

Martin Hawes

Walking Track Design and Management

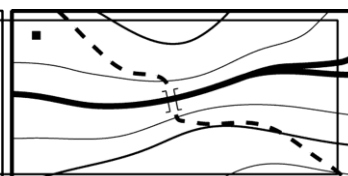
Report on a preliminary survey of a **Trans-Tarkine Track**



Commissioned by the Bob Brown Foundation

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Monster Creek on the Tarkine coast. Photo by Rob Blakers

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Cover photo: View north from Rupert Point to the distant Norfolk Range.
 Photos by the author except where otherwise indicated.

Summary

This report presents the findings of an investigation into the feasibility of constructing a multi-day walking track that will traverse the heartland of Tasmania's Tarkine wilderness. The report discusses the recommended route for the track, the recreational opportunities that the track will offer, the requirements and likely costs of constructing the track, and potential locations of campsites.

The Bob Brown Foundation commissioned the study, which spanned the period September 2015 to April 2016. The study involved 70 days of fieldwork, a day-long aerial survey by helicopter, and detailed study of topographic data including vegetation maps and satellite imagery. The on-ground survey covered more than 90 per cent of the proposed track. Most of the remaining sections were inspected by helicopter.

The proposed track will be of Class 3 Standard, comparable to the Overland Track. It will be suitable for use by walkers of moderate fitness and limited overnight walking experience. Walkers will overnight at campsites provided with elevated tent platforms and toilets, close to sources of potable water.

The key findings of the investigation are as follows:

- It will be possible to undertake the walk as a continuous 10-day trip or as two separate 5-day trips, broken at the Western Explorer Road. Roughly three days will be spent in the region's rainforests, two days on highland traverses, two and a half days on the coast, and two and a half days in lowland heath or scrub country.
- The ten-day walk has the potential to rank as one of the world's great wilderness journeys.
- Each half of the walk has the potential to rank as a world-class multi-day wilderness journey.
- The walk will terminate with a ferry trip from Pieman Head to Corinna.
- Each day of the trip will involve walking between 10 and 15 km. Most days will involve some uphill sections.
- The proposed track and its associated infrastructure can be constructed using straightforward and well-established track construction techniques. Several large bridges will be required and large numbers of steps (which are expensive relative to level track) will be required on some sections.
- There are suitable locations for ten campsites along the track. Of these, five will be inland beside major creeks and rivers, one will be high on Mt Bolton, one will be in rainforest, two will be on the coast near river mouths, and one will be near the track terminus at Pieman Head.
- The carrying capacity of the track will be determined by the capacity of its campsites. I recommend that the campsites be designed to accommodate an initial intake of 30 walkers per day. Campsite infrastructure can be expanded to accommodate higher numbers if there is sufficient demand.

- A detailed on-ground survey, backed up with additional aerial survey (ideally using LIDAR if available) will be required to optimise and fine-tune the proposed route before track construction can commence.
- The overall cost of the proposed development will be just under \$20 million. Of this roughly \$17 million will be for track construction, \$2 million will be for campsite platforms and associated infrastructure, \$400,000 will be for vegetation clearance, and \$275,000 will be for the detailed ground survey.
- This study has not assessed the costs of car parks, trailhead infrastructure, road upgrades, marketing, the set-up of a walker registration (booking) system, or additional aerial survey.
- The impacts of the proposed track on the ecological, human heritage and wilderness values of the region should be rigorously assessed before the track is constructed.

1 Background and implementation of this survey

1.1 Background

In late 2014 the Bob Brown Foundation convened an informal group of representatives of conservation groups and tourism operators to discuss launching a proposal for a multi-day Trans-Tarkine Track, as a flagship of the broader campaign to protect the Tarkine as a World Heritage national park. The group agreed and in February 2015 it accepted my suggestion to focus on a track that traversed the Tarkine in a roughly northeast-to-southwest direction, starting at the existing Tarkine Trails trailhead on the Keith River Road and finishing with a ferry trip from Pieman Head to Corinna. The Foundation subsequently commissioned me to survey the proposed route of the track and to report on the feasibility and likely cost of its construction, the recreational opportunities that it would offer, and potential locations of campsites. The survey was to be based primarily on field inspections but was to include at least one aerial survey, for which a separate budget was allocated.

The Foundation recognised that the resources and timescale allocated for my work would be insufficient to allow all the details of the track location to be resolved. Further surveys will be required to optimise the route and to fine-tune it to the point where construction can commence. One of the outputs of this project is an estimate of the amount of fieldwork that will be required for this.

1.2 Implementation

The first stage of the project involved studying digital topographic maps and associated geodata to plot a draft route for the proposed track and plan a series of field inspections. The geodata covered the entire Tarkine region and included:

- Digitised 1:25,000 topographic maps.
- Spatial data on roads and vehicle tracks, reserve boundaries, 10m contours, drainage courses and vegetation types.
- A GPS record of the Tarkine Trails route that I obtained during a previous project.
- Google Earth satellite imagery, which I could reference directly from my mapping software (MapInfo).

The vegetation data included spatial data on the distribution of tall myrtle forest and eucalypt forest, as identified during the 1995 Tasmanian Regional Forests Agreement (RFA) process.

In forested country I located the initial route as far as possible in tall myrtle forest, as this is more likely to contain stands of scenically appealing open forest and tall trees as well as being easier to navigate when exploring track route options. I was able to check the presence of such forest by inspecting the forest canopy in Google Earth. Where tall myrtle was absent my second choice was eucalypt forest, particularly on spurs where eucalypts are often widely spaced and spectacularly tall. Again, I could check the presence of such trees in Google Earth.

Once I had plotted a draft route on digital maps, I plotted digital guide points and transferred them to a GPS as a location/direction guide for the field inspections.

I undertook the bulk of the field inspections between September 2015 and January 2016, at the rate of about one fieldtrip per month. Most fieldtrips were 7-14 days long including the time that I spent travelling to the region from the south of the state.

Following each field inspection I entered the proposed track location and data on appropriate track-construction techniques and approximate costs into a MapInfo file. I also compiled a photographic record to illustrate the types of terrain and environments that the track will traverse and the key recreational attractions that walkers will encounter during each stage of the walk.

Between mid January and mid March 2016 the high fire risk throughout the region and the outbreak of large fires to the north and west of the region forced the suspension of all surveys including aerial surveys.

On 11th March 2016 I made a 300 km helicopter flight over the region to survey the vicinity of the proposed route, to inspect several alternative routes, and to look for features such as waterfalls and stands of spectacular forest that could be incorporated into the walk or accessed by sidetracks. (I will henceforth refer to this as 'the aerial survey'.) Photographer Rob Blakers accompanied me on this survey and took photographs. The aerial survey generally confirmed the merits of the proposed route but revealed features that warranted further on-ground inspections. This report incorporates information from the aerial survey, which I have described in detail in a separate report.

Based on the findings of the aerial survey I undertook two further fieldtrips in March and April 2016. During the first I investigated an extensive area of open rainforest on a ridge south of Pinner Creek, a stand of eucalypt forest on a spur north of the Rapid River, and the section of the Rapid River between Clearwater Creek and the Pipeline Road. In the final trip I visited the deep valley on the Donaldson River east of Pyramid Hill, and discovered extensive stands of open rainforest on the plateau north of this valley.

2 Walk experience, track standard and usage levels

2.1 Outline of the walk experience

The proposed walk will start at the current terminus of the Tarkine Trails loop, i.e. near the point where the Keith River Road fords the Arthur River. The first two days of the walk will be mostly in forest, much of it very beautiful, although on the second morning walkers will enjoy extensive views from the top of 'Lookout Hill'. This stage includes several (bridged) river crossings and features two spectacular waterfalls.

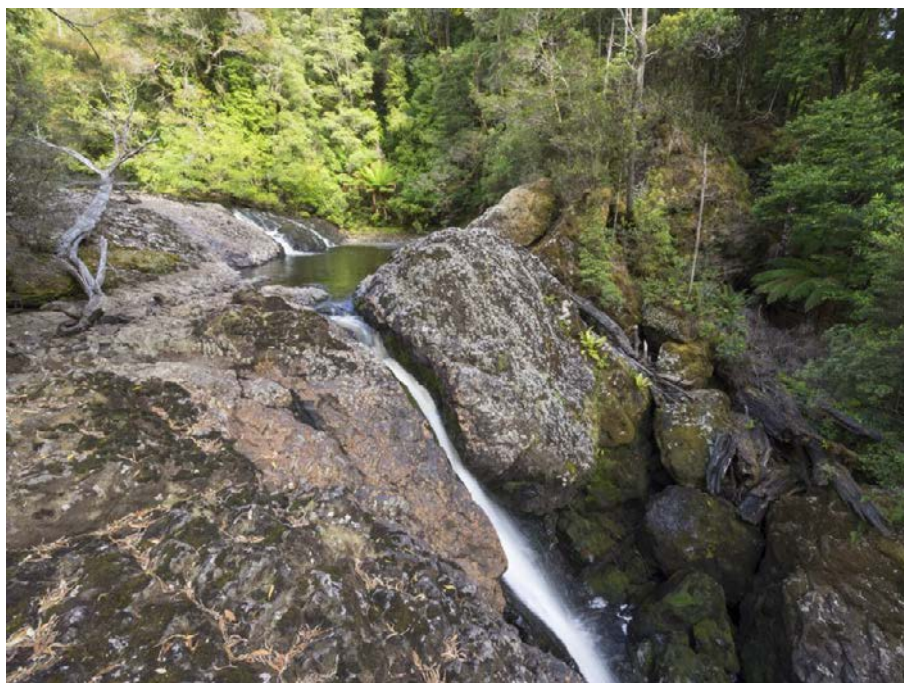


Photo 2.1-1. Eastons Falls.

Much of the third day will be taken up with climbing and traversing the ridgeline of Mt Bertha (703m), which offers extensive views over the entire Tarkine region. On the fourth day walkers will traverse the dense rainforests of the Donaldson Valley, encountering the Donaldson River in at least two places, and on the fifth day they will climb Pyramid Hill and Mt Bolton, which overlooks the Western Explorer Road. Walkers can either break their walk here or camp and keep going.

On Day 6 walkers will cross rolling heathlands flanked by Mt Holloway and Mt Edith to the base of the Norfolk Range. On Day 7 they will climb the range (with a short optional side trip to the summit of Mt Norfolk, at 762m one of the highest peaks in the region) before descending to the coastal plains. The Day 7 campsite will be close to a sidetrack that overlooks a small but spectacular gorge on Italian Creek.

On the eighth day walkers will reach the coast and encounter the beaches and dune systems that dominate much of the coastal landscape between Sandy Cape and the Interview River. From there they will follow beaches and vehicle tracks (which should be closed to vehicles) along the coast to a campsite just north of Camp Creek, near the Lagoon River.



Photo 2.1-2. Lagoon River from dunes to the south

The ninth day will consist almost entirely of beach walking, allowing walkers to admire the vast dune systems and middens. On the final day walkers will continue along former vehicle tracks to Pieman Head, where they will be picked up by ferry for the 90-minute trip to Corinna. A campsite will be provided near Pieman Head for walkers who arrive too late for the ferry, who are heading north from Pieman Head or who wish to spend an extra night in the area.



Photo 2.1-3. Wombat on the Tarkine coast. Photo by Jenny Archer.

It is assumed that the majority of walkers will undertake the walk in a northeast to southwest direction, mainly because of the aesthetic appeal of undertaking a long journey from remote inland forests to the coast. The NE-SW journey will also allow walkers to finish their trip with the ferry trip.

If use of the track is regulated by a permit system it would make sense to require all or most users to walk the track in the NE-SW direction, as this will minimise social encounters and hence increase opportunities for experiencing a sense of solitude.



Photo 2.1-4. Pieman River cruise at the confluence of the Donaldson and Pieman Rivers

2.2 Proposed track standard and walk difficulty

The agreed vision is for a world-class multi-day wilderness track that will allow walkers to experience the outstanding natural and cultural values of the Tarkine, particularly its rainforests, rivers, heathlands, mountains, coastline and Aboriginal heritage. The track is to be of Class 3 standard using the Australian Standard classification system, implying a track standard and hence walking experience comparable to that of the Overland Track. The fact that the track will cross the Western Explorer Road at roughly its halfway point will allow visitors to undertake the walk in two separate trips, or to restock with food if undertaking the entire walk in a single trip. A campsite will be provided for through-walkers on Mt Bolton near the Western Explorer Road, and a shelter (similar to the walkers' shelter at Dove Lake) will be provided beside the road for walkers awaiting transport.

Walkers will overnight at campsites provided with elevated tent platforms, toilets and access to drinkable water. All proposed campsites will be at low altitudes and in sheltered or at least reasonably sheltered locations. The most exposed site will be the one at Mt Bolton, which will be located in a small valley at an altitude of 440m. The NNE orientation of this valley should protect this site from westerly winds. Foot bridges will be provided over all rivers and major creeks, so the track will be passable at all times except times of extreme conditions such as bushfires, floods, snowfalls or exceptionally high seas.

In terms of its overall difficulty the track will be less challenging than the Overland Track thanks to its lower altitude and less mountainous terrain. It is therefore likely to be suitable for, and to attract, a significant proportion of relatively inexperienced walkers. Nevertheless the track will include some challenging sections, particularly the exposed traverses of Mt Bertha and the Norfolk Range. Walkers not travelling in commercial parties will have to carry camping gear and a minimum of five days' food, meaning they will need to be of better than average fitness.

2.3 Projected walker numbers

The proposed track will be subject to a level of usage that will require most of the track surface to be artificially hardened. As hardened track surfaces can withstand use by tens of thousands of walkers annually, the recreational capacity of the track in terms of walker numbers will be limited primarily by the capacity of its campsites.

As a first approximation I propose that the track be designed to accommodate 30 walkers per day. This is two-thirds the projected capacity of the Three Capes Track and half the capacity of the Overland Track.

It seems likely that many walkers will undertake only half the walk in any one trip, although many will make subsequent visits to complete the other half. As each half of the walk will rank as an outstanding wilderness journey in its own right, there is no reason to assume that either half will prove more popular. Hence it is reasonable to assume that at any given time an average of 30 walkers will be using each day-section of the track.

The track will potentially be usable year-round but will be less attractive and occasionally impassable during the core winter months of mid-June to mid-September. Assuming the track receives on average 80 per cent capacity usage during the remaining nine months, this would give an annual usage of approximately 6,570 walkers.

If and when demand for the track exceeds this figure it can be accommodated by expanding the campsites and installing additional toilets.

2.4 Comparison with other great wilderness walks

While it is beyond the scope of this study to provide an in-depth comparison of the proposed track with other well-known multi-day wilderness walks, it is instructive to compare its proposed length and usage levels with those of similar walks in Australia and New Zealand. The following table lists the map-length, time length and approximate annual usage of the proposed Trans-Tarkine Track and eight multi-day walks of comparable difficulty.

The listed lengths for the Trans-Tarkine Track and Overland Track exclude the ferry trips on the Pieman River and Lake St Clair respectively.

Walk	Location	Length (km)	Length (days)	Annual usage
Trans-Tarkine Track	Tas	100	10	6570
Overland Track (Dove Lake to Narcissus)	Tas	65	5	8000
South Coast Track	Tas	85	6	2000
Three Capes (when completed)	Tas	72	6	17,500 (max)
Grampians Peaks Trail (when completed)	Vic	144	13	23,000 (proj)
Larapinta Trail	NT	223	12-16	Not avail
Thorsborne Trail (Hinchinbrook Island)	Qld	32	4	14,000
Milford Track	NZ	54	4	14,000
Routeburn Track	NZ	32	2-4	10,000

Table 1: Lengths and usage levels of selected multi-day wilderness walks in Australia and New Zealand

2.5 Potential income from track fees

Based on the foregoing projected usage estimate, if walkers are charged a track fee of \$25 per adult per day and \$10 per child per day, excluding the cost of the ferry to Corinna, and assuming 80% of users are adults, this will generate an annual income of \$1.4 million. It is reasonable to assume that track and campsite maintenance costs will run at 5 per cent per annum of the initial construction cost, i.e. at roughly \$1 million per year, and that the recurrent cost of track management including booking fees, track rangers and toilet maintenance will not exceed \$400,000 per year. If these assumptions are correct, the suggested track fees would cover the ongoing costs of managing and maintaining the track although they would not repay the initial construction costs.

The foregoing figures do not take into account the potential economic benefits associated with visitor expenditure before and after their walks (for example on transport and accommodation), or the indirect benefits (for example enhanced tourism profile) that would flow from the development to Tasmania's northwest region and to the state as a whole.

2.6 Walker safety issues

The proposed track will generally be fairly non-hazardous, lacking for example the exposed high-altitude traverses of the Overland Track and the flood-prone river fordings of the South Coast Track. Nevertheless the walk will present some hazards, and being easier than the Overland Track it is likely to attract relatively inexperienced walkers who may be poorly equipped to anticipate and deal with these hazards. The main hazards will be as follows:

- The traverses of Mt Bertha, Pyramid Hill, Mt Bolton and Mt Norfolk will at times expose walkers to high winds, driving rain and occasionally snow, and hence to the risk of hypothermia. Three of these traverses (Bertha, Bolton and Norfolk) will include extended sections that offer little or no shelter. Walkers should be discouraged from attempting them in adverse weather unless they are well equipped and confident of their abilities and fitness. To allow walkers to delay the traverse of Mt Bertha and Mt Bolton, the proposed works schedule includes the designation of emergency campsites at the base of the northern ascent of Mt Bertha and on the moorland shelf east of Mt Bolton. Walkers who delay their traverse of Mt Norfolk can stay at the Day-6 campsite at upper Lagoon River.

- To a lesser extent the low-altitude traverses of heathland country will also be exposed and could be hazardous in inclement weather.
- The high traverses will lack water in dry conditions and will offer little shelter from the sun. Walkers should be warned of this risk and advised to carry water and sun protection.
- Bushfires will pose a major risk particularly in the non-forested country west of the Donaldson valley. At times of high fire danger the track should be closed and walkers should if necessary be evacuated.
- All major creeks and rivers will be bridged. However in extreme conditions bridges may be inundated or washed away, and some unbridged creeks may be impassable on the coast. In these circumstances the track should be closed.
- Like all forested environments, the forests traversed by this track will pose a risk of falling limbs and trees. Walkers should be warned of the risk and campsites should be cleared of tree-fall hazards.
- See also the notes concerning the coastal section in 4.8.2.

3 Principles of track alignment and construction

3.1 General principles

The track should be designed and constructed to world-class standards. Specifically, the environmental impact of the track and of its associated usage should be minimised while providing opportunities for outstanding recreational experiences consistent with the track classification. Track construction costs and ongoing maintenance costs should be minimised as far as possible without compromising the foregoing objectives. This can be achieved by adhering to the following well-established guidelines.

- The track should be sited and constructed so as to minimise the occurrence of water flow on the track surface, particularly water flow along the track.
- Track surfaces should be either artificially hardened or naturally self-maintaining. Most of the proposed track will require artificial surfacing but there will be some exceptions, notably beach traverses.
- Track gradients should generally be kept low. Gradients of non-stepped sections should be kept below 5° (approximately 1 in 11) where the track is either unsurfaced or surfaced with timber boarding that lacks a nonslip surface. Extended sections with gradients up to 7° (1 in 8) are acceptable if the track is surfaced with well-packed gravel or with a non-slip surface such as fibre-reinforced polymer (FRP) mesh. Short (up to 20m) sections with gradients up to 10° (1 in 6) are acceptable if the track is surfaced with well-packed gravel.
- The installation of steps should be avoided as far as possible. Altitude loss and gain should be achieved by installing switchbacks in preference to steps where practical. Where steps have to be installed, short flights (up to 18 risers) should be separated by sections of step-free track or at least by landings.
- Switchbacks should be designed to be unobtrusive and to minimise the risk that walkers will cut corners.
- To minimise environmental impacts, visual impacts and track construction costs, steep cross-slopes should be avoided as far as possible particularly in forest environments. (Deep benching in root-dense soils is expensive and may compromise the health of trees.)
- A track width (i.e. walking surface) of 750-1000 mm will generally be suitable. Where the track has a gravel surface the width should generally be 750-900 mm. Where the walking surface is timber, rubber tiling or FRP the width can be as low as 500 mm providing the walking surface is close to the ground. More elevated track (eg duckboard across high buttongrass) should be 1000 mm wide.
- Elevated track structures such as bridges should have handrails in accordance with Australian Standard 2156.2.

- Track markers will generally not be required as the track will be well defined. An exception is likely to occur on some coastal sections, as noted in 3.6. Snow poles are unlikely to be required on high, exposed traverses given the low chance of deep snow on these sections.
- The track and associated infrastructure should be regularly maintained to maintain track standards and minimise deterioration due to factors such as water flow. To ensure that the required maintenance occurs the management agency should draw up, fund and adhere to an ongoing maintenance schedule.

3.2 Existing vehicle tracks in forested section

The recommended track route will follow existing vehicle tracks between the Keith River Road trailhead and the plateau south of Hoof Hill. Most of these tracks are currently unused by vehicles and it is assumed that they will remain so and can gradually be fully converted to walking tracks. The Keith River Road west of the Arthur River still receives some vehicular usage, which ideally should cease if the Trans-Tarkine Track goes ahead.

Where vehicle tracks are benched (as they mostly are), the walking surface should be located on or near the outer edge of the bench to facilitate drainage.

Some sections of vehicle track are fairly stable and have been surfaced historically, and will not require further stabilisation in the short to medium term.

Steep or wet sections of vehicle track will require stabilisation. Steep sections should be stabilised using well-packed, fine gravel that resists abrasion and erosion. Wet sections can generally be stabilised with gravel and geotextile after suitable drainage works have been undertaken.

Where culverts have collapsed or are unstable they will require reconstruction or the installation of foot bridges.

3.3 Existing vehicle tracks in coastal section

Vehicle tracks traverse several sections of the coast between Italian Creek and Pieman Head. While some sections of these tracks have low gradients and reasonably stable surfaces, other sections are undesirably steep, aligned on the fall line, actively eroding or prone to mud development or seasonal inundation (see Photos 3.3-1 and 2). Vehicle tracks also traverse midden sites in places. The installation of new sections of walking track is recommended in places to bypass sections of vehicle track that are poorly located. Where midden sites are difficult to avoid it may be possible to protect them by hardening the walking track (for example with FRP walkway or rubber tiling), in consultation with relevant specialists and representatives of the Aboriginal community.



Photo 3.3-1. Vehicle track on sand south of Rocky Creek



Photo 3.3-2. Boggy area on vehicle track south of Rocky Creek

Where the existing vehicle track surface is gravel it may be possible to leave it unsurfaced, although in most cases it will be preferable to add a layer of finer gravel (either imported or crushed locally) to provide a safer, more comfortable and more stable walking surface.

Where vehicle tracks traverse seasonally wet hollows or mud bowls, it may in some cases be possible to avoid these by locating the walking track along the upper rim of the hollow. If this is not feasible the track should be either realigned or hardened with walkway.

Much of the existing system of vehicle tracks on the coast is located on deep sand (see Photo 3.3-1) and many sandy sections are deeply incised. Under continued foot traffic erosion may slow or even halt, but it is likely to continue on many sections. It is recommended that a walking surface of rubber tiles be installed on much of the coastal vehicle track system subject to a trial of their suitability. Tiles will be relatively cheap, will be easy to lay on sand and will provide a firm walking surface whilst protecting sand from direct abrasion. As with any synthetic track material in such an environment, tiles may be periodically buried by windblown sand in which case they will need to be dug out and re-laid.

For a discussion of bridges on the coastal section, see 4.8.2.

3.4 New track in forested and scrubby areas

Sections of new track in boggy areas and areas subject to occasional inundation should be surfaced with elevated walkway – either ‘planking’ or duckboard. FRP is generally preferable to timber because it can be installed with an inbuilt anti-slip walking surface (see Photo 3.4). Timber in shaded areas is prone to becoming slippery due to the build-up of organic material on its surface.



Photo 3.4. Walkway with 1m wide FRP walking surface at Melaleuca, SW Tas. Photo by Grant Dixon.

Well-drained sections should be stabilised using benching and gravel wherever possible. In forested areas benching will require some cutting into the forest-floor root structure and so may be inappropriate on some sections, particularly steep cross-slopes. In these situations FRP walkway should be installed, with steps where required.

On many parts of the proposed route suitable gravel may be unavailable locally, so if gravel is to be used it will have to be flown in. While flight times are likely to be short owing to the proximity of roads, it may be difficult to drop gravel directly to work sites without substantially opening the forest canopy. This should be avoided as far as possible. Gravel should ideally be flown to a small number

of selected drop sites in natural clearings and transported from there to work sites using powered barrows or other small vehicles (eg a modified ride-on mower with trailer). The use of such vehicles is likely to be practical along extended sections of the track owing to the absence of steps.

All track infrastructure in forested areas is subject to damage due to falling timber and uprooting trees. In this respect gravel surfacing is preferable to planking or duckboard because it is rarely damaged by falling timber, although it can be damaged by uprooting trees.

3.5 New track in heathland areas

Most of the heathland areas associated with the proposed track are located west of the Western Explorer Road, although areas of heathland also occur on 'Lookout Hill', the Mt Bertha Ridge, Pyramid Hill, Mt Bolton, and in isolated pockets elsewhere. The heathland is generally fire-prone and evidently burns frequently; indeed extensive areas between the Western Explorer Road and the Norfolk Range were firebombed in May 2015 and burnt again in January 2016.

