NSW NATIONAL PARKS & WILDLIFE SERVICE

Unicorn Falls Project
New Visitor Facilities
Review of Environmental Factors

Mount Jerusalem National Park

environment.nsw.gov.au

Cover photo: Pools above and below Unicorn Falls. John Spencer/DPIE

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Foreword

This Review of Environmental Factors (REF) was prepared in January 2020 to allow the consideration of the potential environmental impacts associated with the development of a new camping area, separate day use area and walking track in the vicinity of Unicorn Falls in Mount Jerusalem National Park.

Its preparation was consistent with the requirements of Division 5.1 of the *Environmental Planning and Assessment Act 1979*, the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) and *Is an EIS Required?* which is a relevant guideline for the purposes of clause 228 of the EP&A Regulation.

After consideration of the potential impacts, and satisfaction that no significant impacts to the environment or threatened species are likely to occur, the Review of Environmental Factors was determined on 1 April 2020 by the Director, North Coast (NPWS Park Operations) under delegation from the Secretary of the Department of Planning Industry and Environment (DPIE).

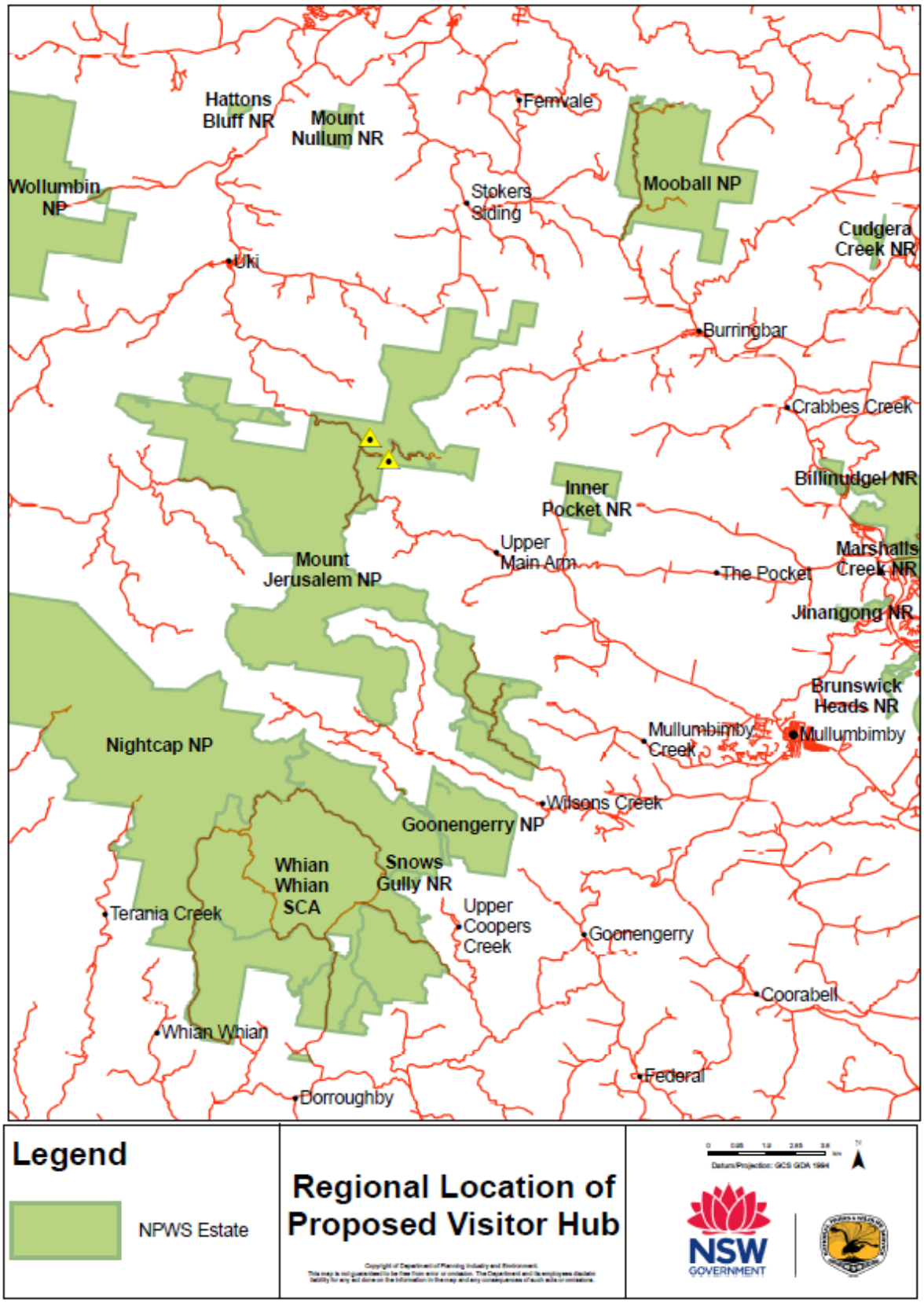

Figure 1 Regional location of proposed visitor hub

1. Description of the proposed activity

Description of proposed activity*	• Construct a small camping area, carparks and toilets adjacent to Manns Road, approximately one kilometre north of the intersection with South Chowan Road. • Develop a day use area with a carpark, toilets and a walking track with formalised access to Unicorn Falls, adjacent to South Chowan Road.
Name of NPWS park or reserve	Mount Jerusalem National Park
Location of activity (e.g. precinct name or nearby street)	Manns Road (camping area) and South Chowan Road (day use area). See maps in Figures 1 and 2.
Estimated commencement date	1/06/2020
Estimated completion date	1/06/2025

2. Proponent's details

All correspondence and notices should be sent to the address of the proponent.

Organisation	National Parks and Wildlife Service, part of the Department of Planning, Industry and Environment
ACN/ABN	ABN: 20770707468
Area or Section/Division	NPWS Tweed Byron Area
Contact name	Manager, Park Operations
Position	Tweed Byron Area Manager
Street address	Tallow Beach Road Byron Bay NSW 2481
Postal address	PO Box 127, Byron Bay NSW 2481
Phone numbers	Business: 02 6639 8300 Mobile: 0407079020
Email	npws.parkplanning@environment.nsw.gov.au

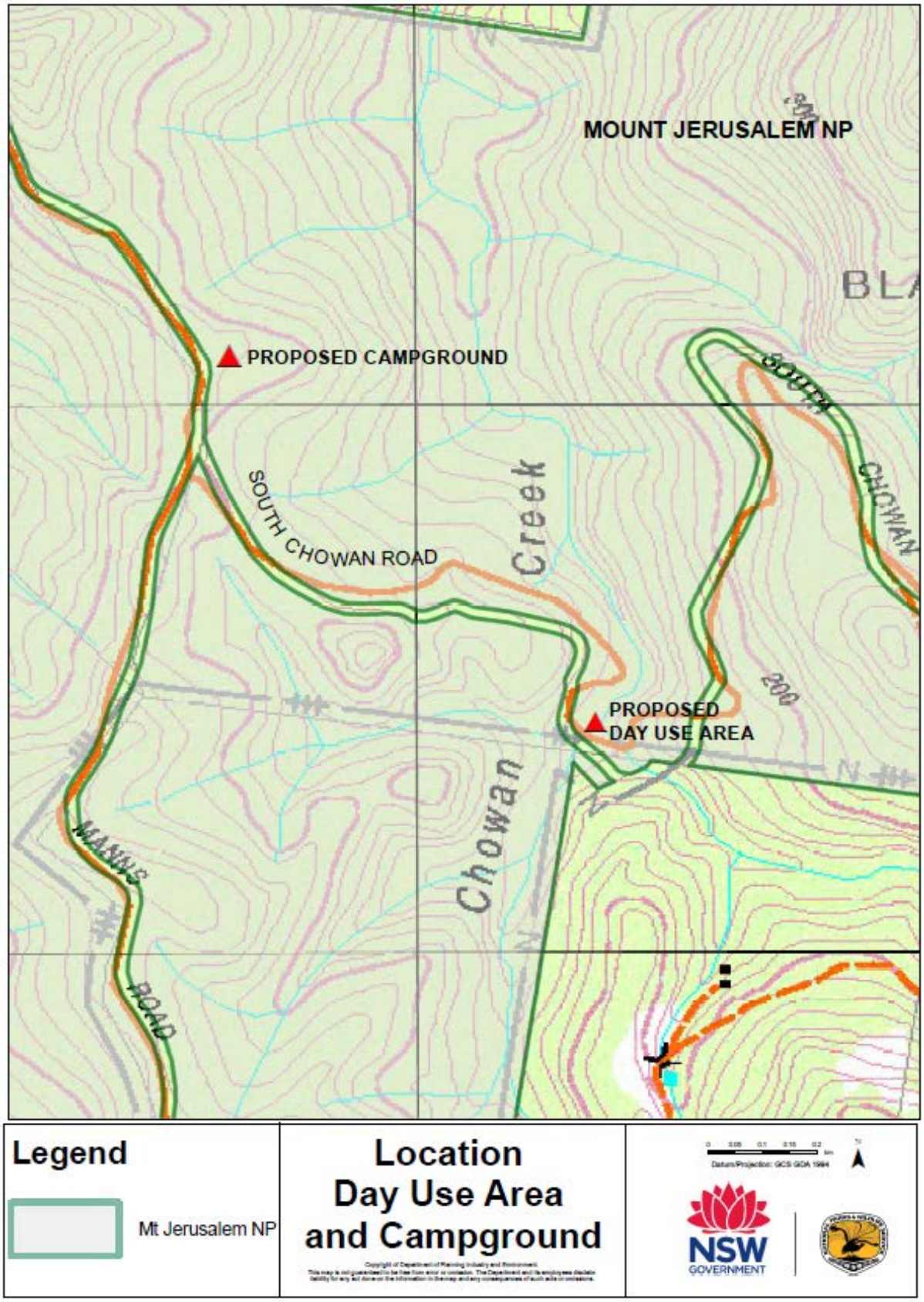

Figure 2 Location of day use area and campground

3. Permissibility

3.1 New South Wales legislation

3.1.1 National Parks and Wildlife Act 1974

Objects of the National Parks and Wildlife Act

The activity is designed to have minimal impact on the natural environment and on European and Aboriginal cultural resources and is therefore consistent with the objects of the *National Parks and Wildlife Act 1974* (NPW Act).

Reserve management principles

The activity is consistent with conservation and protection management principles for national parks (s.30E(2)[a], [b] & [c]) as it is designed to have minimal impact. The activity is directly related to providing for the sustainable use of buildings or modified natural areas having regard to the conservation of the national park's natural and cultural values (s.30E [2A] [f])

Plan of management

The relevant plan of management is the *Parks and Reserves of the Tweed Caldera incorporating Mount Warning, Border Ranges, Mebbin, Nightcap, Goonengerry and Mount Jerusalem National Parks, and Limpinwood, Numinbah and Snows Gully Nature Reserves Plan of Management* (originally adopted in 2004 with plan amendments adopted in 2010 and 2019).

