong stream flow conditions within the first week after heavy rainfall.

9.3.4. Effort

Sampling of adults will be repeated for at least two nights at each site when the substrate and leaf litter are wet after a rainfall event of at least 20mm, but not during strong stream flow conditions within the first week after heavy rainfall.

Sampling of tadpoles with 2 x 5-second sweeps of a net per pool will occur once during each sampling period, repeated on four sampling occasions.

Sampling will be undertaken by the same suitably qualified expert.

9.3.5. Frequency

Adult frogs will be surveyed in two sample periods in the late breeding season, per year. Tadpoles will be surveyed in three sample periods per year (once in the early breeding season and twice in the late breeding season) tadpole sampling occasions per year.

9.3.6. Responsibility

Monitoring, data analysis, and reporting will be undertaken by a suitably qualified person and responsibility for the conduct and reporting of the 10-year monitoring program is held by the Spicers GM SRT.

9.3.7. Correction Trigger Values

Figure 11, Figure 14, and Figure 15 show the baseline population data for Fleay's Barred Frog, collected at the three locations. These demonstrate the high intra-seasonal variability of visibility of the species and support the decision to monitor twice during the later breeding season rather than early and late as conducted during the baseline data collection.

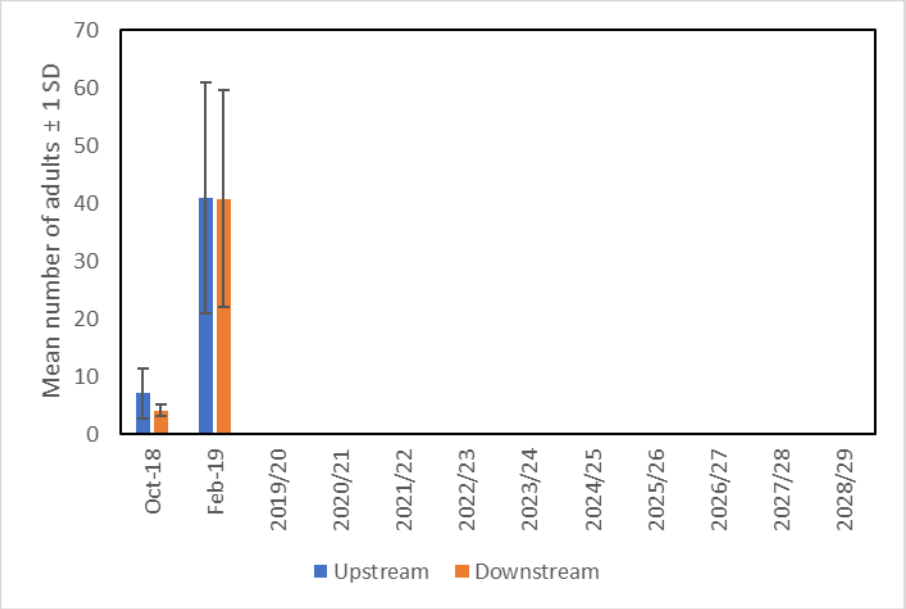

Figure 11 Baseline population data for adult Fleay's Barred Frog upstream and downstream of the Blackfellow Creek Crossing

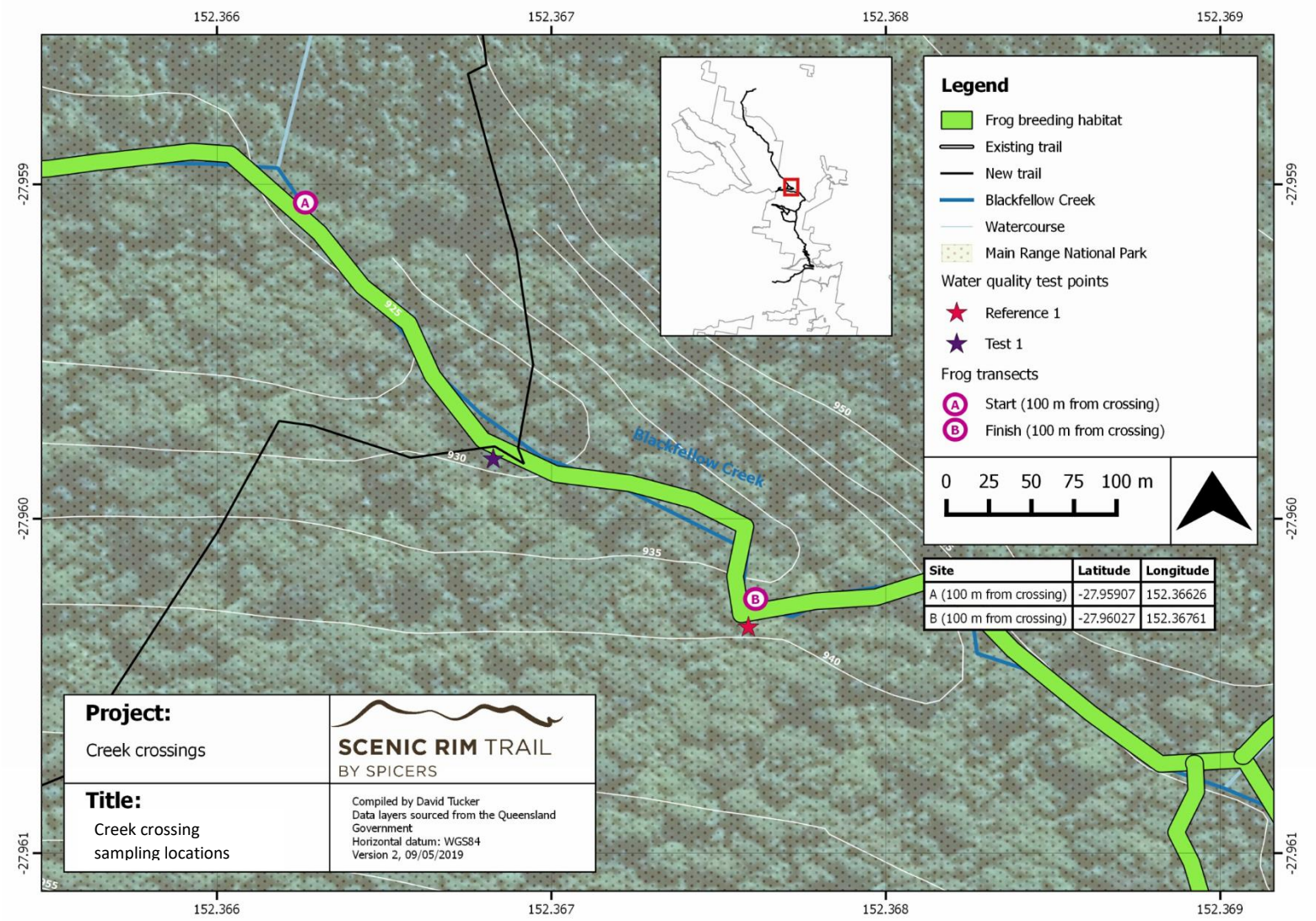

Figure 12 Location of the downstream start point (A) and upstream end point (B) of the frog monitoring transects, riparian habitat, and water quality sampling points upstream and downstream of the Blackfellow Creek crossing. Note that sampling point Test 1 is below the actual crossing.

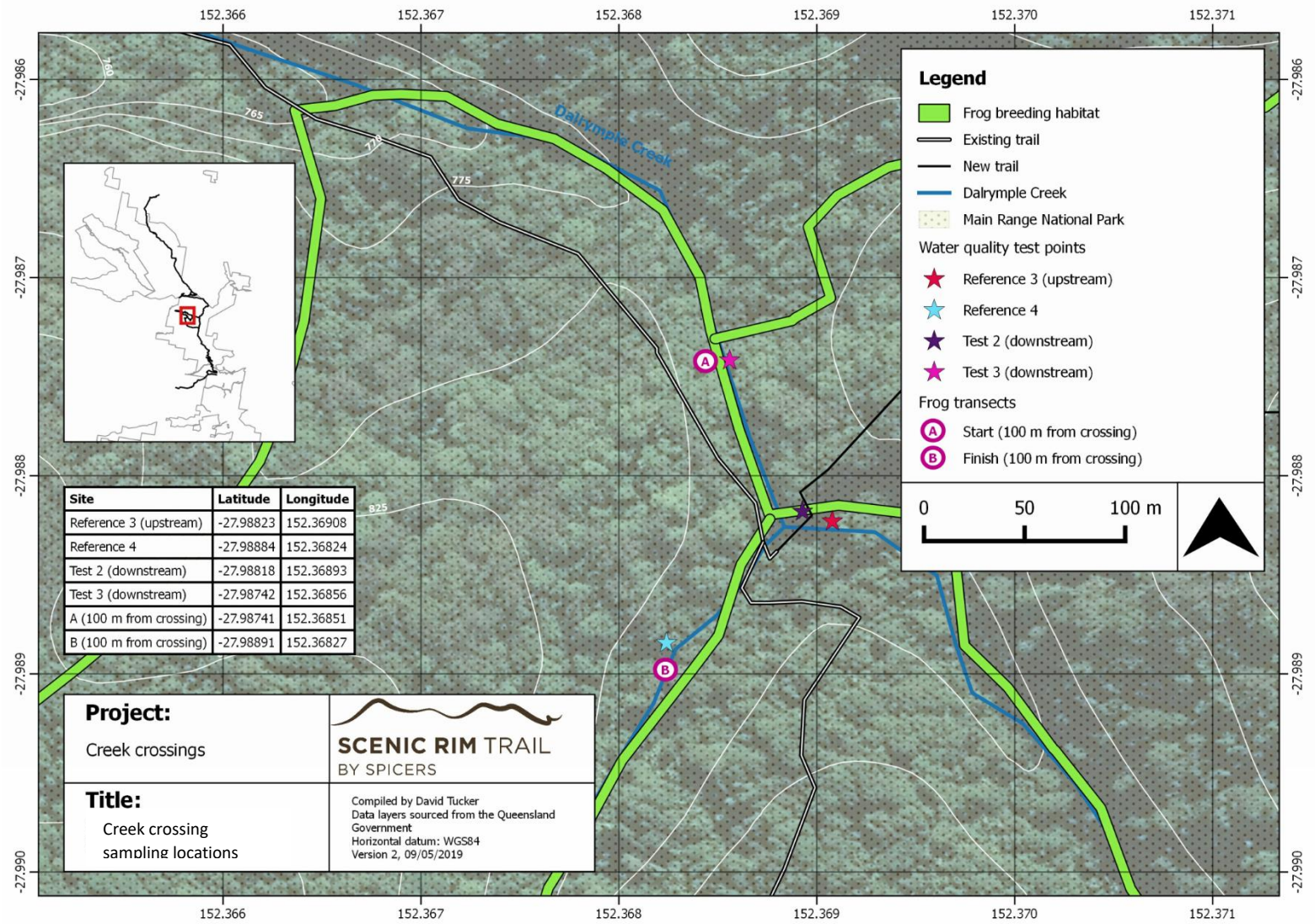

Figure 13 Location of the downstream start point (A) and upstream end point (B) of the frog monitoring transects, riparian habitat, and water quality sampling points upstream and downstream of the Dalrymple Creek crossing.