The frequency of fire is likely to increase in future due to the combined pressures of climate change and pyrophilic management. If a walking track is built in this country using timber or other fire-susceptible materials, much of the track infrastructure is likely to be damaged or destroyed when a fire passes through. As a cautionary example, the Parks and Wildlife Service had to replace hundreds of metres of duckboard twice due to fires in the space of a few years in the vicinity of Cracroft Crossing in the Southwest National Park. Apart from the costs associate with removing and replacing damaged infrastructure, tracks may have to be closed for extended periods until infrastructure can be repaired.



**Photo 3.5-1. Rubber tiles installed on the Roper Lookout Track, Australian Alps.
Photo by Track and Trail Management Services.**

For these reasons it is preferable to employ fireproof or at least fire-resistant construction materials in heathland areas as far as possible. On better-drained ground benching or turnpiking with gravel surfacing (see 3.7) will often be the best option providing the overlying peat is not deeper than about 30 cm. Track stability in wet areas can be improved using geotextile where necessary.

In some locations rubber tiling may be suitable, although it will need to be laid on a fairly even surface such as sand, moderately fine gravel or well-drained soil (see Photo 3.5-1). The advantages of tiling include:

- It has low visual impact particularly from a distance due to its dark colouration.
- It is pleasant to walk on, being a more yielding surface than gravel or timber.
- Installed tiles tend to survive light to moderate fires, presumably because they are at ground level.

Where steps are required the use of rock may be an option but it will generally have to be flown in. It is worth considering the use of risers made of galvanised steel mesh, which have been trialled successfully in the Lake Cygnus area of the Western Arthurs (see Photo 3.5-2). They are somewhat unsightly, but the visual impact may be softened if vegetation grows through and around the mesh. Risers would be backfilled with rocks and gravel.



Photo 3.5-2. Steel-mesh step risers near Lake Cygnus, Western Arthur Range.

On very wet ground there may be no alternative to constructing some kind of supported walkway. Traditional double planking or duckboard are options but would have to be considered disposable in the event of fire. FRP is more fire-resistant than timber but is likely to require replacement after a hot fire.

Steel mesh walkway may be an option. It was successfully trialled on short sections of the Port Davey and South Coast Tracks in the 1980s, and has been in use for a similar time span in the Mt Kosciuszko area of NSW (see Photo 3.5-3). It is unsightly but its visual impact can be minimised by restricting the track width and keeping the mesh low to the ground so vegetation can fill the holes in the mesh. For the track to be effectively fireproofed the supporting structures would also need to be made of steel.



Photo 3.5-3. Steel-mesh walkway at Mt Kosciuszko, NSW. Photo by Paul Ma.

Cordwood can be effectively fireproof if it is embedded into wet ground so that the timber becomes and remains waterlogged. However cordwood is unstable on very wet ground and on better-drained ground it can dry out, increasing its susceptibility to rot and fire. Although cordwood can last upwards of 40 years in ideal conditions its more typical lifespan is around 20 years. The unevenness of its walking surface makes cordwood unsuitable for a Class 3 track. For these reasons its use on the Trans-Tarkine Track is not recommended.

A downside of gravel surfacing in heathland areas is that the resulting track can be highly visible when viewed from higher elevations. This is likely to be an issue particularly on the elevated traverses of the Mt Bertha ridge, Pyramid Hill and the Norfolk Range. From the point of view of visual impacts the use of FRP boardwalk would be preferable in these areas, as the material can be tinted and vegetation can grow through the holes in the walking surface. However, in my opinion this advantage does not outweigh the disadvantage associated with the susceptibility of such materials to damage by fire.

3.6 Walking routes on sand and other natural surfaces

In places the proposed walking route will traverse open country such as beaches and dunes that will not require artificial surfacing or the formation of a formal walking corridor. While many such places including most beach traverses will not require track markers, some sections – particularly in the

vicinity of midden sites – will benefit from the judicious installation of track markers to assist navigation and to direct walkers away from sensitive sites. Timber posts are likely to be the most suitable form of marker. Such markers will probably need to be reinstalled and replaced from time to time due to the impacts of shifting sand, storm inundation and other factors.

3.7 Sources of gravel

Gravel suitable for track surfacing may be available locally in some areas and could be extracted from borrow pits or top/side drains. However I saw little evidence of usable gravel over most of the proposed route. Where local gravel is unavailable it will either have to be flown in or manufactured onsite from local rock using a mobile rock crusher. (An example of the latter is the Series 4000 Red Rhino, which can crush rock to a particle size of 10 mm. This is made in the UK but can probably be imported.)

Imported gravel should be sourced as locally as possible (eg from existing roadside quarries) and should be certified free of biological pathogens.

Much of the terrain between the Western Explorer Road and the Norfolk Range is rocky with stones of rubble size (typically upwards of 5 cm diameter). The rubble is too coarse to be suitable for track surfacing, but it will be suitable for a track bed or for crushing to gravel.

3.8 Campsite size and infrastructure

As noted earlier, the track should be planned to accommodate 30 walkers per day. Campsites may have to accommodate more than 30 people in the event that some parties' itineraries are modified by bad weather or other factors. For example, severe weather might persuade some parties at the Rapid River campsite to stay put for a day, during which time an additional 30 walkers may arrive.



Photo 3.8. Tent platforms in the Walls of Jerusalem National Park. Photo by Grant Dixon.

To allow for this contingency I recommend that sufficient infrastructure be installed at each major campsite to accommodate 40 walkers – that is, 20 hardened tent sites together with associated

social tracks, toilets and water supply. Most tent sites and social tracks will require hardening, including in sandy coastal areas. Tent sites should be arranged in dispersed clusters (eg five clusters of four tent sites) to minimise crowding, but located within easy walking distance of toilets and water supply.

Additional tent sites should be identified and if necessary cleared at each campsite to allow for emergency situations in which more than 40 walkers needed to be accommodated. These additional sites should not require hardening as they are likely to receive only sporadic use.

Emergency campsites with cleared tent sites but no other infrastructure should be established at the northern base of the Mt Bertha traverse and on the heathland shelf at the eastern end of the Mt Bolton traverse, to accommodate walkers who decide to delay their traverses due to severe weather. These campsites should initially comprise five or six tent sites.

3.9 Potential effects of climate change



Photo 3.9. Sand-killed trees and bushfire smoke near the mouth of Italian Creek

Climate change could cause weather events and environmental changes in the Tarkine region that could affect the maintenance, usability and even the long-term viability of the proposed track. The principle effects of climate change could include the following:

- More frequent and more intense bushfires, and the associated disruptions due to fire-fighting activities, could threaten fire-susceptible track infrastructure, increase risks to walkers and cause lengthy periods when the entire track or sections of it are unusable or inaccessible.

- Rising sea levels and storm surges could make sections of the coastline between Italian Creek and Pieman Head intermittently or even permanently impassable, particularly at river mouths. This could require relocating some sections of track and associated infrastructure.
- Extreme rainfall could lead to increased flooding including flash flooding, particularly in the western regions of the track where there is little vegetation to moderate its effects. This could pose a risk to walkers, threaten bridges and track infrastructure (including campsites) in the vicinity of rivers, and trigger landslips in susceptible locations.
- Extreme weather events such as heatwaves and storms could become more frequent, delaying walkers and possibly forcing the closure of the track.

The agency that manages the track should seek specialist advice on these risks and take all practical steps to mitigate them. In particular, campsites should be located well above flood levels and bridges should be located and designed to survive all but the most extreme floods.

4 Route options

4.1 Rationale for the overall track alignment



Map 4.1. Overview of the proposed track alignment

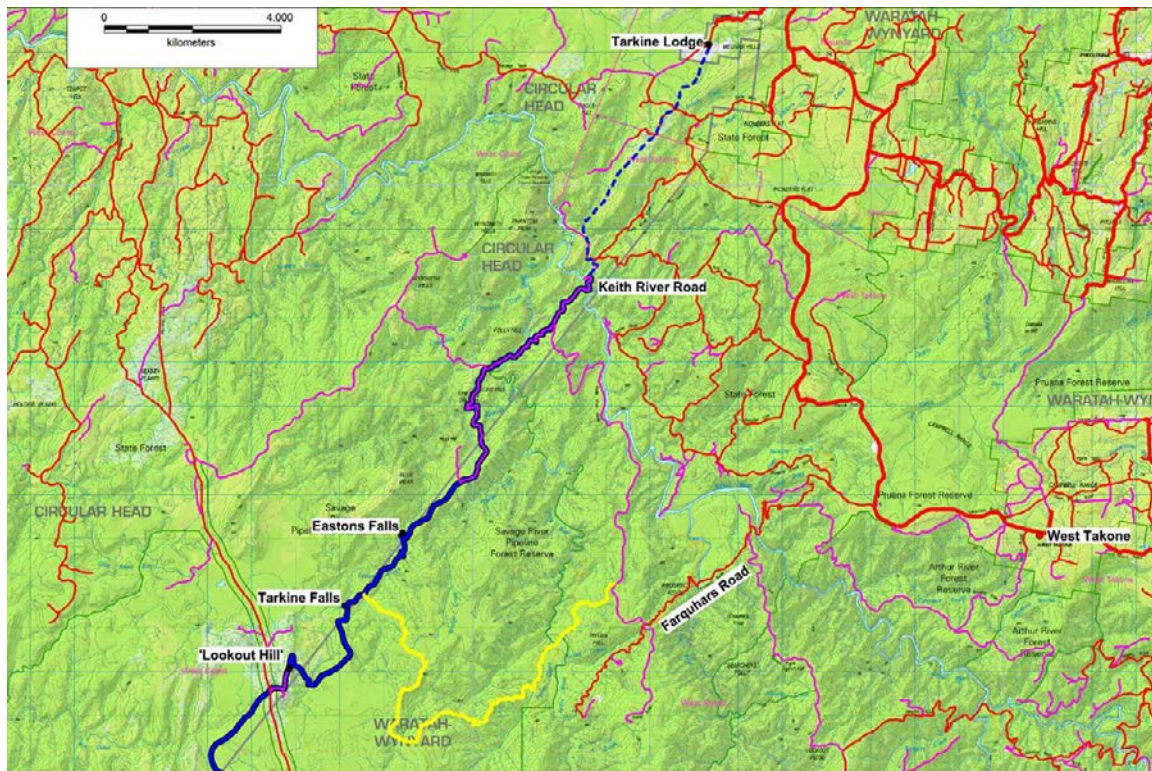
The route of the proposed track had already been decided in broad terms when this study was commissioned. It is worth briefly recapitulating the rationale for its selection. The main factors taken into consideration were as follows:

- The walk should showcase the natural features of the Tarkine, particularly the rainforests and coastal dune systems that are unique to the region.
- The walk should allow walkers to experience a wide variety of environments.
- The greater part of the walk should offer walkers a genuine wilderness experience and should therefore be remote from roads, vehicle tracks and similar disturbances as far as possible.
- The walk should be of sufficient length to rank as one of Australia's major multi-day wilderness walks, yet be short enough to be accessible to a wide range of potential visitors.
- The track should be located outside existing national parks in the region.

Based on these criteria the steering committee decided that the best option was the one investigated in the current study, extending from the Keith River Road to Pieman Head via 'Lookout Hill', Mt Bertha, Pyramid Hill, Mt Bolton, the Norfolk Range and the coast south of Lagoon River (see Map 4.1).

4.2 Location of the eastern trailhead

4.2.1 Trailhead options east of the Pipeline Road



Map 4.2.1-1. Trailhead options east of the Pipeline Road

The overall NE-SW orientation selected for the track locates the north-eastern trailhead somewhere on forestry roads in the Meunna–Takone region. A shortcoming of all potential trailhead locations in this region is that they are fairly inaccessible by road, involving long drives on unsealed roads. However Pruana Road, Bird Road and Farquhars Road east of its junction with Pruana Road are all of a fairly high standard, and road access could if necessary be upgraded if the track development goes ahead.

A natural first choice for the trailhead is one of the existing trailheads of the Tarkine Trails walk, i.e. either the Keith River Road (at the point where it crosses the Arthur River) or Farquhars Road. An advantage of the Farquhars Road access is that it already has a vehicular bridge across the Arthur River. This is currently gated but is accessible to walkers who are prepared to clamber over the chest-high gate. On the down side, the access road to the river on the east side is steep, has tight bends, traverses an active landslip and is probably unsuitable for large vehicles. More importantly, the existing route between this trailhead and Tarkine Falls offers fewer recreational attractions than the Keith River Road access.

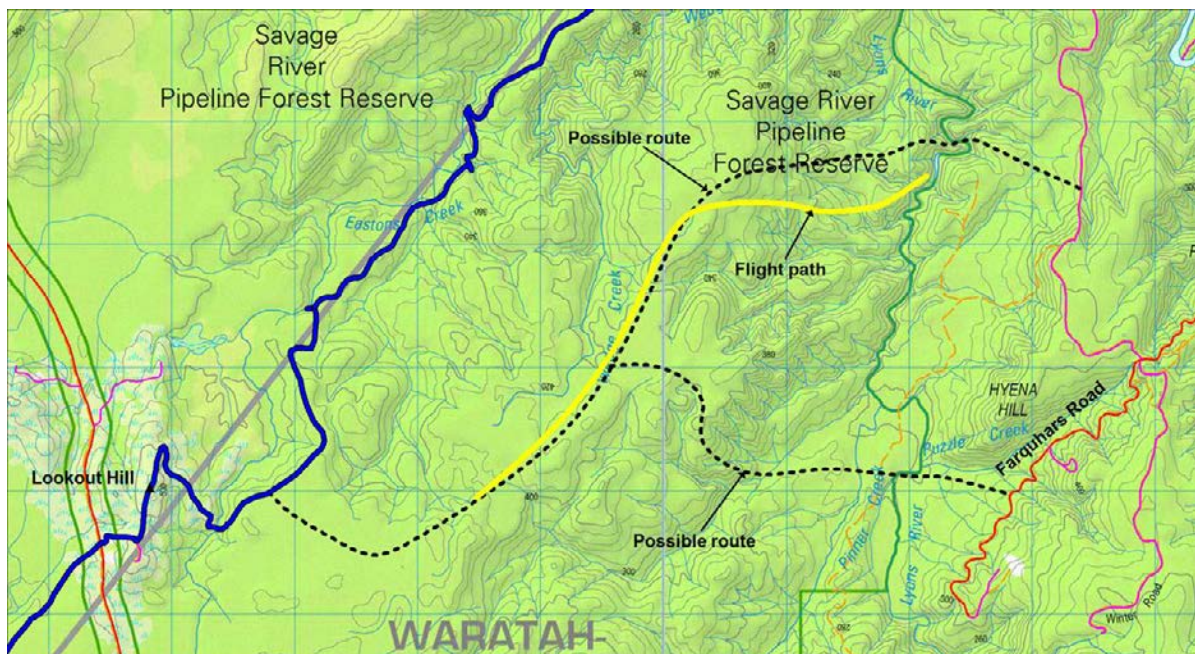
There is a strong argument for routing the track via ‘Lookout Hill’, i.e. the unnamed hill that abuts the Pipeline Road at the western extremity of the Tarkine Trails loop. ‘Lookout Hill’ is the first location on the proposed walk that provides extensive views, and will be one of only a handful of such locations on the entire walk (see Photo 4.2.1 and 4.3-1). If the track is to traverse this hill, the

Keith River Road trailhead will provide a more direct access (see continuous blue line on Map 4.2.1-1) than the existing Tarkine Trails loop from Farquhars Road (yellow line).



Photo 4.2.1. View west from 'Lookout Hill'

The possibility of establishing a more direct route from Farquhars Road to 'Lookout Hill' was investigated during the aerial survey (see Map 4.2.1-2). The forest covering the intervening country (particularly the plateau bordering Wedge Creek and the eastern flanks of that plateau) appeared fairly scrubby and there were no obvious signs of tall myrtle or eucalypt forest. Moreover a direct route would involve numerous undulations including the gullies associated with the tributaries of upper Eastons Creek.



Map 4.2.1-2. Potential routes linking Farquhars Road to 'Lookout Hill'

In the aerial survey I also inspected the long ridge that runs southwest from the end of Farquhars Road, south of Pinner Creek, and I subsequently inspected this ridge on the ground. The ridge has extensive stands of open rainforest but was of interest as a possible auxiliary track rather than as the main route of the Trans-Tarkine Track, because it would bypass the key attractions of the Eastons Creek waterfalls and 'Lookout Hill'. The auxiliary track option is discussed in 9.2.

I made a ground inspection of the entire Tarkine Trails loop as part of a separate project in 2014, and I re-inspected the northern section as well as several potential local alternative routes as part of the current study in 2015. On the basis of these inspections I recommend starting the proposed track at

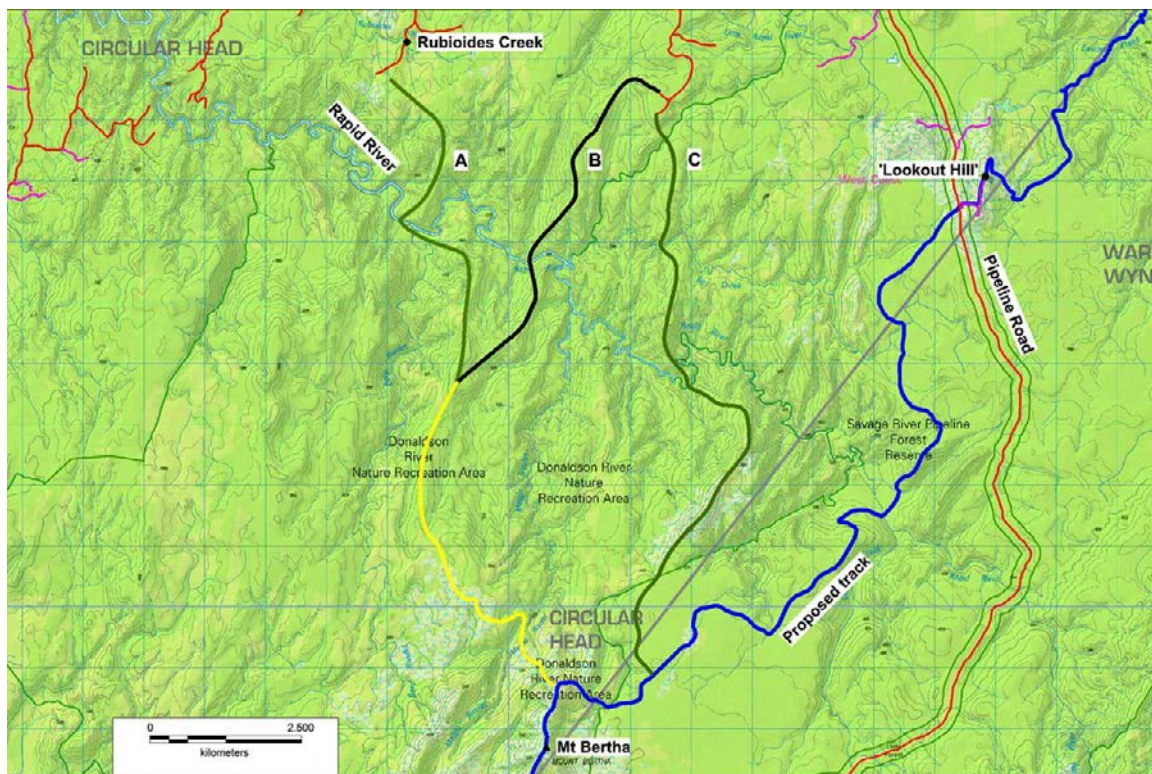
the existing Tarkine Trails trailhead on Keith River Road. This would require installing a pedestrian swing bridge at the location of the former vehicular bridge (known as Hilders Bridge) over the Arthur River.

The Keith River Road trailhead is approximately 39 km by road from the Bass Highway and 80 km by road from either Stanley or Burnie. Approximately 24 km of the road access is currently unsealed.

The option exists of establishing a second trailhead at Tarkine Lodge on the Newhaven Track (see dashed blue line on Map 4.2.1-1). This could be used by lodge clients if the lodge remains in use as accommodation. The section linking Tarkine Lodge to the Arthur River would be approximately seven kilometres long and would therefore add half a day to the duration of the walk. The link track would cross at least two vehicle tracks although these might eventually be closed. A marked route already exists linking the lodge to the river, and this might be suitable (with some realignment) for developing into a higher grade track.

I do not recommend locating the main Trans-Tarkine Track trailhead on private land, as this could pose management problems such as legal issues relating to public access or restrictions on the development of infrastructure such as a trailhead visitor centre.

4.2.2 Trailhead options west of the Pipeline Road



Map 4.2.2. Trailhead options west of the Pipeline Road

Several options exist for locating the Trans-Tarkine Track trailhead west of the Pipeline Road. The main advantage of a west-of-pipeline trailhead is that it would avoid the need for walkers to cross the Pipeline Road, thereby enhancing walkers' sense of remoteness and avoiding possible technical problems associated with crossing the pipeline corridor, which is currently a mining lease. Depending on road conditions a west-of-pipeline trailhead would also be somewhat easier to access than the proposed Keith River Road trailhead, particularly when driving from Smithton.

I have investigated three such options in detail. All three options (see Map 4.2.2) start from forestry spur roads south of Tayatea Road, which is a southerly offshoot of the South Arthur Forest Drive, and traverse ridges north and south of the Rapid River to link with the main proposed route near Mt Bertha.

Route A starts near Rubioides Creek and follows a ridge west of Meiglo Rivulet before crossing the upper rivulet immediately northwest of Mt Bertha. Routes B and C start from a road that runs south from Holder Plains. Route B links with Route A south of the Rapid River while Route C runs in a mainly southerly direction, crossing Roy Creek and the Rapid before traversing an open ridge northeast of Mt Bertha.

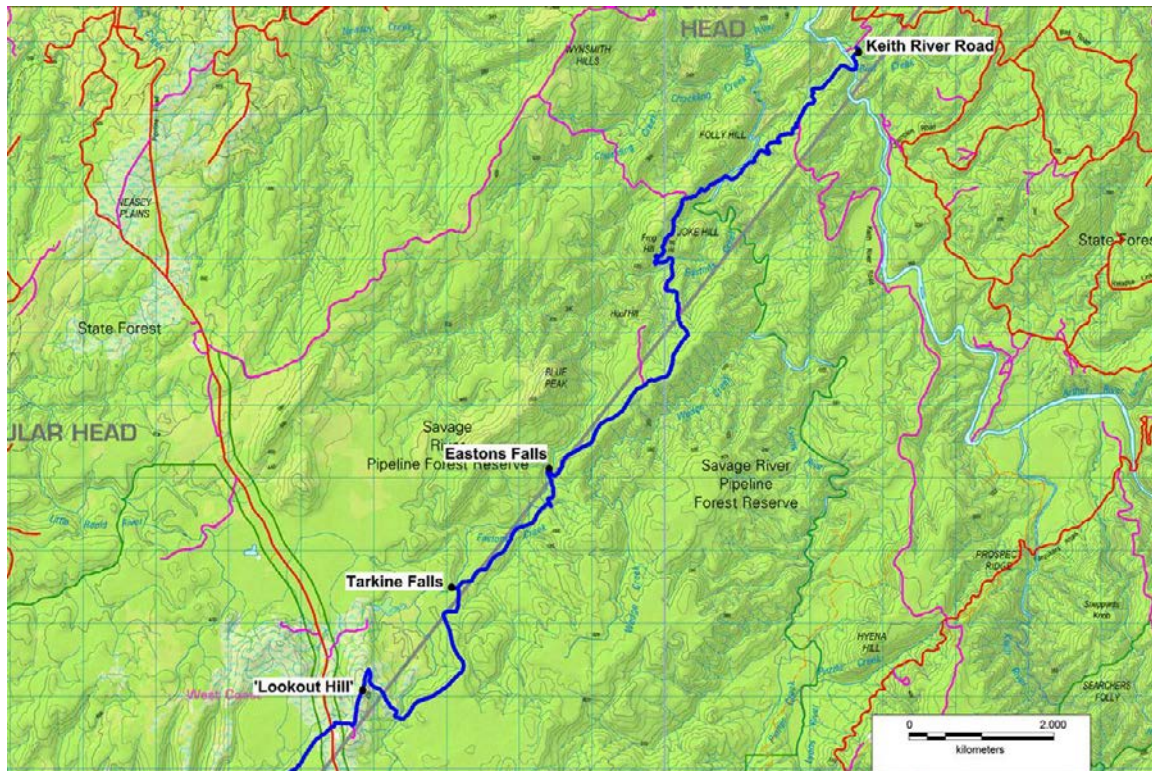
Having plotted potential routes based on topographic data and vegetation maps, I inspected all three routes during the aerial survey. Route A looked the most promising as it involved relatively few undulations and traversed several stands of tall eucalypt forest. However the southern half of this route (yellow line on map) looked less promising as it traversed several kilometres of scrub and scrubby forest.

Route B also traversed some tall eucalypt country, but a greater percentage of the forest on this route looked fairly scrubby compared to route A.

Route C looked feasible, but the need to cross the Roy Creek valley as well as the Rapid River would increase the construction costs and mean more climbing for walkers.

My overall impression is that none of these routes is likely to rival the Keith River Road–Eastons Creek–‘Lookout Hill’ route in terms of scenic and recreational qualities. Apart from avoiding the Pipeline Road the main advantage of these routes in recreational terms relative to the Keith River Road route is that they would traverse stands of tall eucalypt forest. But the Keith River Road route will also traverse some tall eucalypt forest, particularly in the vicinity of the Rapid River where spectacular stands occur.

