

SOMERSET REGIONAL COUNCIL MOUNT GLEN ROCK MASTER PLAN

DRAFT REPORT - JANUARY 2022

Photo: Otium Planning Group



Prepared by Otium Planning Group Pty Ltd. In association with World Trail, CUSP, Bligh Tanner, Trend Ecology & Afirmacon





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Otium Planning Group acknowledges the Australian Aboriginal, Torres Strait and South Sea Islander peoples of this nation.

We acknowledge the traditional custodians of the lands on which our company is located and where we conduct our business. We pay our respects to ancestors and to Elders, past, present and emerging.

Otium is committed to national reconciliation and respect for Indigenous peoples' unique cultural and spiritual relationships to the land, waters and seas, and their rich contribution to society.

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1. INTRODUCTION

In October 2020 Council purchased 127.1 hectares of the western face of Mount Glen Rock, located adjacent to the township of Esk in the Somerset Region. This adjoins an additional 81 ha of reserve land for which Council is trustee, making up a total site area of 208.1 ha. Council has aspirations to develop the site as a multi-use adventure park providing walking and mountain bike trail opportunities, rock climbing and abseiling, and other nature-based recreation close to the Esk township and the iconic Brisbane Valley Rail Trail.

This Master Plan provides a framework for the future development of Mount Glen Rock as a multi-use adventure park. It illustrates the multifaceted components that contribute to the overall look, feel and function of Mount Glen Rock to help guide future development.

1.1. PROJECT APPROACH

The project involves a four-stage project methodology as detailed below.



2. ABOUT MOUNT GLEN ROCK

Mount Glen Rock provides an iconic and stunning backdrop to the township of Esk and is a significant feature of the Somerset region's natural landscape. The unique mountainous rock formation contributes to the character and identity of the town and is highly valued by the Esk community and the broader Somerset region.

With a peak measuring 314m of elevation, Mount Glen Rock offers views towards Somerset Dam in the northeast and over the township of Esk and the Brisbane Valley in the south west. The site is heavily vegetated, with a variety of native vegetation evident and predominantly rocky terrain. Several fire breaks run through the site.

While undeveloped, the site is accessible from:

- « Land to the north of Francis Terrace across Sandy Creek (adjacent to the sewage treatment plant)
- « The Hassall Street road reserve, the planned location for a bridge across Sandy Creek, which provides access from the main town centre via a 500m walk.
- « Middle Street, which provides access to the southeast corner of the site, connecting with the new Sandy Creek trail.
- « Council's green waste site in the south eastern corner of the reserve accessed via the Brisbane Valley Highway
- « Lions Park, which is located adjacent to the south western corner of the site, separated by Sandy Creek and provides a connection to the site along the Brisbane Valley Rail Trail (BVRT) Horse Bypass.