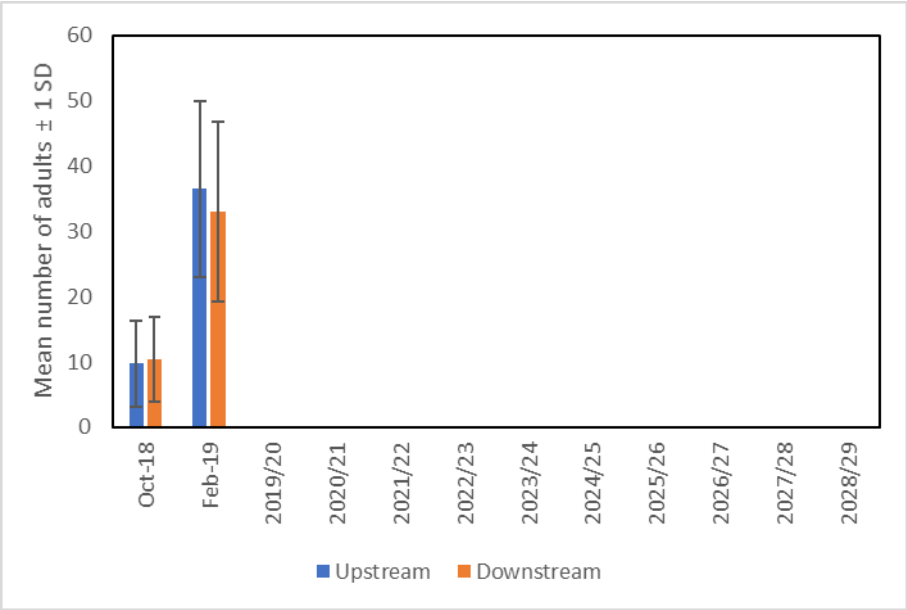

Figure 14 Baseline population data for adult Fleay's Barred Frog upstream and downstream of the Dalrymple Creek Crossing

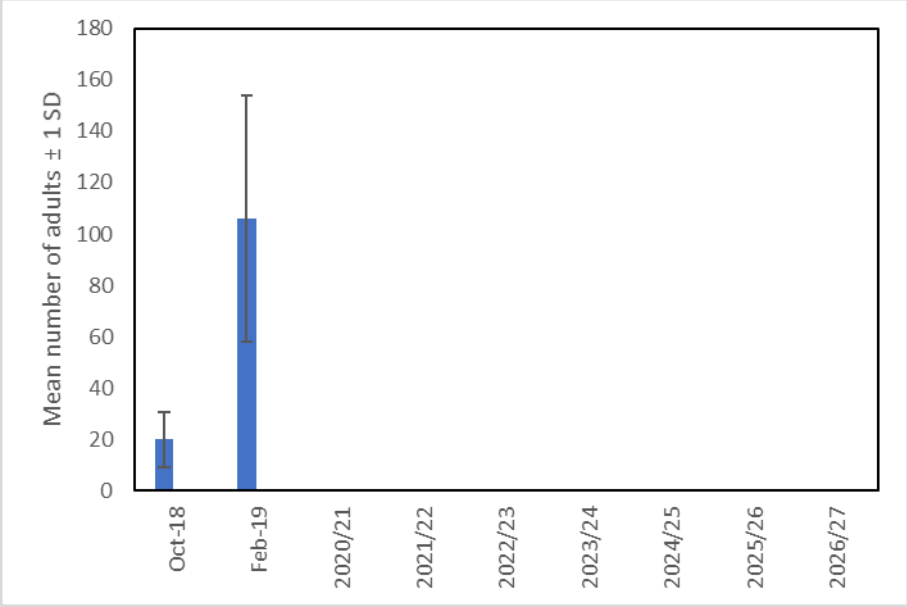

Figure 15 Baseline population data for adult Fleay's Barred Frog along the Cascade Track

Analysis of Variance (ANOVA) will be conducted annually on the collected data to determine whether there are statistically significant differences ($P < 0.05$) between the *Control* and *Impact* sites. A management response will be triggered if the population at an *Impact* site is significantly less than the *Control* site.

A generalised linear model or the non-parametric Mann-Kendall test will be applied after three years of data have been collected, and each year thereafter. ANOVA (or non-parametric equivalents) incorporating water quality, hydrological, riparian habitat quality, and climate data where a statistically significant decline in population numbers is detected.

A management response will be triggered if a statistically significant decline in the population is observed and if monitoring of water quality (Section 9.5) or riparian habitat quality (Section 9.6) indicates that the SRT may be having an impact on the frog population.

9.3.8. Corrective Management Action

The corrective management action will depend on which environmental factor may have caused the population decline:

- Riparian habitat quality impacts due to feral animal (i.e. pigs, cattle) disturbance will result in:
    - Notification to QPWS of damage and request for feral animal control
- Riparian habitat quality decline due to independent walker disturbance may result in:
    - Placement of natural barriers to alternate creek crossings
    - Rehabilitation of unauthorised creek crossings, in consultation with QPWS
    - Establishment of signs noting critical frog breeding habitat, in consultation with QPWS

9.4. Mountain Frog

9.4.1. Location

The location of the crossings of Blackfellow Creek and Dalrymple Creek are shown on Figure 5 and Figure 6. The location of the rainforest spinach habitat adjacent to the SRT is shown on Figure 18 and Figure 19.

9.4.2. Survey Method

This survey method outlined below is in accordance with the Threatened species survey and assessment guidelines: field survey methods for fauna – Amphibians (NSW DECC 2009).

Mountain frogs will be surveyed during the daytime. Rainforest spinach habitat along the upstream and downstream transects established for Fleay's Barred Frog surveys on Blackfellow and Dalrymple creeks and along Lookout Rd creek (Figure 12, Figure 13) will be surveyed for calling male frogs. The audio strip transect survey method will be applied and the number and location of calling frogs will be recorded on hand held GPS.

Rainforest spinach habitat has been mapped along the SRT (Figure 18). Rainforest spinach habitat within 50m of new trails, i.e. at the three locations on Figure 18 adjacent to the new trails, will be surveyed for calling male frogs during the daytime using the audio point survey approach where habitat patches are small). The number and location of frogs will be recorded on hand held GPS. Figure 19 shows the location of mapped rainforest spinach along Blackfellow Creek and recorded occurrence of Mountain Frog within 100m upstream and downstream of the creek crossing in this habitat.

9.4.3. Effort

Sampling will be limited to two separate, consecutive days at each site by the same suitably qualified expert. The 100m transects and the sites adjacent to the SRT will be walked at the same time once each day.

9.4.4. Timing

Surveys will be undertaken between September to early November, the main calling period for this species at Main Range National Park.

9.4.5. Frequency

Sampling will occur annually in conjunction with the Fleay's Barred Frog surveys.

9.4.6. Responsibility

Monitoring, data analysis, and reporting will be undertaken by a suitably qualified expert and responsibility for the conduct and reporting of the 10-year monitoring program is held by the GM SRT.

9.4.7. Correction Trigger Values

Figure 16 and Figure 17 show the baseline population data for Mountain Frog, collected at Blackfellow Creek and Lookout Road creek. There were no Mountain Frogs recorded at Dalrymple Creek.

Analysis of Variance (ANOVA) will be conducted annually on the collected data to determine whether there are statistically significant differences ($P < 0.05$) between the *Control* and *Impact* sites. A management response will be triggered if the population at an *Impact* site is significantly less than the *Control* site.

A generalised linear model or the non-parametric Mann-Kendall test will be applied after three years of data have been collected, and each year thereafter. ANOVA (or non-parametric equivalent) incorporating water quality, hydrological, riparian habitat quality, and climate data where a statistically significant decline is detected in the population numbers.

A management response will be triggered if a statistically significant decline in the population is observed and if monitoring of water quality (Section 9.5) or riparian habitat quality (Section 9.6) indicates that the SRT may be having an impact on the population.

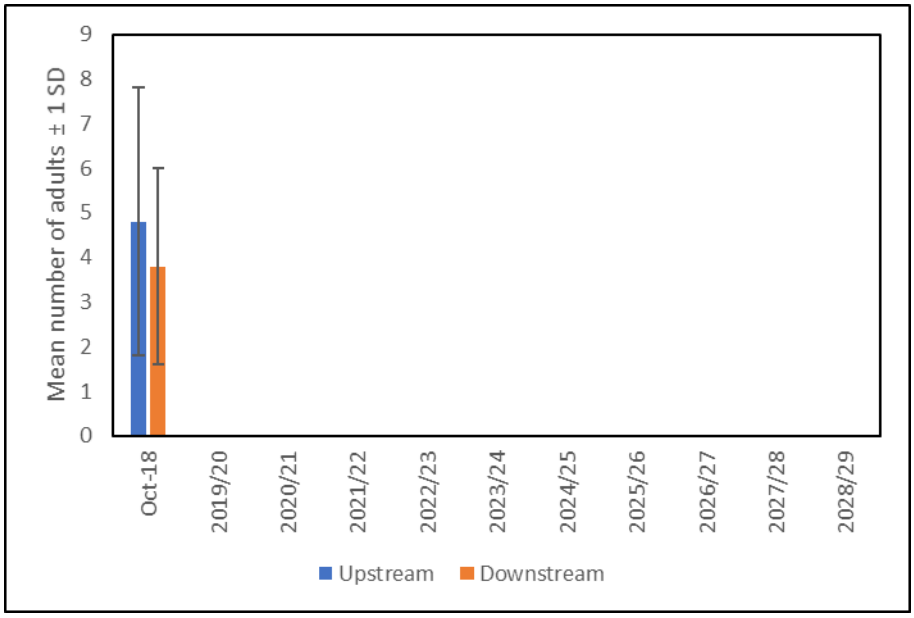

Figure 16 Baseline Mountain Frog abundance upstream and downstream of the Blackfellow Creek Crossing