4.3 Keith River Road to 'Lookout Hill'



Map 4.3-1 Keith River Road to 'Lookout Hill'

This section of the proposed track traverses fairly complex terrain with hills and ridges up to 500m altitude and deeply incised valleys, often with steep slopes (see Photo 4.3-1). The area is blanketed in forest with the exception of 'Lookout Hill' at its western extremity. The obvious first approximation to the route on this section is the Tarkine Trails route, which utilises existing closed vehicle tracks as far as the plateau south of Hoof Hill.



Photo 4.3-1. Blue Peak and the distant Eastons Creek valley, seen from 'Lookout Hill'.

4.3.1 Incorporation of existing vehicle tracks

Sections of existing closed vehicle tracks could be converted to walking track and incorporated into the proposed track providing they remain off-limits to vehicular use, in which case they will continue to revegetate and will eventually be difficult to recognise as former vehicle tracks. The advantage of following such tracks is that they provide a readymade benched surface, which in some cases has already been artificially surfaced with gravel and is therefore stable. An example is the section of Folly Hill Road that traverses the eastern slopes of Frog Hill.

In the short term following vehicle tracks may detract from the wild quality of the walking experience although many of the existing tracks followed by the Tarkine Trails route are already fairly overgrown. Another potential disadvantage is that some sections of vehicle track are steeper than is desirable for a walking track, for example the section of Folly Hill Road that ascends west of the Lyons River (see 5.1.2). As noted in 3.2 it may be necessary to surface steep sections with heavily compacted gravel to reduce the rate of scuffing and surface erosion.

4.3.2 Access to riverine environments

The proposed route east of the Pipeline Road traverses country that encompasses several rivers and major creeks, and hence provides opportunities for walkers to experience riverine environments. Outstanding riverine features of the area include the Arthur and Lyons Rivers, Eastons Creek, Tarkine Falls on upper Eastons Creek, and an unnamed falls on Eastons Creek south of Blue Peak. I will henceforth refer to the latter as Eastons Falls (see Photo 2.1-1). All of these attractions are accessed by the existing Tarkine Trails route between the Keith River Road and 'Lookout Hill', or by short side-routes.

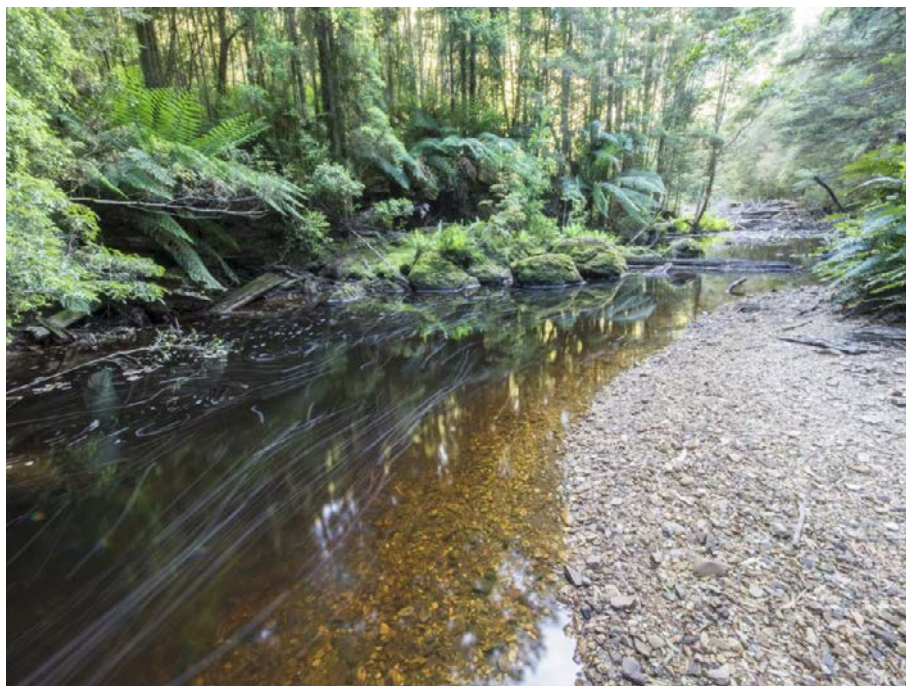


Photo 4.3.2-1. Eastons Creek

I have made preliminary investigations into the feasibility of routing the track along or close to one or more sections of river bank in this area. In many places this is impractical owing to the steepness of the banks. Where banks are less steep it will generally be necessary to locate the track some distance from a river due to the unevenness of the terrain, the density of the vegetation, the presence of flood channels and/or the need for the track to be above the potential flood height. This reduces the visual exposure of the track to the river, hence weakening the rationale for following the river.

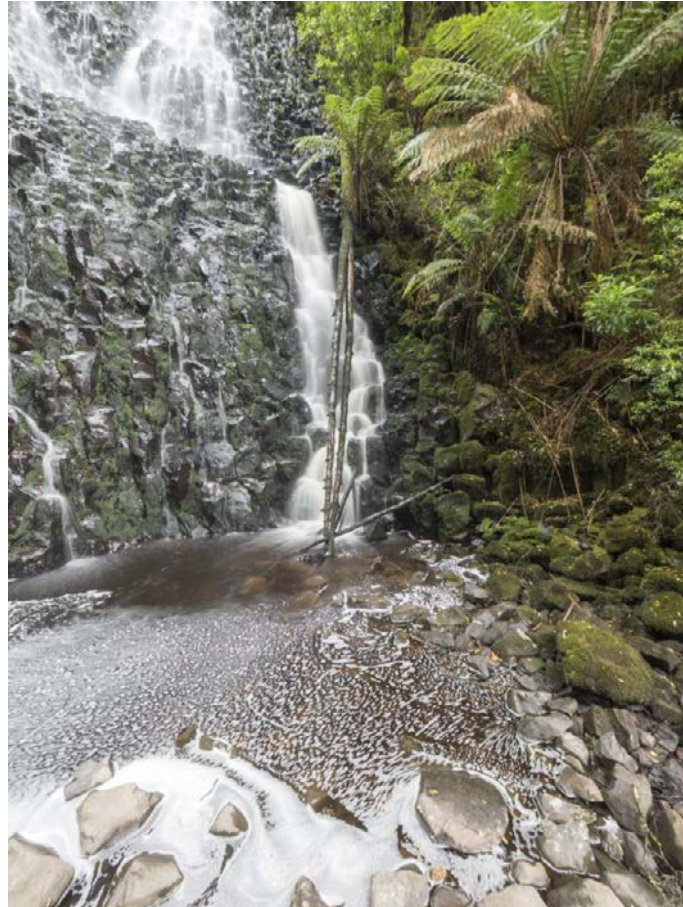
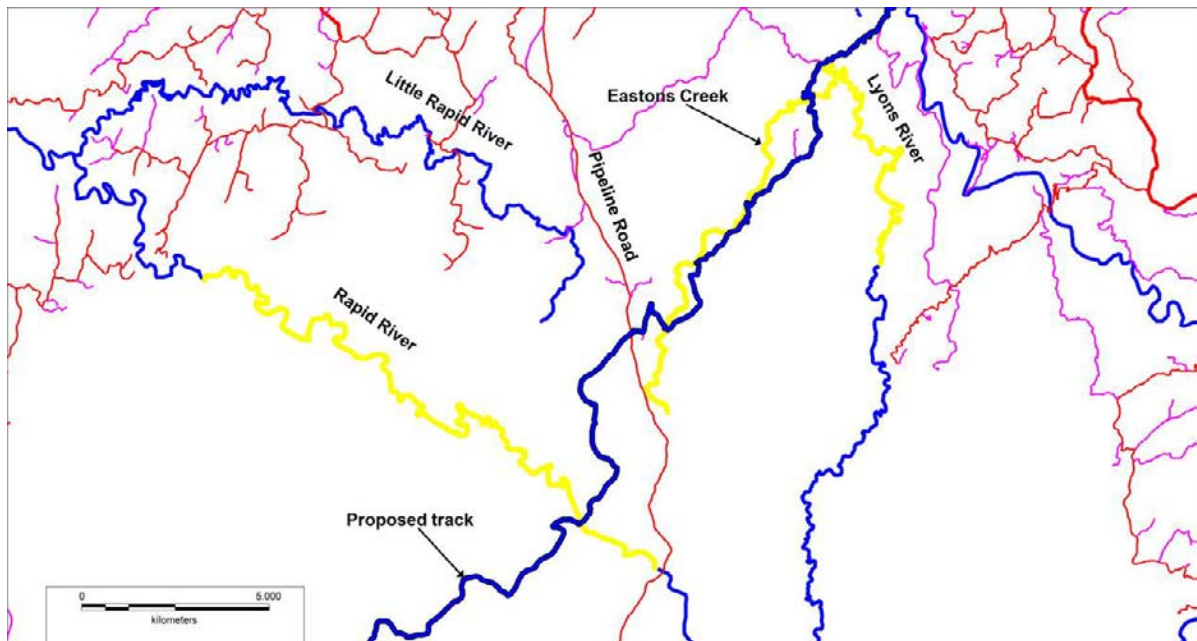


Photo 4.3.2-2. Tarkine Falls

A potential option is to route the track along the west bank of the Lyons River from the current ford over the Lyons to the river-bend north of Joke Hill, thence to the Frog Hill/Joke Hill saddle where it could rejoin the existing Tarkine Trails track. However the slope above the bend is very steep and the cost of track construction would be difficult to justify given that an existing vehicle track already traverses the slope higher up. For this reason I do not recommend this option for the foreseeable future.

In the course of the aerial survey I inspected the entire length of Eastons Creek and an 8 km section of the Lyons River upstream of its junction with Eastons Creek, to look for waterfalls, gorges, cliffs, swimming holes and other scenic features that the proposed track might access (see Map 4.3-2). I did not see any features that would warrant such access other than the ones I already knew about, namely Tarkine Falls and Eastons Falls. However owing to the dense canopy it was not always

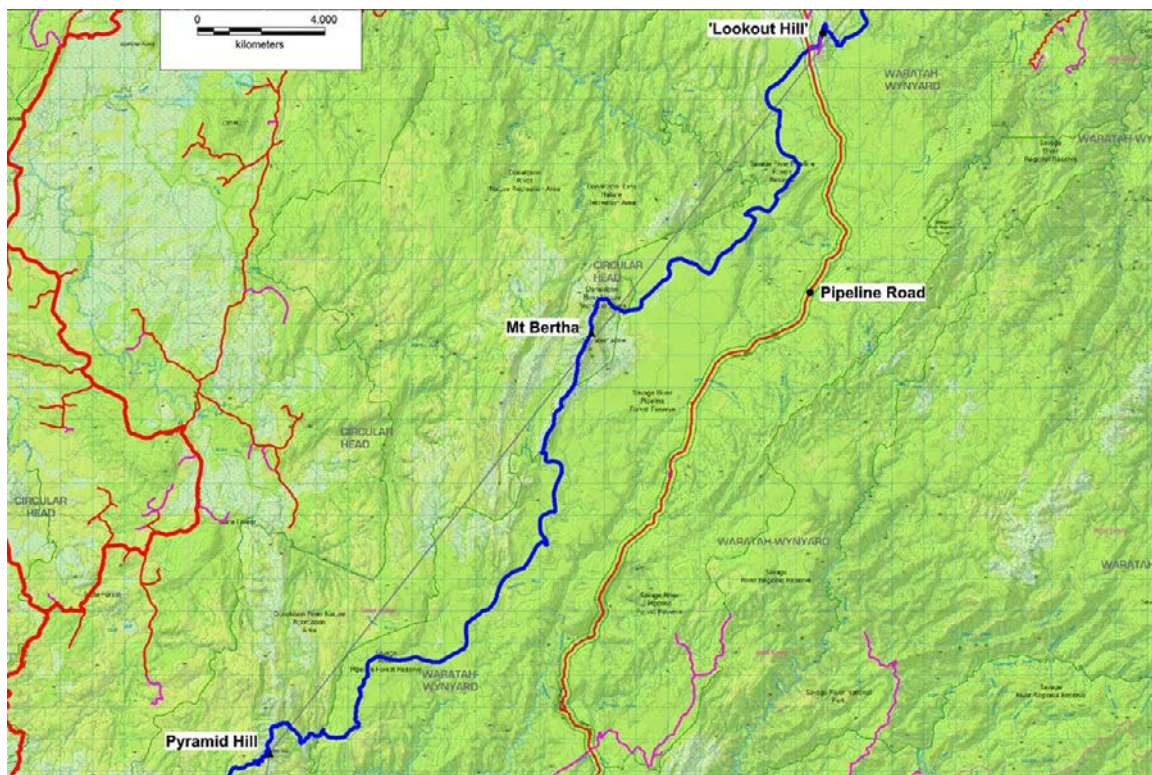
possible to see the rivers in places, so I may have missed features that would warrant at least a sidetrack.



Map 4.3-2. Aerially surveyed sections (yellow lines) of the Rapid River, Eastons Creek and Lyons River

4.4 'Lookout Hill' to Mt Bertha ridge

4.4.1 Mt Bertha as a key attraction



Map 4.4.1. 'Lookout Hill' to Pyramid Hill

Mt Bertha is potentially one of the key attractions of the entire 10-day walk, being one of its highest points (just over 700m) and offering extensive views over the Tarkine hinterland from the Norfolk Range to the Savage River catchment and from the Meredith Range to the state's northern coastline (see Photos 4.4.1 and 4.4.3).



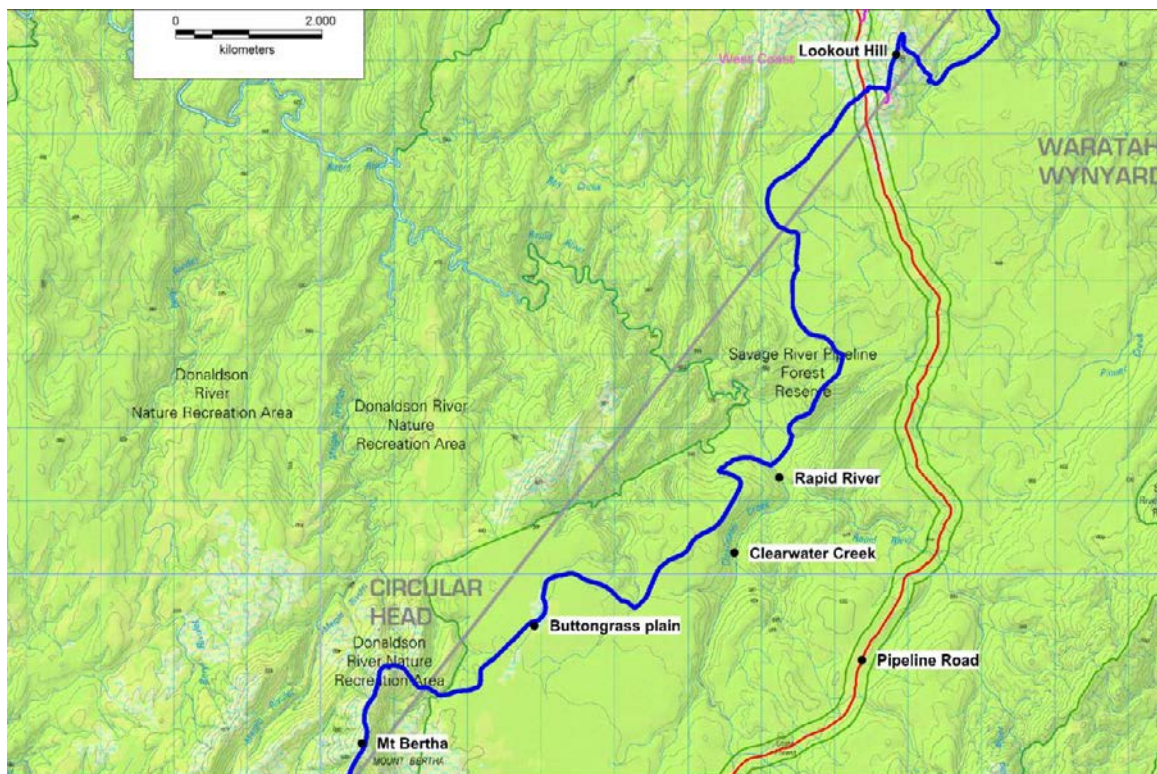
Photo 4.4.1. Meredith Range from Mt Bertha

Although the peak is not high enough to feature true alpine vegetation, its dramatic topography and expanses of windswept heath offer the nearest thing to an alpine experience that walkers will encounter on the walk except on the traverse of the Norfolk Range. I recommend prolonging the 'Mt Bertha experience' by locating the track along most of the length of the Bertha ridgeline before it drops back into the rainforest of the Donaldson valley. This will also allow the track to shed 200m of altitude gradually, with minimal use of steps.

One disadvantage of taking the track over Mt Bertha is that its viewfield includes the Savage River open cut mine, as do the viewfields of 'Lookout Hill', Pyramid Hill and Mt Bolton. Views of the mine are unavoidable unless one avoids all major lookouts, which would deprive walkers of one of region's main recreational attractions as well as a change from the relative confinement of the lowland heathlands and forests. Fortunately the mine occupies only a small part of each of these viewfields, and one can only look forward to the time when the mine is closed and rehabilitated.

Another potential drawback of the Mt Bertha traverse is that it is very exposed and could therefore be challenging and potentially dangerous in bad weather. The potential for challenges of this nature can be seen as one of the attractions of the walk providing walkers are made aware of the risks and are equipped to deal with them (if only by delaying their traverse until the weather improves).

4.4.2 'Lookout Hill' to Mt Bertha



Map 4.4.2. 'Lookout Hill' to Mt Bertha

The summit of 'Lookout Hill' is only half a kilometre east of the Pipeline Road and is accessed by a gravel side road. This side road joins the Pipeline Road at a point where the pipeline is underground, removing one possible source of concern for the pipeline manager about the risks associated with allowing walkers to access and cross the road.



Photo 4.4.2-1. Mt Bertha from 'Lookout Hill' at sunset

On the west side of the road the track should head westwards to maximise its remoteness from the road. However there is no point taking it more than approximately 1.5 km west of the road, as this would take it out of the tall myrtle forest into scrubber and heavily dissected country.

The spur and plateau northwest of Clearwater Creek offer a natural alignment for the track heading towards Mt Bertha, as well as featuring some of the most spectacular tall forest encountered on the entire walk (see Photo 4.4.2-2). This spur broadly determines the location to cross the Rapid River, which traverses a broad plain for approximately 1.4 km downstream of its junction with Clearwater Creek.

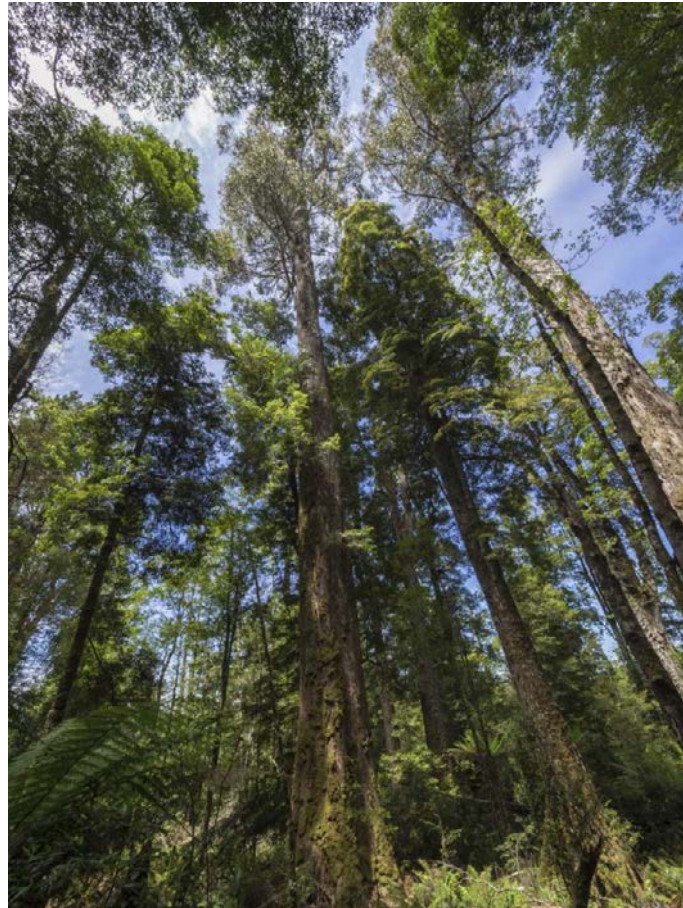


Photo 4.4.2-2. Tall eucalypts on plateau northwest of Clearwater Creek

During the aerial survey I inspected a 20-km stretch of the Rapid River downstream of Clearwater Creek, looking for sections or features that might be worth accessing by either the main track or a sidetrack. I did not observe any locations that were obviously more attractive than the aforementioned broad plain. Rob Blakers, who accompanied me on the aerial survey, confirmed the absence of waterfalls on the river having previously rafted it. In my first fieldtrip to the Rapid River accompanied by Grant Dixon we visited the small gorge downstream of the plain, but we did not feel it was scenic enough to justify modifying the route.

In a subsequent fieldtrip I discovered several small waterfalls on the Rapid River between the Pipeline Road and Clearwater Creek (see Photo 4.4.2-3). In the long term it may be practical to construct a sidetrack up the river the access these falls from the proposed Rapid River campsite.

However it is nearly 3 km from the proposed campsite to the upper falls, and the per-metre cost of track construction would be high owing to the steep – in places nearly vertical – terrain. Hence for the foreseeable future I do not think it is worth pursuing this option.



Photo 4.4.2-3. Falls on Rapid River upstream of Clearwater Creek

On the north side of the Rapid River two prominent spurs climb northeast from the valley floor. The west spur climbs to the height of the plateau west of the Pipeline Road, and features some impressive tall eucalypts and myrtles (see Photo 4.4.2-4). I noticed the east spur during the aerial survey because it appeared to feature a substantially more extensive stand of tall eucalypts. However, a subsequent ground inspection revealed that the eucalypts were *E nitida* and not particularly impressive. Traversing the east spur would bring walkers to within half a kilometre of the Pipeline Road, and would require an additional 80m of climbing relative to the west spur. The east spur offers glimpses of views but these do not justify the climb.

Another natural alignment point for the track is the larger of the two areas of moorland located on the plain northeast of Mt Bertha. This plain was one of the surprises of the survey and will be one of the surprises of the Trans-Tarkine walk, being an area of pure buttongrass in the midst of the forest (see Photo 4.4.2-5). A small creek dissects the moorland in a SW-NE direction. Just south of this creek on the east side of the moorland one can get a view of the Mt Bertha ridge (see Photo 4.4.2-6). The moorland will provide a dramatic contrast to the forests in which walkers will have spent most of the previous two days.



Photo 4.4.2-4. Tall myrtles north of the Rapid River



Photo 4.4.2-5. Buttongrass plain northeast of Mt Bertha



Photo 4.4.2-6. Mt Bertha from buttongrass plain to northeast

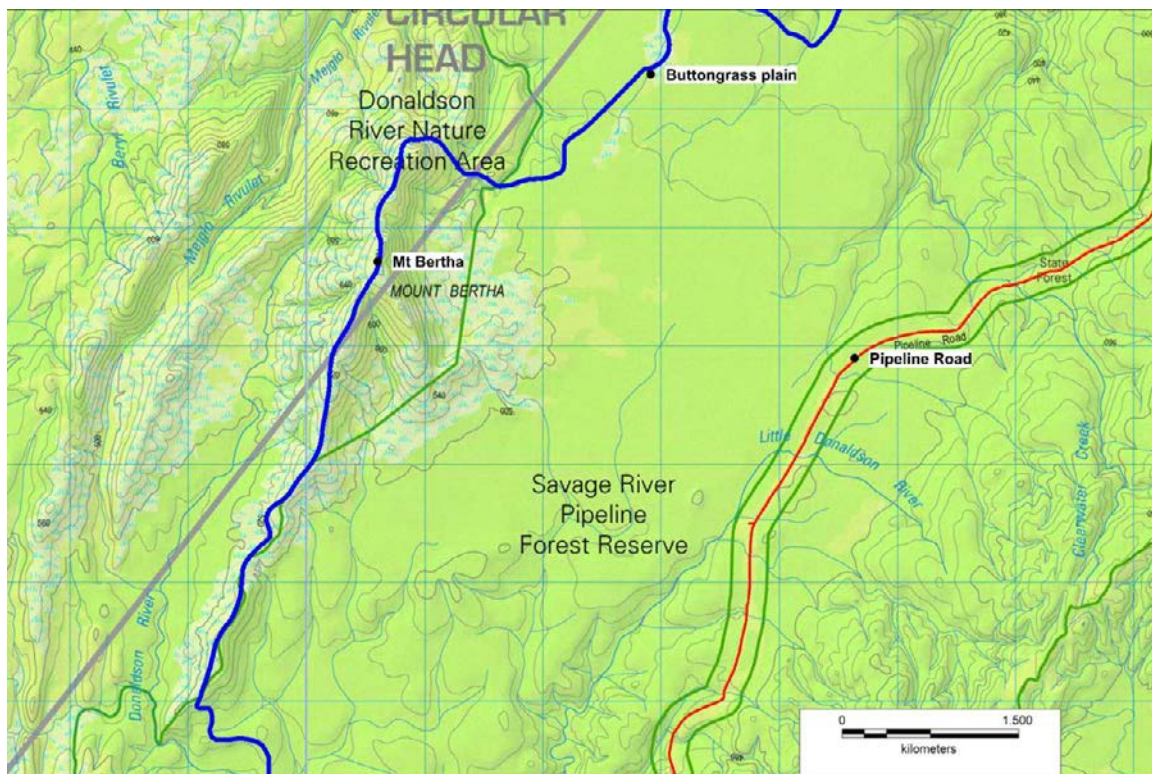
The aerial survey confirmed that the smaller moorland to the southwest is scrubbier and appears less attractive.