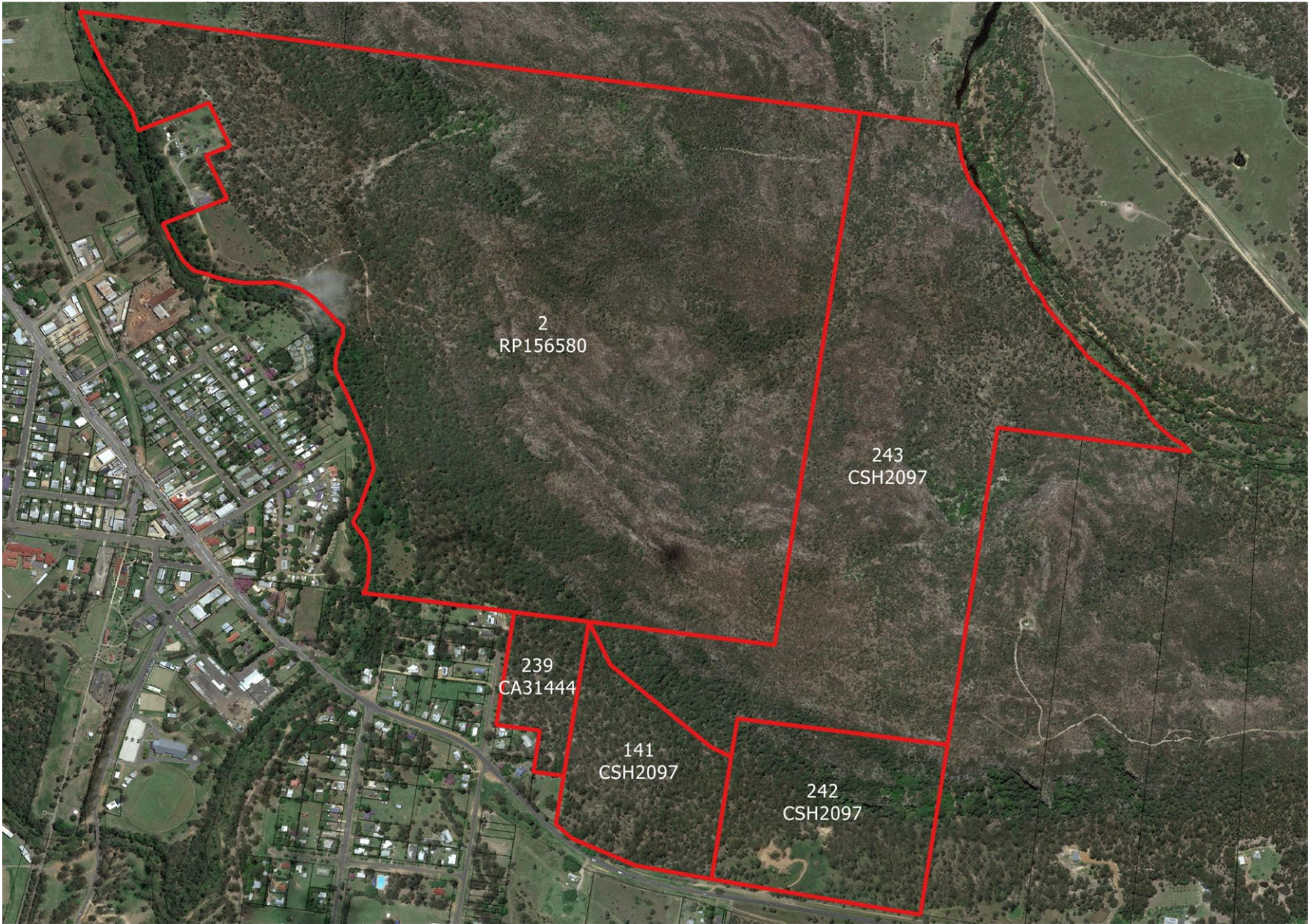
Australia's longest recreational rail trail, the Brisbane Valley Rail Trail, is located within 300m of the site. The BVRT Horse Bypass Trail provides a link from the Brisbane Valley Rail Trail at the Esk Showgrounds to Lions Park, with potential access to the Mount Glen Rock site via Lions Park, Middle Street, and Hassall Street.

Council has been progressing a number of developments complementary to the development of Mount Glen Rock as a multi-use adventure park:

- « The "Sandy Creek Fire Break Trail" has recently been developed along the existing fire break running adjacent to Sandy Creek along the western base of Mount Glen Rock. The trail is a 1,100m, two-way, multi-purpose, low-grade trail extending from Francis Terrace (near the Esk Sewage Treatment Plan) to Middle Street.
- « The Hassall Street Bridge will provide a pedestrian bridge link across Sandy Creek from the Hassall Street road reserve linking with the Sandy Creek Fire Break Trail.
- « The "Summit Trail" is planned to run from the Sandy Creek Fire Break Trail to the highest peak of Mount Glen Rock. This would be a two-way, medium difficulty walking trail utilising natural terrain and materials found on-site and incorporating a small clearing/ lookout at the summit.



Figure 1: Mount Glen Rock Study Area



3. OUR VISION AND MISSION FOR MOUNT GLEN ROCK

VISION

“Deliver a uniquely Somerset outdoor recreation experience, that connects the natural environment and scenic beauty of the site to a vibrant local community.”



Photo: AllTrails



Iconic

topography



Views

over Esk and the Brisbane Valley counteract geographical constraints of the site



Compatibility

The site is compatible with mountain biking, hiking, rock climbing and abseiling



Wildlife

The site is home to koalas and the brush-tailed wallaby



Location

Conveniently located adjacent to the Esk township and within 30 minutes of Lake Somerset, Lake Wivenhoe and the Brisbane River



MISSION

“Inspire Somerset residents and visitors to experience, admire and benefit from Mount Glen Rock.”