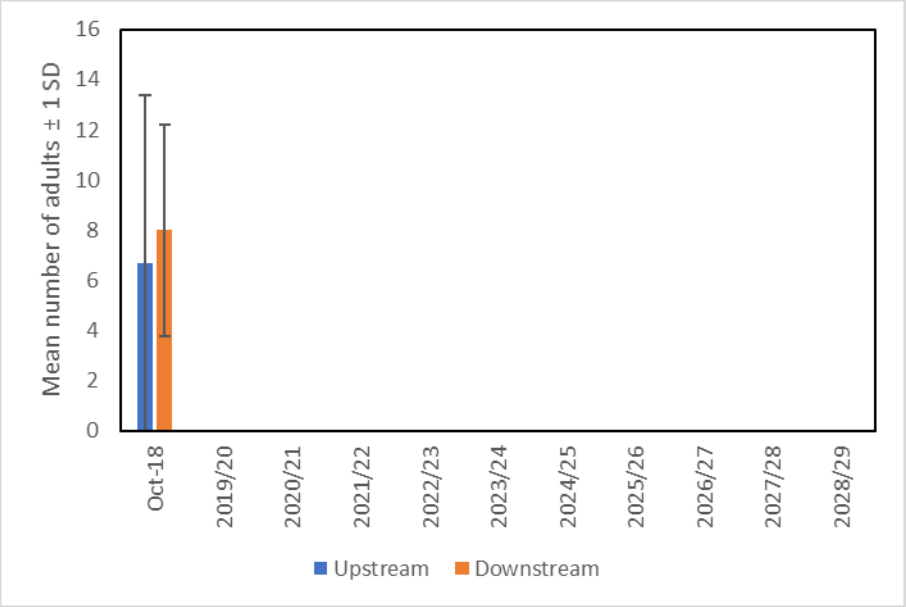

Figure 17 Baseline Mountain Frog upstream and downstream of Lookout Road

9.4.8. Corrective Management Action

The corrective management action will depend on which environmental factor may have caused the population decline:

- Riparian habitat quality impacts due to feral animal (i.e. pigs, cattle) disturbance will result in:
    - Notification to QPWS of damage and request for feral animal control
- Riparian habitat quality impacts due to independent walker disturbance may result in:
    - Placement of natural barriers to unauthorised creek crossings
    - Rehabilitation of unauthorised creek crossings, in consultation with QPWS
    - Establishment of signs noting critical frog breeding habitat, in consultation with QPWS

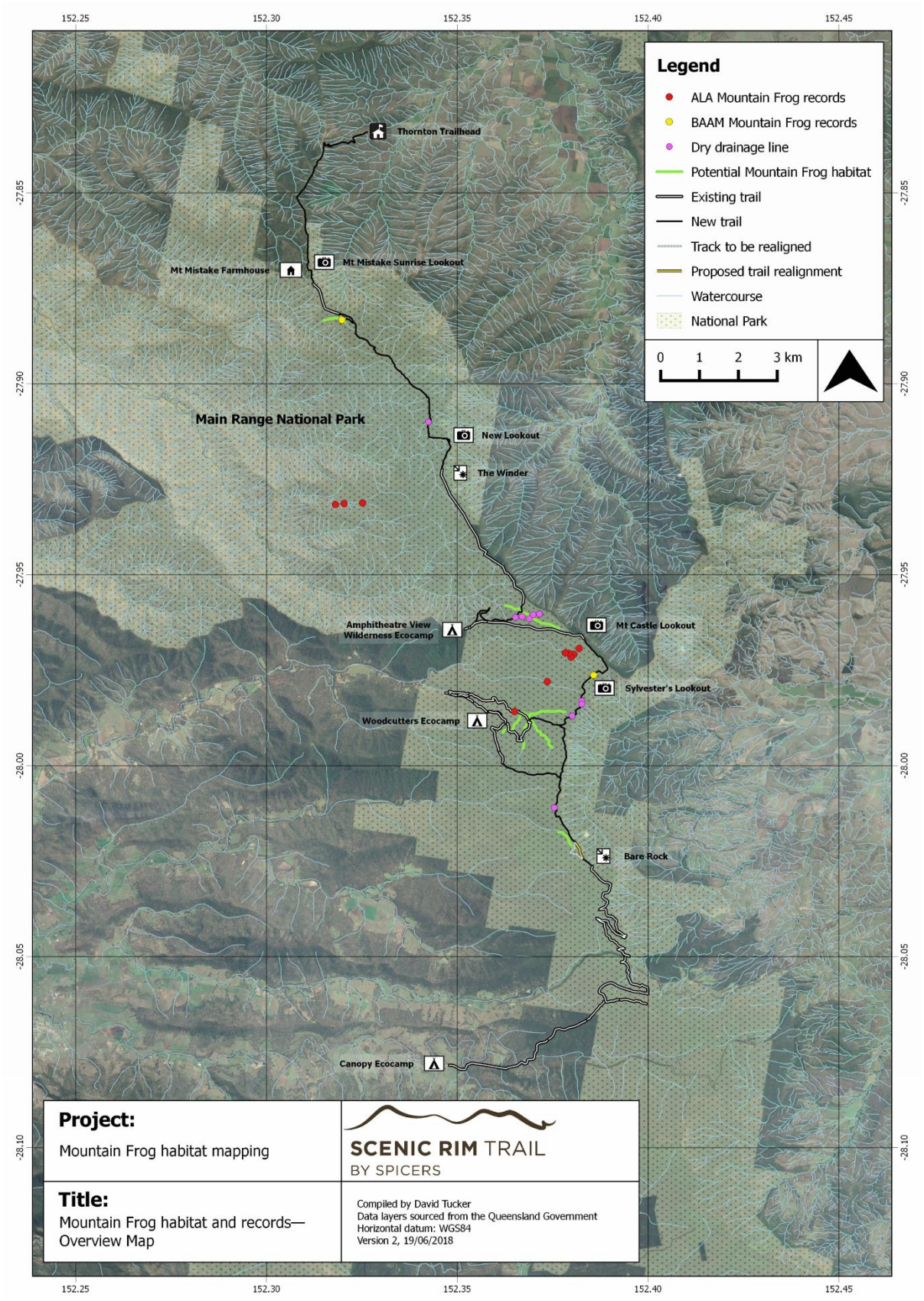

Figure 18 Location of mapped Mountain Frog rainforest spinach habitat and Mountain Frog records along the SRT

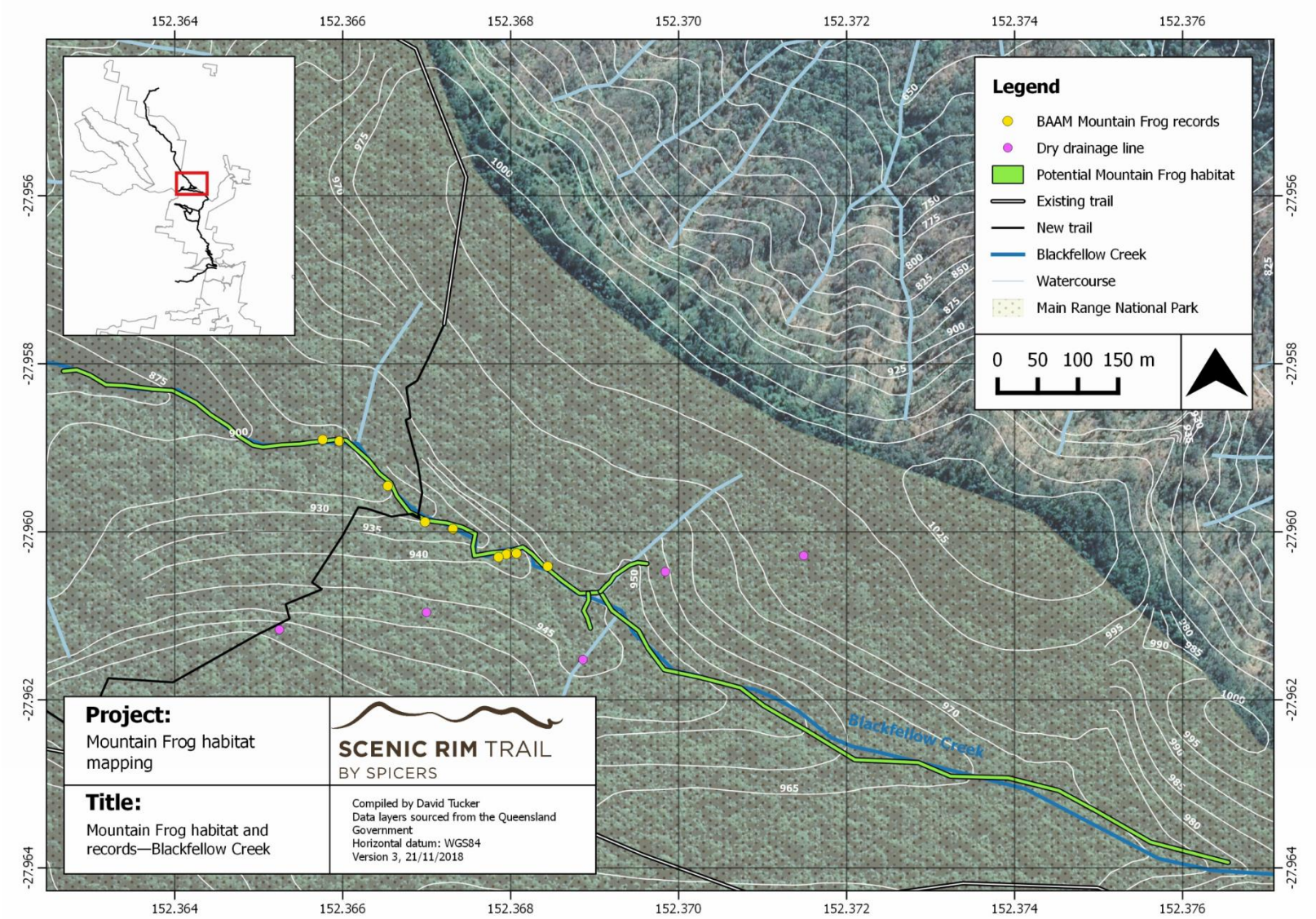

Figure 19 Mapped Mountain Frog habitat and recorded occurrence along Blackfellow Creek

9.5. Water Quality at Creek Crossings

9.5.1. Survey Method

The survey method outlined below is in accordance with the Monitoring and Sampling Manual: Environmental Protection (Water) Policy (DES 2018) and the Australian Guidelines for water quality monitoring and reporting (ANZECC and ARMCANZ 2000).