At the south-western end of the moorland the track will re-enter the forest (see Photo 4.4.2-7) and continue in a southwest direction for approximately 1.6 km to the base of a foothill of Mt Bertha.



Photo 4.4.2-7. Rainforest northeast of Mt Bertha

4.4.3 Traverse of the Mt Bertha ridge



Map 4.4.3. Traverse of Mt Bertha ridge

The proposed route will climb fairly steeply around the northern end of the ridge north of Mt Bertha, then follow the ridgeline over the summit and southwards for approximately five kilometres. The ridgeline traverse offers extensive views and a hint of alpine conditions in the vicinity of the summit (see Photo 4.4.3).



Photo 4.4.3. Norfolk Range from Mt Bertha

4.5 Mt Bertha ridge to the Western Explorer Road



Map 4.5. Mt Bertha ridge to the Western Explorer Road

4.5.1 Pyramid Hill as a key attraction

Pyramid Hill is the natural focal point of the section of the track that will link Mt Bertha to the Western Explorer Road. Although not especially high (532m) the hill and its environs provide widespread views over the surrounding country, and the traverse of the peak will provide a welcome contrast to the forest environments in which walkers will have spent much of the first four days of their trip (see Photos 4.5.1-1 & 2). The view to the south is restricted by trees at the summit but is open from points nearby. In clear weather the viewfield includes Cradle Mountain and Barn Bluff, reminding walkers of the close geographical connection between the Tarkine and the current World Heritage Area (see Photo 4.5.1-3). These peaks are also visible from Mt Bolton, although less so.

Bypassing Pyramid Hill to the north would provide no obvious benefits and would bring the track close to the southern end of the Sumac Road. Bypassing it to the south would confine the track to slopes of scrubby forest, much of which was severely burnt in the 2008 fire.

The proposed traverse of Pyramid Hill and a kilometre section of the ridge to its north is quite exposed, and could therefore be challenging in adverse weather. However as noted earlier the altitude is not great, and once the track is constructed it will be possible to complete the exposed part of the traverse in less than an hour.

One drawback of the proposed Pyramid Hill route is that the summit view includes a substantial amount of the Savage River mine, including at least a kilometre of the open-cut face. The Western Explorer Road can also be glimpsed, although it is easily overlooked. Mitigating this, the vast

majority of the view is wild and walkers will be only a few hours' walk from the road, so they will expect to be approaching signs of human activity.



Photo 4.5.1-1. Mt Bertha from Pyramid Hill



Photo 4.5.1-2. Pyramid Hill from ridge to north; Mt Edith & Mt Holloway in distance

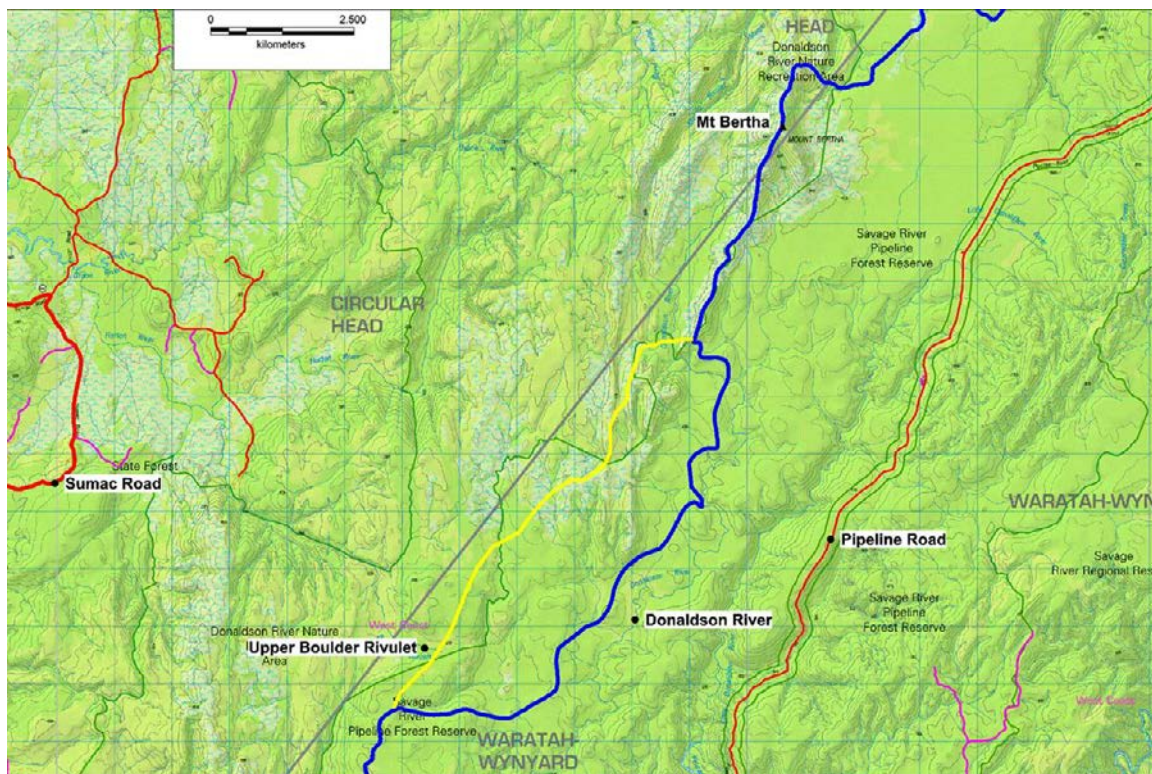
Another drawback is that much of the surrounding forest and other vegetation, particularly between Pyramid Hill and Mt Bolton, was severely damaged by the 2008 fire. The result is scenically shocking although the impact will decline as revegetation occurs. (Full recovery will take many decades.) Fallen timber can be cleared for track construction but its clearance will add to construction and

maintenance costs, and the density of fallen timber in the area will add to the time required for fine-tuning the track alignment.



Photo 4.5.1-3. Cradle Mt and Barn Bluff from Pyramid Hill (telephoto)

4.5.2 Mt Bertha ridge to upper Boulder Rivulet



Map 4.5.2. Mt Bertha ridge to upper Boulder Rivulet

There are two main options for routing the track between the southern end of the Mt Bertha ‘tail’ and the upper Boulder Rivulet area. The eastern option (blue line on above map) drops into the west Donaldson Valley, which is blanketed with rainforest (see Photo 4.5.2-1). The western option (yellow line) would traverse a mosaic of forest, heathland and scrub southwest of Mt Bertha. It would be inadvisable to take the track east of the Donaldson River as this would put it too close to the Pipeline Road, which is within 2 km of the Donaldson in places.

The advantage of the western option is that it would traverse a greater variety of environments, in places breaking out from under the rainforest canopy for several kilometres. However, walkers will have already traversed the Mt Bertha ridge and so will have already been exposed for an extended period (a 5 km traverse) to open skies, heathland environments and extensive views. By contrast, the ridges southwest of Mt Bertha will offer only limited views.

I have not walked this route but I have seen the country that it would traverse from a nearby ridge south of Mt Bertha, and I inspected it by helicopter during the aerial survey. These inspections confirmed that the heathland is fairly scrubby, limiting its recreational appeal (see Photo 4.5.2-2). The route would traverse dense scrub in places, particularly in the vicinity of upper Boulder Rivulet, and it would miss out on the exposure to rainforest and river environments that the eastern alternative offers.



Photo 4.5.2-1. Tall myrtle canopy in Donaldson valley

The eastern route will take walkers through another major sector of the greater Tarkine rainforest. Much of the rainforest west of the Donaldson is moderately scrubby (see Photos 4.5.2-3 and 4) but it includes stands of giant myrtles with largely open understorey. These stands tend to be located on ridges, slopes and well-drained plateaus whereas low-lying areas tend to be scrubby, but there are exceptions. Dense scrub occurs in places (see Photo 4.5.2-5).



Photo 4.5.2-2. Scrub/moorland country southwest of Mt Bertha

The terrain is mostly gently undulating although steep slopes occur in places, requiring steps or oblique ascents. Cross-slopes should generally be avoided as far as possible because they tend to be dissected with steep gullies, which will require switchbacks if track gradients are to be kept low. Creeks tend to be wide and shallow, so most of them can be crossed with duckboard rather than requiring elevated bridges. The duckboard may occasionally be submerged after heavy rains, but is unlikely to be damaged by water flow.



Photo 4.5.2-3. Forest in Donaldson valley



Photo 4.5.2-4. Typical scrub understory in Donaldson valley



Photo 4.5.2-5. Dense scrub on western fringes of Donaldson valley

In the course of the ground survey I visited several points along the bank of the Donaldson, looking for opportunities to site the track along the bank or at least to access it in places. Most of the locations that I visited were unsuitable for track construction due to steep banks, dense scrub, flood channels or other factors. However one location was near-idyllic, with an open grove of tree ferns bordering a bank of small boulders beside the river (see Photo 4.5.2-6). It would be worth bringing the track to the riverbank at this point, although this will require descending the steep slope to the west.

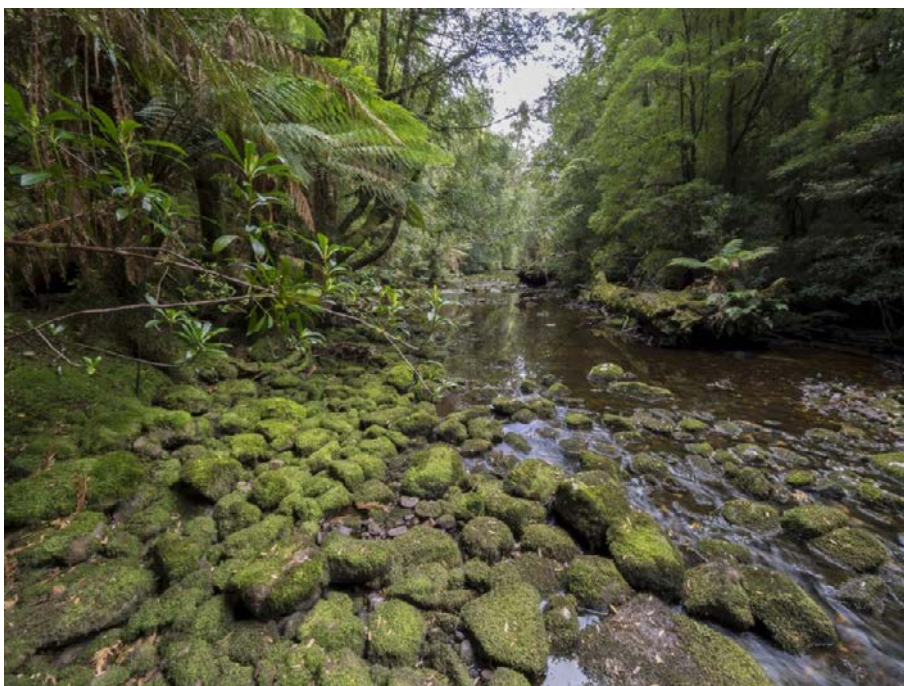
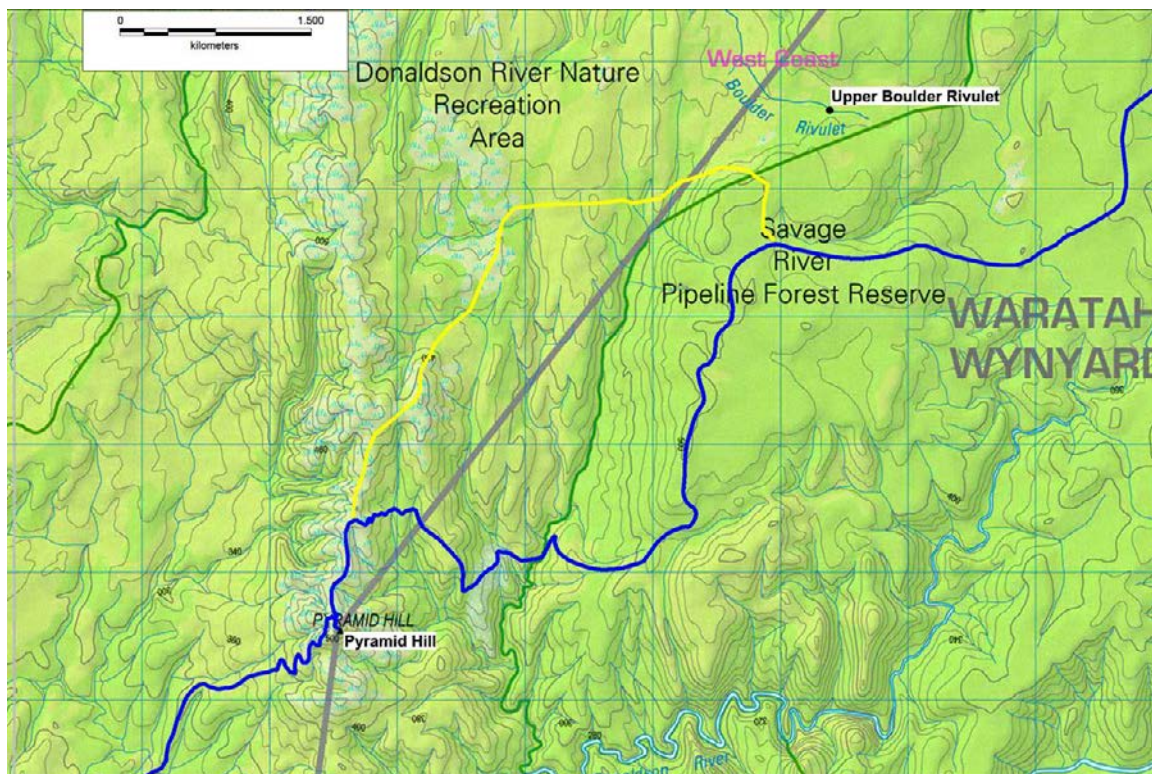


Photo 4.5.2-6. Proposed point where track will access Donaldson River

On the ridge immediately west of this location there is an extensive clearing in the forest, which I guess was caused by a lightning strike and subsequent local fire that killed most of the trees. This clearing affords inspiring views over the adjacent valley and surrounding forest canopy, and would make an attractive feature of the walk. However the presence of regrowth indicates that the views are likely to be lost as the vegetation recovers in the next few decades. There are signs that part of this clearing may have been used as a helipad in the past, possibly more than 20 years ago.

Before the track route is finalised in this area it would be advisable to explore the forest thoroughly to maximise the track's scenic values and in particular its exposure to tall, open forest. It would also be advisable to explore the entire length of the Donaldson River between the southern end of the Mt Bertha 'tail' and Pineapple Creek, as there may be other locations and even extended sections of river bank that are suitable for siting the track. I flew along the river between Mt Bertha and Pyramid Hill during the aerial survey, but I could not always see the river owing to the density of the forest canopy particularly along its upper reaches.

4.5.3 Upper Boulder Rivulet to Pyramid Hill



Map 4.5.3. Upper Boulder Rivulet to Pyramid Hill

The route that I initially inspected between upper Boulder Rivulet and Pyramid Hill (yellow line on above map) drops northward off the forested plateau south of upper Boulder Rivulet, traverses west then southwest across the valley, climbs an open spur NNE of Pyramid Hill, and traverses approximately 1.5 km of open ridgeline southwards to Pyramid Hill. The vicinity of upper Boulder Rivulet is blanketed with extremely thick bauera scrub, but the scrub moderates as one proceeds westward. The main attraction of this route is the Pyramid ridgeline traverse, which provides extensive views and the semblance of an alpine experience. Notwithstanding the scrub, the lowland traverse also has its attractions including pockets of rainforest, moderately open woodland and heath.

The proposed route (blue line) follows the plateau south of upper Boulder Rivulet for approximately 2.5 km before crossing the valley, climbing a spur northeast of Pyramid Hill and traversing the open ridgeline for approximately 1 km to the peak. A fieldtrip that I undertook in April 2016 revealed that the plateau south of upper Boulder Rivulet is covered with an extensive stand of mostly open rainforest with many giant myrtles (see Photos 4.5.3-1 & 2). If the track follows the proposed route, this will be the most spectacular stand of rainforest south of Mt Bertha and will offer walkers a grand finale from the Tarkine rainforests before they enter the more open country to the west.

I have not inspected the section of route between this plateau and the ridgeline north of Pyramid Hill, but I do not foresee any difficulties with taking the track across this section.

In the course of the aerial survey I inspected the Donaldson River southeast and east of Pyramid Hill, where it flows through a steep-sided valley and includes several hairpin bends. The valley looked

sufficiently scenic to warrant an on-ground inspection, which I undertook in April 2016. From an on-ground perspective the valley is steep but not particularly spectacular (see Photo 4.5.3-3). The most striking feature is a narrow ridge that extends southwards across the main alignment of the river for approximately 300m; however views from this ridge are limited because of the density of the forest vegetation. The east side of this ridge includes sections of cliff up to 25m high and in one place slightly overhanging.



Photo 4.5.3-1. Giant myrtle on plateau northeast of Pyramid Hill



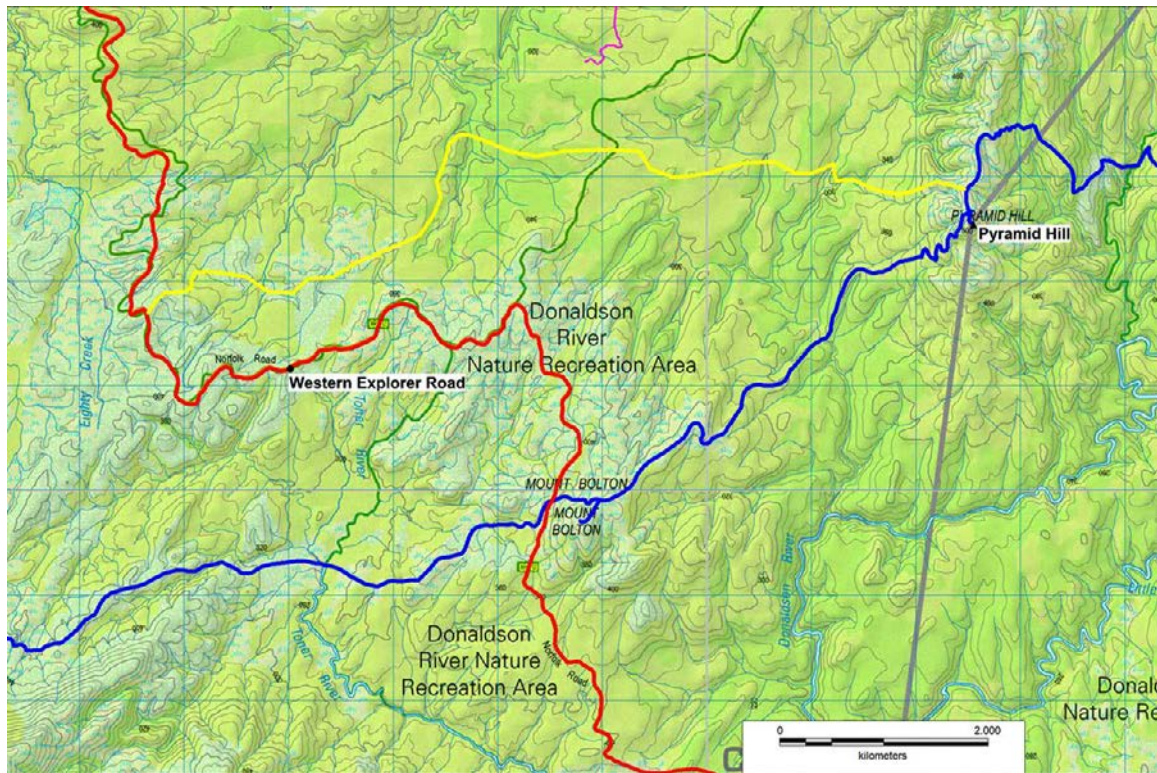
Photo 4.5.3-2. Open rainforest on plateau northeast of Pyramid Hill



Photo 4.5.3-3. Donaldson valley east of Pyramid Hill

I my opinion these features and the valley generally are not sufficiently spectacular to warrant constructing a track to access them, which would require traversing extended sections of precipitous country at extremely high per-metre track construction costs.

4.5.4 Pyramid Hill to Western Explorer Road



Map 4.5.4. Pyramid Hill to Western Explorer Road

The proposed route (blue line on above map) traverses Mt Bolton, which together with 'Lookout Hill', Mt Bertha, Pyramid Hill and Mt Norfolk will be one of the high points of the walk offering extensive views (see Photo 4.5.4-1). The proposed Night 5 campsite will be located in a small valley to the northeast of Mt Bolton, allowing walkers who camp there easy access to the summit for evening and morning views. Mt Bolton is also the best starting-point for a track westwards towards Mt Norfolk (see 4.6).



Photo 4.5.4-1. Panorama west from Mt Bolton

The proposed route between Pyramid Hill and Mt Bolton would be fairly direct, descending spurs and slopes to the creek that separates the peaks. Much of this country was badly burnt in 2008, but pockets of rainforest remain unburnt (see Photos 4.5.4-2 and 3).



Photo 4.5.4-2. Woodland west of Pyramid Hill

An alternative route from Pyramid Hill to the Western Explorer Road (yellow line on Map 4.5.4) runs approximately westward from Pyramid Hill to upper Eighty Creek. The last two kilometres of this section would run roughly parallel to the 'dogleg' section of the Western Explorer Road, a bit less than a kilometre from the road. The track would have to follow this route if it were to link to the Mt Mabel route (see 4.6.2). A trailhead at Eighty Creek could also link to the upper Lagoon River route (see 4.6.4).



Photo 4.5.4-3. Fire-killed trees reflected in creek between Pyramid Hill and Mt Bolton

The main disadvantage of the 'yellow line' route is that it traverses extended sections of scrubby woodland and scrub, a fact confirmed during the aerial survey. It also traverses areas of forest that were so badly damaged in the 2008 fire that little revegetation has yet occurred. It would therefore have little scenic appeal, and it would miss out on the extensive views that are gained by traversing Mt Bolton. Given that the Mt Mabel route has little to recommend it, the same applies to the Pyramid Hill to upper Eighty Creek option.

4.6 Western Explorer Road to Norfolk Range

4.6.1 The Norfolk Range as a potential highlight of the walk

The walk from the Western Explorer Road to the Norfolk Range would be Day 6 of the overall walk and Day 1 of the second five-day walk. The Norfolk Range is an obvious drawcard of the walk as it offers the challenge of a climb to the highest point on the 10-day walk, a hint of alpine environments, and extensive views including walkers' first views of the coastline (see Photos 4.6.1-1 & 2). It would be hard to route the track to avoid the range since bypassing it to the north or south would require a major deviation from the overall northeast-southwest alignment that is dictated by the location of existing roads and logging areas (but see 4.6.6).



Photo 4.6.1-1. View north from near summit of Mt Norfolk. Aerial photo by Rob Blakers.

The following points should be considered when weighing up route options for accessing and crossing the Norfolk Range:

- Mt Norfolk is the obvious main destination on the range, being the highest point and close to the proposed track's most direct alignment.
- It is preferable to avoid steep, unrelieved climbs as this would detract from the track's recreational appeal. For example it would be undesirable to climb Mt Norfolk directly from the Lagoon River as this would involve an altitude gain of 350m in a map distance of less than 1 km.
- It is preferable to minimise the visual impact of the track particularly on the slopes of the range.
- Lowland access routes between the Western Explorer Road and the Norfolk Range should offer opportunities for good recreational experiences and stable track construction.

- A traverse along part of the range would potentially extend the ‘alpine’ dimension of the walk. However the range is not high enough to offer truly alpine environments, and the benefits of a traverse would be largely cancelled if the track was mostly in high scrub or forest (as is the case on much of the Mt Mabel traverse, for example; see 4.6.2).