Developed for the benefit of the region; recreationally, socially and economically



A significant recreational asset and source of pride for Esk and the region



A trigger for enhanced business and economic opportunities



Developed to its safest extent and not at the expense of its natural assets



Developed sustainably with opportunities sought to offset expenditure through traditional and innovative revenue streams

4. WHO ARE WE PLANNING FOR?

When developed, Mount Glen Rock will attract visitors locally from Esk and surrounds, regionally from the Somerset Region and further afield from the Ipswich West Moreton Region, South East Queensland and interstate.

The Esk Community

5,158 residents

Older age profile (median age 52)

56% of families are couples without children

Expected population of 7,059 by 2041

The Somerset Region

24,597 residents

Media age of 43

20.4% of the population is children

38.4% couples with children

Expected population of 39,017 by 2041

The Wider Region

342,016 residents of Ipswich and West Moreton

Younger age profile (median age 35)

31.3% of families are couples with children

Expected 2041 population of 722,499

623,000 Annual Visitors to the Somerset Region

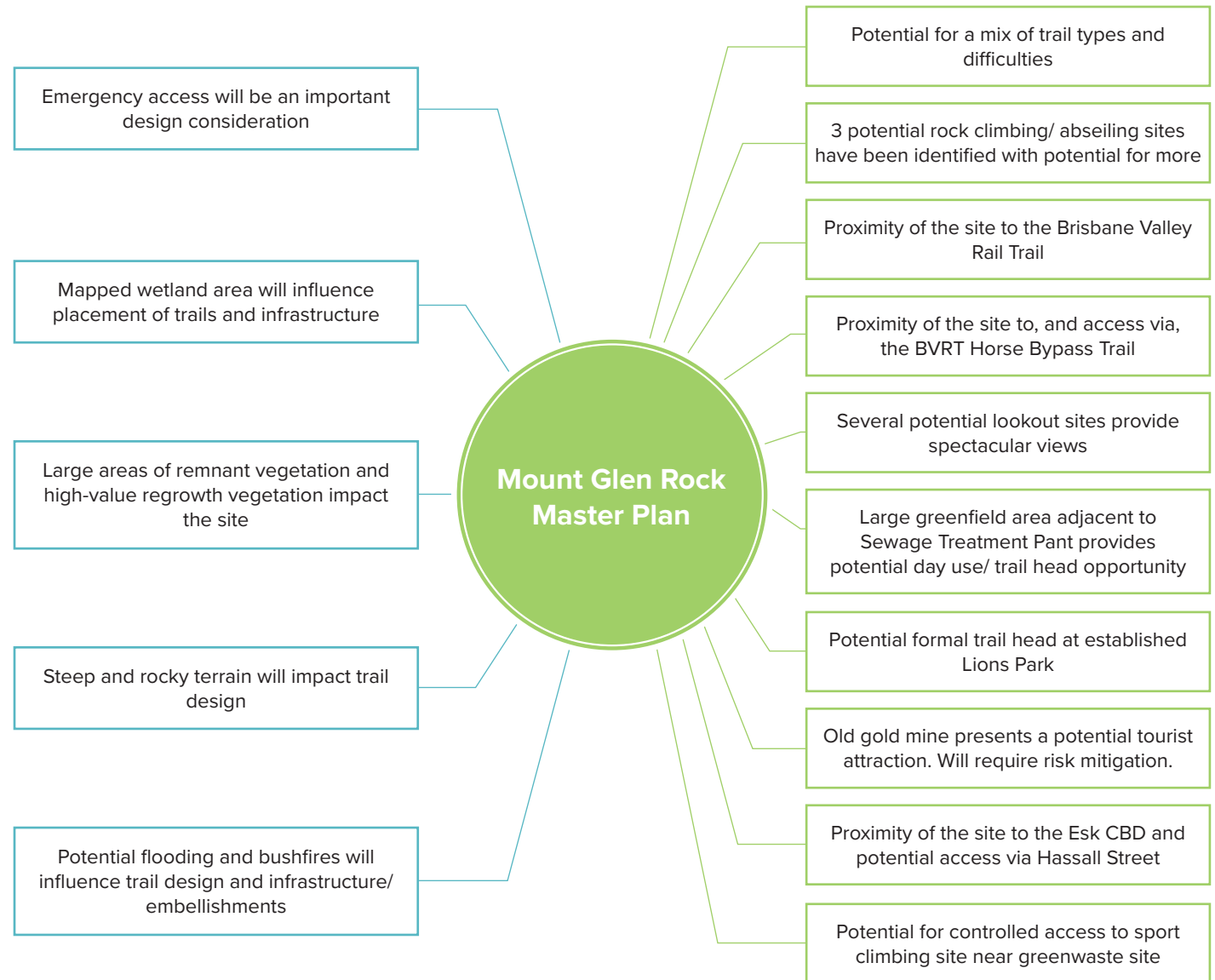
162,000 domestic overnight visitors

458,000 domestic day trip visitors

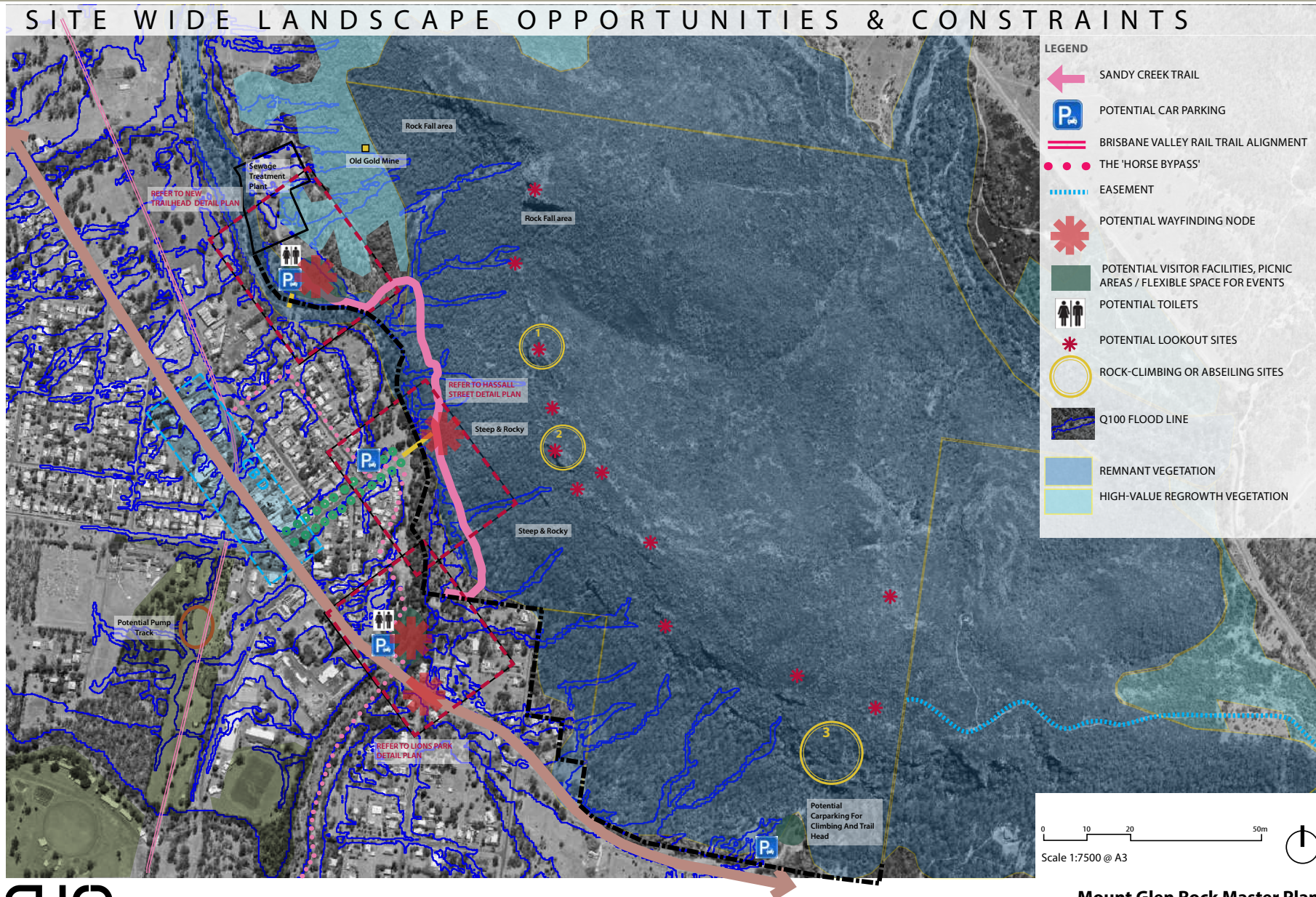


5. MASTER PLANNING OPPORTUNITIES AND CONSTRAINTS

A number of opportunities and constraints have influenced the master planning of Mount Glen Rock as an adventure recreation park.