Surface water will be collected in sterile equipment from moving water instream and tested onsite for pH, EC, dissolved oxygen (DO), turbidity, and temperature. Samples, including replicates and samples for quality control, will be bottled, stored at 4°C, and sent to a NATA accredited laboratory for the following analysis:

- *E. coli* (cfu/100ml);
- Ammonia (mg/l as N), Total Kjeldahl Nitrogen, Nitrate, Nitrite (mg/l as N);
- Total Phosphorus, Ortho Phosphate (mg/l);
- Major Anions - Chloride, Sulphate, Bicarbonate, Fluoride;
- Major Cations - Sodium, Potassium, Calcium, Magnesium

Industry standard Quality Assurance and Quality Control (QA/QC) procedures will be followed to avoid sample contamination.

9.5.2. Location

Sampling will occur at four sites, providing a BACI design (Figure 20). The four sites include one site upstream and downstream of the Blackfellow Creek crossing (SW007, SW008) and of the Dalrymple Creek crossing (SW009, SW010).

9.5.3. Effort

Sampling will occur three times per annum at each creek crossing under baseflow conditions. At least two samples will be collected at each site for onsite testing. At least two samples will be collected at each site for laboratory testing. A field duplicate sample will be collected per 10 samples.

9.5.4. Timing

Three surveys will be conducted at the Blackfellow Creek and Dalrymple Creek crossings per annum. Two sample periods will occur while frog populations are being monitored (the wet season) and one sample will occur during the dry season under ambient conditions. Wet season sampling will occur between four and six weeks following good rainfall and not within a week of high rainfall.

9.5.5. Frequency

During the 10-year monitoring program sampling will occur three times per annum at Blackfellow Creek and Dalrymple Creek crossings under ambient conditions and will be repeated annually.

9.5.6. Responsibility

The monitoring, data analysis, and reporting will be undertaken by a suitably qualified expert and responsibility for the conduct and reporting of the monitoring program is held by the GM SRT.

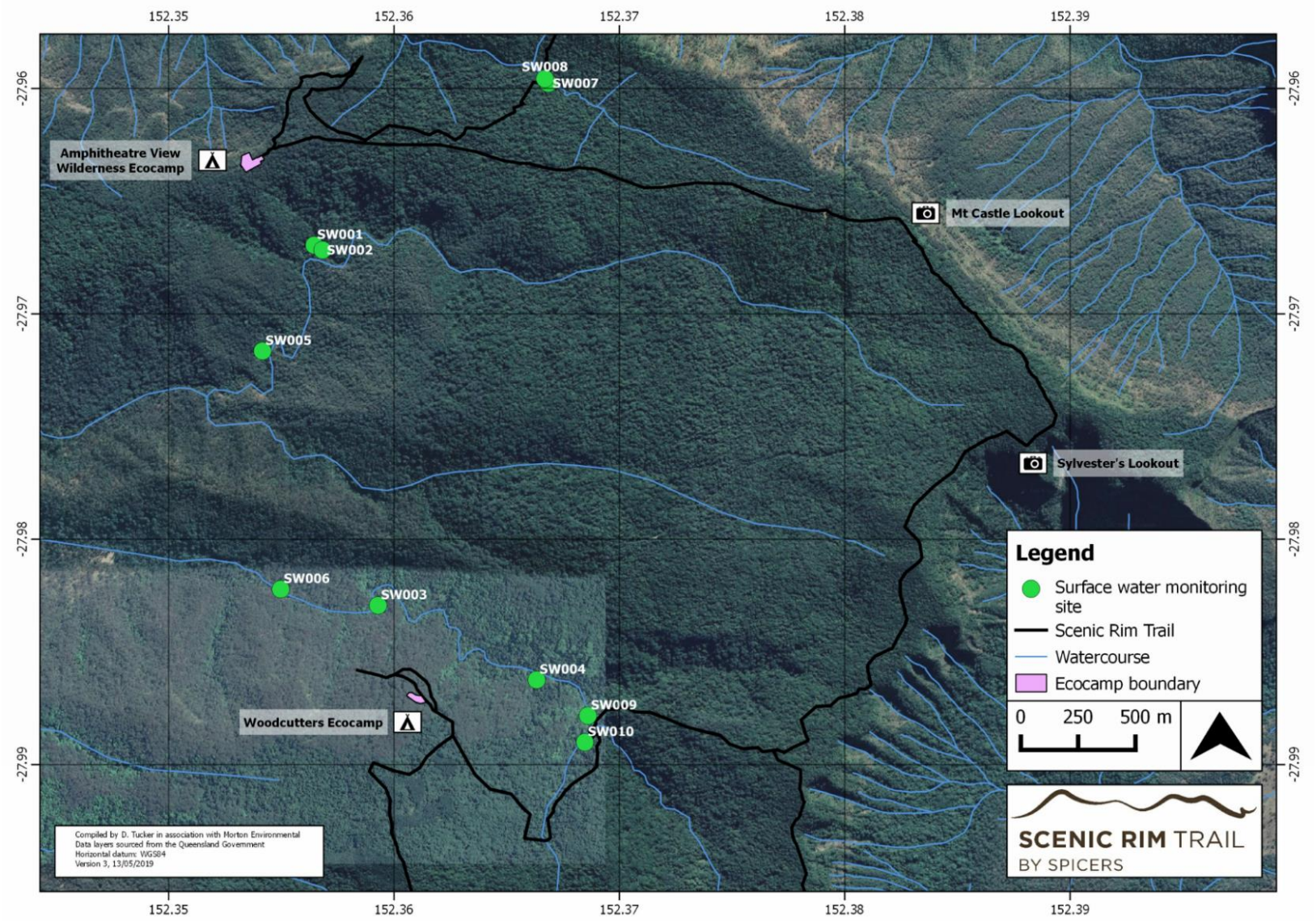

Figure 20 Location of surface water monitoring sites for the EcoCamps (SW001 – SW006; for PWaSM) and new creek crossings (SW007 - SW010)

Table 11 Baseline water quality data upstream and downstream of the Blackfellow Creek and Dalrymple Creek crossings compared to 80th percentile water quality objectives. Mean ± 1 sample standard deviation and median values with rounding are presented.

Site		Ammonium – N	Oxidised – N	Total N	Filterable P	Total P	Dissolved Oxygen	Turbidity	pH	Conductivity	Alkalinity
80th % WQO		40 µg/L	275 µg/L	1510 µg/L	130 µg/L	560 µg/L	110 %	90 NTU	8.1 pH Units	335 µS/cm	140 mg/L ($CaCO_3$)
Blackfellow Creek											
SW007	Mean ± 1 SSD	24.5 ± 21.9	24.5 ± 21.9	200 ± 0	95 ± 21.2	100 ± 0	90.33 ± 22.3	2.6 ± 0	6.74 ± 0.38	90.9 ± 7.3	32 ±1.4
	Median	24.5	24.5	200	95	100	101.3	2.6	6.76		32
SW008	Mean ± 1 SSD	94.5 ± 121	450 ± 156	800 ± 424	90 ± 14	135 ± 50	103.25 ± 5	3.37 ± 1.9	6.5 ± 0.8	68.17 ± 21	26.5 ± 0.7
	Median	94.5	450	800	90	135	103.25	3.37	6.41	72	26.5
Dalrymple Creek											
SW009	Mean ± 1 SSD	55 ± 49.5	570 ± 566	850 ± 495	75 ± 21.2	70 ± 0	104.5 ± 5.3	4.1 ± 1.5	7.24 ± 0.7	75.5 ± 20.4	35 ± 4.2
	Median	55	570	850	75	70	107	3.7	7.25	87	35
SW010	Mean ± 1 SSD	39.5 ± 43.1	85 ± 21.2	1150 ± 1202	85 ± 21.2	290 ± 297	104.07 ± 9.9	11.37 ± 16.2	7.3 ± 0.7	71.47 ± 20.4	34 ± 2.8
	Median	39.5	85	1150	85	290	104	4.2	7.3	82	34

9.5.7. Correction Trigger Values

The 80th percentile values for high ecological value waters in south eastern catchments of the Condamine River Basin (Table 11; DES 2018) sets the trigger values for Blackfellow Creek and Dalrymple Creek. This requires that the median quality values should be lower than the 80th percentile of concentration values of the reference values[9].

A statistical trend analysis applying the non-parametric Mann-Kendall test[10] will be undertaken after three years of data have been collected, and each year thereafter to predict whether water quality is likely to exceed these thresholds because of treated wastewater disposal.

The water quality in both creeks upstream and downstream of the crossing is good during baseflow conditions and the values are consistent with a groundwater source for the baseflow (Table 11). There are relatively high nutrient levels in the water which are consistent with the high nutrient levels in the basaltic soils of the catchment. Turbidity levels are very low although this is expected to increase naturally under high flow conditions. Low levels of *E. coli* are present in most of the sampling sites (<1 – 14 cfu/100ml) and this is expected to be from animal sources, including cattle.

9.5.8. Corrective Management Action

The corrective management action will depend on which environmental factor has caused the water quality decline:

- Decline due to feral animal (pigs, cattle) disturbance of riparian vegetation will result in:
    - Notification to QPWS of damage and request for feral animal control
- Decline due to sedimentation from track erosion and water flow
    - Hardening of track surface
    - Realignment of track camber or slope
    - Installation of sediment trap basins or drainage bunds
- Decline due to independent walker disturbance of riparian vegetation may result in:
    - Placement of natural barriers to alternate creek crossings
    - Rehabilitation of alternate creek crossings, in consultation with QPWS

9.6. Riparian Habitat Quality near Creek Crossings

9.6.1. Survey Method

The survey method outlined below is in accordance with the Australian River Assessment System (AusRivAS) Physical Assessment Protocol (eWater CRC 2012), a standardised protocol for the assessment of stream physical condition, and a description of riparian groundcover vegetation community composition and structure. Particular attention has been focussed on indicators of key threatening processes for Fleay's Barred Frog[11] and Mountain Frog, i.e. the condition of the riparian vegetation (including Rainforest Spinach), trampling of riparian soils, and in-stream sediment.