The activity is consistent with the following sections inserted into the plan of management by the 2019 plan of management amendment, which addresses the development of a master plan, and a day use area and camping area in Mount Jerusalem National Park:

> **Section 3.2 Visitor use**
>
> This plan supports developing a multi-day walking track network linking Mount Jerusalem National Park with Whian Whian State Conservation Area and the Minyon Falls visitor hub in Nightcap National Park (see Section 3.2.4 Bushwalking). To create the network, new walking tracks and new track linkages will be investigated that build on the existing system of walking tracks, management trails and roads. The new walking track network would also incorporate new day walks. The concept includes improving visitor facilities, signage, interpretation and information; developing a new camping area and day use area at Unicorn Falls in Mount Jerusalem Park; and developing remote camping areas in Mount Jerusalem and Nightcap National Parks (see Sections 3.2.2 Day Use Areas, 3.2.3 Camping, 3.2.4 Bushwalking and 3.2.10 Information, Interpretation & Education).
>
> A master plan will be developed to provide detailed information on the multi-day walking track route and associated visitor facility improvements. The master plan will be publicly exhibited and, once finalised, it will guide the preparation of all environmental impact, cultural heritage, safety, social, financial and engineering assessments required by law and policy. Following public exhibition, the master plan may be adjusted to meet environmental impact assessment outcomes, consultation and local design issues. However, it must still meet the requirements of this plan of management.
>
> The majority of the multi-day walking track network will be constructed and maintained to Class 4 standard (Australian Walking Track Grading System). Class 4 tracks are hiking tracks

suited to self-reliant bushwalkers with only basic directional signage provided. Track surfaces are largely natural except where prevailing environmental conditions necessitate improvements.

3.2.2 Day Use Areas

As part of the multi-day walking track network concept, this plan enables development of a day use area at Unicorn Falls on Chowan Creek, South Chowan Road, in Mount Jerusalem National Park (refer Map 3). The facility will incorporate car parking, a toilet, picnic tables, BBQs, visitor information and formalised access to the waterfall. The final design will include measures to prevent unauthorised vehicle access to the creek bank and revegetation.

Guidelines and Actions

- Develop a day use area at Unicorn Falls on Chowan Creek, South Chowan Road, in Mount Jerusalem National Park (refer Figure 2).

3.2.3 Camping

As part of the multi-day walking track network, this plan enables the development of a camping area adjacent to Manns Road, near Unicorn Falls, in Mount Jerusalem National Park (refer Figure 2). The facility will incorporate car parking, campsites, a toilet, picnic tables, BBQs, an information shelter and a walking track to the waterfall. The final design will include measures to prevent unauthorised vehicle access to the creek bank and revegetation. New walking tracks will link the camping area to Unicorn Falls (approximately 1km away) and to the Whiskey Creek Trail (approximately 200m away), providing connections to the multi-day walking track network.

Guidelines and Actions

- Provide for camping at camping areas identified in Maps 1-3 in accordance with the level of facilities and site capacity defined in Table 4.
- Develop a camping area adjacent to Manns Road, near Unicorn Falls, in Mount Jerusalem National Park.

Table 4 – Camping Areas

Facilities Recreation Node	Primary Function	Picnic Facilities	Lookout Platform	Toilets	Shelter Structure	Car Park Max. Limit
Unicorn Falls, Mount Jerusalem NP	Camping	Yes	No	Yes	No	Up to 10

3.2.4 Bushwalking

NPWS is working closely with stakeholder groups to identify and improve recreational opportunities within the Tweed, Byron and Lismore local government areas. A major focus of this collaboration is the development of a master plan for a multi-day walking track network linking Mount Jerusalem National Park with Whian Whian State Conservation Area and Minyon Falls in Nightcap National Park. The network builds on the existing system of walking tracks, management trails and roads.

The master plan will provide detailed information on the multi-day walking track route and associated visitor facility improvements. The master plan will also address walking tracks and visitor facilities in Wollumbin National Park. The master plan will be publicly exhibited and, once finalised, will guide preparation of necessary environmental impact, cultural heritage, safety, social, financial and engineering assessments.

The majority of the multi-day walking track network will be constructed and maintained to Class 4 standard (Australian Walking Track Grading System). Class 4 tracks are hiking tracks suited to self-reliant bushwalkers with only basic directional signage provided. Track surfaces are largely natural except where prevailing environmental conditions necessitate improvements.

Guidelines and Actions

- Develop a master plan for a multi-day walking track network and associated visitor facility improvements linking Mount Jerusalem National Park with Minyon Falls in Nightcap National Park, and for walking tracks and visitor facilities in Wollumbin National Park. Undertake community consultation, comply with any applicable native title or Indigenous Land Use Agreement (ILUA) procedures and prepare environmental impact, safety, social, financial and engineering assessments as required.

3.2.10 Information, Interpretation and Education

Desired Outcomes

- Visitors are well informed of recreation opportunities and facilities available across the region, including those associated with the multi-day walking track network linking Mount Jerusalem National Park and Nightcap National Park, and enjoy safe and sustainable use.

Guidelines and Actions

- Provide directional, interpretive and information signs on the multi-day walking track network and associated visitor hubs and access points.

Section 4.1 Plan implementation

Table 5 – Implementation Table

Section	Key Activities	Priority
3.2.2 Day Use Areas	Develop a day use area at Unicorn Falls on Chowan Creek, South Chowan Road, in Mount Jerusalem National Park	High
3.2.3 Camping	Develop a camping area adjacent to Manns Road, near Unicorn Falls, in Mount Jerusalem National Park.	High
3.3.4 Bushwalking	Develop a master plan for a multi-day walking track network and associated visitor facility improvements linking Mount Jerusalem National Park with Minyon Falls in Nightcap National Park, and for walking tracks and visitor facilities in Wollumbin National Park. Undertake community consultation, comply with any applicable native title or ILUA procedures and prepare required environmental impact, cultural heritage, safety, social, financial and engineering assessments.	High
3.2.10 Information, Interpretation and Education	Provide directional, interpretive and information signs on the multi-day walking track network and at associated visitor hubs and access points.	High

Management powers and responsibilities

The activity is consistent with s.8(3)(b) of the *National Parks and Wildlife Act 1974* (NPW Act), which provides for the carrying out of works considered necessary for, or in connection with, the management and maintenance of national parks. The activity is consistent with s.12(f) of the NPW Act by providing facilities and opportunities for sustainable visitor or tourist use and enjoyment on land reserved under the NPW Act. The activity is consistent with the conservation objectives of s.12 relating to wildlife (s.12(b)) and Aboriginal Objects (s.12(d)).

3.1.2 Environmental Planning and Assessment Act 1979

Development permissible without consent

Clause 65 of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) provides that development for any purpose may be undertaken within lands reserved or acquired under the NPW Act without consent. This, along with the land's zoning as E1 National Parks and Nature Reserves, removes the need for development consent under Part 4 of the EP&A Act. The proposal, consistent with most activities in national parks, is assessed under Part 5 Division 5.1 of the EP&A Act.

Koala habitat protection

The activity is on land containing koala habitat. The relevant aims, objectives, principles, and provisions of the relevant Koala Habitat SEPPs have been considered in preparing this review of environmental actors (REF).

A new SEPP is being introduced on 1 March 2020 to replace the previous SEPP 44. The new SEPP updates the definitions of koala habitat. The definitions of core koala habitat and potential koala habitat will be replaced with definitions that identify the characteristics of plant communities that make up koala habitat and evidence that koalas are present. These definitions will be supported by an updated list of tree species that reflects current scientific knowledge.

The proposed procedure requires an applicant to establish whether a site contains koala habitat following an assessment of the vegetation as described in the guidelines. These guidelines have yet to be released. Where koala habitat is established, further assessment will be required to determine if koalas are present before an application is submitted. If koalas are present at a site, but the vegetation is not koala habitat, an assessment will continue as if it were koala habitat.

The proposed campground site at Manns Road supports the following koala feed tree species, listed on Schedule 2 of the new SEPP: grey gum (*Eucalyptus propinqua*), ironbark (*E. siderophloia*), tallowwood (*E. microcorys*) and white mahogany (*E. acmenoides*). The following numbers of each species will be removed: 27 ironbark, 16 tallowwood, 7 grey gum, and 5 white mahogany (see Appendix 1).

In lieu of access to the new guidelines, the previous definition for potential koala habitat has been applied using the new koala feed tree list. This definition stated that areas of native vegetation where the koala feed trees comprised at least 15% of the total number of trees in the upper or lower strata of the tree component were potential koala habitat. The majority of trees at the campground are koala feed trees. The new definition of core koala habitat is: an area of land where koalas are present, or which has been assessed by a suitably qualified and experienced person in accordance with the guideline as being highly suitable koala habitat, and where koalas have been recorded as being present in the previous 18 years.

The Spot Assessment Technique (SAT) (Phillips & Callaghan 2011) was used to determine the level of koala habitat use at the proposed camping area due to the low number of recent records nearby (see Table 1), which is influenced by the site's relatively remote location. SAT involved the inspection of the ground layer around 75 trees in and adjacent to the proposed camping area for faecal pellets and an inspection of the area for koalas. No koalas were observed during the course of fieldwork at either site or in surrounding areas. This investigation resulted in the location of one faecal pellet, which indicates a **low use area**. This level of usage does not indicate core koala habitat.

Rainforest and wet sclerophyll forest intergrade around the site of the proposed day use area. Occasional koala feed trees (grey gum and tallowwood) are emergent over rainforest dominated by coachwood (*Ceratopetalum apetalum*). None of these trees will be impacted.

Three flooded gums (*E. grandis*), listed under the new SEPP as koala feed trees, will be removed from the proposed carpark area.

A Threatened Species Assessment has been prepared for the koala, which concludes that – if recommended environmental safeguards, mitigation measures and a habitat compensation program are implemented – the activity is unlikely to significantly impact this species.

Koala records from Bionet were investigated and are summarised in the table below. There are 15 koala records within four kilometres of the proposed camping area, recorded over 44 years. Four records are from 2009-2019, four are from 1999-2009, one is from 1989-1999, and six are from 1975-1989. Distance accuracy of records varies widely from 5 metres to 10 kilometres. The closest record with reasonable accuracy (500m) is 1.3 kilometres from the site and was recorded in 2008.

Table 1 – Koala records within 4km of proposed camping area

Year	Distance from proposed camping area (m)	Accuracy (m)
2016	3900	5
2014	3000	1000
2014	3100	1000
2013	3300	30
2008	1300	500
2006	500	10000
2006	3100	10000
2006	4100	10000
1992	4000	100
1986	2100	100
1986	2600	1000
1977	2600	1000
1977	3200	1000
1977	3900	1000
1975	3500	100

Source: Bionet search February 2020.