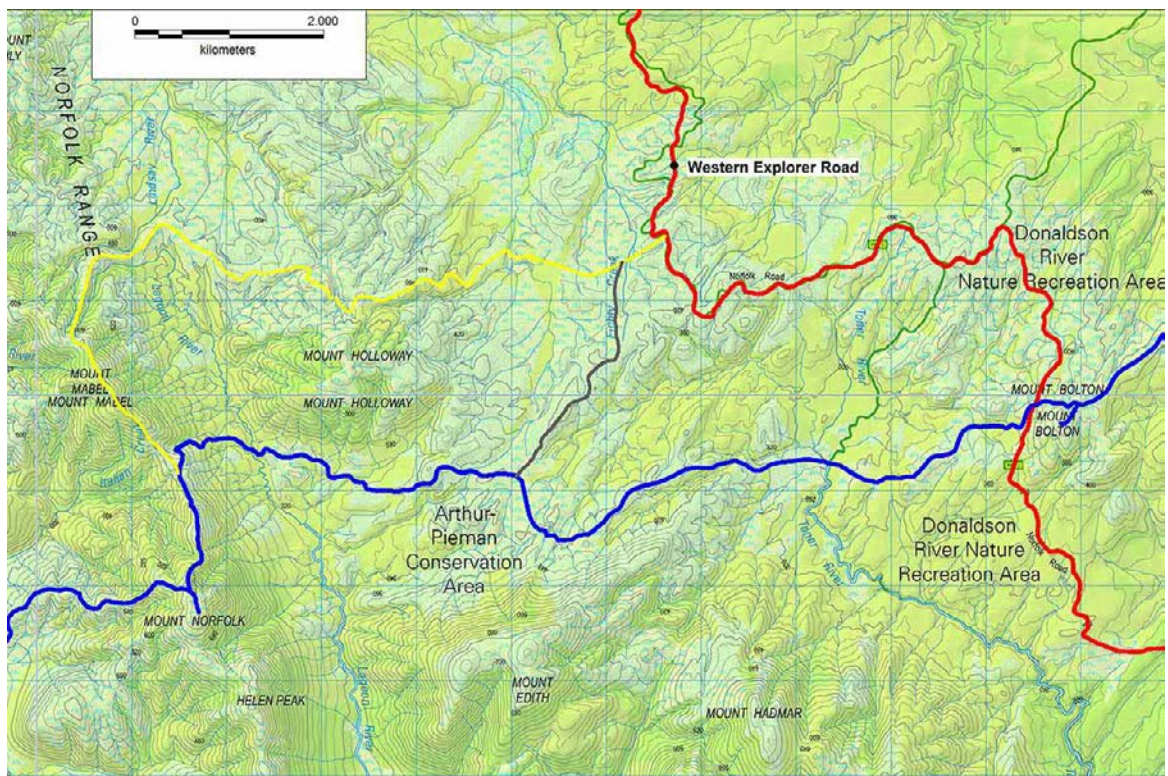
Some people have argued that track development on the Norfolk Range should be avoided because the range is currently entirely undeveloped. This argument is not valid as there is an existing cut track across Mt Mabel to the summit of Mt Norfolk. The track is quite distinct (sections through scrub can be seen on Google Earth) and probably accesses the range via West Bluff. Judging by the condition of cut timber the track has been in existence for at least five years.



Photo 4.6.1-2. Coast from slopes north of Mt Norfolk

Two route options, and a link track between them, were ground-inspected between the Western Explorer Road and Mt Norfolk. These are described below, as is the final ascent of Mt Norfolk.

4.6.2 Mt Mabel route



Map 4.6.2. Routes between Western Explorer Road and Mt Norfolk

This route (yellow line on Map 4.6.2) starts in the vicinity of upper Eighty Creek, traverses the lower northern slopes of Mt Holloway and the watershed of the Lagoon River, climbs a partly wooded spur north of Mt Mabel, traverses Mt Mabel, and climbs Mt Norfolk from the north. If this route was adopted the likely Night-6 campsite would be on the Norfolk Range immediately north of Mt Mabel, with camping platforms distributed in semi-open subalpine forest. The campsite would be approximately 8 km from the road, which given the 200 m climb at the end would make it a suitable walking distance for the first day of the second half of the walk.

The main advantages of this route are:

- There are no major river crossings (saving the cost of bridges).
- It would offer a fairly gradual ascent of the range, partly through subalpine rainforest that is moderately open in places. (This may have been partly burnt in January 2016.)
- The upper part of the ascent is visually shielded by forest canopy. (Ditto.)

The main disadvantages are:

- Much of the lowland section traverses poorly drained ground, probably requiring planking or duckboard.
- The lack of river crossings reduces the scenic variety.
- Views of the Norfolk Range on the lowlands traverse are restricted by Mt Holloway.

- The traverse of Mt Mabel is almost entirely through dense, high scrub or forest, preventing views and largely cancelling the benefits of a high-country traverse.
- The trailhead near Eighty Creek is nondescript.
- The proposed campsite near Mt Mabel has no natural water supply.



Photo 4.6.2. View west from near Eighty Creek

4.6.3 Upper Lagoon River route

This route (blue line on Map 4.6.2) starts at Mt Bolton, traverses the lowlands between Mt Edith and Mt Holloway, crosses the Lagoon River about 2.5 km downstream from its headwaters, ascends steeply 180m in altitude to the Mt Mabel–Mt Norfolk saddle, and climbs Mt Norfolk from the north. As there are no suitable campsites on this part of the range, the recommended site is near the Lagoon River at the base of the climb. This site is approximately 10 km from the trailhead.



Photo 4.6.3. Mt Holloway (centre) from Mt Bolton

The main advantages of this route are:

- The proposed trailhead on the slopes of Mt Bolton is scenic, commanding a wide view of the Norfolk Range and the country that walkers are about to traverse.
- The lowland traverse is also quite scenic.
- Much of the terrain traversed is moderately well drained, allowing the track to be constructed with benching and gravel.

The main disadvantages are:

- Swing bridges will be required over the Toner and Lagoon Rivers. (This will add to the track cost, but in recreational terms could be seen as a plus.)
- The main ascent of the range will be steep, requiring numerous steps.
- The Mt Bolton area is within earshot of machinery noise from the Savage River mine, parts of which can be seen from the summit.

- If there is a possibility of closing the Western Explorer Road south of the Trans-Tarkine Track trailheads, it would be preferable to close it as far north as possible. On that basis it would be preferable for the track to intersect the road at Eighty Creek.

4.6.4 Link route

This route (grey line on Map 4.6.2) starts near the Eighty Creek trailhead of the Mt Mabel route and joins the upper Lagoon River route southeast of Mt Holloway. It follows a low-altitude watershed, about 60 per cent of which is sufficiently well-drained to allow benching or turnpiking. The remainder will require planking.

The route allows the possibility of starting the track at Eighty Creek and linking to the upper Lagoon River route.

The main advantages of this route are:

- It would allow the track to meet the Western Explorer Road further north, while avoiding most of the disadvantages associated with the Eighty Creek route.
- It would avoid the need for a bridge over the Toner River.

The main disadvantages of this route are:

- The link section is fairly uninspiring scenically.
- The trailhead would be just over 6 km from the Lagoon River. The campsite would therefore have to be either on the Norfolk Range, where there are no good site options south of Mt Mabel, or on the plains west of the range, which would make the first day of the Western Explorer Road–Pieman Head walk excessively long (11 km plus a 440m ascent and descent).
- As noted earlier, the Pyramid Hill to Eighty Creek route has little to recommend it and misses the advantages associated with traversing Mt Bolton.

4.6.5 Ascent to Mt Norfolk from Mabel-Norfolk saddle

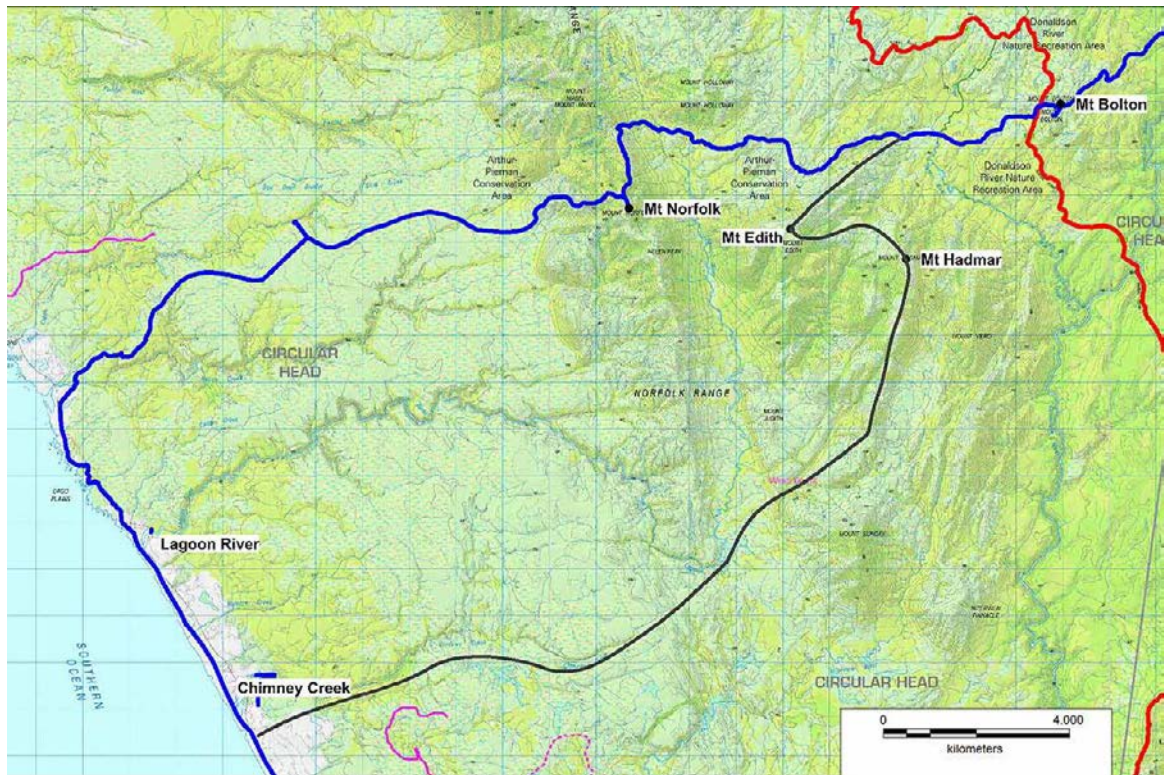


Photo 4.6.5. Mt Mabel (on left) from the south

The Mabel–Norfolk saddle and the spur immediate to the south have low moorland, giving the area a more alpine feel than other nearby parts of the range (including most of the final ascent to Mt Norfolk). This section also provides the first views of the coast, although it looks remote (13 km) and the view to the south is restricted by Mt Norfolk. The area is too exposed to be a suitable campsite location.

The final ascent to Mt Norfolk (650m map distance, 140m altitude gain) is mostly through high scrub and dense forest, affording no views. The immediate vicinity (1-200m) of the summit is clearer, but even here the scrub is waist-high and the flatness of the summit restricts views. The provision of a viewing platform approximately two metres high, with access steps and safety rails, is recommended.

4.6.6 Mt Edith / Mt Hadmar alternative



Map 4.6.6. Mt Edith / Mt Hadmar route (dark grey line)

As an alternative to traversing the Norfolk Range, Bob Brown has suggested a route from Mt Bolton via either Mt Edith or Mt Hadmar or both. I inspected this option by helicopter as part of the aerial survey. A prominent clear spur accesses Mt Edith from the northeast, where it intersects the proposed track near its crossing point on the Toner River. From Mt Edith the track could either descend steeply and directly to the Lagoon River and follow the river southwards to the southern end of the Norfolk Range, or traverse eastwards to Mt Hadmar and then descend south/southwest to the Lagoon River. West of the Norfolk Range the track would head west/southwest to the coast south of Chimney Creek.

The dark grey line on Map 4.6.6 shows the route option that includes Mt Hadmar.

The aerial inspection confirmed that the route over the mountains is mostly open and that track construction would be feasible, although the slopes are steep in places. Mt Edith and Mt Hadmar offer good views including some views of the coast, although the coast is even more remote from here than it is from Mt Norfolk (15 km vs 13 km) and the view is restricted by the Norfolk Range.

It would not be advisable to route the track over both Edith/Hadmar and the Norfolk Range, as this would greatly increase the amount of climbing required and would substantially increase the cost of track construction for no great gain in recreational value. Traversing between Mt Edith and Mt Hadmar would involve a 300m descent and subsequent 280m ascent on top of the 460m northeast ascent of Mt Edith. Descending directly from Mt Edith would involve extended traverses of slopes with terrain gradients of around 30°.

The upper Lagoon valley downstream of Mt Edith is mostly fairly open and moderately scenic, although views to the west are blocked by the Norfolk Range. As the route would meet the coast south of Chimney Creek, it would eliminate the need for bridging Italian Creek and Chimney Creek, and for installing boats over Lagoon River.

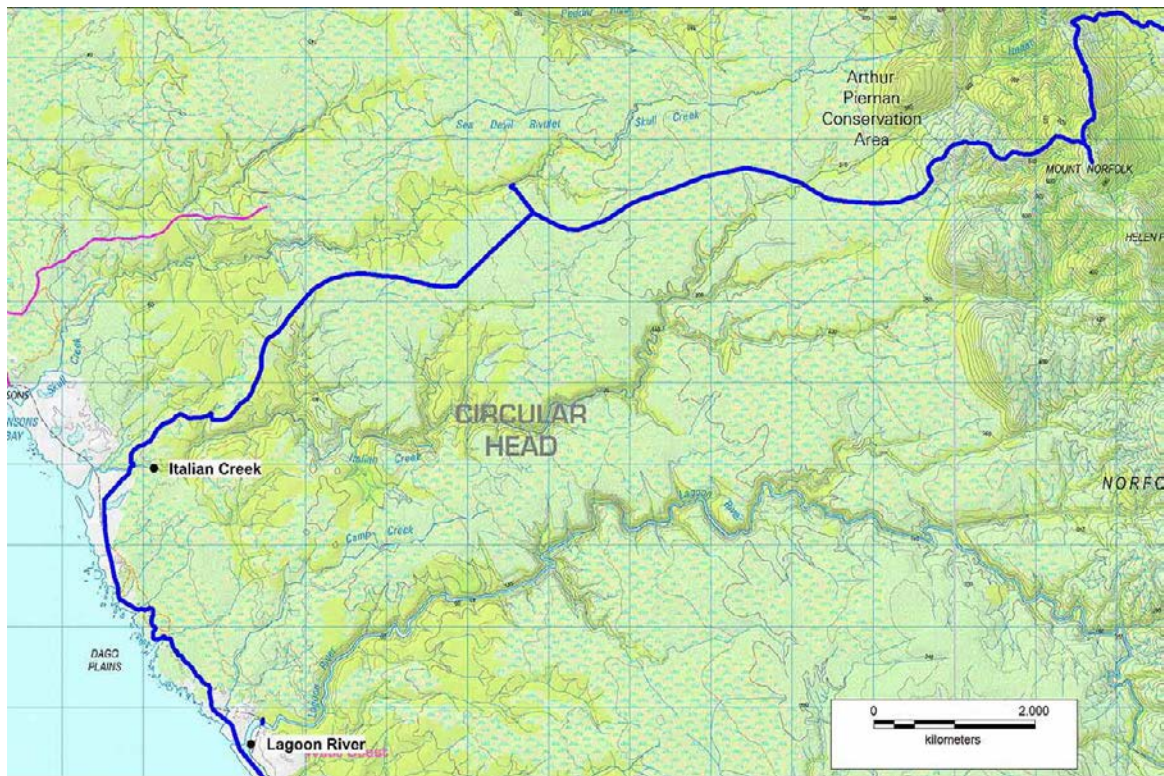
The main disadvantage of the route is that it would reduce the length of the coastal traverse by between half a day and a day, thereby excluding some of the most dramatic and memorable scenery on the entire walk. Indeed, relative to the Italian Creek route (blue line on Map 4.6.6) it would halve the length of beach and dune country that the walk would traverse (from 11.6 km to 5.5 km). This could be offset by routing the track in a north-westerly direction from the Lagoon River bend to the coast, but doing so would create an obviously contrived dogleg in the track.

An Edith-Hadmar route (minus the Norfolk Range) might also leave some walkers feeling short-changed, as the Norfolk Range is the most prominent range in the Tarkine region north of the Waratah Road and dominates the skyline of the coastal region.

In view of these disadvantages I recommend against proceeding with this option.

4.7 Mt Norfolk to coast

4.7.1 Mt Norfolk to western base of range



Map 4.7. Mt Norfolk to Lagoon River

I was unable to inspect this section on the ground owing to the bushfire risk but I have inspected it on maps and Google Earth, and by air during the aerial survey.

Three spurs descend from Mt Norfolk to the plains west of the range. The northern spur appears the most promising for track construction because it has mostly moderate gradients and will offer good views. Although numerous steps will be required on the descent, it should be possible to install minor switchbacks in places to reduce gradients and incorporate step-free sections of track.

The middle spur is steep and very narrow, largely precluding the installation of switchbacks, and the southern spur is prohibitively steep at its lower end.

I considered other route options for the western descent from the range, but none look more promising than the northern spur described above.

4.7.2 Norfolk Range to mouth of Italian Creek

The proposed route (see Map 4.7) will cross the upper Italian Creek and run roughly southwest, traversing mostly open heathy plains before re-crossing Italian Creek slightly inland from its mouth and emerging onto the coastal dune zone.



Photo 4.7.2-1. Norfolk Range from plains to west

I inspected the western half of this route on the ground. I was unable to ground-inspect the eastern half owing to the bushfire risk, but I inspected it by helicopter during the aerial survey. I also aerially inspected the entire lengths of Italian Creek and Lagoon River, looking for scenic features such as cliffs and waterfalls (see 4.7.3).



Photo 4.7.2-2. The coast from plains inland of mouth of Italian Creek

It is desirable for the proposed walk to incorporate a substantial amount of the Tarkine coastal dune country, as this ranks as one of the most spectacular features of the region. Indeed the coastal traverse will be one of the most memorable parts of the walk, particularly as walkers will encounter it at the end of their walk (see Photos 4.7.2-3 and 4.7.2-4). The coastal dune country is also rich in

Aboriginal heritage, which can be a feature of the walk subject to the approval of the Aboriginal community.



Photo 4.7.2-3. Beach near mouth of Italian Creek

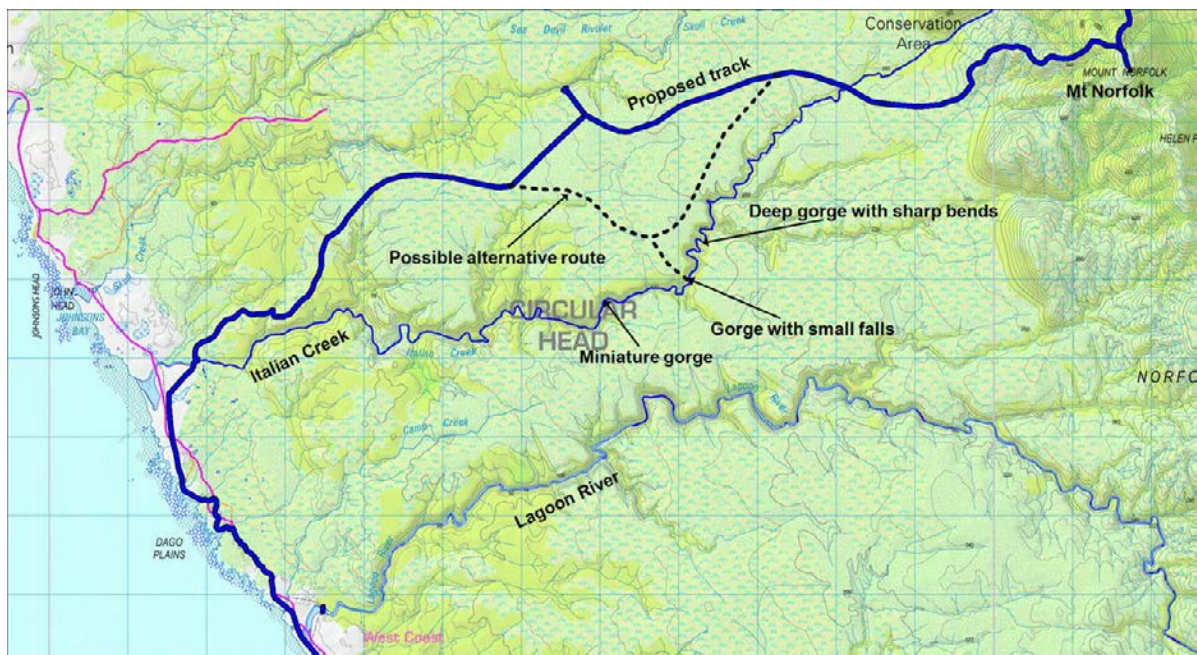
The route should be kept south of Sandy Cape because the cape area is likely to remain accessible to off-road vehicles for the foreseeable future, and encounters with ORVs would generally detract from walkers' wilderness experience. If the Trans-Tarkine Track is developed it is to be hoped that ORV access can be effectively prohibited between Sandy Cape and Pieman Head.



Photo 4.7.2-4. Dunes near mouth of Italian Creek

If the proposed track met the coast substantially north of Italian Creek (say at Sea Devil Rivulet), this would make it difficult for walkers to complete the western half of the Trans-Tarkine Track in five days and to reach Pieman Head in time to catch the ferry at a reasonable hour on the fifth day. A track linking Mt Norfolk to Italian Creek therefore represents a good compromise, as well as providing access to the spectacular coastal scenery in the vicinity of the river mouth.

4.7.3 Scenic attractions on Italian Creek



Map 4.7.3. Italian Creek and Lagoon River

As noted earlier, I inspected the entire lengths of Italian Creek and Lagoon River during the aerial survey.

Much of Italian Creek flows through a continuous gorge, one stretch of which (approximately 6-7 km inland from the coast) is particularly spectacular and includes a small waterfall (see Map 4.7.3). During the next stage of the project it is worth investigating the option of aligning the main track closer to this gorge and installing a sidetrack (or several sidetracks) either down to the creek or to vantage points overlooking the gorge.

Much of the Lagoon River west of the Norfolk Range also runs in a gorge, but I observed no outstanding features and the vegetation along much of the gorge is either heathland or recently burnt scrub.

4.8 Mouth of Italian Creek to Pieman Head



Map 4.8. Italian Creek to Pieman Head

4.8.1 Values of the coastal traverse

As noted earlier, the walk between Italian Creek and Pieman Head will offer some of the most spectacular and memorable experiences of the entire Trans-Tarkine Track including vast beaches and dune systems, dramatic rocky shorelines, wild river mouths, coastal lagoons, the endlessly restless Southern Ocean, and abundant evidence of thousands of years of Aboriginal occupation (see Photos 4.8.1-1 to 4). To cap it all, walkers will finish their walk with a cruise on the beautiful Pieman River.



Photo 4.8.1-1. Vista south of Chimney Creek



Photo 4.8.1-2. Lagoon River



Photo 4.8.1-3. Beach south of Monster Creek



Photo 4.8.1-4. Coastline near Lagoon River. Aerial photo by Rob Blakers.

4.8.2 Key issues on coastal section

The traverse of the coastal section between Italian Creek and Pieman Head presents several issues that are not relevant to other parts of the proposed walk. These are as follows.

The need to protect midden sites

As noted in 3.3, existing vehicle tracks and vehicular routes traverse midden sites in places. The proposed walking track and marked routes should avoid middens as far as possible. If middens cannot be avoided they should be physically protected to prevent damage by trampling.

Large seasonal variation in water table

Unlike inland areas of the Tarkine the coastal zone is subject to large seasonal variations in the water table. This results in the complete inundation in winter of many areas that are dry in summer. (See for example Photos 4.8.2-1 and 4.8.2-2, taken in January and October respectively near the Pedder River north of Sandy Cape.) If the proposed track is to be used for most of the year, it must be located on ground above high-water levels and surfaced with duckboard where this is not feasible. I undertook the recent survey during an exceptionally dry period. Before more detailed track planning is undertaken in this region it is essential that the proposed route be surveyed when the water table is at or close to its anticipated maximum annual level.



Photo 4.8.2-1. Vehicle tracks near Pedder River in midsummer 2012



Photo 4.8.2-2. The same location in October 2012

Beaches may sometimes be impassable

The coastal walk will include traverses of several beaches with a combined length of several kilometres. Although these beaches are mostly very wide they may at times be impassable due to inundation by waves or high tides. Parks and Wildlife Service literature also warns that beaches can occasionally be inundated by deep foam, which has been known to suffocate cattle and horses. At

such times the coastline will remain passable to walkers who are prepared to walk inland, but this will be considerably more difficult and time consuming than the normal coastal traverse.

Rivers cannot be bridged at or close to their mouths

Several of the larger creeks and rivers between Italian Creek and Pieman Head are subject to flooding that can prohibit safe fording, but cannot be bridged at or close to their mouths because they traverse beaches and dune systems. Even if it were practical to construct the foundations of bridges on bedrock underlying the sand, the impacts of shifting sand and occasional high seas would almost certainly compromise the safety and usability of such structures.

All creeks and rivers can be bridged on (currently) sand-free terrain if one goes sufficiently far inland. However this would require walkers to make long deviations, in some cases over steep, high dunes; it would require substantial additional track construction; and the bridges themselves will often be costly. At times of extreme flood even quite small creeks may become impassable, whereas for much of the year most creeks can be forded easily and in a dry summer even the largest rivers are reduced to trickles that can be stepped over. Given the track's proposed Class 3 classification, a balance needs to be struck that will allow walkers to cross most rivers and creeks without wading under most conditions, but will avoid bridging every creek for conditions that may only occur a few times each year. Specific recommendations are detailed in 5.13.



Photo 4.8.2-3. Masked Lapwing nest in the Tarkine coastal zone

Disturbance to birds

The use of beaches by walkers poses a risk of disturbance to birds, particularly beach-nesting birds, some of which are rare and declining in numbers. Examples include Pied Oystercatchers, Hooded Plovers and Fairy Terns. As the breeding season coincides with the walking high season, walkers should be encouraged to stay below the high tide line. The temptation to venture inland (for

example to climb dunes) may tend to defeat this objective, and walker behaviour and its impacts need to be monitored.

The open environment will invite off-track walking

Unlike most of the remainder of the walk, the open coastal environment will invite off-track walking. This is particularly true in the vicinity of designated campsites, where walkers are likely to explore local bays and headlands.

Off-track walking could lead to undesirable environmental impacts including damage to vegetation, soil loss, accelerated dune erosion, disturbance to fauna and damage to midden sites. The extent and severity of these impacts will need to be monitored and remedial action may be required in some areas. The latter may include discouraging walkers from accessing some areas and delineating the perimeters of some midden sites.