The following key indicators of riparian habitat condition relevant to the baseline assessment and subsequent monitoring of such potential impacts has been assessed using the AusRivAS datasheets:

- Extent of trampling of sensitive groundcover vegetation along the riparian bank;
- Extent of erosion along the hiking trail in the vicinity of the creek crossings;
- Extent of feral pig tracks, scats, diggings or mud wallows;

[9] https://www.waterquality.gov.au/anz-guidelines/monitoring/data-analysis/derivation-assessment
[10] This test is used because the median values are being compared, cf. the mean values.
[11] http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25960

- Extent of domestic cattle tracks, pugging, scats or browsing of groundcover vegetation;
- Extent of sediment in the in-stream channel;
- Extent of damage to riparian bank stability; and
- Extent of weeds.

Supplementary monitoring of riparian vegetation at the crossings will be undertaken through fixed photopoint records.

9.6.2. Location

Repeat surveys will occur in the 100m transects upstream and downstream of the Blackfellow Creek crossing (Figure 5, Figure 12) and Dalrymple Creek crossing (Figure 6, Figure 13).

9.6.3. Effort

The 100m transect upstream and downstream of the Blackfellow Creek and Dalrymple Creek crossings (Figure 12, Figure 13) will be walked and the species and condition of the vegetation, the condition of the creek bank, and instream habitat condition, within a 5 metre strip either side of the creek will be recorded. This will be done in conjunction with the frog surveys.

9.6.4. Timing

Repeat surveys will be conducted within the period September - December during baseflow conditions and not within a week of a high rainfall event that causes flooding.

9.6.5. Frequency

The surveys will be repeated annually as part of the 10-year monitoring program.

9.6.6. Responsibility

The monitoring, assessment, and reporting will be undertaken by a suitably qualified person and responsibility for the conduct and reporting of the monitoring program is held by the GM SRT.

9.6.7. Correction Trigger Values

The identification of any damage to riparian vegetation caused by walkers using the crossings, or by feral animals, will trigger corrective management action.

The baseline data for Blackfellow Creek are presented in Table 12 and indicate generally good riparian habitat condition although current feral pig activity could change this.

Table 12 Riparian habitat baseline condition at Blackfellow Creek

Key indicator	Within 100m upstream	Within 100m downstream
Evidence and extent of trampling of sensitive groundcover vegetation along the riparian bank	No evidence of trampling Good cover of Rainforest Spinach	No evidence of trampling Good cover of Rainforest Spinach
Evidence and extent of erosion along the hiking trail in the vicinity of the creek crossings	No evidence of erosion	No evidence of erosion
Evidence and extent of feral pig and/or domestic cattle activity	No evidence of feral pigs in October 2018; but a few feral pig diggings present on the banks by February-March 2019 No evidence of domestic cattle.	A single feral pig mud wallow and fresh tracks 150m downstream in October 2018; wallow regularly used and expanded by February-March 2019 with a well-trodden track crossing the creek at this point

		No evidence of domestic cattle
Evidence and extent of sediment in the in-stream channel	Occasional vegetated side bars, some showing erosion from recent high-water flows; limited sediment in pools, which have a range of sediment sizes	Occasional vegetated side bars, some showing erosion from recent high-water flows; limited sediment in pools, which have a range of sediment sizes
Evidence and extent of damage to riparian bank stability	No damage to bank stability	No damage to bank stability
Evidence and extent of weeds	No weeds present	No weeds present
Mt Mistake Spiny Crayfish population	A total of 58 active burrows detected within 100m upstream of the proposed crossing point, confirming a healthy population	A total of 18 active burrows detected within 100m downstream of the proposed crossing point, confirming a healthy population

The baseline data for Dalrymple Creek are presented in Table 13 and indicate generally good riparian habitat condition.

Table 13 Riparian habitat baseline condition at Dalrymple Creek

Key indicator	Within 100m upstream	Within 100m downstream
Evidence and extent of trampling of sensitive groundcover vegetation along the riparian bank	No evidence of trampling Good cover of Rainforest Spinach	No evidence of trampling Good cover of Rainforest Spinach
Evidence and extent of erosion along the hiking trail in the vicinity of the creek crossings	No evidence of erosion	No evidence of erosion
Evidence and extent of feral pig and/or domestic cattle activity	None	None
Evidence and extent of sediment in the in-stream channel	Occasional vegetated and unvegetated side bars; limited sediment in pools, which have a range of sediment sizes	Limited sediment in pools, which have a range of sediment sizes
Evidence and extent of damage to riparian bank stability	No damage to bank stability	No damage to bank stability
Evidence and extent of weeds	No weeds present	No weeds present
Mt Mistake Spiny Crayfish population	A total of 28 active burrows detected within 100m upstream of the proposed crossing point, confirming a healthy population	A total of 3 active burrows detected within 100m downstream of the proposed crossing point, confirming a healthy population

9.6.8. Corrective Management Action

The corrective management action will depend on which environmental factor may have caused the decline in habitat quality:

- Habitat quality impacts due to feral animal (pigs, cattle) disturbance will result in:
  - Notification to QPWS of damage and requirement for feral animal control
- Habitat quality impacts due to independent walker disturbance may result in:
  - Placement of natural barriers to alternate creek crossings
  - Rehabilitation of unauthorised creek crossings, in consultation with QPWS
  - Establishment of signs noting critical frog breeding habitat, in consultation with QPWS

10. Environmental Training

10.1. Construction

The SRT Project Manager will provide an induction to all construction personnel and contractors providing delivery or construction services within the Main Range National Park. The induction will include the environmental standards expected by Spicers and relevant legislation for operating within a National Park, and the objectives and requirements of the SRTMP.

The Site Supervisor will hold a Toolbox Talk prior to work commencing every Monday morning. The talk will include specific environmental issues, controls, or instructions arising. The Toolbox Talk will be an opportunity for construction staff to raise environmental issues and ask questions.

10.2. Operation

SRT EcoGuides will receive training in the identification of weeds specified in this plan, symptoms of potential plant pathogens, and feral pest animals. Refresher training will be undertaken annually.

SRT EcoGuides and EcoCamp service staff will be trained in the operation of the wastewater treatment system in order to ensure that it is working as required and to be able to shut of the dispersal of treated wastewater to land in the event of an emergency or system failure.

11. Emergency Contacts and Procedures

In the case of an environmental emergency such as fire, immediately notify the emergency services on 000, or 112 if reception is low.

In the case of an environmental emergency such as failure to contain untreated human waste, immediately notify the Head Ranger on 07 4666 1133 followed by the Spicers' General Manager Scenic Rim Trail on 0434 235 668.

In the case of an environmental action contrary to the Conditions of Approval, notify the Spicers' General Manager Scenic Rim Trail on 0434 235 668 within 12 hours of becoming aware of the event.

In the case of an emergency affecting human health, immediately notify the emergency services on 000, or 112 if reception is low, followed by the Head Ranger on 07 4666 1133.

12. Data Management, Reporting, Auditing, and SRTMP Review

12.1. Data Management

The GM SRT will be responsible for overseeing and managing all the monitoring activities and programs required as part of this SRTMP. This will include maintaining accurate records substantiating all activities associated with or relevant to the conditions of approval.

These records will be made available to DoEE upon request and will be published annually on the SRT website.

12.2. Reporting

The results of all monitoring programs, including data and reports will be published on the SRT website. Table 14 provides the schedule of reporting by Spicers to the DoEE required to meet the Conditions of Approval.

Table 14 Spicers Reporting Schedule to the DoEE (Commonwealth)

Key dates	Activities	Reference Conditions of Approval
	PRE-CONSTRUCTION	
Prior to commencement of the action	Provide Department with a georeferenced map and shapefile showing all identified Mountain Frog habitat and rainforest spinach	2.c.
Within 5 business days of being detected	Report any observed decrease in a population or negative change in quality referred to in 14.c. to the Department within 5 business days of detection	16
Within 40 business days after notifying Department	Submit Corrective Action Plan to the Department if CoA 16 applies	17
Within 10 business days of Ministers approval	Publish Corrective Action Plan and outcomes on website	18
Within 20 business days following commencement of Corrective Action Plan	Notify Department of actual date of commencement	20
Within 60 business days of every 12-month anniversary of commencement	Publish report on website addressing compliance with each condition, including reports and analyses arising from implementation of CAP, SRTMP, and BDCP	22
Within 2 business days of becoming aware	Notify the Department in writing of any incidence of non-compliance with conditions or commitments made in plans	23
Within 10 business days of becoming aware	Provide the Department with all details of non-compliance with conditions or commitments made in plans, including corrective actions, investigations, and potential impacts	24

Key dates	Activities	Reference Conditions of Approval
At any time	Notify the Department if the SRTMP has been revised as per CoA 27	27.a.
At any time	Notify the Department if the SRTMP has been revised as per CoA 28	28.a.
Within 10 days of publishing revised SRTMP	Notify the Department of the actual date of publication	33.c.

Table 15 provides the internal reporting schedule for personnel involved in the construction or operation of the SRT.

Table 15 Internal reporting schedule for operation of SRT

Key Dates	Activity	Key Personnel
	CONSTRUCTION	
Weekly	Provide progress report to SRT Project Manager	Construction Manager
Within 12 hours of becoming aware	Report of non-compliance with Conditions of Approval or specific direction by Spicers	All personnel
Within 12 hours of becoming aware	Report to SRT Project Manager of complaint by member of the public	Construction Manager
	OPERATION	
Monthly	Report to General Manager – Land and Environment any non-significant environmental issues observed	EcoGuides
Within 12 hours of becoming aware	Report to General Manager – Land and Environment any significant environmental issues observed, including observations of new pests, weeds or pathogens	EcoGuides
Within 12 hours of becoming aware	Report any environmental complaints from members of the public	EcoGuides
Within 48 hours of becoming aware	Report on QPWS online tool any observation of pests, weeds, or pathogens	General Manager SRT
Within 48 hours of becoming aware	Report on QPWS online tool observations of track erosion	General Manager SRT

12.2.1. EcoGuide Reporting Protocol

EcoGuides will provide trip reports to SRT management that will include environmental reporting.