3.1.3 Heritage Act 1977

The South Chowan Road Bridge, on South Chowan Road, which is located directly adjacent to the proposed day use area, is listed in the Historic Heritage Management System (Item 9919) as an item on the s.170 heritage register (in accordance with the *Heritage Act 1977*). The bridge was replaced a few years ago (J. Atkins 2019, pers. comm., 28 March). Proposed works will not affect the bridge.

3.1.4 Biodiversity Conservation Act 2016

Threatened species assessments have been prepared in accordance with the *Biodiversity Conservation Act 2016* (BC Act) for threatened species and an ecological community likely to occur. They conclude that significant impact is unlikely if recommended environmental safeguards, mitigation measures and habitat compensation are implemented.

By assessing, avoiding and minimising environmental impacts, compensating for unavoidable impacts and monitoring the two critically endangered scrub turpentines (*Rhodamnia rubescens*) at the campground, the activity is consistent with the following purposes of the BC Act (s. 1.3):

a. to conserve biodiversity at bioregional and state scales
b. to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations
c. to improve, share and use knowledge, including local and traditional Aboriginal ecological knowledge, about biodiversity conservation
d. to support collating and sharing data, and monitoring and reporting on the status of biodiversity and the effectiveness of conservation actions.

3.1.5 Rural Fires Act 1997

The Far North Coast Bush Fire Management Committee, of which NPWS is a member, has prepared a *Bush Fire Risk Management Plan* (BFR Management Plan) in accordance with the *Rural Fires Act 1997*. NPWS is a recognised firefighting authority and public authority responsible for detecting and suppressing fires and implementing risk management programs to protect life and property within all areas under its control.

The BFR Management Plan establishes four bush fire management zones with corresponding bush fire management intents. The proposed Manns Road camping area and Unicorn Falls day use area are located within an extensive Heritage Management Zone (HMZ) mapped in the *Mount Jerusalem National Park and Inner Pocket Nature Reserve Fire Management Strategy Type 2 2005* (FMS). The HMZ equates to a Land Management Zone in the BFR Management Plan. The primary objectives of the HMZ under the FMS are to protect biodiversity and conserve cultural heritage, which is consistent with the purposes of Land Management Zones (LMZs) in the BFR Management Plan. Application and suppression of fire is to consider the fire thresholds for the vegetation types that occur. The current proposal was not envisaged when NPWS prepared the FMS.

Planning for Bushfire Protection (PBP) (Rural Fire Service 2019) has been considered as a guideline for the activity. However, its application is not a mandatory requirement for activities under Part 5 *Environmental Planning and Assessment Act 1979*. The proposed camping area most closely fits with the description of 'primitive camping' in PBP. Primitive camping is regarded as a specific tourism use within the Special Fire Protection Purpose Developments category. Bushfire Protection Measures in the PBP for primitive camping include providing Asset Protection Zones (APZs), firefighting access, water and emergency management planning.

Asset Protection Zones

Clearing of between 80-100 metres would be required to meet APZ requirements east and west of the camping area which is located on a ridge running roughly north–south. These APZ requirements were derived from applying the Site Assessment Methodology in Appendix 1 to PBP, which includes consideration of slope and the type of vegetation surrounding the proposed camping area. The environmental impacts of such clearing and impacts on the aesthetics of the camping area require the consideration of an alternative approach (see below).

Emergency access and water

NPWS ensures that adequate access for emergency vehicles for firefighting is provided. The firefighting vehicle capacity of public access roads and management trails is mapped in the

Fire Management Strategy (FMS). Watering points for firefighting vehicles are also mapped in the FMS.

Fire management

The NPWS Fire Management Manual details policy and procedures for all fire management planning and fire operations on land under NPWS control, including protecting staff, the public and stakeholders from fire. Section 3 – Preparedness (Table 10) lists preparedness guidelines and public warnings for all Fire Danger Ratings (FDR) from Low to Catastrophic. Depending on local circumstances, park fire bans may be implemented when the FDR is Very High, and parks or sections within may be closed or evacuated when the Fire Danger Index (FDI) reaches Severe. Once the FDI reaches Extreme, in addition to measures available at a Severe FDI, public warnings are implemented. This involves information being placed on the internet and staff attending camping areas and day use areas. When FDI reaches Catastrophic, parks are closed to the public. The NPWS Fire Management Manual also includes detailed procedures for implementing fire bans, alerts and park closures.

Evacuation

The vegetation surrounding the roads, which visitors would use to evacuate the park in an emergency, is also highly fire prone. There is no environmentally acceptable solution to reduce this risk on the park because the high level of environmental impact, which would occur by extensively clearing high conservation value roadside vegetation in a conservation reserve, is unacceptable. However, the NPWS Fire Management Manual, which is supported by local NPWS Branch Incident Procedures, details the operational matters associated with park visitor evacuations. NPWS is progressively preparing emergency management plans for each of its parks and reserves. Parks precincts with high or extreme risks are being prioritised.

There are two directions to exit the park from the proposed Manns Road camping area/Unicorn Falls day use area – to the north-west and to the south. To the north-west, Manns Road continues unsealed for approximately 2.5 kilometres and then exits the park and enters less heavily timbered rural lands at Rowlands Creek and becomes a sealed road. To the south, Manns Road (unsealed) continues for approximately 2 kilometres and then becomes Skyline Road and heads east for 600 metres before exiting the park at Upper Main Arm; after that, it turns south and becomes Main Arm Road. Two kilometres from the park, the road begins following the riparian corridor on the floodplain and enters less heavily timbered rural lands.

3.1.6 Fisheries Management Act 1994

Potential for impact on the endangered fish, purple spotted gudgeon (*Mogurnda adspersa*) was considered under the *Fisheries Management Act 1994*. Modelled habitat mapping by Department of Primary Industries – Fisheries was reviewed. Mapping shows likely suitable habitat in Chowan Creek, further downstream. However, DPI Fisheries confirmed it is unlikely that the creek adjacent to the proposed day use area site is suitable habitat (B. Harrison 2019, pers. comm., 3 May).

3.2 Commonwealth legislation

3.2.7 Environment Protection and Biodiversity Conservation Act 1999

The following is a list of threatened species and an ecological community likely to occur, based on local records and/or habitat availability, and their conservation status under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act):

Lowland Rainforest of Subtropical Australia	(Critically Endangered)
Mitchell's rainforest snail	(Critically Endangered)
Giant barred frog	(Endangered)
Spotted-tailed quoll	(Endangered)
Grey-headed flying-fox	(Vulnerable)
Koala population – QLD, NSW and Victoria	(Vulnerable)
Long-nosed potoroo – South East Mainland	(Vulnerable)
Large-eared pied bat	(Vulnerable)

In accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act), Threatened species assessments have been completed for these species and ecological community. The assessments concluded that, if recommended environmental safeguards, mitigation measures and a habitat compensation program are implemented, there is unlikely to be a significant impact on these threatened entities.

The threatened species assessments (including the key threatening process (KTP) assessment) and the assessment of significance test under the BC Act address essentially the same matters in relation to risk to the entity from the activity as those matters set out in the *Commonwealth's Matters of National Significance Significant impact guidelines 1.1* (Department of Environment 2013). Therefore, additional impact assessments for these entities are not required. Based on the conclusions of the assessments prepared, referral of the activity to the Commonwealth Minister for Environment is not required.

The Greater glider (*Petauroides volans*) is another species which is likely to occur; this species is listed under the EPBC Act and is not listed under the BC Act. No impact assessment has been prepared for the species under that Act. A threatened species assessment in accordance with the EPBC Act has been prepared for this species (see Appendix 4). The assessment concluded that, if recommended environmental safeguards, mitigation measures and habitat compensation are implemented, the activity is unlikely to significantly impact this species and the activity does not require referral to the Commonwealth Minister for the Environment.

A note on plant species listed under the EPBC Act

The proposed campground, day use area and walking track, and buffers to these areas, have been searched for threatened plants listed under the EPBC Act, and none were detected.

3.3 Consistency with departmental policy

Policy name	How proposal is consistent
Firewood	NPWS will not provide firewood at the proposed camping area, and firewood collection will not be permitted. NPWS will encourage campers to bring non-pathogen/non-pest bearing fuels in accordance with the policy. Fires will not be permitted in the day use area.
Park Visitor Facilities Policy	All visitor facilities, including the walking track, will be constructed in accordance with the policy, which mandates that facilities are constructed in accordance with the NPWS Park Facilities Manual, unless a variation is approved in accordance with the Section 10 of the policy.
Walking Track Policy	The walking track will be constructed in accordance with the policy which requires that it is planned in accordance with: • the plan of management • the Park Visitor Facilities Policy • the Park Facilities Manual. In accordance with the policy the track will be appropriately located, designed to minimise environmental impacts, and will be appropriate to the setting. Planning, development and management of the walking track will consider public safety issues, how the track fits within other walking opportunities, such as off-park tracks, opportunities to provide access for people with disabilities and the resources needed to keep the track maintained.

4. Consultation

NPWS has consulted with the NPWS North Coast Regional Advisory Committee and the National Parks and Wildlife Advisory Council about the plan of management amendments required for the Tweed Byron Hinterland Trails Project, including the development of the associated facilities at Manns Road and Unicorns Falls.

NPWS has also met with groups of individuals, briefed them on the project and answered their questions. Northern Rivers Bushwalkers and Uki Residents Association were consulted about the project. The project webpage allows members of the public to register their interest and receive project updates. Some neighbours around Unicorn Falls have registered.

Tweed and Byron Shires have been consulted about the Tweed Byron Hinterland Trails Project.

During consultation, one individual requested provision of horse riding specific infrastructure. The plan of management (and amendments) is the statutory document which guides operations with the park. Horse riding is permitted on a number of roads and management trails in the park, including Manns Road and South Chowan Road. Current plans do not incorporate horse-specific infrastructure (for example, holding yards or hitching rails) at the proposed campground and day use area. .More developed horse riding infrastructure is provided in Nightcap National Park nearby.

5. Native title

There are no native title claims for the subject area. The Widjabul Wia-bul claim (Tribunal File No. NC2013/005) includes land in the south part of the park but not the subject area. There are no native title determinations or indigenous land use agreements for the park.

The infrastructure proposed as part of this project is not regarded as large-scale (major); the only new buildings are two toilets and no leases are proposed. As it is in a park reserved after 23 December 1996, the works can be validated under Section 24KA of the *Native Title Act 1993* (Cwth) as a facility for use by the general public. NTS Corp was consulted when the draft amendment to the plan of management was exhibited and notified when the plan amendment was adopted in 2019, but there is no legal requirement under the Native Title Act to have provided further notification of the works.