Exposed, informal campsites may be more attractive in still weather

Designated campsites should be reasonably sheltered, because exposed sites would be unsuitable if not completely unusable in high winds, which are frequent on the coast. In calm conditions however some walkers may be tempted to use more exposed sites that have better tent-door views and are closer to beaches and water supplies. A good example is the site north of Camp Creek, which is 300m north of Lagoon River. The best location for a designated campsite is on the upper part of a grassy area approximately 500m northwest of Camp Creek, but there are more exposed sites closer to and overlooking the beach. The ongoing use of such sites may cause unacceptable environmental impacts, including problems associated with their distance from constructed toilets. If such impacts occur the use of such campsites may have to be discouraged or prohibited.

Availability of drinking water

Drinking water can be scarce on the coast in high summer because rivers and creeks can be brackish, particularly in lagoons, due to low flow. Conversely, in winter and at times of rough weather fresh water may be difficult to obtain because sea water has been driven into river mouths. This is likely to be an issue principally in the vicinity of campsites, for obvious reasons. The likely availability of drinkable water has been one of the major factors that I have taken into account when recommending locations for campsites in the coastal zone (see 6.2).

The coastal region could be used for shorter walks

The coastal region is likely to remain attractive to walkers undertaking return walks from Pieman Head or through-walks to or from Sandy Cape, and is likely to become more attractive once tracks have been upgraded and bridges have been installed over major rivers and creeks. This issue is addressed in section 9.

4.8.3 Ferry from Pieman Head to Corinna

Walkers will end their walk by catching a ferry from Pieman Head to Corinna. This will provide a relaxing end to the walk that will be scenic and memorable in its own right.

The possibility of constructing a walking track from Pieman Head to Corinna was considered but rejected by the Trans-Tarkine Track steering committee, mainly because the track would be largely redundant given the existence of the river cruise. A walking track would also have to bridge the Donaldson and Savage Rivers – a span of up to 100m in the case of the Donaldson (see Photo 2.1-4).



Photo 4.8.3. On board the Pieman cruise

The ferry trips are likely to be undertaken by a private operator – most likely the existing operators at Corinna, although there are other possibilities. It would be possible to use the *Arcadia*, as this completes its usual cruise by 3 pm and so could return to Pieman Head by 4 pm. However an earlier departure time may be desirable as explained in 4.8.4.

At present there is no jetty on the north bank of the Pieman at Pieman Head. Walkers are dropped off and picked up by dinghy and ferried to the *Arcadia*, which moors at a jetty on the south bank. If the Trans-Tarkine Track is constructed it would be desirable to construct a jetty on the north bank. The current pickup location can be subject to rough water and high winds at times, so there may be times when a ferry cannot moor there. To cover this possibility it might be necessary to establish an alternative rough-weather jetty several kilometres upstream, say at Lenna Creek, and an emergency access track utilising part of the old mine track.

It will be necessary to consult local experts and government agencies, particularly MAST, before a decision is made about constructing new jetties.

4.8.4 Timing of arrival at Corinna

The river trip from Pieman Head to Corinna takes approximately 90 minutes, and travel by road from Corinna to the nearest major population centres such as Strahan and Burnie takes around two hours. Allowing half an hour for boarding and disembarking, this means that travel from Pieman Head to the nearest population centre will take at least four hours. The alternative would be for walkers to

stay at Corinna, which would benefit the local economy although it would probably require the construction of additional camping and accommodation facilities at Corinna.

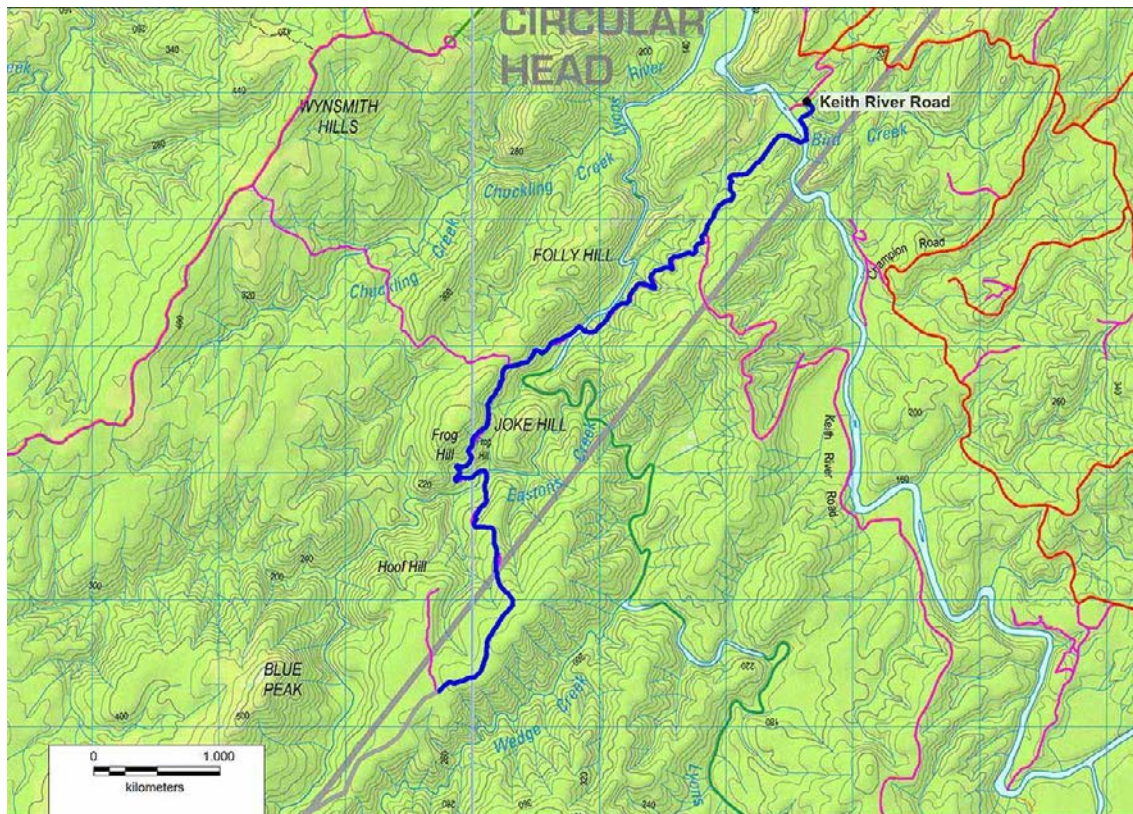
For six months of the year, even a 4 pm departure from Pieman Head would allow walkers to reach population centres in daylight if they wished. In midwinter the ferry would have to leave Pieman Head by 3:15 pm to reach Corinna by sunset.

I recommend that the Day 9 campsite be located at the Interview River (see 6.2), which is approximately 11 km from Pieman Head. Even with a latish 9 am start, and allowing for breaks, walkers should be able to reach Pieman Head comfortably by 3 pm, so a 3:15 pm ferry departure time from Pieman Head is probably realistic.

As noted earlier I also recommend establishing a campsite at Pieman Head, which could be used by walkers who arrived too late in the day to catch the ferry.

5 Route details and works requirements

5.1 Works section 1: Keith River Road to plateau south of Hoof Hill



Map 5.1. Keith River Road to plateau south of Hoof Hill

5.1.1 Arthur River to Lyons River

This section will follow the Keith River Road and Folly Hill Road assuming these are closed to vehicular access. Gradients are low and the walking surface can be surfaced with gravel. An active landslide on the slope above the Lyons River, approximately 250 m northeast of the crossing point, may pose engineering problems and require specialised stabilisation. The Arthur River and Lyons River will require swing bridges, the exact locations of which will require engineering assessments and may require a partial realignment of the proposed track away from the existing vehicle tracks.

5.1.2 Lyons River to Eastons Creek crossing

This section will follow Folly Hill Road. It involves a gain and subsequent loss of around 80 m in altitude, which is necessary to clear the steep slopes above the Lyons River. In the long term it may be practical to relocate the track along the west bank of the Lyons River and up to the Frog Hill/Joke Hill saddle, but this is not justified in the short term given that well-formed tracks (i.e. the vehicle tracks) already exist.

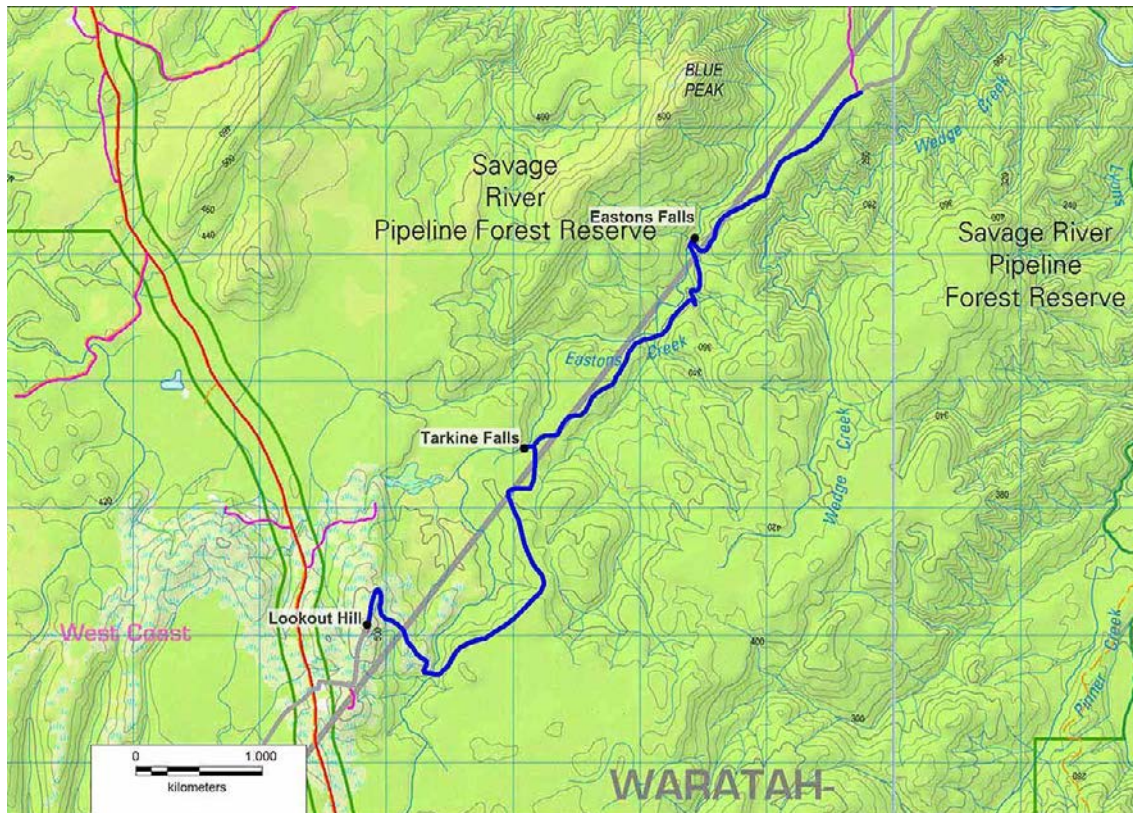
An extended section of Folly Hill Road ascending west of the Lyons River has a surface of bare, loose gravel and a track gradient over 10°. It will be necessary to install additional drainage (probably rollovers) on this section and surface it with hard-packed gravel or some other abrasion-resistant

surfacing. Most of the remainder of the section is well benched with moderate gradients. Some sections may require no additional surfacing in the short term, while others may require surfacing with gravel. Eastons Creek will require bridging, possibly with a swing bridge.

5.1.3 Eastons Creek crossing to plateau south of Hoof Hill

The terrain south of Joke Hill presents a major barrier than can only be practically traversed by climbing. (The only alternative would be to follow up Eastons Creek, but extended sections of terrain adjoining the creek are prohibitively steep.) The proposed route follows Folly Hill Road to the plateau south of Hoof Hill, which is the western limit of vehicle tracks in this area. This involves an ascent of just over 200m, which will be one of the more challenging tasks of the first five days particularly since it will confront walkers on their first day. The vehicle track is mostly well sited although it is steeper than desirable on some sections.

5.2 Works section 2: Plateau south of Hoof Hill to 'Lookout Hill'



Map 5.2. Plateau south of Hoof Hill to 'Lookout Hill'

5.2.1 Plateau south of Hoof Hill to Eastons Falls

The Tarkine Trails route runs just below their 'Heaven' campsite before obliquely descending the slope to the bank of Eastons Creek roughly due south of Blue Peak. A short taped side-route leads to the waterfalls (Eastons Falls) just downstream of the crossing point. The falls consist of a small upper cascade and a larger fall that drops into a small but spectacular gorge. They are sufficiently scenic to warrant inclusion as one of the primary attractions of the proposed track. The vicinity of Eastons Falls is also recommended as the location of the first campsite of the walk, probably on the east bank of the creek.

The Tarkine Trails route on this section climbs and falls somewhat erratically in places and is duplicated near its upper (northern) end. Additional investigation will be required to identify the optimum route for the proposed track.

5.2.2 Eastons Falls to upper Eastons Creek crossing

The Tarkine Trails route crosses Eastons Creek not far above the falls, then climbs steeply, gaining 80m of altitude before descending again to the creek and re-crossing it. The double crossing and fairly demanding climb cannot be justified in recreational terms, the only benefits being access to a delightful but fairly confined campsite on the west bank of the creek, and exposure to moderately attractive rainforest. There is also a swimming hole adjacent to the campsite.

I recommend that the proposed track run upstream from Eastons Falls to the swimming hole, remain on the east bank, cut uphill to avoid swampy areas and flood channels, and rejoin the Tarkine Trails route close to the second crossing. At normal water levels walkers will be able to access the aforementioned campsite if they wish. Note that if the track follows this route, the middle and upper Eastons Creek crossings on the existing Tarkine Trails route will be eliminated.

5.2.3 Upper Eastons Creek crossing to Tarkine Falls

This section runs in a roughly NE-SW direction across fairly level terrain. The Tarkine Trails route is reasonable but meanders unnecessarily in places and is unacceptably steep in places. Minor realignment will be required to rectify this. It will be necessary to construct a formal track from the Tarkine Trails campsite to the base of the falls.

5.2.4 Tarkine Falls to plateau east of 'Lookout Hill'

This section ascends the spur south of Tarkine Falls and traverses the edge of the plateau east of upper Eastons Creek. As with the previous section, the Tarkine Trails route is reasonable but meanders unnecessarily in places and is unacceptably steep in places. Further survey work will be required to fine-tune the route.

There are at least two other possible routes between Tarkine Falls and 'Lookout Hill'. One runs southwest from the falls, crosses Eastons Creek approximately 700 m upstream from the falls, and ascends the spur on the west side of the creek. The other runs westwards from the falls and climbs 'Lookout Hill' via the spur on its northern side. The disadvantage of both routes is that only a small proportion of them is located in tall myrtle forest, in contrast to the proposed route which is almost entirely in tall (and quite scenic) myrtle forest. The northern-spur route also has the disadvantage of crossing a vehicle track and running close to a small quarry. For these reasons a route similar to the Tarkine Trails route is recommended. As with the previous sections, local realignment will be required to avoid unnecessary meanderings and undulations.

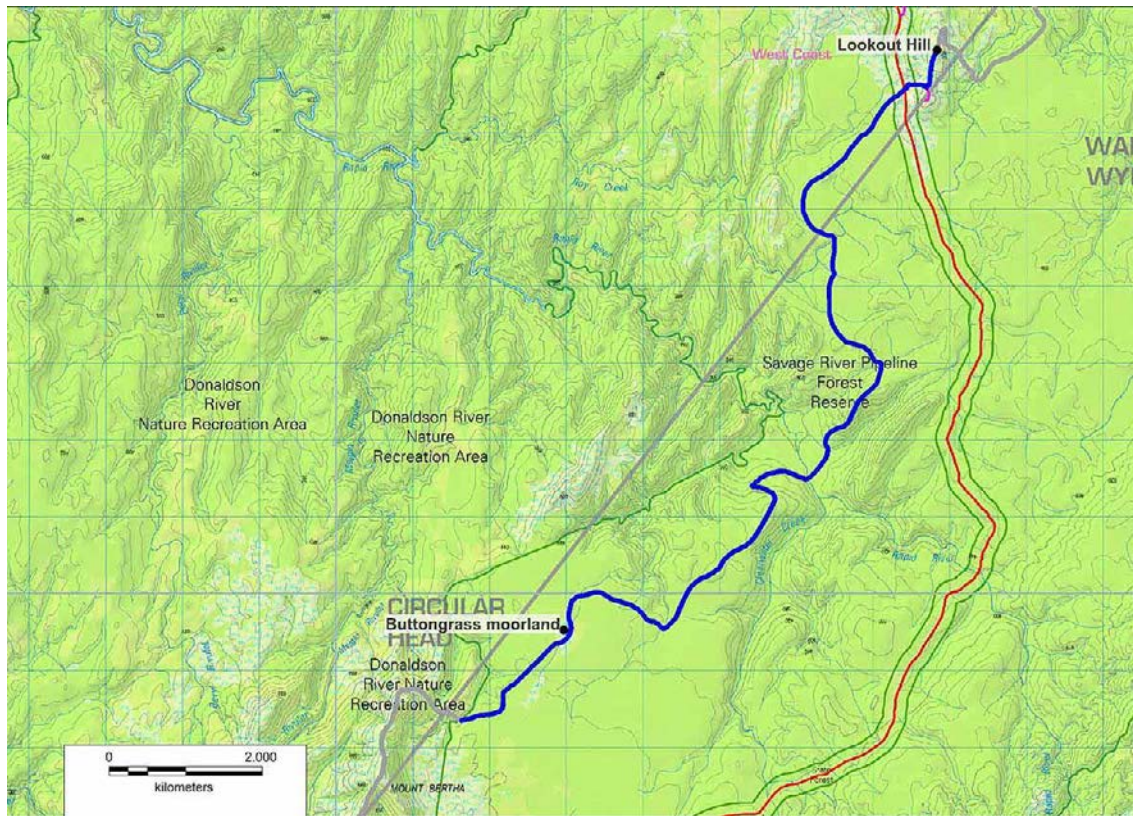
5.2.5 Eastern ascent of 'Lookout Hill'

The Tarkine Trails route runs directly east-west across the upper Eastons Creek valley. Several parts of this section are steep to very steep, on or close to the fall line and actively eroding. The proposed route crosses the valley further upstream and ascends the spur that runs southeast from the hill. It will have lower grades although it may require some steps on the lower slopes of the Eastons Creek valley. On the upper part of the ascent the track will probably incorporate a long switchback to avoid steps. This would also give walkers more extensive views before they reach the top of the hill.

5.2.6 Summit of 'Lookout Hill'

The summit area of the hill provides extensive views that encompass the Eastons Creek catchment, Blue Peak, the Savage River catchment, Mt Bertha, the Meredith Range, Mt Cleveland and the Norfolk Range from Mt Norfolk northwards. In clear weather the views extend as far as the Nut at Stanley, Mt Cameron West, Mt Dundas, Mt Murchison and Mt Heemskirk. Scrub fringing the cleared area on the summit prevents getting a 360° view from any one point, so I recommend that an elevated platform be constructed on or near the site of the trig point (which can probably be removed). I have included the cost of this in my estimates of track construction costs.

5.3 Works section 3: 'Lookout Hill' to base of ascent to Mt Bertha



Map 5.3. 'Lookout Hill' to base of ascent to Mt Bertha

5.3.1 'Lookout Hill' to Pipeline Road

A substantial gravel road runs to the top of 'Lookout Hill' from the Pipeline Road. While this is unsightly and unpleasant to walk on, it would be pointless to construct a walking track to duplicate it. Rather it should form part of the proposed walking track, and hopefully can be closed and eventually revegetated to walking track width. The pipeline itself is buried on this section of the Pipeline Road, so pedestrian traffic does not pose any risk to the pipeline.

5.3.2 Pipeline Road to top of descent to Rapid River

The recommended route has been chosen to optimise exposure to tall myrtle forest while maximising the remoteness from the Pipeline Road. The forest traversed includes extended scrubby sections but also some areas of relatively open tall rainforest.

5.3.3 Northern descent to Rapid River

The proposed route descends a spur that is blanketed mostly with open tall-eucalypt forest. Some of this forest is quite spectacular, particular on the upper parts of the spur. The descent involves a 140m loss of altitude so it will probably be necessary to install numerous steps. Options should be explored for installing local switchbacks to reduce the number of steps and intersperse them with step-free sections.

5.3.4 Traverse of Rapid River valley

The Rapid River valley is forested but the understorey is mostly fairly open – a feature unusual for valleys in the region. The precise location of the track will be determined by a number of factors, principally the optimum site for a campsite and for a swing bridge over the Rapid. The small gorge approximately a kilometre downstream of the tentatively proposed bridge site was inspected but not considered spectacular enough to warrant a sidetrack or a deviation in the track. Potential campsites should ideally be close to the river and elevated above all but the highest potential flood heights. One such site has already been located slightly downstream of the mapped track route.

5.3.5 Southern ascent from Rapid River

This ascent involves a climb of 120m. The slope is steep in places but the forest is mostly open. It should be possible to align the track so as to gain the altitude gradually with few if any steps. The precise route will require more detailed investigation.

5.3.6 Top of ascent from Rapid River to moorland NE of Mt Bertha

The plateau west of Clearwater Creek contains extensive tracts of tall, open myrtle forest, including some of the most impressive stands found in the course of this project. One particularly spectacular stand is located close to the eastern edge of the plateau and offers glimpses of views over the Clearwater valley. The section of the route that runs westward towards the moorland is less open.

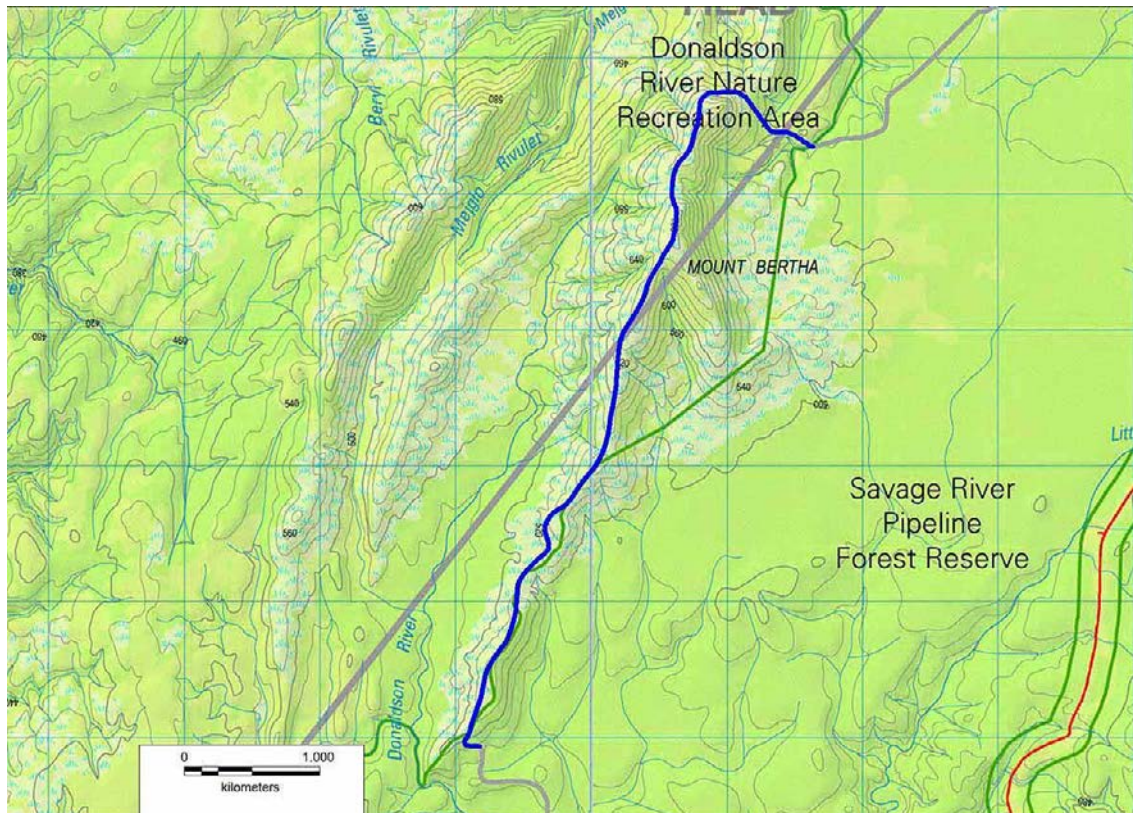
5.3.7 Traverse of moorland NE of Mt Bertha

As noted in 4.4.2, this buttongrass moorland is one of the surprises of the early part of the walk. All track on the moorland will have to be hardened with elevated walkway, and it may be necessary to discourage walkers from walking off the track in this area.

5.3.8 Moorland NE of Mt Bertha to base of ascent to Mt Bertha

The proposed route traverses southwest through fairly open rainforest to the base of a small outlying knoll.