1. EcoGuides will include an environmental report in their trip report to Spicers at the end of each trip if there are significant observations
2. The following information is considered significant and will be reported:
    a. New pig sign or number of pigs seen, and their location by grid reference or track feature
    b. Other feral animals or new sign observed, their location by grid reference or track feature
    c. New weed species or weed presence (e.g. new infestation of existing species) observed, an estimation of their abundance, and their location by grid reference or track feature
    d. New sign and relative cover of known plant pathogens, such as *Phytophthora*, and location by grid reference or track feature
    e. New track erosion caused by water movement or foot traffic, and location by grid reference or track feature
3. EcoGuides will notify service staff prior to leaving an EcoCamp if feral rats or mice are observed within any of the buildings
    a. Service staff will notify the General Manager immediately on return to base.

12.3. Auditing

12.3.1. Construction

- The GM SRT will ensure that an independent audit of compliance is undertaken upon direction of the Minister for the Environment and a report provided to the Minister (CoA 25).

12.3.2. Operation

- The implementation of this SRTMP and its effectiveness in achieving environmental protection during operation of the Scenic Rim Trail will be reviewed annually by the GM SRT.
- The GM SRT will ensure that an independent audit of compliance is undertaken upon direction of the Minister for the Environment and a report provided to the Minister (CoA 25)

12.4. Environmental Management Plan Review

12.4.1. Construction

The SRTMP will be reviewed three (3) months after commencement of construction. The review will be undertaken by an Environmental Specialist and will assess whether the environmental objectives are being achieved and progress against State and Commonwealth approval conditions.

The review will assess environmental monitoring to date and the effect of any corrective actions that have been implemented.

The SRTMP will be reviewed immediately in the event of a significant environmental incident.

12.4.2. Operation

The SRTMP will be reviewed annually by an Environmental Specialist and will incorporate the results of monitoring and any research conducted, to determine whether the environmental objectives are being achieved and approval conditions are met. The review will also assess the effect of any corrective actions that have been implemented. The SRTMP review will be signed by the General Manager Land and Environment and will be provided to QPWS and DoEE.

The SRTMP will be reviewed immediately in the event of a significant environmental incident occurring due to operation of the SRT. For example, this would include:

- Significant spillage of human waste during treatment or tankering from MRNP for offsite disposal
- Introduction and establishment of commensal rodents in Hastings River Mouse habitat adjacent to Woodcutters EcoCamp
- Extensive erosion of tracks to Blackfellow Creek or Dalrymple Creek causing an acute sedimentation event or likely to lead to chronic sedimentation

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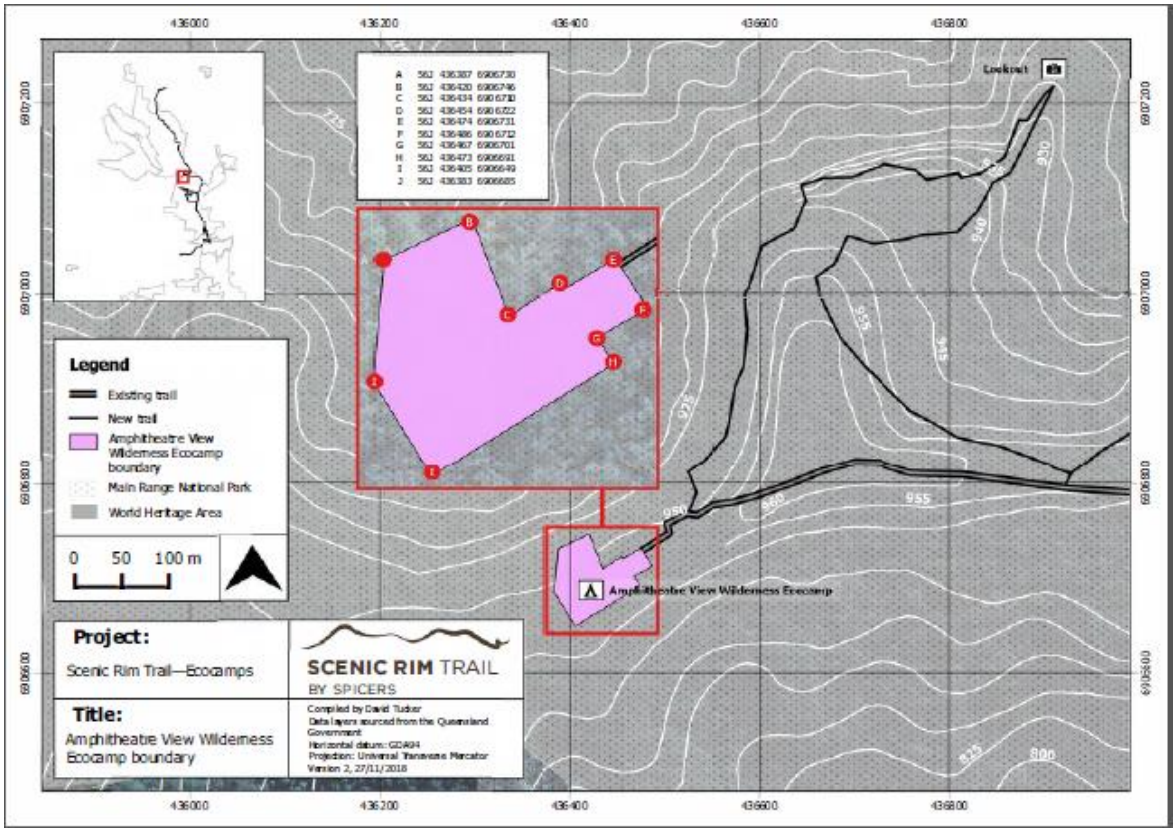
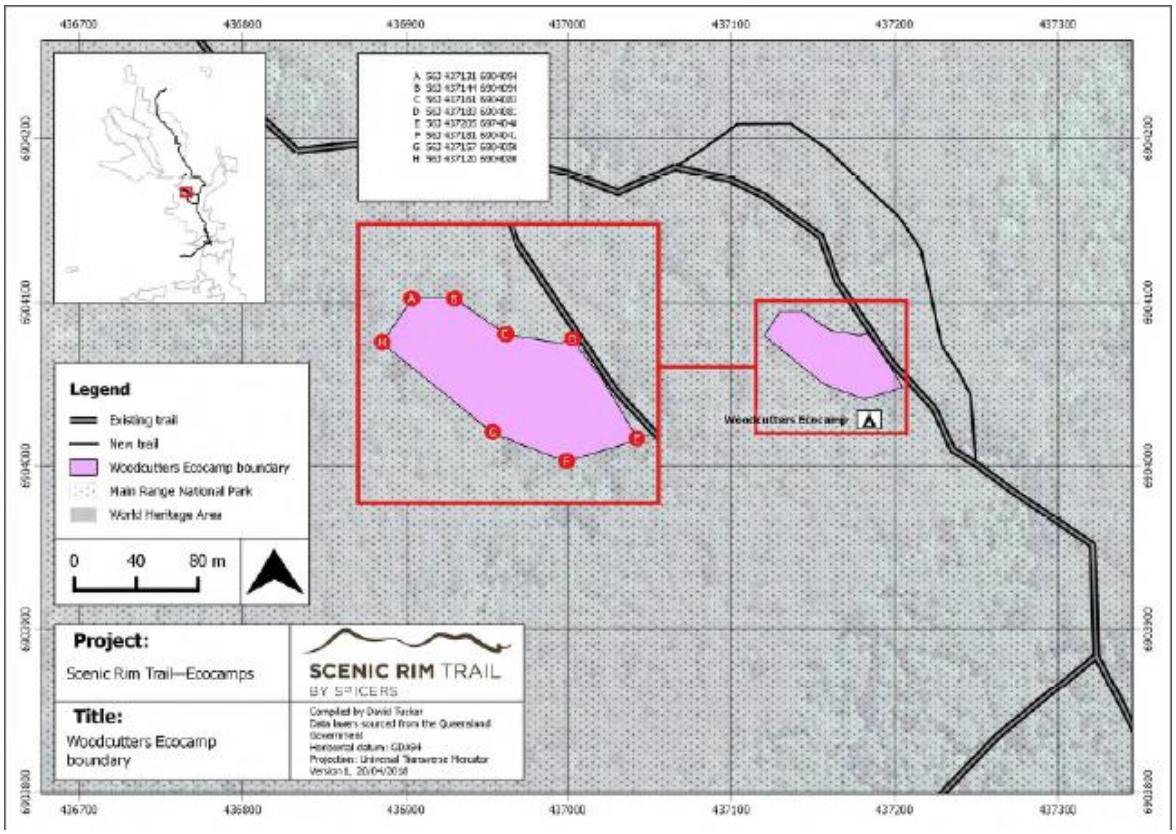
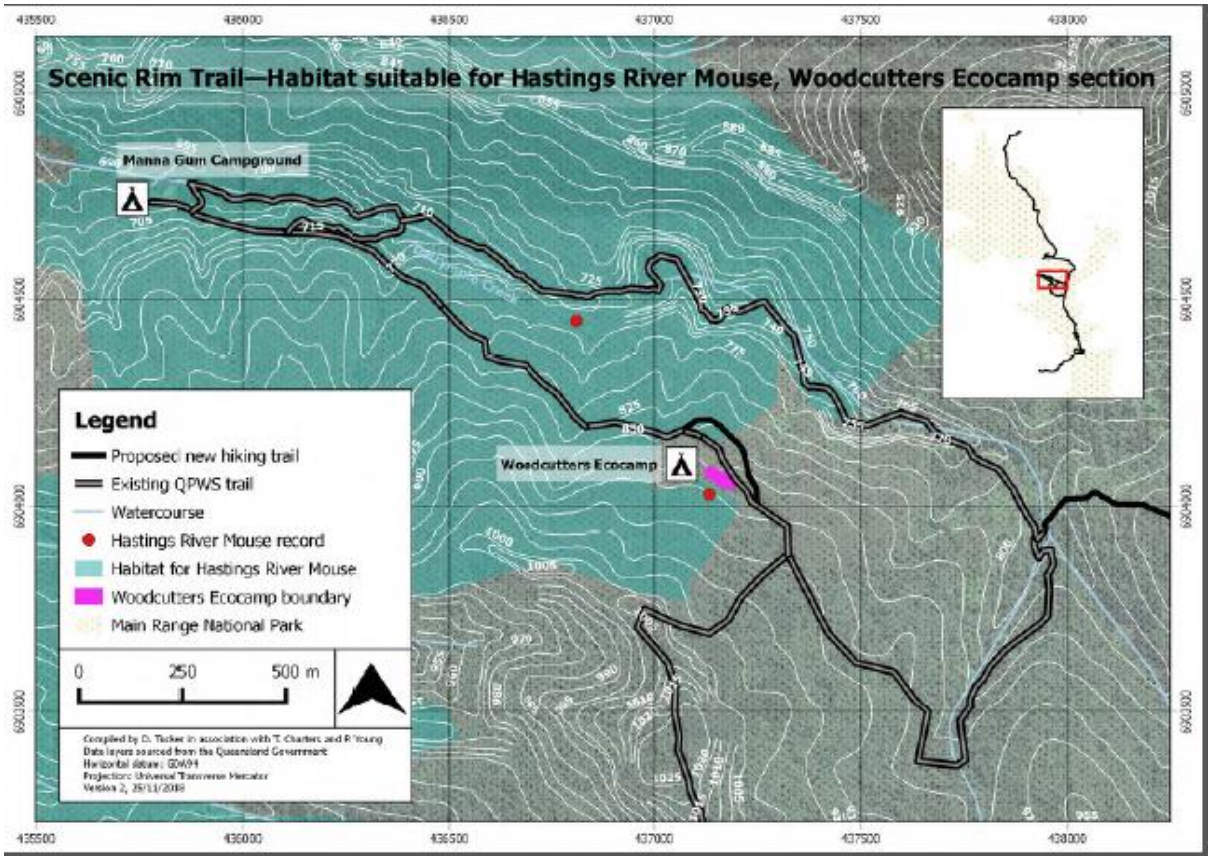
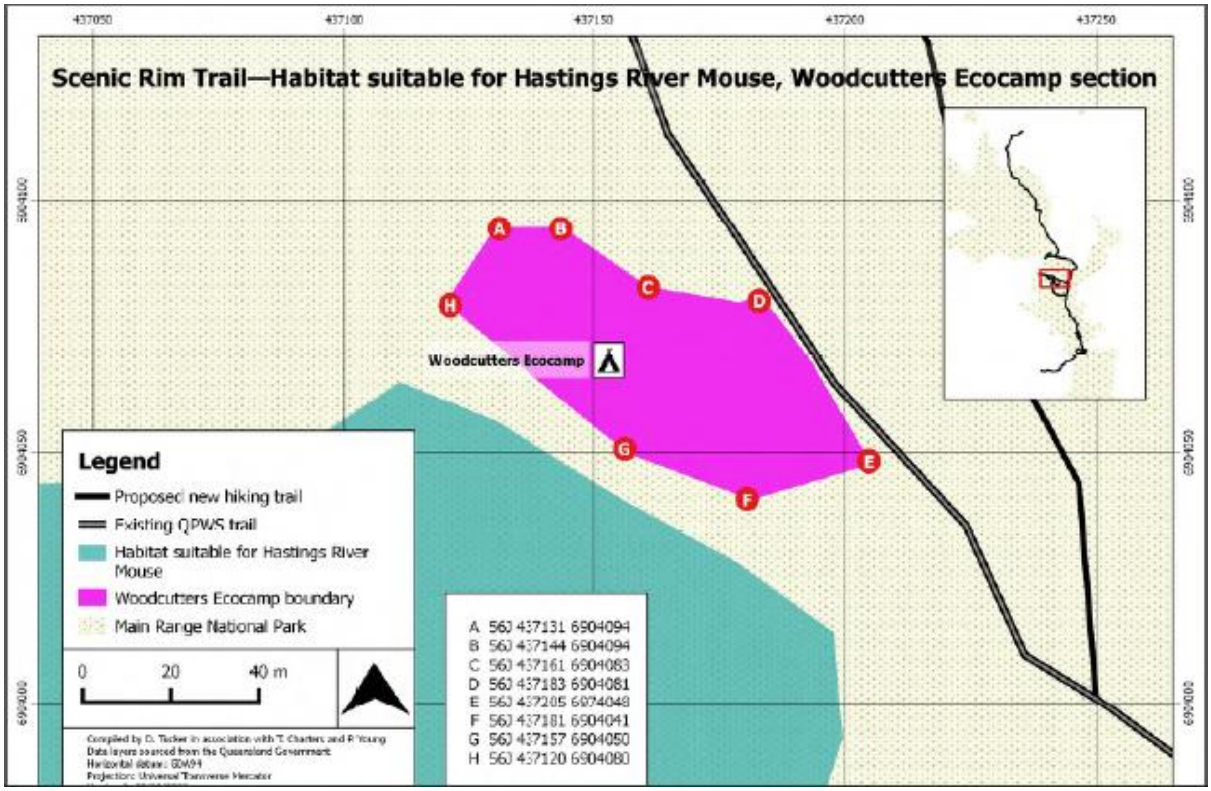
Appendix 1 - Attachments 2 & 6 to the Conditions of Approval