6. Proposed activity

6.1 Location of activity

Park name	Mount Jerusalem National Park
Description of location	A camping area is proposed on Manns Road, approximately 100 metres north of the intersection with South Chowan Road. A day use area is proposed on South Chowan Road, 800 metres from the intersection with Manns Road. A walking track is proposed to link the day use area to the pool below Unicorn Falls. See Figures 1 and 2.
Site commonly known as	The proposed location of the day use area is known as Unicorn Falls.
Street address	See above.
Council (local government area)	Tweed
NSW State electorate	Lismore

6.2 Proposed construction

The REF has been prepared with reference to Landscape and Construction Drawings, dated 13 January 2020. The walking track shown connecting to the campground at Manns Road does not form part of this activity and has not been assessed in this REF.

The activity involves construction of a camping area at Manns Road with three drive-in camp sites and four walk-in tent camp sites. Supporting infrastructure for the campground are a double stall composting toilet, an information shelter, carparking and road and pedestrian access to and within the site. The day use facility at Unicorns Falls involves construction of a double stall toilet, a car park and pedestrian pathway, two table seats and a walking track to the waterfall with stone steps.

The Landscape and Construction Drawings address all aspects of the project and include detailed drawings of the existing sites, demolition plans, detailed plans of the new facilities, including cross-sections, levels and grading plans, and set out plans. Detailed plans are included of the sealed vault pit toilet at Unicorn Falls, the information shelter, table seats, stone steps, bollards, dry stone walls and safety barriers. Notes to the plans address specific matters related to set out, levels, erosion and sediment control, sequence of works and demolition.

Drawings at Appendix 5 represent 95% project documentation and it is understood that further refinement of the plans will occur; for example, detail such as turfing in the campground and gravel pavement in the day use area are likely to change and use of camping platforms instead of the current cut and fill design.

The size of the proposed activity footprint:

- estimated footprint of camping area: 1210 m^2
- estimated footprint of day use area (including walking track): 830m^2
- total: 2040 m^2.

The estimates are conservative and are for direct impacts of the activity only.

Temporary signage will be required for traffic management and to inform the public of the nature of the works being undertaken. Traffic management signage will be detailed in traffic management plans, yet to be prepared.

It is likely that a small bulldozer and excavator will be used, in addition to trucks, to supply and remove materials and equipment. Further details of methods and materials are contained in the Landscape and Construction Drawings, dated 13/1/20.

All materials stored on site will be located outside of vegetated areas. Where necessary, materials will be covered, bunded or have other sediment controls erected around them. It is likely that materials will be sourced close to the time of use to avoid the need to store them on site. Alternatively, materials will be stored at NPWS works depots until required.

Notes to the Landscape and Construction Drawings (Drawing L-001 Issue C) include 'Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.'

The demolition plans (Drawings L-101 & L-201) show the site clearing and earthworks required. The cross-sections, Drawings L-205 to L-209, show ground level changes at locations shown on GA plans for the day use area (Drawings L-102 to L-104) and the campground (Drawing L-202.)

It has been calculated that 1903m^2 of vegetation will be removed (Table 2). Details of the 70 trees to be removed at the campground are provided and are show on the plan at Appendix 6. The demolition plans (Drawings L-101 & L-201) show most of the trees to be removed. However, additional trees were located during fieldwork and these have been plotted on the plan.

6.3 Environmental safeguards and mitigation measures

- Construct facilities in accordance with approved Landscape Construction Drawings (Appendix 5) and the Park Facilities Manual, including in accordance with the Notes: Drawing L-001, Issue C, to the Landscape Construction Drawings.
- Erect temporary protective fencing around the two critically endangered scrub turpentines (*Rhodamnia rubescens*) adjacent to the campground, before construction commencing. Refer to Drawing L-201 (Issue C) which shows the location labelled as 'Endangered plant species area to be untouched'. Maintain the fencing until such time as the permanent protective enclosure is constructed.
- Monitor the health of the two scrub turpentine specimens twice annually and record the information in a central location in Department of Planning, Industry and Environment. Ensure maintenance weeding of the enclosure. Install signage explaining the species conservation significance, threats and that visitors can assist species recovery by staying out of the enclosure.
- Clearly mark all forest sheoaks (*Allocasuarina torulosa*) at Manns Road within the walk-in tent camping area and any directly adjoining the campground footprint for retention and protection to preserve feed (and recruitment) trees for the threatened glossy black-cockatoo (*Calyptorhynchus lathami*).

- Apply the current Australian Standard (AS 4970 – 2009) for Protection of Trees on Development Sites (Standards Australia 2009) to avoid additional construction impacts on trees at both sites, using a qualified arborist experienced in its application, or a suitably qualified/experienced NPWS officer. The Tree Removal and Protection Plan - Manns Road Campground identifies trees requiring assessment for protection using Landscape Construction Drawings (Issue C, dated13/1/2020). The Tree Protection Inventory – Manns Road Campground provides details of those trees.
- Implement management recommendations of the Vegetation and Flora Survey and Assessment Report (Appendix 3).
- Implement recommendations 1,3 & 4 of the Aboriginal Cultural Heritage Assessment Letter of Advice (Appendix 7). Recommendation 2 has been implemented and the recommended consultation conducted and reported.
- Implement recommendations of the Cultural Values Assessment (Appendix 8).
- Implement recommendations of the Aboricultural Report (Appendix 9). Day use area recommendations are on p.7 and campground recommendations are on p. 11 of that report.
- Implement recommendations of the Rapid Habitat Assessment for threatened frog species and the Mitchell's rainforest snail (Appendix 10).
- Erect regulatory signage prohibiting fires at Unicorn Falls day use area and firewood collection at both sites.
- To mitigate impacts on park neighbours, visitors and the environment, use water to suppress dust in construction areas, if necessary. Ensure appropriate sediment control measures are implemented to manage runoff and to protect the water quality of Chowan Creek.
- Source all construction and landscaping materials from reputable sources and ensure machinery is cleaned prior to use on the park to reduce the risk of introducing weeds, invasive insect pests and other introduced pests such as cane toads.
- Dispose of all solid waste at a registered landfill or moved it to a suitable location within the park which will not cause off-site impacts, such as sedimentation.
- Do not operate heavy vehicles on Manns Road during school bus operation times.
- Do not undertake work on weekends at the Unicorn Falls day use area to reduce safety risks to visitors to the site.
- Operate all equipment and vehicles in compliance with noise, vibration and emissions requirements of the *Protection of the Environment Operations Act 1997* and its regulations.

6.4 Sustainability measures

Sustainability is a key and supporting design principle of visitor facility design and construction as set out in the Park Facilities Manual (PFM). See sections 3.1.2 and 3.2.1 of OEH (2016).

All facilities must be designed in accordance with the manual unless a variation is approved in accordance with the Section 10 of the Park Visitor Facilities policy.

The PFM includes technical sheets that provide a broad range of information from the general 'look' of facilities through to construction detailing for fabrication and implementation. The technical sheets often prescribe use of certain materials which have assessed for sustainability.

The Sustainable Practice (s.2.2.6) section of the PFM lists the key strategies to be employed at each stage of the lifecycle of a facility: planning and design, materials, fabrication,

construction, fit-out and maintenance and disposal at end-of-life. The following are the considerations for materials:

- reuse demolition components materials or recycled content materials that meet engineering specifications
- source materials locally to reduce transport impacts and support the local community
- use materials adequate for a job and not of an excessive standard (e.g. don't use stainless steel when galvanised will do)
- use materials that have a lower embodied energy.

6.5 Construction timetable

It is proposed to commence construction on the day use area in the second half of 2020. A commencement date has not been set for construction of the campground.

It is envisaged that traffic management plans will be prepared separately for the Manns Road campground and the Unicorn Falls day use area subprojects to respond to the different construction timeframes.

For road safety, heavy vehicles do not use Manns Road during school bus operation times and work will not occur at Unicorn Falls on weekends due to potential for conflict with existing visitor use.

7. Reasons for the project

7.1 Objectives

The proposal aims to provide new visitor facilities to develop a multi-day walking track network linking Mount Jerusalem National Park and Whian Whian State Conservation Area.

The multi-day walking track network, of which new visitor facilities are a component, is being developed to provide alternative nature-based visitation opportunities to alleviate pressure on Wollumbin National Park and to develop a broader range of visitor facilities within parks locally. Current levels of visitation at Wollumbin National Park are adversely impacting the park's significant Aboriginal cultural heritage values.

7.2 Consideration of alternatives

The alternatives would be:

- do nothing – do not provide visitor facilities in the north of the multi-day walking track network
- provide visitor facilities in another location on park.

It is desirable for visitor facilities to be provided at the northern starting point of the multi-day waking track network to enable visitors to access camping areas, toilets and picnic areas (day use areas). The nearest alternative visitor facilities on park are located in Nightcap National Park at Minyon Falls/Rummery Park, 20 kilometres south. This recreational node is the southern end of the new walking track network.

The proposed facility locations were chosen because of ease of access by the community, the existing profile of Unicorn Falls in the community, both online and locally, and the modified nature of the proposed camping area and day use area. NPWS is not aware of other comparable sites in the park.

8. Description of the existing environment

A full description of the vegetation of the day use area and campground is included.

The proposed day use area will be located in a level clearing in a stand of warm temperate and lowland subtropical rainforest adjacent to South Chowan Road. The rainforest extends along Chowan Creek and an unnamed tributary, adjacent to the proposed day use area. A waterfall, known locally as Unicorn Falls, is located on Chowan Creek adjacent to the proposed day use area. The associated carpark and toilets will be located on the disturbed edge of South Chowan Road.

The short walking track from the Unicorn Falls day use area to the waterfall commences in coachwood (*Ceratopetalum apetalum*) dominated rainforest which transitions to wet sclerophyll forest with elevation, with 20 m coachwood, tallowwood (*Eucalyptus microcorys*), brush box (*Lophostemon confertus*) and turpentine (*Syncarpia glomulifera*) emergents over rainforest. Rainforest understorey and midstorey will be removed and two coachwood and a laurel for the walking track.

The carpark and toilets are proposed for the disturbed road edge which supports young rainforest regrowth below emergent flooded gums (*E. grandis*), woody weeds and non-native grasses. Soil/gravel piles and an old log dump on this edge will be removed.

The camping area is proposed for a mainly level site, which is partly cleared within moist eucalypt forest dominated by ironbark (*Eucalyptus siderophloia*), tallowwood (*E. microcorys*), grey gum (*E. propinqua*) and white mahogany (*E. acmenoides*) with a rainforest midstorey. Piles of soil mixed with woody debris material occupy part of the central clearing and will be removed from the site. The existing southern access road to the site which runs parallel to Manns Road will form part of the proposed access to the camping area. The existing northern access road will be closed and rehabilitated.