5.4 Works section 4: Ascent and traverse of Mt Bertha ridge



Map 5.4. Ascent and traverse of Mt Bertha ridge

5.4.1 Ascent to northern end of Mt Bertha ridge

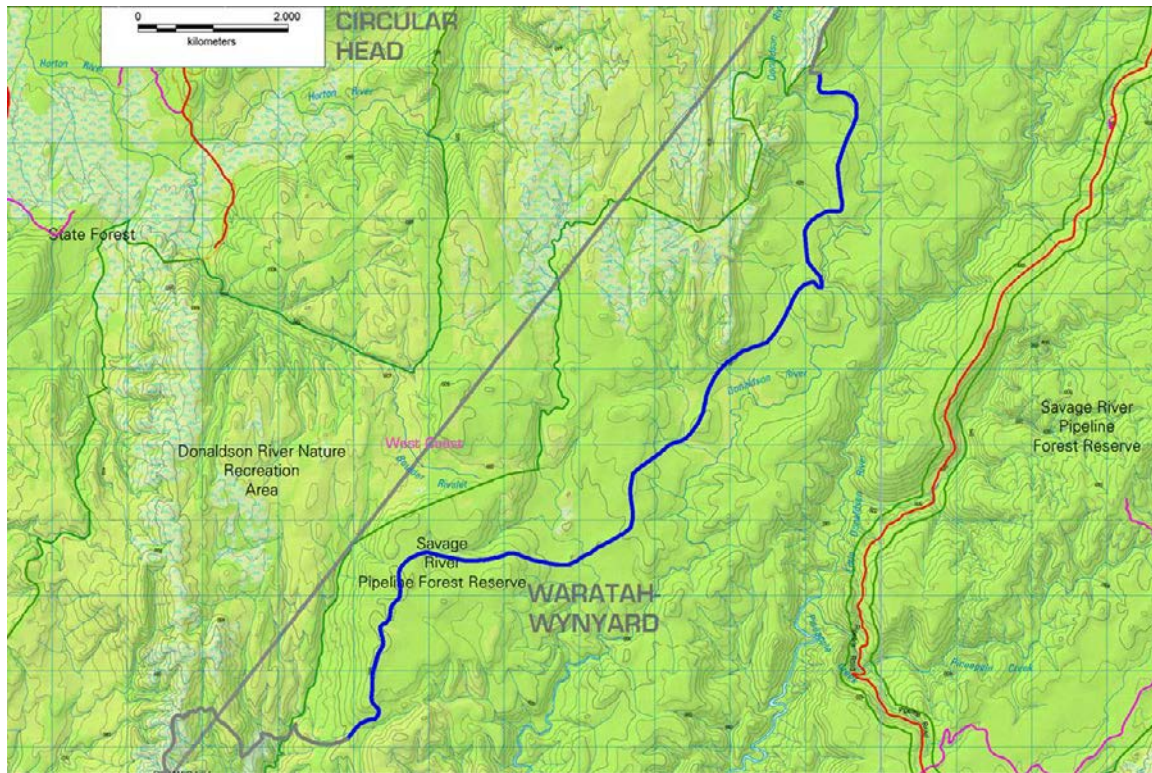
From the outlying knoll the track will cut west to the base of the main slope, then climb steeply and traverse the steep slope at the northern end of the ridge before gaining its crest. The section will require numerous steps, but can also incorporate step-free sections.

5.4.2 Traverse of Mt Bertha Ridge

This section will traverse close to the crest of the main Mt Bertha ridge, including the summit of Mt Bertha and running down its southern 'tail' to a point approximately 4 km southwest of the peak before dropping off eastwards into the forest. The higher parts of the traverse provide extensive views that include the entire Norfolk Range. Unfortunately the Savage River mine is also visible, although it is not prominent from that distance (about 25 km).

Most of the traverse can be stabilised with benching and gravel, although this will have an undesirable visual impact in places. The option should be investigated of surfacing the track with rubber tiling, as this would reduce the visual impact (although the tiling would be prone to damage in the event of hot fires).

5.5 Works section 5: Mt Bertha ridge to plateau northeast of Pyramid Hill

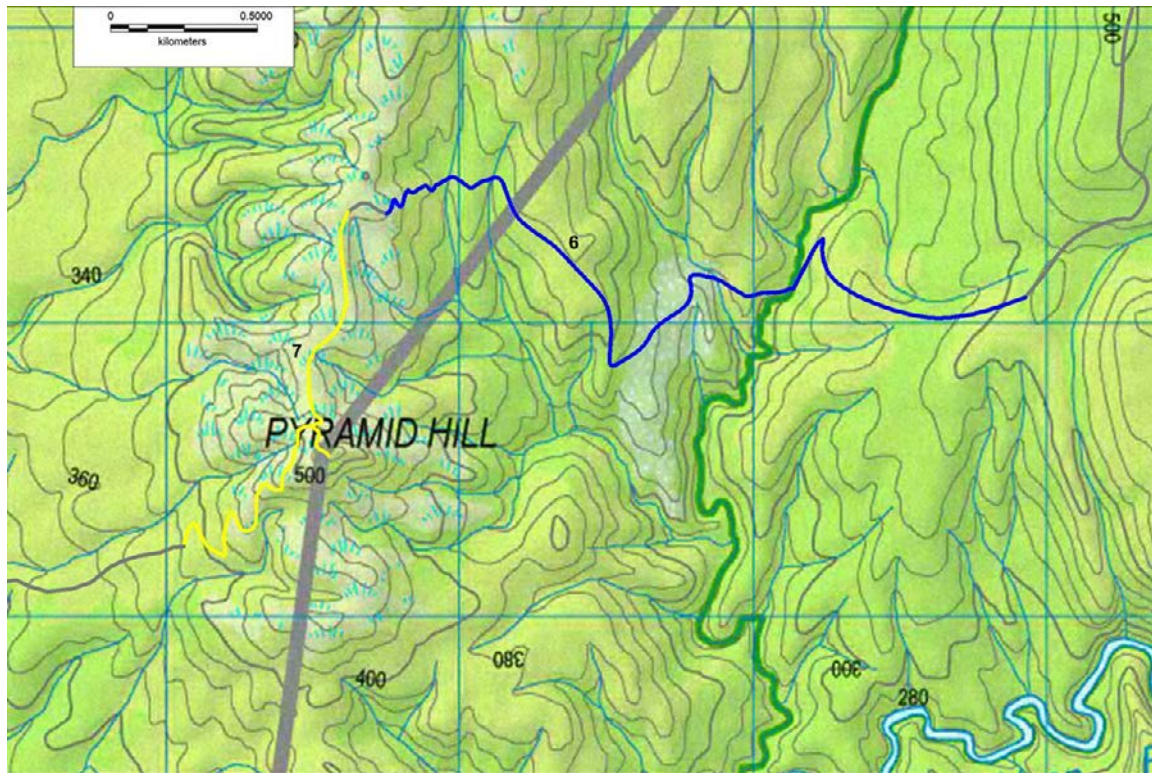


Map 5.5. Mt Bertha ridge to plateau northeast of Pyramid Hill

As noted earlier, this section traverses the densely forested tracts of the west Donaldson valley. The route has been chosen to traverse elevated plateaus with tall myrtle canopy as far as possible, as slopes tend to be scrubber and dissected by deep gullies. Much of the forest is moderately scrubby but there are areas of stately open forest in places. Apart from crossing the Donaldson just south of the Bertha ridge, there is at least one location where the river and its immediate environs are sufficiently scenic to warrant routing the track right to the river bank. South of Boulder Rivulet the track will turn south and follow the plateau northeast of Pyramid Hill.

Most of this section can be hardened with benching and gravel, although duckboard will be required on poorly drained sections.

5.6 Works section 6: Traverse of valley east of Pyramid Hill



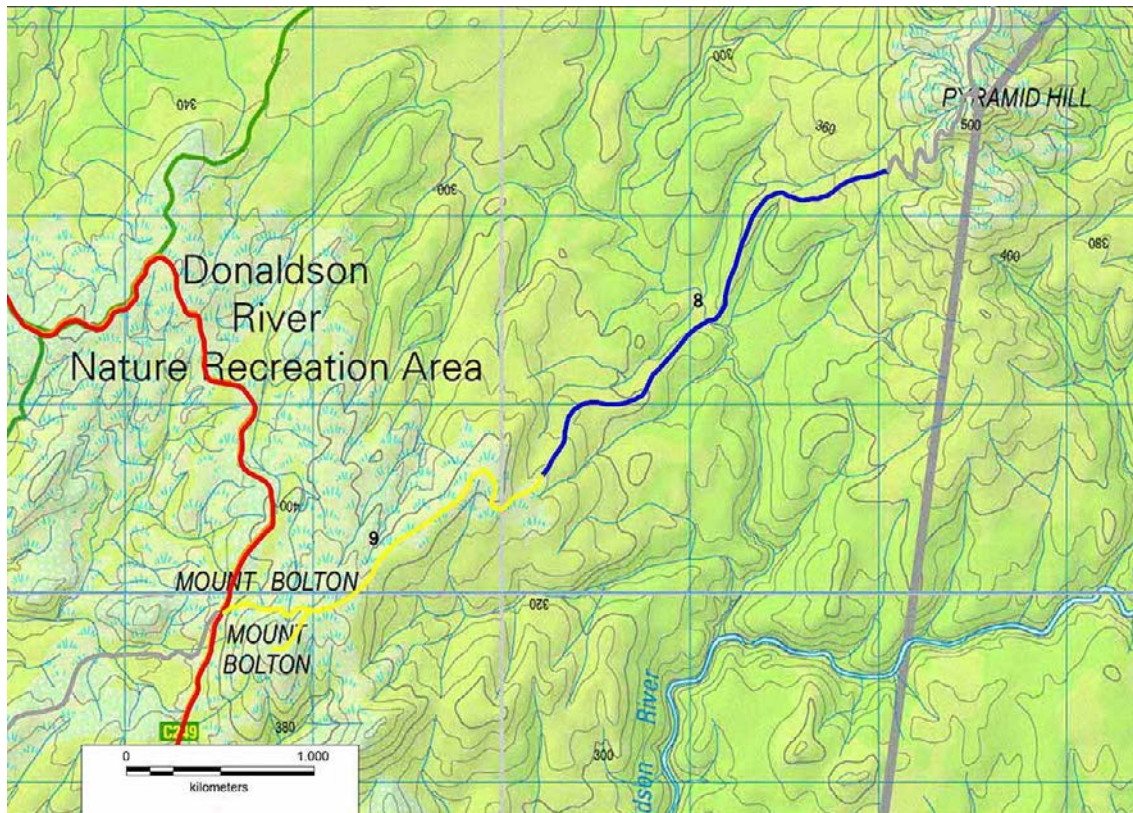
Map 5.6. Work sections 6 and 7: Traverse of Pyramid Hill and valley to east

Works section 6 traverses the fairly dissected country between Pyramid Hill and the plateau to the northeast (see blue line on Map 5.6). Much of the section is likely to be fairly scrubby, with rainforest in the gullies. Track construction on this section is likely to require planking, although it may be possible to stabilise some segments using benching with gravel surfacing. Several small bridges will be required, with a more substantial bridge over the main creek. If the track is suitably aligned it is likely to require few if any steps. Vegetation clearance will require intensive work in places, and bauera will need to be regularly cut back once the track is opened.

5.7 Works section 7: Pyramid Hill summit traverse

Most of this section traverses open buttongrass (see yellow line on Map 5.6). The ascent and descent from the range can probably be achieved mainly with benched switchbacks, although steps will be required in places particularly on the western descent from Pyramid Hill. Level traverses can be hardened with benching. All sections will require surfacing with gravel that is either imported or crushed onsite from local rocks.

5.8 Works section 8: Pyramid Hill descent to Mt Bolton ascent



Map 5.8. Work sections 8 and 9: Pyramid Hill descent to Western Explorer Road

Works section 8 (see blue line on Map 5.8) involves 150m of altitude loss and gain but gradients are mostly moderate. As noted earlier, much of the section traverses badly burnt forest although there are small areas of unburnt rainforest. In the course of fine-tuning the track alignment, efforts should be made to increase the exposure to unburnt forest if practical. The track crosses a substantial creek in the valley, which will require a bridge. Parts of the northern ascent of Mt Bolton could probably be constructed with benching. (Local gravel may be available in places, but the soil through much of this section appears to be fairly clayey.) Most of the rest of the section will require planking.

5.9 Works section 9: Traverse of Mt Bolton

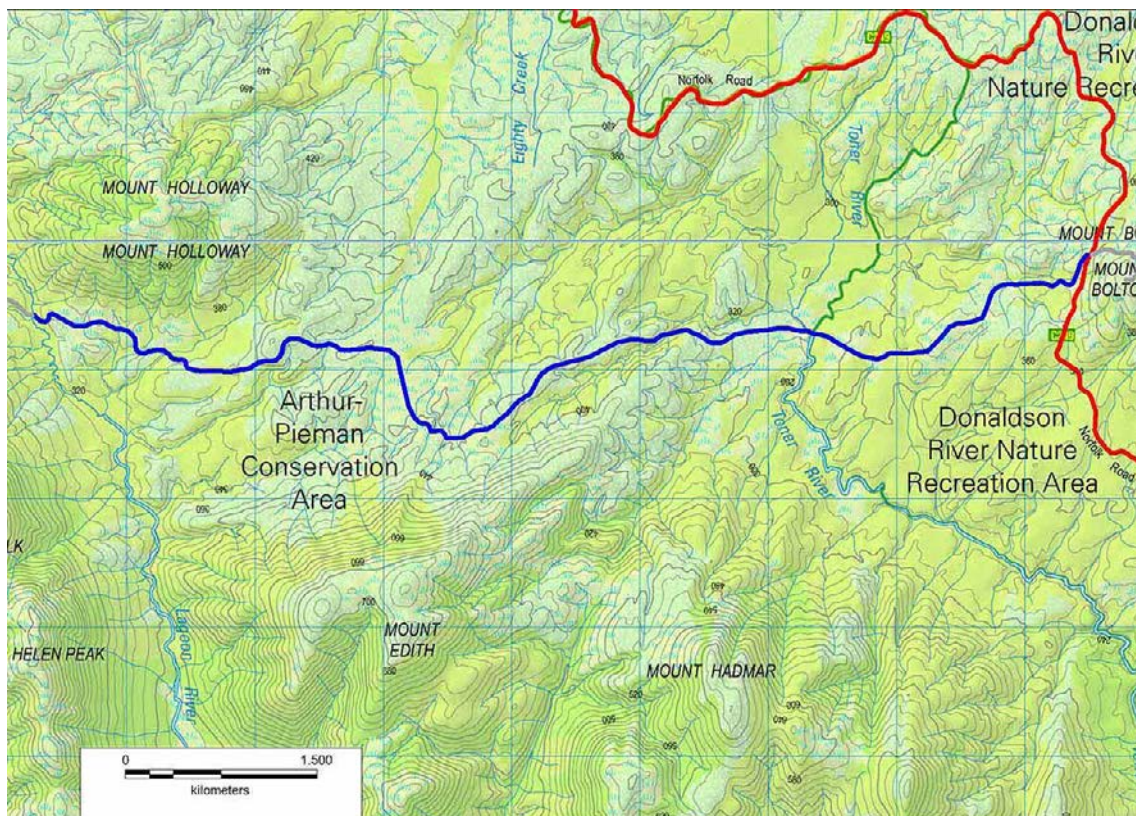
Mt Bolton and the ridge that extends to the northeast is an area of open buttongrass moorland. The proposed track (see yellow line on Map 5.8) would climb to the plateau north of the summit, then descend gradually to the road via the northern slopes of the peak. A sidetrack would lead to the peak, which has extensive views. Track construction on this section would be either benching with imported or locally crushed gravel, or planking.

For walkers intending to continue immediately onto the second stage of the walk, a campsite can be established slightly below and to the north of the summit, near the junction of the summit sidetrack. This would allow walkers easy access to the summit to enjoy the views in good weather. The campsite would be fairly exposed, but the altitude is not great (around 440 m) and the site could be nestled in the small valley north of the peak.

It would be expedient to provide a shelter near the trailhead on the Western Explorer Road for use by walkers who are ending their walk there and awaiting transport. A shelter similar to the one at the Dove Lake car park might be appropriate although it would not need to be as large. A toilet should also be provided. These have been included in the overall cost estimates.

Provision will need to be made for car parking and vehicle turning at the Mt Bolton trailhead. It may be possible to accommodate this by installing a car park and turning area on the spur just north of the proposed trailhead location, on the west side of the road.

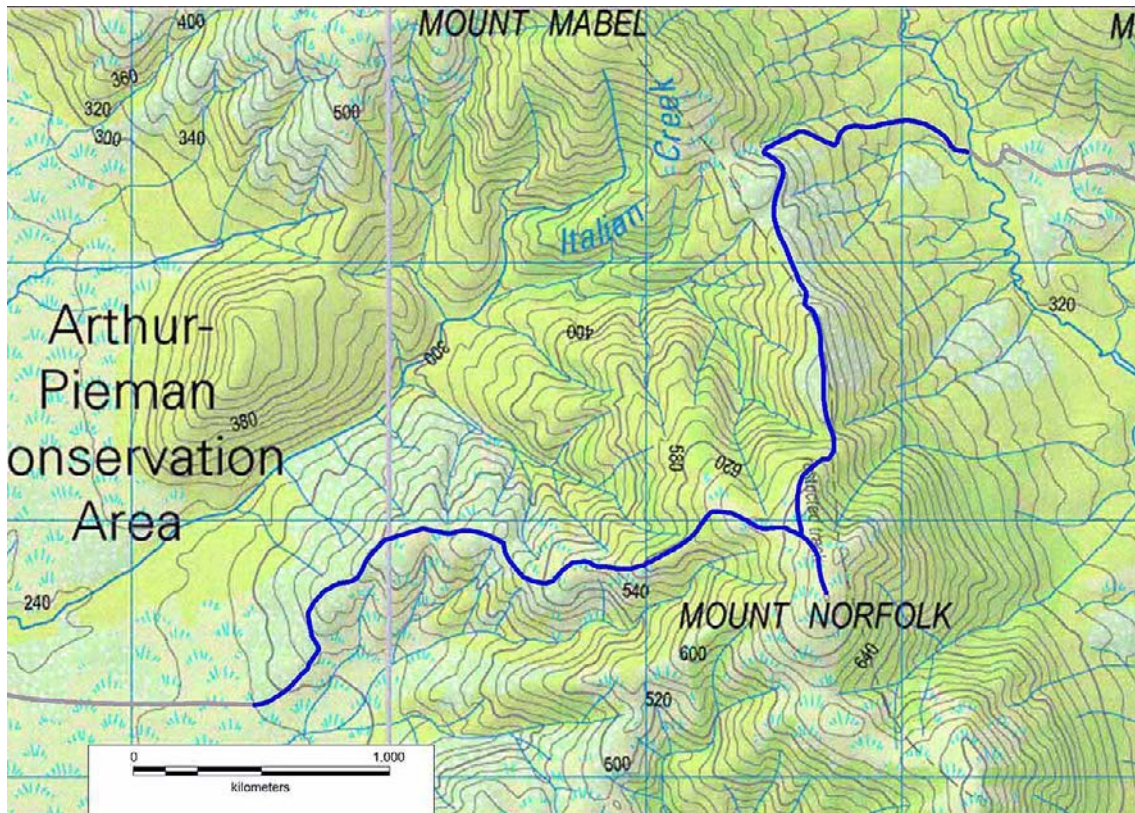
5.10 Works section 10: Western Explorer Road to upper Lagoon River



Map 5.10. Western Explorer Road to upper Lagoon River

This section traverses gently undulating moorland bordered by hills that rise steeply to around 700m. Much of the section can be stabilised by benching and surfacing with gravel, although wet sections will require planking. Small swing bridges will be required over the Toner and Lagoon Rivers, which are flood prone.

5.11 Works section 11: Traverse of Mt Norfolk



Map 5.11. Traverse of Mt Norfolk

5.11.1 Eastern ascent

The eastern slopes of the Norfolk Range in this vicinity are steep and have little forest cover. The proposed route climbs a fairly broad spur that should allow for installing some switchbacks, although finetuning the route could be arduous due to the dense scrub. At approximately the 430m contour the track will briefly enter rainforest before emerging onto moorland on the upper slopes of the range. The ascent will almost certainly require sections of steps.

5.11.2 Traverse to Mt Norfolk

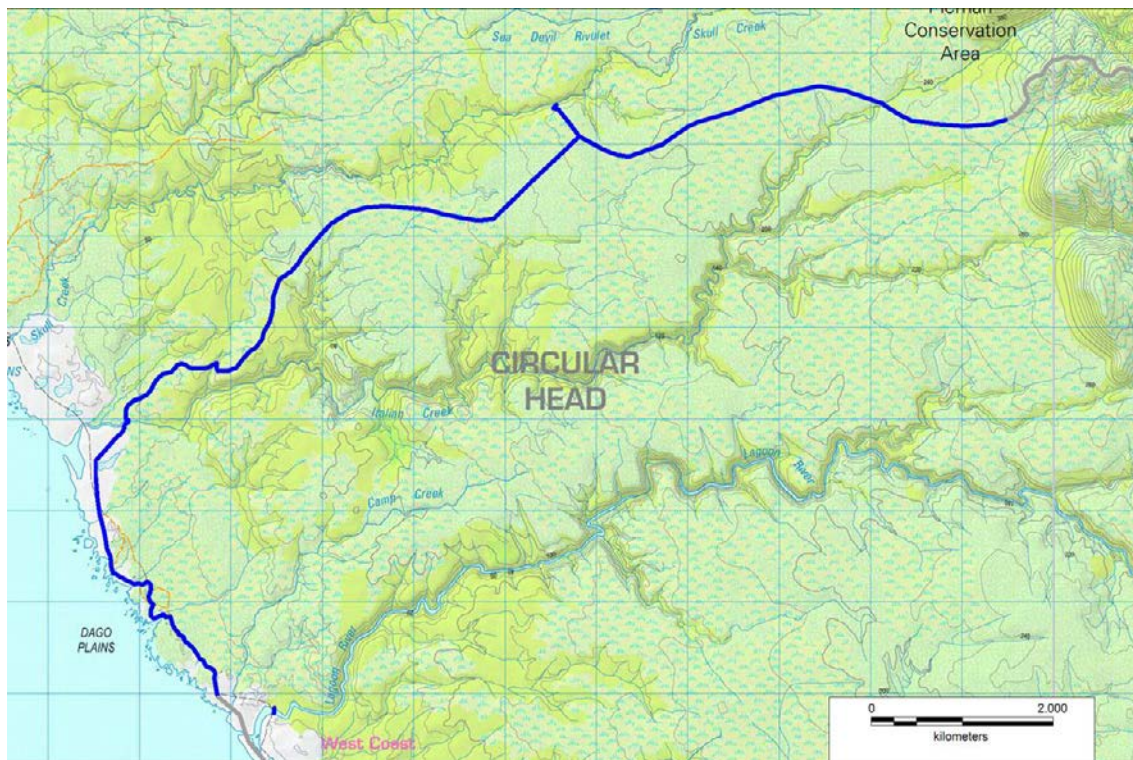
The traverse comprises some fairly level sections and some steep ascents, much of which will require steps. The final 250m to the summit will be a sidetrack from the main track.

As noted in 4.6.5, views from the summit are restricted at ground level and the provision of an elevated viewing platform is recommended. Provision for this has been included in the cost estimates.

5.11.3 Western descent

The proposed route follows a prominent spur northwest of Mt Norfolk. The spur is largely free of scrub apart from a 380m long section near the top of the range. Being steep and open the spur offers extensive views over the country ahead and the distant coastline. Some parts of the spur are wide enough to allow the construction of switchbacks, but the descent will nevertheless require over 1000 steps.

5.12 Works section 12: Base of Mt Norfolk to Lagoon River



Map 5.12. Base of Mt Norfolk to Lagoon River

5.12.1 Base of Mt Norfolk to lower Italian Creek

I inspected the western half of this section on the ground, and the entire section by helicopter. The section appeared mostly dry and well drained despite being mostly flat. This is presumably because of the presence of sandy soils. Although much of the section is identified on the 'Tas Vegetation' layer as buttongrass moorland, buttongrass is actually fairly scarce; the cover is mostly drier heath.

It will be essential to inspect this section in wet conditions before a final decision is made on track construction techniques. On the basis of the inspection so far I am reasonably confident that much of the section can be stabilised using (mostly light) benching and rubber tiling. Geotextile and gravel might be suitable on wetter sections. Few if any sections appear boggy enough to warrant planking or duckboard.

It is advisable to bridge lower Italian Creek because it is clearly subject to flooding. I found what appears to be a suitable bridge site approximately 775 m inland, at a point well inland from the nearest mobile dunes (see Photo 5.12.1).

See 4.7.3 for comments regarding a possible variation of this route to take in one or more lookout points overlooking the gorge on middle Italian Creek.



Photo 5.12.1. Looking upstream from proposed bridge site on Italian Creek

5.12.2 Italian Creek to Dago Plains

It is possible to follow beach and dunes for approximately 1.8 km south of the mouth of Italian Creek before joining the vehicle track. The dunes on the southern half of this section include numerous large middens (see Photo 5.12.2), so it will be necessary to survey and mark a route that avoids these as far as possible, with advice from representatives of the Aboriginal community.



Photo 5.12.2. Middens north of Lagoon River

5.12.3 Lagoon River crossing

The Lagoon River crossing has been included in Works section 12 because no other construction will be required between Camp Creek and Chimney Creek.

There are no practical bridge sites across the Lagoon River below the lower gorge, which is approximately 1.2 km inland and rendered fairly inaccessible by the massive dunes flanking the lagoon particularly on its southern side (see Photo 5.12.3-1). In view of this I recommend installing boats on either shore of the lagoon just above its first bend, which is approximately 480m inland (see Photo 5.12.3-2). The crossing is approximately 50m and the location is easily accessible from the beach on either side of the lagoon. If the contours of the lagoon and adjacent dunes shift over time, the boat moorings can be moved to accommodate this.