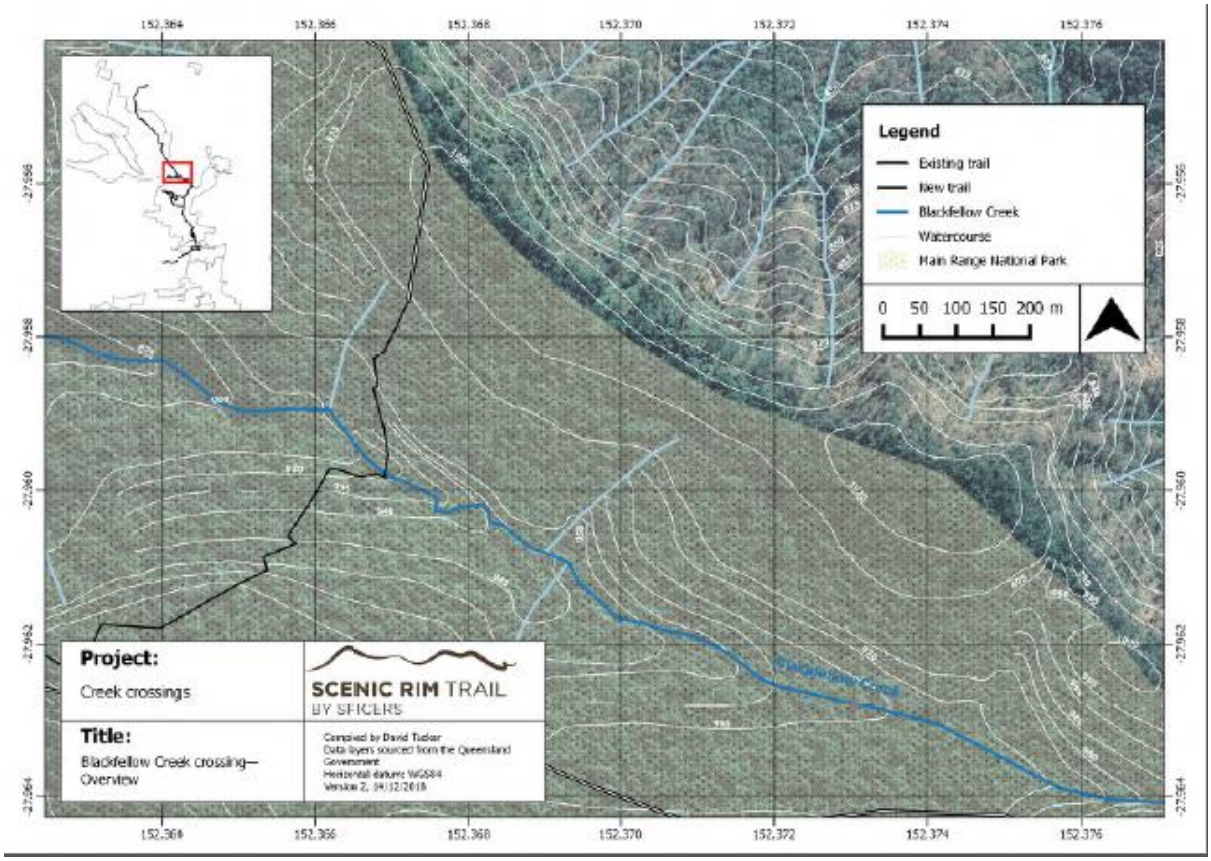


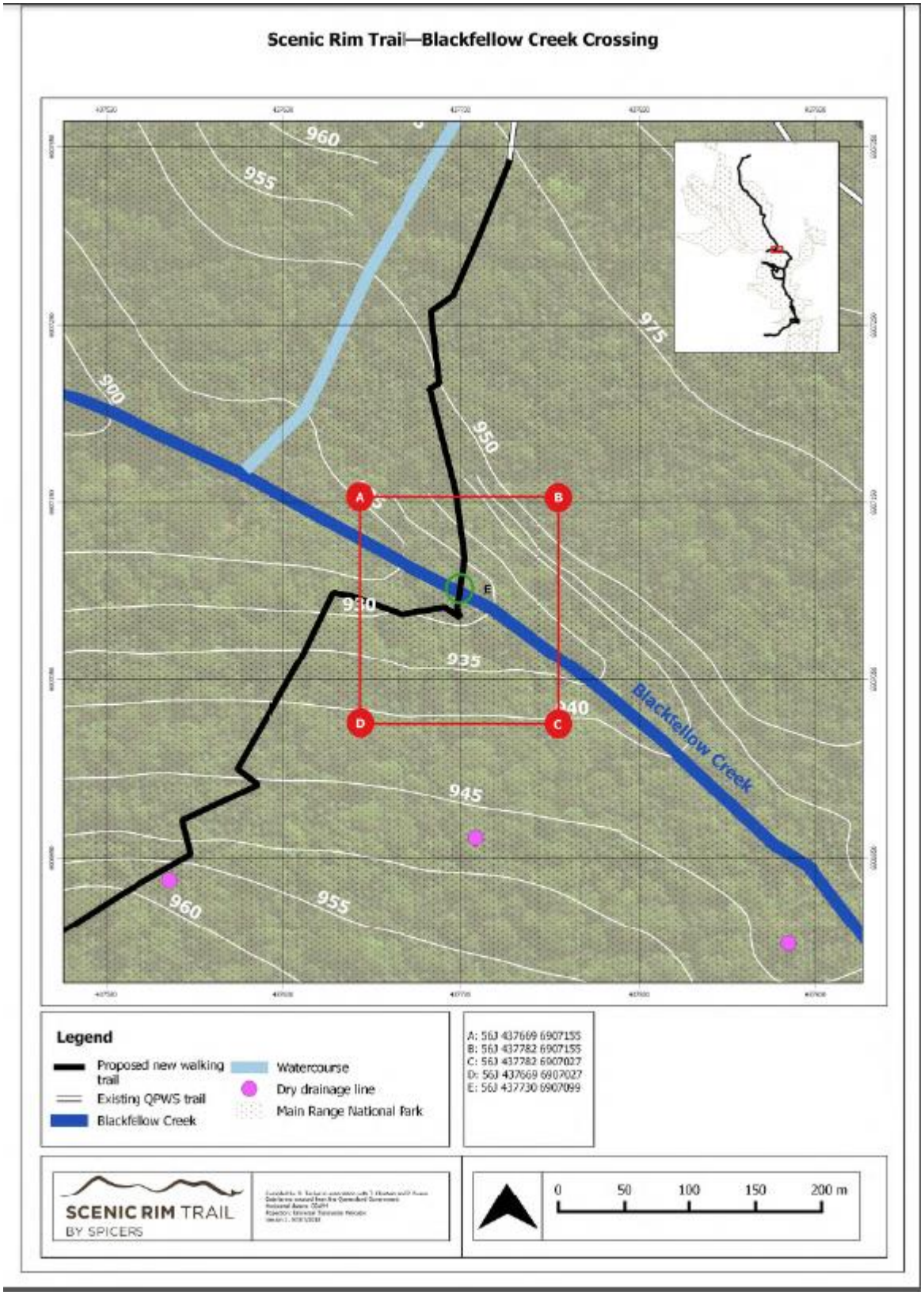


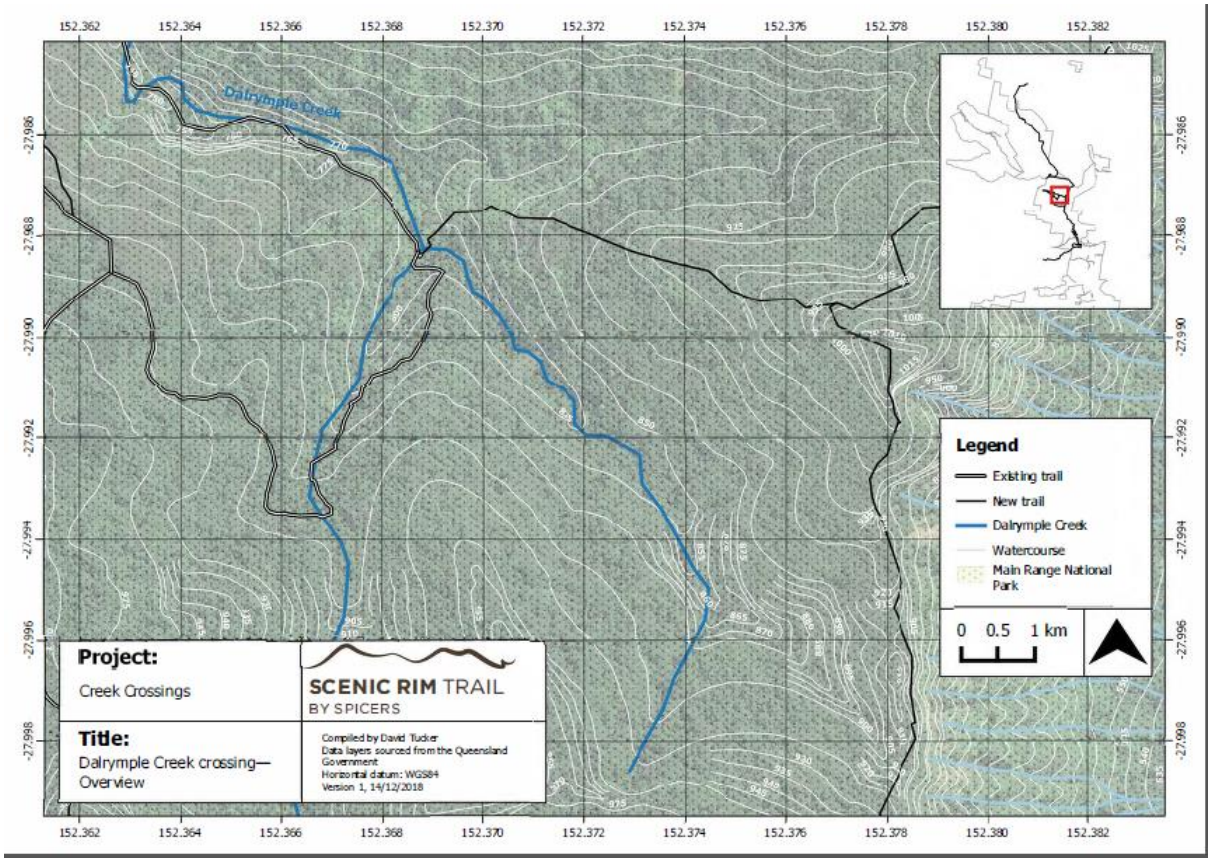

Scenic Rim Trail—Habitat suitable for Hastings River Mouse, Woodcutters Ecocamp section
Manna Gum Campground
Woodcutters Ecocamp
Legend
Proposed new hiking trail
Existing QPWS trail
Watercourse
Hastings River Mouse record
Habitat for Hastings River Mouse
Woodcutters Ecocamp boundary
Main Range National Park
0
250
500 m


Scenic Rim Trail—Habitat suitable for Hastings River Mouse, Woodcutters Ecocamp section
Woodcutters Ecocamp
A
B
C
D
E
F
G
H
Legend
Proposed new hiking trail
Existing QPWS trail
Habitat suitable for Hastings River Mouse
Woodcutters Ecocamp boundary
Main Range National Park
0
20
40 m
A 56J 437131 6904094
B 56J 437144 6904094
C 56J 437161 6904083
D 56J 437183 6904081
E 56J 437205 6904048
F 56J 437181 6904041
G 56J 437157 6904050
H 56J 437120 6904080

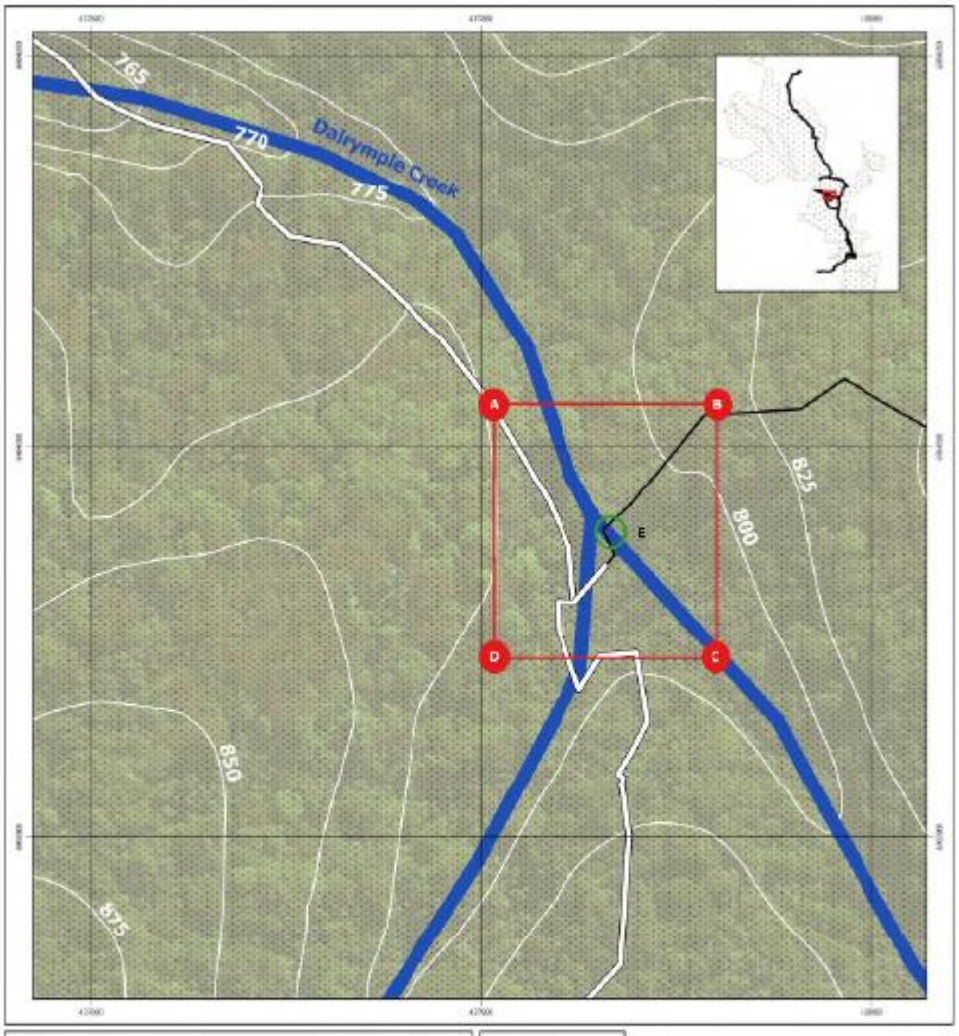
Appendix 2 – Attachments 3 and 4 to the Conditions of Approval




Scenic Rim Trail—Blackfellow Creek Crossing
960
955
975
900
950
930
935
945