Development of the carparks, roads, drive-in and walk-in camp sites, toilet and information shelter require removal of native vegetation. Trees for removal are shown on the plan.

8.1 Physical setting

Meteorological data

The area has a sub-tropical climate with a mean annual rainfall of 1582 mm. Rainfall is lowest between July and September and highest between December to March. Lowest mean daytime temperatures, between 21° C and 22° C, occur in July-August. Highest mean daytime temperatures, between 28° C and 29° C, occur from December to February.

Information sourced from the Murwillumbah weather station based on 30 years of records.

Topography

Morand (1996) describes the surrounding area as steep to very steep hills formed on Chillingham Volcanics which occur as a narrow north–south spine, up to two kilometres wide, bisecting the Tweed Volcano Caldera. South of Mount Warning they have a north-west to south-east trend. Slopes are long, and ridges and crests are moderately broad.

The proposed campground is located at an elevation of 210 metres and the proposed day use area at 120 metres.

Surrounding land uses

The proposed day use area is located close to the park boundary and adjoining private land. The closest private property supports multiple dwellings on a largely forested lot.

The proposed camping area is surrounded by national park.

Land uses around the park include grazing, horticulture and large lot/rural residential uses.

Geology and geomorphology

Geology is dominated by rhyolitic tuff, rhyolite and claystone derived from the Chillingham Volcanics (Triassic period) which pre-date the Mount Warning Volcanics. These rocks overlay cobble conglomerates from the ancient Neranleigh Fernvale beds, the basement rocks of the region (Morand 1996).

Soil types and properties

Kurosol (Australian Soil Classification) – strong textural contrast between A horizons with a strongly acid B horizon. Kurosols have low fertility and poor water-holding capacity.

Morand (1996) describes the local Frogs Hollow soil landscape as moderately deep to deep (100cm - 200cm), moderately well-drained Brown Podzolic Soils and Brown Earths on ridges and upper slopes. Deep (>200 cm), moderately well-drained Red Podzolic Soils and Red Clays occur elsewhere.

Properties: very steep slopes and mass movement hazard with localised rock outcrops and shallow soils. Strongly acid, highly erodible soils with high aluminium toxicity potential (Morand 1996).

Waterways including wild and scenic rivers

Unicorn Falls is located on Chowan Creek. An unnamed tributary joins Chowan Creek adjacent to the proposed day use area. No wild or scenic rivers occur in the vicinity.

Catchment values

The project is proposed for the northern part of the national park which is located in the Upper Tweed catchment. Chowan Creek flows into Rowlands Creek which flows to the Tweed River. The Tweed and Oxley Rivers are the major water supply for the towns and villages of the Tweed Shire. The forested lands of the catchment contribute significantly to protecting the water supply for the community and dependent ecosystems.

8.2 Biodiversity

Ecological communities

The vegetation and flora report (Appendix 3) states that rainforest vegetation at and around the day use area may be considered to fit the description of the Lowland Rainforest Endangered Ecological Community (Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions). It recommends that it be treated as an endangered ecological community (EEC) as a precautionary approach. Lowland Rainforest is listed as an EEC under the Biodiversity Conservation Act. In accordance with the tests under s.7.3 of the *Biodiversity Conservation Act 2016*, a threatened species assessment has been prepared for the EEC (Appendix 4).

Warm temperate rainforest occurring at the day use area and surrounds most closely fits with the Coachwood –Yellow Carabeen (*Sloanea woolsii*) floristic gradation of the Cetatopealum/Schizomeria – Argyrodendron/Sloanea Suballiance within the Coachwood Alliance (see Appendix 3, pp.4-5). Warm temperate rainforest is significant due to its high biodiversity values, including plant species diversity and providing habitat for threatened species and because it is close to its northern distribution in Australia (Appendix 3, p.6).

Flora

Two young specimens of scrub turpentine (*Rhodamnia rubescens*) (CE), 16 cm and 40 cm high, were recorded in a survey of the proposed camping area. The sites at Manns Road and South Chowan Road (Unicorn Falls) and buffers to both areas were searched for threatened plants and none were located, except for the scrub turpentines (see Appendix 3). A threatened species assessment, in accordance with the tests under s.7.3 of the *Biodiversity Conservation Act 2016*, has been prepared for this species (Appendix 4).

The following threatened plants are recorded downstream of Unicorn Falls[1]: red lilly pilly (*Syzygium hodgkinsoniae*) (V) which is known to occur sporadically in rainforest along Chowan Creek, *Corokia whiteana* (V) and rusty rose walnut (*Endiandra hayesii*) (V) (Bionet search February 2020). None of these species will be affected by the activity.

The following threatened plants are recorded in Mount Jerusalem National Park: green-leaved rose walnut *Endiandra muelleri* subsp. *bracteata* (E), smooth Davidson's plum (*Davidsonia johnsonii*) (E), minyon quandong (*Elaeocarpus sedentarius*) (E), pointed trefoil (*Rhynchosia acuminatissima*) (V), marblewood (*Acacia bakeri*) (V), narrow-leaf finger fern (*Grammitis stenophylla*) (E), nightcap plectranthus (*Plectranthus nitidus*) (E), arrow-head vine (*Tinospora tinosporoides*) (V), peach myrtle (*Uromyrtus australis*) (E), needle-leaf fern (*Belvisia mucronata*) (E), red boppel nut (*Hicksbeachia pinnatifolia*) (V), rough-shelled bush nut (*Macadamia tetraphylla*) (V), rusty plum (*Niemerya whitei*) (V) and small-leaved hazelwood (*Symplocos baeuerlenii*) (V) (Bionet search February 2020). None of these species will be affected by the activity.

Fauna

Over 180 species of native animals have been recorded in the diverse habitats of Mount Jerusalem National Park, including 15 species of bat, 19 other mammal species, 94 bird species, 27 reptile species and 12 frog species. The following threatened fauna are recorded in Mount Jerusalem National Park (E - Endangered, V – Vulnerable under the BC Act):

Non-flying mammals

Common planigale (*Planigale maculata*) (V), eastern pygmy-possum (*Cercartetus nanus*) (V), koala (*Phascolarctos cinereus*) (V), long-nosed potoroo (*Potorous tridactylus*) (V), red-legged pademelon (*Thylogale stigmatica*) (V), rufous bettong (*Aepyprymnus rufescens*) (V), spotted-tailed quoll (*Dasyurus maculatus*) (V), yellow-bellied glider (*Petaurus australis*) (V).

Flying mammals

Common blossom-bat (*Syconycteris australis*) (V), eastern cave bat (*Vespadelus troughtoni*) (V), eastern freetail-bat (*Mormopterus norfolkensis*) (V), eastern long-eared bat (*Nyctophilus bifax*) (V), greater broad-nosed bat (*Scoteanax rueppellii*) (V), large-eared pied bat

[1] CE= Critically Endangered, E = Endangered and V = vulnerable under the BC Act.

(*Chalinolobus dwyeri*) (V), little bentwing-bat (*Miniopterus australis*) (V), southern myotis (*Myotis macropus*) (V).

Birds

Albert's lyrebird (*Menura alberti*) (V), glossy black-cockatoo (*Calyptorhynchus lathami*) (V), little lorikeet (*Glossopsitta pusilla*) (V), marbled frogmouth (*Podargus ocellatus*) (V), masked owl (*Tyto novaehollandiae*)(V), powerful owl (*Ninox strenua*) (V), rufous scrub-bird (*Atrichornis rufescens*) (V), rose-crowned fruit-dove (*Ptilinopus regina*) (V), sooty owl (*Tyto tenebricosa*) (V), varied sittella (*Daphoenositta chrysoptera*) (V), white-eared monarch (*Carterornis leucotis*) (V), Wompoo fruit-dove (*Ptilinopus magnificus*) (V).

Amphibians

Giant barred frog (*Mixophyes iteratus*) (E), pouched frog (*Assa darlingtonia*) (V), Loveridge's frog (*Philoria loveridgei*) (E).

Reptiles

Stephen's banded snake (*Hoplocephalus stephensii*) (V).

Other species that may occur

The following threatened animals also potentially occur in the study area based on habitat availability and/or local records:

Barred cuckoo-shrike (*Coracina lineata*) (V), grey-headed flying-fox (*Pteropus poliocephalus*) (V), large bent-winged bat (*Miniopterus orianae oceanensis*) V), Mitchell's rainforest snail (*Thersites mitchellae*) (E), superb fruit-dove (*Ptilinopus superbus*) (V), yellow-bellied sheathtail-bat (*Saccolaimus flaviventris*) (V), atlas rainforest ground-beetle (*Nurus atlas*) (E) and shorter rainforest ground-beetle (*Nurus brevis*) (E).

Threatened species assessments in accordance with the tests under s.7.3 of the *Biodiversity Conservation Act 2016* have been prepared for the above species (Appendix 4), except for those species determined to be unlikely to occur. The species unlikely to occur are listed in Appendix 4 (Table 1) and reasons are provided.

8.3 Cultural heritage values

Aboriginal cultural heritage

Aboriginal cultural heritage investigations were undertaken by Everick Heritage. A search of the Aboriginal Heritage Information Management System identified two registered Aboriginal sites within 1000 m of the proposed visitor facilities. One was an open site, the other a closed site. There are restrictions on these sites and no other information is publicly available. The area of the campground is listed as an Aboriginal Place of Heritage Significance in the *Tweed Aboriginal Cultural Heritage Management Plan* (2017). A site survey was conducted with representatives of the Tweed Byron Local Aboriginal Land Council (LALC) in May 2019 and no cultural heritage objects were found.

Everick conducted a Due Diligence Assessment concluded that both sites were unlikely to retain Aboriginal Objects, further investigation was not warranted and that the proposed works would not impact Aboriginal Objects. LALC representatives suggested that the Rock Pool features at the day use area site may be significant to Aboriginal women which may

require additional consultation with Aboriginal women. Everick made four recommendations, in addition to recommending further consultation with Aboriginal women, these were:

1. an Aboriginal Objects find procedure
2. a procedure if Aboriginal remains are located
3. conservation principles.

Everick conducted further consultation with Aboriginal representatives, including Aboriginal women (see Appendix 8). From this consultation it concluded that although there was no collective story or cultural practice indicating that Unicorn Falls is particularly significant to Aboriginal culture or the Minjungbal/Nganawal people, the falls are likely to be part of a broader cultural landscape where falls are typically 'women's sites'.

Everick made three recommendations as a potential basis for a management plan to enable the Minjungbal and Nganawal people to actively participate in management of Unicorn Falls:

1. cultural use and renewal - encouraging use by Aboriginal women, Back to Country activities
2. provision of amenities, particularly appropriate toilets
3. public interpretation – incorporating messages and information from the Aboriginal community, with their consent and copyright.