Photo 5.12.3-1. Upper section of lagoon on Lagoon River



Photo 5.12.3-2. Potential site of boat crossing on Lagoon River

It is possible that the proposed boat crossing will be impractical or dangerous at times of high flood, or during exceptionally high tides and storms. The site should be inspected under such conditions before installing boats. Note that under such conditions other sections of the coast may also be impassable, in which case the entire coastal section of the track should be closed.

5.13 Works section 13: Lagoon River to Pieman Head



Map 5.13. Lagoon River to Pieman Head

Most of this section will follow either beaches or existing vehicle tracks. When I inspected them the beaches were easy to walk on with reasonably firm sand.

5.13.1 Chimney Creek

Chimney Creek has a fairly small catchment but may be unfordable at times. The lowest site on the creek where a bridge could be installed on sand-free bedrock is located 1.2 km inland (see Photos 5.13.1-1 and 5.13.1-2). I recommend installing a bridge at this point together with an access track on either side. The access track should be marked, cleared and benched but can remain unsurfaced because it will receive only sporadic use.



Photo 5.13.1-1. Chimney Creek over 500m upstream from its mouth



Photo 5.13.1-2. Proposed bridge site on Chimney Creek, looking upstream

A possible alternative bridge site exists approximately 500m inland, where a 50m swing bridge would be required. The site is in dunes but there are rock outcrops nearby, suggesting that rock foundations could be found for a bridge. However the site would be subject to dune shift and could be inundated in times of high tide and storms, so it is probably unsuitable.

5.13.2 Monster Creek

Like Chimney Creek, Monster Creek has a small catchment but may be unfordable at times. The prospects for bridging the creek inland are poor as the lower part of the creek runs through steep and obviously mobile sand dunes. The best option appears to be to install a pair of bridges with a combined length of around 10m at a point where two braids of the creek run between outcrops less than 100m from the shoreline (see Photo 5.13.2), together with short sections of duckboard joining and accessing the bridges. This location may occasionally be inundated by the sea, but at such times other parts of the coastal track would probably also be impassable and the track would be closed. The site could also be covered by sand at some stage, but the infrastructure would be fairly cheap to replace.



Photo 5.13.2. Potential bridge site on Monster Creek

5.13.3 Interview River

The Interview River can be bridged at a point approximately 470m inland, near the lower end of a rocky gorge (see Photo 5.13.3). The approaches to the bridge on both sides of the gorge will require steps. An access track from the north should be constructed from the base of the large dune northwest of the proposed bridge site. On the south side the access track will run along a lightly vegetated shelf that runs in a SSW direction towards the campsite. This track should be surfaced, as walkers are likely to use it to access drinkable water at the bridge site. The track on the north side should also be surfaced as it may receive fairly frequent use.



Photo 5.13.3. Interview River. Potential bridge site is near furthest visible point on river.

5.13.4 Vehicle track south of Interview River

The proposed track should generally follow the existing vehicle track between Interview River and Pieman Head, although numerous local realignments will be required to improve gradients and drainage. For comments on track stabilisation techniques see 3.3. Rocky Creek, Ford Creek and several smaller creeks are likely to be unfordable at times, and should all be bridged.

5.13.5 Rupert Point

The existing vehicle track divides at Rupert Point, one track continuing in a fairly direct north-south line and the other deviating around the point, following the coastline north of the point. While it is more direct, the inland route is poorly sited as it involves two extended steep sections. As substantial numbers of walkers will want to access the coast at Rupert Point, I recommend closing the inland section and taking the walking track along the coastal route.

6 Trip itinerary and campsite locations

6.1 Factors determining the location of campsites

As far as possible campsites should be located in sheltered, attractive locations at intervals consistent with the projected difficulty of the walk. It is assumed that all campsites will be hardened using tent platforms and interconnecting 'social tracks'.

Campsites should have access to natural sources of drinkable water. If they do not, water will have to be provided either from local collection systems or by flying it in to storage tanks. Campsites will require suitable locations for composting toilets.

Given the proposed track classification and walk difficulty, I recommend that campsites be located between 10 and 15 kilometres apart. For comparison, the longest standard day on the Overland Track (excluding the Lakeside Track) is the section between Lake Windermere and Pelion Hut, which is just under 17 km. This section is mostly fairly level apart from the gradual 120m climb to Pelion. The longest day on the Three Capes Track is also 17 km and involves minimal climbing.

The first and last days of the two halves of the walk should ideally be somewhat shorter than the trip average, to allow for travelling times to and from the trailheads.

A key factor determining the location of campsites on the first half of the walk (i.e. the section from the Keith River Road to the Western Explorer Road) is the presence of the Mt Bertha ridge, which the proposed walking track will traverse. While the crest and flanks of this ridge offer spectacular views they are unsuitable for a campsite because they are too exposed as well as lacking a reliable water supply. Campsites should therefore be located in the lowlands northeast and southeast of the ridge. This has a major bearing on the location of other campsites between the Keith River Road and the Western Explorer Road.

6.2 Proposed itinerary

6.2.1 Day 1: Keith River Road to Eastons Falls (10 km)

This would be the shortest day of the first half of the walk, offering a fairly gentle start to the trip and allowing time for travel to the trailhead from population centres such as Burnie or Smithton. The day's walk would be mostly on former vehicle tracks and would involve crossing the Arthur and Lyons Rivers, sidling/ascending Frog Hill, crossing Eastons Creek, climbing to the plateau south of Hoof Hill (a substantial climb) and descending again to Eastons Creek. The walk's main recreational attractions will be mixed forests, riverine environments and Eastons Falls. The proposed campsite is adjacent to Eastons Creek and close to the falls and a swimming hole.

6.2.2 Day 2: Eastons Falls to Rapid River (14 km)

The day's walk will start with a traverse up the Eastons Creek valley and a gradual climb to Tarkine Falls on the upper reaches of the creek. A short sidetrack will provide access to the falls. Walkers will then traverse 'Lookout Hill', cross the Pipeline Road and traverse the forested plateau west of the road before descending to the Rapid River. Although the day's walk is moderately long it does not involve any significant climbing apart from the fairly gradual 100m ascent of 'Lookout Hill'. The day's

attractions will include Tarkine Falls, extensive views from 'Lookout Hill', and spectacular tall forests particularly on the approach and descent to the Rapid River. The campsite will be on an elevated (i.e. not flood-prone) area close to the river.

6.2.3 Day 3: Rapid River to upper Donaldson River (15 km)

This will be one of the most challenging days of the 10-day walk, involving a 200m climb of Mt Bertha and an extended traverse of moderately high (maximum 700m) exposed country. After climbing out of the Rapid River valley walkers will traverse spectacular tall forest to the scenic buttongrass plain northeast of Mt Bertha, then climb the range via the ridge north of the peak before traversing the summit and gradually descending the 4 km 'tail' to its south. The proposed campsite will be close to the point where the track crosses the upper Donaldson. An emergency campsite (cleared but with no infrastructure) should be established near the base of the northern ascent of Mt Bertha, to allow walkers to wait out bad weather before attempting the traverse.



Photo 6.2.3. Bennetts wallaby. Photo by Jenny Archer.

6.2.4 Day 4: Upper Donaldson River to plateau northeast of Pyramid Hill (13 km)

The day's walk will traverse the west side of the middle Donaldson valley before climbing and then traversing (southwards) the plateau northeast of Pyramid Hill. The walk will be almost entirely in tall myrtle forests, including spectacular stands of open forest on the ascent and traverse of the plateau. The track will also access at least one scenic point on the Donaldson River. The proposed campsite will be in open rainforest above a creek at the southern end of the plateau northeast of Pyramid Hill. The day's walk will be moderately long but will involve little climbing overall.

6.2.5 Day 5: Plateau northeast of Pyramid Hill to Mt Bolton (11 km)

This walk will be fairly short in terms of kilometres but will involve two moderate climbs, namely the 200m ascent of Pyramid Hill and the (gradual) 140m ascent of Mt Bolton from the east. Both high

traverses will offer extensive views in good weather. The proposed campsite location is in a small valley just north of Mt Bolton, which is moderately sheltered but within 10 minutes' walk of the summit (offering potential evening and early morning views). As many walkers will terminate or break their walk at the Western Explorer Road, the Mt Bolton campsite can be smaller than others on the walk. An emergency campsite should be established on the heathland shelf at the eastern end of the Mt Bolton traverse, to accommodate walkers who choose to delay the traverse in severe weather.

6.2.6 Day 6: Mt Bolton to upper Lagoon River (10 km)

This will be a fairly short and easy walk across open, gently undulating country flanked by the massifs of Mt Edith, Mt Holloway and the Norfolk Range. The campsite will be close to the foot of the Norfolk Range near the upper Lagoon River (above flood level). In the event of adverse weather parties can wait at this campsite before attempting the traverse of Mt Norfolk.

6.2.7 Day 7: Upper Lagoon River to upper Skull Creek (10 km)

Walkers today will cross the Norfolk Range, which will involve a fairly steep 400m climb and a traverse of exposed country particularly on the western descent. The track will pass close to the summit of Mt Norfolk, with a short sidetrack offering the option of climbing the peak. Open sections of the traverse will offer dramatic views including extensive albeit distant views of the coast.

The campsite will be in a sheltered location close to upper Skull Creek. This is approximately 5 km from the base of the range, allowing walkers to cover a significant proportion of the walk to the coast before they camp (hence sparing them from nearly a full day crossing the relatively featureless coastal plain). A sidetrack near the campsite will access viewpoints overlooking the Italian Creek gorge.



Photo 6.2.8. Proposed campsite north of Camp Creek

6.2.8 Day 8: Upper Skull Creek to Lagoon River (12 km)

Walkers will spend the morning continuing to the coast, which will become increasingly visible in the last few kilometres. By early afternoon they will cross lower Italian Creek and emerge onto the dunes country south of the creek. After traversing beaches and low dunes for two kilometres they will rejoin the formed walking track and follow it for a further 1.5 km to the campsite.

The proposed campsite (see Photo 6.2.8) is on the upper part of a large grassy area situated approximately 400m northwest of Camp Creek, from which drinkable water is normally available. The grassy area does not command views but is close to vantage points overlooking the coast, and it may be expedient to construct short sidetracks to these vantage points. The lower part of the grassy area floods in winter, but there is ample room on the upper part for 20 camping platforms.

6.2.9 Day 9: Lagoon River to Interview River (10 km)

The day's walk will consist entirely of beach walking. The main attractions of the walk will be the vast beaches and dune systems that dominate this section of the coastline, and the lagoon mouths of Lagoon River, Chimney Creek and the Interview River. As noted in 4.8.2, bridges (or boats in the case of Lagoon River) will be provided over major creeks and rivers to allow passage in all but the most extreme conditions. Around the halfway mark walkers will be able to replenish their drinking water supplies at Chimney Creek.



Photo 6.2.9. Part of potential campsite south of Interview River

The campsite can be established on a group of grassy areas situated approximately 440m south of the Interview River (see Photo 6.2.9).

6.2.10 Day 10: Interview River to Pieman Head (11 km)

This section of the walk traverses the rocky slopes between the Interview River and Pieman Head, with frequent views of small bays and rocky headlands. The walk will terminate at Hardwicke Point near Pieman Head, where walkers will be picked up by ferry and taken to Corinna. Highlights of the day will include Rupert Point (see cover photo) and the ferry trip (see Photo 6.2.10). A campsite will be provided somewhere in the vicinity of Pieman Head, probably near the coast.



Photo 6.2.10. Walkers awaiting cruise at Pieman Head

6.2.11 Informal campsites

In addition to the sites identified above there will be other locations on the track that will be suitable for camping and may be used by walkers from time to time. There will generally be no need to restrict use of such sites or to install any infrastructure, as usage is likely to be low and sporadic except on the coast. Another exception may be high-altitude sites particularly on Mt Bertha and the Norfolk Range, where walkers may camp to await photographs or just morning and evening views. Such sites will be susceptible to trampling damage, loss of vegetation etc, and hence may require closure or hardening if significant usage occurs.

For discussion of additional campsites in the coastal region, see 9.5.

7 Detailed survey

As noted previously, further extensive on-ground survey work will be required to optimise and fine-tune the proposed route before track construction can commence. The efficiency of such a survey could be substantially improved by the availability of detailed topographic information, particularly elevation maps with contours at intervals as low as 1 metre. This information could be obtained using aerial-survey technologies such as LIDAR.

The efficiency of the route-optimisation process in forested areas, particularly between Hoof Hill and Pyramid Hill, could be substantially enhanced if better information were available on the type, density and distribution of forest understorey. Technologies may already be available or could be adapted to provide this information. In the absence of such technologies the best approach may be to obtain and analyse high-resolution aerial photographs of the vicinity of the proposed track, possibly obtained using drones.

8 Track and campsite construction costs

I have estimated the costs of constructing the proposed track and associated campsites based on generic estimates of lay rates for the relevant construction techniques. I have also estimated the costs of vegetation clearance ahead of track construction, and of undertaking a detailed survey to determine the exact route of the track on a metre-by-metre basis.

My estimates are detailed in the Excel spreadsheet 'Trans-Tarkine Track Construction Cost Estimates'. The estimates include the costs of:

- track installation including materials, transport and labour
- tent platforms and associated infrastructure such as local ('social') tracks
- toilets
- trailhead registration booths
- a walkers' shelter at Mt Bolton
- signposts

The estimates exclude the costs of:

- infrastructure associated with vehicular access such as road upgrades and car parks
- clearing and trimming vegetation at campsites
- additional aerial survey or digital interpretation

In the spreadsheet, segment lengths in forested areas have been adjusted by a correction factor to allow for the fact that the lengths of constructed track segments are likely to exceed initial map-based estimates owing to local deviations to accommodate obstacles such as gullies.

Cost estimates of this nature are heavily dependent on assumptions particularly with regard to lay rates. The lay rates that I have used are based on information obtained from a wide range of track-development projects in Tasmanian wild areas, but must be regarded as a rough guide only.

The following table summarises the estimated costs by works section.

Table 2: Estimated costs of track construction, vegetation clearance and detailed survey

Section no	Section	Construction	Veg clearance	Survey	Campsites	Total	Detailed survey (person-days)
Keith River Road to Western Explorer Road							
1	Keith River Road to plateau south of Hoof Hill	\$510,786	\$11,448	\$0	\$0	\$522,233	0
2	Plateau south of Hoof Hill to 'Lookout Hill'	\$1,750,094	\$38,556	\$26,400	\$191,000	\$2,006,050	30
3	'Lookout Hill' to base of ascent to Mt Bertha	\$2,868,702	\$59,079	\$43,120	\$191,000	\$3,161,901	49
4	Ascent and traverse of Mt Bertha ridge	\$1,057,884	\$17,580	\$21,120	\$0	\$1,096,583	24
5	Mt Bertha ridge to plateau NE of Pyramid Hill	\$2,662,386	\$65,481	\$51,040	\$191,000	\$2,969,907	58
6	Traverse of valley east of Pyramid Hill	\$709,790	\$32,490	\$14,080	\$191,000	\$947,360	16
7	Pyramid Hill summit traverse	\$381,850	\$5,807	\$6,160	\$0	\$393,817	7
8	Pyramid Hill descent to Mt Bolton ascent	\$501,673	\$27,591	\$13,200	\$0	\$542,464	15
9	Traverse of Mt Bolton	\$388,619	\$5,725	\$7,920	\$114,600	\$516,864	9
	Walkers' shelter & toilet at Western Explorer Rd	\$115,000	\$0	\$0	\$0	\$115,000	
	Total	\$10,946,785	\$263,755	\$183,040	\$878,600	\$12,272,180	208
Western Explorer Road to Pieman Head							
10	Western Explorer Road to upper Lagoon River	\$1,536,956	\$20,603	\$33,440	\$191,000	\$1,781,999	38
11	Traverse of Mt Norfolk	\$1,477,959	\$15,839	\$22,000	\$0	\$1,515,798	25
12	Base of Mt Norfolk to mouth of Italian Creek	\$1,768,899	\$64,690	\$23,760	\$191,000	\$2,048,350	27
13	Mouth of Italian Creek to Pieman Head	\$1,584,202	\$35,147	\$9,680	\$573,000	\$2,202,029	11
	Total	\$6,368,017	\$136,279	\$88,880	\$955,000	\$7,548,176	101
Overall totals		\$17,314,802	\$400,034	\$271,920	\$1,833,600	\$19,820,356	309

9 Auxiliary tracks and trip options

Construction of the proposed track and the promotion of its attractions will create and invite recreational opportunities in the Tarkine region over and above the use of the track for 5-day and 10-day trips. For example, significant numbers of walkers may elect to visit Eastons Falls as a 2-day return trip from the Keith River Road trailhead. In this respect the track will be comparable to the Overland Track, which is used not only for the Cradle-to-Lake St Clair trek but by walkers accessing Barn Bluff, the Pelion Range and other destinations, in some cases via sidetracks such as the Arm River Track. The possibility and likelihood of such developments need to be taken into consideration when planning the Trans-Tarkine Track, both to maximise its recreational potential and to anticipate potential issues such as campsite crowding. The following sections identify several potential developments.

9.1 Return walks from the Keith River Road trailhead

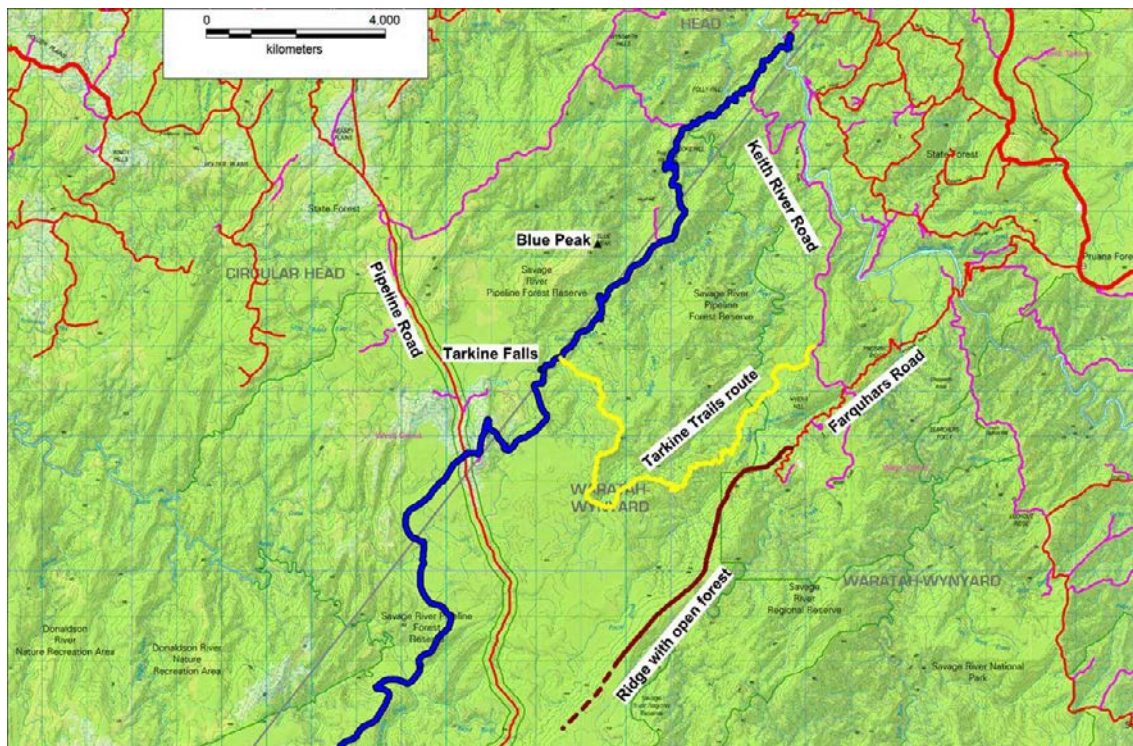
As mentioned above, some walkers may undertake return trips from the Keith River Road trailhead to Eastons Falls, Tarkine Falls, 'Lookout Hill' and more remote locations such as Mt Bertha. To accommodate such walkers it will be necessary to provide additional camping space either at TTT campsites or separate sites. Potential alternative campsite locations include the lower Eastons Creek crossing, the existing Tarkine Trails campsite (or the vicinity thereof) near Tarkine Falls, and the base of the north-eastern slopes of Mt Bertha.

See also my comments on the possibility of a trailhead at Tarkine Lodge in 4.2.1.



Photo 9.1. View east from 'Lookout Hill'

9.2 Tarkine Trails loop and similar loops



Map 9.2. Potential loop walks east of Mt Bertha

The existing Tarkine Trails walk consists of a partial loop that links the Keith River Road trailhead to Farquhars Road (see Map 9.2). It remains to be negotiated whether Tarkine Trails will continue to operate this walk once the Trans-Tarkine Track is constructed. The walk could be turned into a complete loop by directing walkers along the Keith River Road west of the Arthur River. The appeal of such a walk would depend in part on whether continued vehicular access is permitted on the Keith River Road and Farquhars Road.

The southern part of the Tarkine Trails walk, i.e. the section linking Farquhars Road to Tarkine Falls, is 14 km long not including Farquhars Road and a short section of the Keith River Road. Use of this section could continue at low levels without causing significant environmental damage. However if usage increased it would be necessary to harden a substantial proportion of the track, as well as realigning it in places to improve gradients and gradients. It is questionable whether the recreational attractions of this section would justify the cost of this, which would run to several million dollars.

Another option that I have considered is to construct a loop track from Farquhars Road along the long ridge that runs NE-SW south of Pinner Creek, linking from there to the Trans-Tarkine Track either east or west of the Pipeline Road (again see Map 9.2). I noticed this ridge on the aerial survey owing to its extensive stands of open-understory rainforest, and I subsequently inspected it on the ground. The forest is indeed mostly open and it contains some stands of large myrtles (see Photos 9.2-1 and 2), but overall I do not feel it is sufficiently scenic to warrant pursuing this option. Additional drawbacks are that the north-eastern end of the ridge has been subject to historical logging, and none of the options for linking the southwest end of the ridge through to the Trans-Tarkine Track has much merit in terms of recreational appeal.



Photo 9.2-1. Open forest on ridge south of Pinner Creek



Photo 9.2-2. Tall myrtle on ridge south of Pinner Creek

9.3 Return walks east from Western Explorer Road

Mt Bolton is likely to prove a popular short walk from the Western Explorer Road, particularly for people who are driving the road for other reasons. Longer walks east from the road are less likely to prove attractive owing to the lack of obvious destinations. The most popular longer walk is likely to be to Pyramid Hill, which will be reachable in a day return trip once the track is completed.

9.4 Return walks west from Western Explorer Road

Completion of the Trans-Tarkine Track is likely to attract substantial visitation to the Norfolk Range and particularly to Mt Norfolk. Some increased visitation may also occur to Mt Mabel, walkers leaving the TTT near the Norfolk-Mabel saddle. As a track already exists to Mt Mabel, this is unlikely to cause significant environmental problems for the foreseeable future. It may be necessary to provide additional or alternative camping space, probably near upper Lagoon River, for overnight walkers who do not intend to continue to the coast.

9.5 Coastal walks

As mentioned in 4.8.2, significant numbers of walkers already undertake walks along the coast north of Pieman Head, and the number is likely to increase once the Trans-Tarkine Track is constructed and promoted. The walks most likely to be popular are return trips from Pieman Head to Rupert Point, the Interview River and more distant destinations, and the through walk to Pieman Head from Sandy Cape (where walkers can be dropped off by vehicle).



Photo 9.5. View south from near Camp Creek

Additional campsite infrastructure will be required for non-TTT walkers, and it would be best for this to be separate from the designated TTT campsites. Potential campsite locations include Rupert Point, the moorland shelf on the south side of the Interview River lagoon, moorlands north of the proposed Lagoon River campsite, and the area immediately south of the proposed bridge over lower Italian Creek.

10 Conclusions

The Trans-Tarkine Track is achievable, and when completed it will rank alongside the world's great multi-day wilderness journeys. The track will traverse the heartland of the Tarkine and showcase the values that make the region unique. Starting in the midst of Australia's most extensive temperate rainforest the walk will traverse heathlands, valleys, mountain ranges, beaches, and dune landscapes rich in Aboriginal heritage. It will end with a relaxing and spectacular river cruise from Pieman Head to Corinna.

Walkers will have the option of completing the walk as a continuous ten-day trip or as two five-day trips, breaking at the Western Explorer Road. Camping will be at designated sites provided with tent platforms, toilets and easy access to drinking water.

The walk will generally be less challenging than the Overland Track but it will include some challenging sections, particularly the traverses of Mt Bertha and Mt Norfolk. Each day of the trip will involve walking between 10 and 15 km, and most days will involve some uphill sections. The track will be constructed to Class 3 standard and will generally have a dry walking surface. All rivers and major creeks will be bridged.

I recommend that the track (specifically the campsites) be designed to accommodate an initial intake of 30 walkers per day, although this could increase if there is sufficient demand.

Construction of the track will cost around \$20 million, including campsite infrastructure but not including road upgrades and trailhead infrastructure.

A more detailed on-ground survey, backed up with additional aerial survey (with LIDAR if available) will be required to optimise and fine-tune the proposed route before track construction can commence. The impacts of the proposed track on the ecological, human heritage and wilderness values of the region should also be rigorously assessed.



Photo 10. Mist rising from the forest canopy, seen at sunset from 'Lookout Hill'.