Blackfellow Creek
A
B
C
D
E
Legend
Proposed new walking trail
Existing QPWS trail
Blackfellow Creek
Watercourse
Dry drainage line
Main Range National Park
A: 56J 437669 6907155
B: 56J 437782 6907155
C: 56J 437782 6907027
D: 56J 437669 6907027
E: 56J 437730 6907099
SCENIC RIM TRAIL
BY SPICERS
0
50
100
150
200 m


152.362
152.364
152.366
152.368
152.370
152.372
152.374
152.376
152.378
152.380
152.382
-27.986
-27.988
-27.990
-27.992
-27.994
-27.996
-27.998
Dalrymple Creek
Legend
Existing trail
New trail
Dalrymple Creek
Watercourse
Main Range National Park
0 0.5 1 km
Project:
Creek Crossings
SCENIC RIM TRAIL
BY SPICERS
Title:
Dalrymple Creek crossing—Overview
Compiled by David Tucker
Data layers sourced from the Queensland Government
Horizontal datum: WGS84
Version 1, 14/12/2018

Scenic Rim Trail—Dalrymple Creek Crossing



Legend

- Proposed new walking trail
- Existing QPWS trail
- Watercourse
- Main Range National Park

A: 56J 437885 6904022
B: 56J 438002 6904022
C: 56J 438002 6903893
D: 56J 437885 6903893
E: 56J 437944 6903957

SCENIC RIM TRAIL
BY SPICERS

0 40 80 120 160 m