Natural or cultural heritage values

The fauna listed under the heading 'Matters of National Environmental Significance under the EPBC Act' (in the following section) are of national natural heritage value. The fauna listed under the heading 'Fauna' in section 8.2 (including fauna of conservation significance) are of state natural heritage value. Animals listed under both national and state legislation satisfy both criteria. Aboriginal cultural heritage values are addressed in the previous section which attributes local significance. No European cultural heritage values have been identified at either site although the sites are linked to the history of forestry more broadly in north east NSW.

Other cultural heritage values

The camping area is proposed in an area which was possibly used as a log dump when the area was managed by Forestry Corporation as Nullum State Forest. Log dumps are common in forestry operations and the proposed camping area does not have special cultural heritage value.

8.4 Other social and community values

Recreation values

The Unicorn Falls area is used recreationally and has a profile in social media. There is evidence of campfires in the proposed day use area and on the proposed walking track adjacent to the camping area. The development of the camping and day use areas is intended to enhance the recreational use of these areas, linked to development of the Tweed Byron Hinterland Trails. The proposed camping area is not used for recreation.

Scenic and visually significant areas

The largely undisturbed setting of Unicorn Falls within a rainforest setting is visually significant.

Education and scientific values

The proposed camping area, walking track, and day use area, within their landscape settings, provide a wide range of opportunities for education/interpretation. The area has significant scientific value because it supports a range of threatened species and their habitats and a threatened ecological community.

It is recommended that signage is provided at the day use area about the critically endangered scrub turpentine and how visitors can assist its recovery and at Unicorn Falls to educate visitors about the endangered frogs and their habitats and how visitors can assist their recovery.

Interests of external stakeholders

The project web page has allowed members of the public to register their interest and receive project updates. Some neighbours around Unicorn Falls have registered and have been provided with information regarding this project. It is acknowledged that the activity will result in increased visitation at Unicorn Falls and increased use of South Chowan Road which provides access to park neighbours. The Manns Road campground is surrounded by park, but the road is used as a thoroughfare between Upper Main Arm and Rowlands Creek. The traffic management plans, to be prepared for construction, will consider the needs of all road users when planning how South Chowan Road and Manns Road can be used safely throughout the proposed works.

8.5 Matter of National Environmental Significance

The following threatened species and an ecological community are likely to occur, based on local records and/or habitat availability, and their conservation status under the EPBC Act:

Lowland Rainforest of Subtropical Australia	(Critically Endangered)
Mitchell's rainforest snail	(Critically Endangered)
Giant barred frog	(Endangered)
Spotted-tailed quoll	(Endangered)
Greater glider	(Vulnerable)
Grey-headed flying-fox	(Vulnerable)
Koala population – QLD, NSW and Victoria	(Vulnerable)
Long-nosed potoroo – South East Mainland	(Vulnerable)
Large-eared pied bat	(Vulnerable)

Refer to Appendix 4 for threatened species assessments for these entities.

The following plants are recorded elsewhere in the park and are listed under the EPBC Act: *Corokia whiteana* (V), red lilly pilly (*Syzygium hodgkinsoniae*) (V), smooth Davidson's plum (*Davidsonia johnsonii*) (E), minyon quandong (*Elaeocarpus sedentarius*) (E), nightcap plectranthus (*Plectranthus nitidus*) (E), peach myrtle (*Uromyrtus australis*) (E), ravine orchid (*Sarcochilus fitzgeraldii*), red boppel nut (*Hicksbeachia pinnatifolia*) (V), rough-shelled bush nut (*Macadamia tetraphylla*) (V), small-leaved hazelwood (*Symplocos baeuerlenii*) (V).

The proposed campground, day use area and walking track, and buffers to these areas, have been searched for threatened plants listed under the EPBC Act and none were detected.

9. Impact assessment

9.1 Physical and chemical impacts during construction and operation

	Applicable?*	**Impact level**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Is the proposal likely to impact on soil quality or land stability?	☐	NA	NA	
2. Is the activity likely to affect a waterbody, watercourse, wetland or natural drainage system?	☒	Low negative	The day use area and walking track will be developed adjacent to Chowan Creek.	The REF has been prepared with reference to Landscape and Construction Drawings, dated 13/1/20 (see Appendix 5). Notes to the Drawings (Drawing L-001, Issue C) address erosion and sediment control matters and state: 'The Contractor shall provide an Erosion and Sediment Control Plan for the works prior to commencement on-site for approval by the Principal'. The Notes also state: 'Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.' The facilities, including the walking track, will be built in accordance with the NPWS *Park Facilities Manual* (OEH 2016) which incorporates consideration of sediment and erosion control principles. It is understood that NPWS will not proceed with the proposed gravel pavement in the existing clearing at the day use area (see Drawing L-102) and that this change will be shown on final plans.
3. Is the activity likely to change flood or tidal regimes, or be affected by flooding?	☒	Low negative	The day use area is located on Chowan Creek. The creek experiences high flows associated with heavy rainfall from time to time.	If NPWS makes an assessment that forecast flooding would pose a serious risk to visitors using the day use area (and walking track) NPWS staff would close the day use area, erect

	Applicable?*	**Impact level**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			Although the adjoining creek and tributary rise in response to rainfall, NPWS has not recorded flooding affecting the proposed day use area.	appropriate closure signage and place information about the closure on the public website (via Elements). When flooding occurs, it is difficult to access the day use area due to flooding on approach roads which reduces the risk to visitors.
4. Is the activity likely to affect coastal processes and coastal hazards, including those projected by climate change (e.g. sea level rise)?	☐	NA	NA	
5. Does the activity involve the use, storage, or transport of hazardous substances or the use or generation of chemicals, which may build up residues in the environment?	☐	NA	NA	
6. Does the activity involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	☒	Low negative	Solid waste will be generated in the form of materials to be removed from the site, for example, soil and timber. The demolition plans (Drawings L-101 & L-201) and Tree Removal and Protection Plan for the Manns Road campground show the site clearing and earthworks required. Emissions will be generated by construction equipment.	All solid waste must be disposed of at a registered landfill or moved to a suitable location within the park which will not cause off-site impacts, e.g. sedimentation. All equipment will be adequately maintained and operated in compliance with the emissions standards of the *Protection of the Environment Operations Act 1997* and its regulations.
7. Will the activity involve the emission of dust, odours, noise,	☒	Low negative	Dust, noise and, to a lesser extent, vibration will result from construction work. Park neighbours reside on rural properties close to	All equipment will be adequately maintained and operated in compliance with the noise and vibration standards of the

	Applicable?*	Impact level	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
vibration or radiation in the proximity of residential or urban areas or other sensitive locations?			Unicorn Falls and further along South Chowan Road. These construction impacts will be short term only and will not affect a large area, and will only affect a small number of houses.	*Protection of the Environment Operations Act 1997* and its regulations. If required, areas will be sprayed with water to reduce dust. Care must be taken to manage runoff to by employing appropriate sediment control measures to protect the water quality of Chowan Creek. It is envisaged that the day use area will be constructed in the latter half of 2020, which is usually a low rainfall period, prior to summer. Noise and vibration impacts will be restricted to weekdays and will be short term.

9.2 Biological impacts during construction and operation

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. Is any vegetation to be cleared or modified? (includes vegetation of conservation significance or cultural landscape value)	☒	Medium negative	Manns Road campground: Seventy trees, midstorey and understorey will be removed from the Manns Road campground site. A total of 1076m^2 of vegetation clearing is required. Most of the trees are koala feed trees (see Koala Habitat Protection SEPP assessment on p.9 of this REF). Tree blossom also supports nectarivorous birds and bats, and the insects attracted support insectivorous birds and bats. Some of the tree species may also be of value to the Greater glider as food plants.	All works will be undertaken in accordance with Construction and Landscape Drawings. Demolition Notes (Drawing L-001) include requirements that trees to be removed are marked on site, the protective fencing of all trees retained adjoining the work area of the canopy line of the trees, and it includes tree protection methods. The Tree Removal and Protection Plan identifies all trees to be removed and trees requiring protection. The plan includes additional trees identified during field survey work. Details of all trees are provided in the Tree Removal Inventory and Tree Protection Inventory.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			Unicorn Falls day use area: three flooded gums (*E. grandis*), one sally wattle (*Acacia melanoxylon*), young rainforest regrowth and midstorey and understorey in wet sclerophyll forest and rainforest will be removed. A total of 827m^2 of vegetation clearing is required. The Arboricultural Report recommends removing a sally wattle (*A. melanoxylon*) at the proposed day use area carpark and removing one tree at the campground. No vegetation of cultural landscape value will be removed.	To avoid additional impacts on trees from the construction of the day use area and walking track, and the campground, it is recommended that NPWS apply the current Australian Standard (AS 4970 – 2009) for Protection of Trees on Development Sites (Standards Australia 2009). It is recommended that NPWS use a qualified arborist experienced in its application, or a suitably qualified/experienced NPWS officer. Application of the Australian Standard demonstrates best practice in tree management within this protected area. The Tree Protection Inventory lists trees identified in Landscape Construction Drawings, particularly Demolition Drawings and from fieldwork that are close to the construction footprint. The Australian Standard recommends that, depending on the degree of impact within individual Tree Protection Zones, certain steps are taken to protect the tree and its root zone. This includes some tree protection zone calculations, as examples, and provides some basal area measurements, as examples. Depending on the final plans, more or less trees may need to be assessed and protected from construction impacts. The Vegetation and Flora Survey and Assessment Report includes a range of recommendations on pp.11-15. These are not reproduced here in full but should be incorporated in the activity. One of these recommendations is implementing compensatory actions to offset impacts. A rationale and offset calculations are provided for the 4.4ha of bush regeneration works proposed targeting dense infestations of lantana (*Lantana camara*) at specific locations near both sites. The Arboricultural Report also refers to application of the Australian Standard (AS 4970 – 2009) to address tree protection during construction. The report makes a range of recommendations for the camping area (p.11) and for the day use area (p.7). These are not reproduced here in full but should be incorporated in the activity. To avoid additional impacts on vegetation, it recommends that use of the campground is

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				suspended when winds exceed 60km/h for visitor safety. To avoid impacts on trees at the day use area and along the walking track to the waterfall, it is recommended that steps and paths are built up rather than excavated.
2. Is the activity likely to significantly affect threatened flora species, populations, or their habitats, or area of outstanding biodiversity value (refer to threatened species assessment of significance)?	☒	Low negative	Two critically endangered scrub turpentines (*R. rubescens*) are located adjacent to the campground. They will be protected within an enclosure. Approximately 1000m^2 of adjoining habitat will be removed or modified by the proposal. The threatened species assessments concluded that, if recommended safeguards were implemented, the activity is unlikely to significantly affect this species.	The Vegetation and Flora Survey and Assessment Report recommends protecting the two scrub turpentines within an 8m x 8m enclosure which is weeded as part of ongoing management of the campground. It is recommended that the plants are monitored twice annually, and the information recorded in a central location in the Department of Planning, Industry and Environment and that signage is installed explaining the conservation significance of the species, threats and that visitors can assist its recovery by staying out of the enclosure. Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for vegetation at both sites, and compensatory actions.
3. Does the activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?	☒	Low negative	Over 180 species of native animals have been recorded in the diverse habitats of Mount Jerusalem National Park, including 15 species of bat, 19 other mammal species, 94 bird species, 27 reptile species and 12 frog species. Habitat removal at both sites has the potential to displace and disturb fauna using the habitats – wet sclerophyll and rainforest. Some use may be seasonal as food resources, such as blossoms or insects, becomes available. In contrast, other species may use the area as part of a nomadic movement pattern or as part of a permanent territory. The spatial scale of the habitat removal (1903m^2) is small, so unlikely to create a barrier to movement, or	Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for vegetation (habitat) at both sites, and compensatory actions.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			cause other major impacts on fauna utilising these areas which occur within much larger area of similar and contiguous habitats. Impacts on surrounding areas will expand the impacts of the activity. These impacts include visitor use of the campground which does not have a recent history of use since becoming a national park. The Unicorn Falls area has an existing pattern of visitor use, but this is expected to increase, and the impacts of human disturbance will increase proportionately. Disturbance can deter usage by animals sensitive to human disturbance, but for many highly mobile species this is unlikely to be of concern. Species adversely affected are likely to change their pattern of use of these areas, either restricting their usage to periods of lower human disturbance or avoiding the areas. This is unlikely to impact the conservation status of common fauna species but may impact individuals. Potential impacts on threatened fauna are addressed in Section 9.2 #4 (following).	
4. Is the activity likely to have a significant effect on threatened fauna species, or their habitats, or areas of outstanding biodiversity value (refer to threatened species	☒	Low negative	Section 8.2 – 'Fauna' (p.20) lists the threatened fauna recorded within Mount Jerusalem National Park and unrecorded fauna likely to occur. Threatened species assessments were prepared for 33 fauna species known or likely to occur. They concluded that if additional impacts are avoided and environmental safeguards and compensatory actions are	Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for vegetation (habitat) at both sites, and compensatory actions. The Arboricultural Report recommends that the large hollow-bearing tree adjacent to the Manns Road campground is retained and braced appropriately to reduce the risk of it falling into the campground. The rapid habitat assessment report for threatened frogs and Mitchell's rainforest snail (*Thersites mitchellae*) makes a range

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
assessment of significance)?			implemented the activity is unlikely to have a significant effect.	of recommendations to safeguard these species. They are not reproduced here but should be incorporated in the activity. They include: • addressing causes of sedimentation of frog breeding habitat at the day use area and monitoring the situation • erecting signage highlighting the importance of the area to threatened frogs and advising visitors how they can help • adjusting the track to avoid large logs and buttresses of large trees, particularly in wetter areas with well-developed litter layers • spreading excess soil (spoil) from the walking track on even terrain away from logs and other frog and snail habitat • retaining large logs (which function as habitat) • progressively removing *Lantana camara* to mitigate impacts on pouched frog (*Assa darlingtonia*). To ensure preservation of potential glossy black-cockatoo (*Calyptorhynchus lathami*) feed trees, it is recommended that all forest sheoaks (*Allocasuarina torulosa*) within the walk-in tent camp and any directly adjoining the Manns Road campground footprint are clearly identified in the field for retention and are protected.
5. Is the activity likely to impact on an ecological community of conservation significance?	☒	Low negative	A small area (up to 500m2) of warm temperate rainforest in and around the day use area will sustain direct and indirect impacts. The Vegetation and Flora Survey and Assessment Report states that 'The warm temperate rainforest of the study sites has high biodiversity values, including flora species diversity, and provides habitat for numerous threatened species. Warm temperate rainforests are of particular importance being	Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for vegetation (habitat) at both sites, and compensatory actions.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			close to their northern distribution in Australia (NPWS 2004).'	
6. Is the activity likely to have a significant effect on an endangered ecological community or its habitat (refer to threatened species assessment of significance)?	☒	Low negative	Vegetation at, and in the vicinity of, the day use area is recognised as a possible Lowland Rainforest EEC. Up to 500m^2 of the EEC will be impacted. The threatened species assessment for the EEC concluded that if additional impacts are avoided and compensation measures are implemented the activity is unlikely to have a significant effect on the EEC.	Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for vegetation, and compensatory actions.
7. Is the activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?	☒	Low negative	Direct impacts from vegetation removal and indirect impacts from the activity are threats to the biological diversity and ecological integrity of the ecological communities at both sites. Implementation of recommended environmental safeguards, mitigation measures and compensatory actions will reduce and manage this threat to an acceptable (low) level.	
8. Is the activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?	☒	Low negative	Genetically modified organisms are unlikely to be introduced. The Key Threatening Processes Assessment reviews potential for introduction of the following weeds and introduced insects and amphibian: • exotic vines and scramblers • exotic perennial grasses • *Lantana camara* • yellow crazy ant (*Anoplolepis gracilipes*) • red imported fire ants (*Solenopsis invicta*)	Any weeds introduced as a result of the activity will be treated as part of ongoing maintenance of these facilities by NPWS or through implementation of the bush regeneration program developed as a compensatory action. To reduce the likelihood of introducing weeds and introduced insects and amphibians, it is recommended that all construction and landscaping materials are sourced from reputable sources and machinery is cleaned prior to use on the park.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			• cane toad (*Bufo marinus*).	
9. Is the activity likely to affect any declared area of outstanding biodiversity value?	☐	NA	NA	
11. Is the activity likely to affect any joint management agreement under the BC Act?	☐	NA	NA	

9.3 Community impacts during construction and operation

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. Is the activity likely to affect community services or infrastructure?	☒	Low negative	There will be additional vehicle movements on the road network during construction, including trucks carrying machinery, equipment and materials. These impacts will be short term. Increased vehicle movements are expected when facilities are operational, proportionate with increased visitation. Some visitors are expected to be bushwalkers delivered to the day use area or campground by small buses to use the Hinterland Trails. The Manns Road campground is surrounded by park. However, the road is used as a thoroughfare between Upper Main Arm and Rowlands Creek. South Chowan	It is proposed to commence construction of the day use area in the second half of 2020. A commencement date has not been set for construction of the campground. It is envisaged that traffic management plans will be prepared separately for the Manns Road campground and the Unicorn Falls day use area subprojects to respond to the different construction timeframes. For road safety, heavy vehicles will not use Manns Road during school bus operation times, and work will not occur at Unicorn Falls on weekends due to public safety risks to visitors.

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			Road, where the day use area is proposed, services a small number of park neighbours.	
2. Does the activity affect sites of importance to local or the broader community for their recreational or other values or access to these sites?	☒	High positive	The local community currently uses the Unicorn Falls area recreationally. The project will provide safe access to the waterfall, toilets, picnic tables and safe, off-road parking. Visual amenity will improve with the removal of roadside weeds and the old log dump.	None required.
3. Is the activity likely to affect economic factors, including employment, industry and property value?	☒	High positive	The development of the Tweed Byron Hinterland Trails Project is intended to inject money into the local economy from visitors coming to the area to use the facilities and by providing support to businesses providing services to visitors and bushwalkers using the Trail. It is unlikely that the development of the camping and day use facilities will increase land values for park neighbours, but this is possible.	None required.
4. Is the activity likely to have an impact on the safety of the community?	☒	High positive	The development of the Unicorn Falls day use will result in the provision of safe access to the waterfall, safe toilets to reduce the risk of pollution of the adjacent waterway and safe, off-road parking. Traffic management is addressed at #1.	None required.
5. Is the activity likely to cause a bushfire risk?	☒	Low negative	In accordance with the NPWS Firewood Policy, NPWS will not provide firewood at the proposed camping area and firewood collection will not be permitted. NPWS will encourage campers to bring non-pathogen/non-pest bearing fuels. Fires will not be permitted at the day use area.	Erect appropriate signage prohibiting fires and firewood collection.

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
6. Will the activity affect the visual or scenic landscape?	☒	High positive	At the proposed campground, piles of soil and woody debris occupying part of the existing clearing will be removed. Weeds in surrounding bushland will be treated. Rehabilitation advice is in provided for the existing northern access to the campground, which will be closed. The eroded access to the waterfall will be replaced with properly constructed steps at the day use area. The damage from motorbikes at the site of the day use area will be rehabilitated. Rehabilitation advice is provided. The roadside weeds and piles of old logs will be removed and replaced with a properly constructed car park and toilets. Facilities will be constructed in accordance with the *Park Facilities Manual* (OEH 2016), which aims to promote an Australian identity incorporating: • a generous scale and spatial 'feel' • robust design reflecting a strong 'grounding' of elements • materials reference archetypal Australian-built form, such as corrugated iron, timber, steel and natural stone.	Rehabilitate damage adjacent to the existing clearing from illegal motorbike use. Rehabilitate the northern access to the campground.
7. Is the activity likely to cause noise, pollution, visual impact, loss of privacy, glare or overshadowing to members of the community, particularly adjoining landowners?	☒	Low negative	Construction of the day use area and campground will cause noise and vehicle and equipment emissions. These impacts will be short term. Erosion and sediment control measures will be implemented to manage pollution risks.	All equipment will be adequately maintained and is required to comply with noise and emissions requirements of the *Protection of the Environment Operations Act 1997* and its regulations. The REF has been prepared with reference to Landscape and Construction Drawings, dated 13/1/20. Notes to the drawings (Drawing L-001, Issue C) address erosion and sediment control matters, including that: 'The Contractor shall provide an Erosion and Sediment

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
				Control Plan for the works prior to commencement on-site for approval by the Principal'.

9.4 Natural resource impacts during construction and operation

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. Is the activity likely to result in the degradation of the park or any other area reserved for conservation purposes?	☐	NA	NA	
2. Is the activity likely to affect the use of, or the community's ability to use, natural resources?	☒	Negligible	The project is proposed for the northern part of the national park which is located in the Upper Tweed catchment. Chowan Creek flows into Rowlands Creek, which flows to the Tweed River. The Tweed and Oxley Rivers are the major water supply for the towns and villages of the Tweed Shire. The forested lands of the catchment contribute significantly to protecting the water supply for the community and dependent ecosystems.	Erosion and sediment control measures will be implemented. See preceding section (Section 9.3 #7).
3. Is the activity likely to involve the use, wastage, destruction or depletion of natural resources including water, fuels, timber or extractive materials?	☒	Low negative	Material used includes timber, stone, water, steel and fuels and oils. All facilities will be constructed in accordance with the *Park Facilities Manual* (OEH 2016). Sustainability is a key and supporting design principle (see Section.3.1.2 & Section.3.2.1) of visitor facility design and construction. The PFM includes technical sheets that provide a broad	Material use will be minimised as much as possible, and facilities will be constructed in accordance with the PFM.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			range of information from the general 'look' of facilities through to construction detailing for fabrication and implementation. The technical sheets often prescribe use of certain materials which have assessed for sustainability.	
4. Does the activity provide for the sustainable and efficient use of water and energy?	☐	NA	NA	

9.5 Aboriginal cultural heritage impacts during construction and operation

Addressing matters 1–5 will assist in meeting requirements set out in Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.

	Applicable?*	Likely impact	Reasons (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	Safeguards/mitigation measures
1. Will the activity disturb the ground surface or any culturally modified trees?	☒	Negligible	Cultural heritage investigations by consultant archaeologists (Everick Heritage Consultants) including a Due Diligence Assessment, a site survey and community consultation concluded that both sites (Manns Road campground and Unicorn Falls day use area) were unlikely to retain Aboriginal Objects, further investigation was not warranted and that the proposed works would not impact Aboriginal Objects.	Implement the Aboriginal Objects Find Procedure and Aboriginal Remains Procedure and Conservation Principles.
2. Does the activity affect known Aboriginal	☒	No	A search of the Aboriginal Heritage Information Management System (AHIMS) identified two registered	See above.

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
Objects or Aboriginal places? Include all known sources of information on the likely presence of Aboriginal Objects or places, including AHIMS search results.			Aboriginal sites within 1000 m of the proposed visitor facilities. One was an open site, the other a closed site. There are restrictions on these sites and no other information is publicly available. The area of the campground is listed as an Aboriginal Place of Heritage Significance in the Tweed Aboriginal Cultural Heritage Management Plan (2017). A site survey was conducted by Everick Heritage Consultants with representatives of the Tweed Byron Local Aboriginal Land Council in May 2019 and no cultural heritage objects were found. No Aboriginal Places are registered near the sites of the proposed facilities.	
3. Is the activity located within, or will it affect, areas : • within 200m of waters* • within a sand dune system* • on a ridge top, ridge line or headland • within 200m below or above a cliff face • within 20m of or in a cave, rock shelter or a cave mouth?	☒	Yes	See above sections and following sections. The day use area is located on Chowan Creek. The campground is located on a ridge.	See above.
4. If Aboriginal Objects or landscape features are present, can impacts be avoided?	☒	Yes	Everick conducted further consultation with Aboriginal representatives, including Aboriginal women about the waterfall and creek area. From this consultation it concluded that although there was no collective story or cultural practice indicating that Unicorn Falls is particularly significant to Aboriginal culture or the	Everick made three recommendations as a potential basis for a management plan to enable the Minjungbal and Nganawal people to actively participate in management of Unicorn Falls: • cultural use and renewal: encouraging use by Aboriginal women, Back to Country activities

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			Minjungbal/ Nganawal people, the falls are likely to be part of a broader cultural landscape where falls are typically 'women's sites'.	• provision of amenities, particularly appropriate toilets • public interpretation: incorporating messages and information from the Aboriginal community, with their consent and copyright.
5. If the above steps indicate that there remains a risk of harm or disturbance, has a desktop assessment and visual inspection^ been undertaken (refer to the Due Diligence Code)?	☐	NA	NA	
6. Is the activity likely to affect wild resources or access to these resources, which are used or valued by the Aboriginal community?	☒	Low negative	Aboriginal people will maintain access to the campground and day use area and wild resources. Provision of toilets will lessen the risk of water pollution at the waterfall/Chowan Creek day use area which is likely to facilitate cultural use of this area.	See response at #4 of this section.

9.6 Other cultural heritage impacts during construction or operation

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. What is the impact on places, buildings,	☐	NA	NA	

	Applicable?*	**Likely impact**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
landscapes or moveable heritage items? Attach relevant supporting information where required, such as a heritage impact statement.				
2. Is any vegetation of cultural landscape value likely to be affected (e.g. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?	☐	NA	NA	

9.7 Matters of national environmental significance under the EPBC Act

	Applicable?*	**Impact level**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
Is the proposal likely to impact on matters of national environmental significance as follows:				
• listed threatened species or ecological communities	☒	Low negative	The following is a list of threatened species and an ecological community likely to occur, based on local	Refer to Section 9.2 #1 for detailed information on environmental safeguards and mitigation methods for

	Applicable?*	Impact level	Reasons (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	Safeguards/mitigation measures
			records and/or habitat availability, and their conservation status under the EPBC Act: • Lowland Rainforest of Subtropical Australia – Critically Endangered • Mitchell's rainforest snail *(Thersites mitchellae)* – Critically Endangered • giant barred frog *(Mixophyes iteratus)* –Endangered • spotted-tailed quoll *(Dasyurus maculatus)* – Endangered • Grey-headed flying-fox *(Pteropus poliocephalus)* – Vulnerable • koala population QLD, NSW and Victoria –Vulnerable • long-nosed potoroo SE Mainland –Vulnerable • large-eared pied bat *(Chalinolobus dwyeri)* – Vulnerable. Threatened species assessments, in accordance with the BC Act, have been completed for these species and ecological community. The assessments concluded that, if recommended environmental safeguards, mitigation measures and a habitat compensation program are implemented, there is unlikely to be a significant impact on these threatened entities. The threatened species assessments (including the KTP assessment) and the assessment of significance test under the BC Act address essentially the same matters in relation to risk to the entity from the activity as those matters set out in the Commonwealth's *Matters of National Significance Significant impact guidelines 1.1* (Department of Environment 2013). Therefore, additional impact assessments for these entities are not required and, based on the conclusions of the assessments prepared, referral of the activity to the Minister for Energy and Environment is not required.	vegetation (and fauna habitat) at both sites, and compensatory actions. Refer to Section 9.2 #4 for additional recommendations applying to threatened fauna.

	Applicable?*	**Impact level**	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment and proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			Greater glider *(Petauroides volans)* is likely to occur, is listed under the EPBC Act and is not listed under the BC Act and no impact assessment has been prepared for the species under that Act. A threatened species assessment in accordance with the EPBC Act has been prepared for this species. The assessment concluded that, if recommended environmental safeguards, mitigation measures and habitat compensation are implemented, the activity is unlikely to have a significant impact on this species and the activity does not require referral to the Commonwealth Minister for the Environment. The proposed campground, day use area and walking track, and buffers to these areas, have been searched for threatened plants listed under the EPBC Act and none were detected. There is unlikely to be any impact on other EPBC Act listed flora.	
• listed migratory species	☐	NA		
• the ecology of Ramsar wetlands	☐	NA		
• Commonwealth marine environment	☐	NA		
• world heritage values of world heritage properties	☐	NA		
• the national heritage values of national heritage places	☐	NA		

10. Assessment of significance – summary

Category of impact	Significance of impacts		
	Extent of impact	Nature of impact	Environmentally sensitive features
Physical and chemical	Low	Potential sedimentation impacts Disposal of solid waste	Chowan Creek Park neighbours Threatened species and their habitats
Biological	Low	Vegetation loss Changes to hydrology Impacts of human disturbance	Threatened species and their habitats Lowland Rainforest EEC Warm temperate rainforest Protected area
Natural resources	Low	Potential sedimentation impact on water quality Materials and equipment used to construct facilities	Chowan Creek Finite resources Embodied energy use
Community	High Positive	Provision of safe, new facilities for community use Attracting visitors to the area brings money into the local services economy	NA
Cultural heritage	Negligible – Low	Safe toilet facilities will reduce risk of water pollution Opportunities for Aboriginal community involvement in management and interpretation	Cultural landscape association between women and waterfalls/ freshwater

11. Conclusions

The impacts of the activity can be managed by implementation of recommendations to safeguard the environment, minimise impact and avoid additional impacts. Compensatory actions are recommended to address unavoidable impacts.

Based on the assessments prepared for 33 threatened fauna, one threatened plant and a threatened ecological community, and the key threatening process assessment, there is unlikely to be a significant impact on these threatened entities if additional impacts are avoided, and environmental safeguards and compensatory actions are implemented.

The Matters of National Environmental Significance Assessment concluded that if additional impacts are avoided and recommended environmental safeguards, mitigation measures and habitat compensation are implemented, the activity is unlikely to have a significant impact on the listed species and ecological community and the activity does not require referral to the Commonwealth Minister for the Environment.

12. Supporting documentation

Document title	Author	Date
Appendix 1 Tree Removal Inventory – Manns Road Campground	D Mackey	1/01/2020
Appendix 2 Tree Protection Inventory – Manns Road Campground	D Mackey	1/01/2020
Appendix 3 Unicorn Falls Vegetation and Flora Survey and Assessment Report	B Stewart, Landmark Ecological Services	24/01/2020
Appendix 4 Threatened species assessments – BC Act & EPBC Act	D Mackey	21/02/2020
Appendix 5 Unicorn Falls Landscape Construction Drawings Issue C - 95% Documentation	Newscape	13/01/2020
Appendix 6 Tree Removal and Protection Plan – Manns Road Campground	D Mackey	21/02/2020
Appendix 7 Aboriginal Cultural Heritage Assessment Letter of Advice Proposed Unicorn Falls Precinct and Link Track Near Uki, NSW	Everick Heritage Consultants	1/07/2019
Appendix 8 NPWS Unicorn Falls Uki, NSW - Cultural Values Assessment	Everick Heritage Consultants	1/01/2020
Appendix 9 Arboricultural Report – Unicorn Falls and Day Camping Area	P Gray, Northern Tree Care	20/12/2019
Appendix 10 A Rapid Habitat Assessment for Threatened Frog Species and Mitchell's Rainforest Snail in the Area of the Proposed Unicorn Falls Track, Mt Jerusalem National Park, North East NSW	D Milledge, Landmark Ecological Services	6/7/2019

13. References

Commonwealth Department of Environment 2013, *Matters of National Significance Significant impact guidelines 1.1,* Department of Environment, Canberra. www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance.

Morand DT 1996, *Soil Landscapes of the Murwillumbah* - Tweed *Heads 1:100000 Sheet,* NSW Department of Land and Water Conservation, Sydney.

Office of Environment & Heritage 2016, *Park Facilities Manual*, OEH, Sydney.

Phillips S & Callaghan J 2011, 'The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus'*, *Australian Zoologist,* vol. 35, no. 3, pp. 774-780.

Rural Fire Service 2019*, Planning for Bushfire Protection – A guide for councils, planners, fire authorities and developers,* RFS, Lidcombe.

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