6. SITE OPPORTUNITIES AND CONSTRAINTS



Mount Glen Rock Master Plan

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7. WHY ADVENTURE RECREATION?

Adventure activities like mountain biking, hiking, abseiling and rock climbing align with one of the key ‘megatrends identified by the Australian Sports Commission’:

“From extreme to mainstream.”

In 2018



15%

of Queensland adults participated in bushwalking, increasing from 14% in 2015.



2%

of Queensland adults participated in rock climbing, increasing from 1% in 2015.



3%

of Queensland adults participated in mountain biking increasing from 2% in 2015.



Mountain biking is considered one of the **fastest-growing recreational activities** with 17,625 members globally, representing a 60% increase between 2014 and 2019².



Increased participation in outdoor and adventure recreation is an **emerging trend** and, in many locations, this means walking, riding and running on trails.

The **increasing availability** of mountain bikes, decreasing prices and increased awareness of the activity helps drive increased participation and increased numbers of people looking for new destinations and weekend excursions to ride trails.



Economic analysis undertaken by TRC Tourism indicates that mountain biking, hiking and rock climbing at Mount Glen Rock could potentially **generate significant economic benefits**³.



More people are wanting to **ride on trails in natural areas**. The decreasing price of, and increased availability of E-Mountain Bikes has also driven an increase in participation.



Potential social benefits noted by TRC Tourism, likely to occur as a result of the Mount Glen Rock development include:

- « Improvements to long-term health, leisure, family, community and wellbeing
- « Increased social morale
- « Enhancing regional pride within local communities
- « Creating connections between people and places and attracting new residents to small, rural communities
- « Increased investment and development of service and support industries, such as hospitality.



Anecdotal evidence suggests the **rock climbing and abseiling market is increasing** and this is supported by Australian Climbing Association estimates.

¹ Hajkowicz, S.A., Cook, H., Wilhelmseder, L., Boughen, N., 2013. *The Future of Australian Sport: Megatrends shaping the sports sector over coming decades. A Consultancy Report for the Australian Sports Commission. CSIRO, Australia.*

² *Mountain Biking in Australia: An Economic and Participation Analysis, 2021 (GHD Report for AusCycling)*

³ TRC Tourism, July 2021. *Mount Glen Rock Preliminary Assessment of Economic Potential, Constraints and Opportunities*

8. KEY STAKEHOLDER PRIORITIES

Discussions with council staff, councillors and stakeholder groups have highlighted the following priorities for site development:



The design needs to consider the **sustainable management of recreational use** and specifically the multi-use nature of the site and the need to minimise potential conflict between walkers, mountain bikers, and climbers.



Opportunities provided should **cater for all levels of users** from beginner to advanced. In particular, there is strong demand for access to cliffs suitable for climbing training. Additionally the rise in mountain biking means there is more demand for beginner and intermediate trails and destinations that suit groups such as families with a mix of abilities.



Ensuring **multiple points of access** and access for a range of mobilities will be essential. This means that a range of paths and trails and appropriate parking solutions will be needed.



Trails should **complement local offerings** such as the Brisbane Valley Rail Trail and have the potential to link to a broader network of regional mountain biking destinations.



Connecting the site to the township via active transport networks is important for the local community and tourism.



Capitalise on **tourist values** of the site, for example, the views of Esk and the surrounding countryside.



Development should be mindful of, and in keeping with, the **natural environment** and “feel” of the site.



Functional, well-designed trailheads should be provided that include information and maps, good wayfinding, gathering spaces and suitable support facilities.



Ensure development is **high-quality** to encourage visitation and events and compete with other quality venues throughout South East Queensland.



Planning for the site should **allow staged development** as funding becomes available, with early stages adding to the opportunities for residents as well as increasing reasons for visitors to the region to visit the site.

Figure 2 view to Sandy Creek Trail from Francis Terrace (Photo: Otium Planning Group)



9. MOUNT GLEN ROCK TRAILS

The construction of trails at Mount Glen Rock will create a desirable destination of 'Local to Regional Significance'. With Mount Glen Rock's ideal location next to the Esk Township, the destination is likely to experience increased visitation for outdoor recreation enthusiasts seeking a weekender style of getaway.

Key features of the trail network include:



Trails

- « Around **28 km of MTB only and shared trails**. Including 9 km of flow and gravity trails and over 18 km of adventure and shared trails.
- « A number of **"mountain bike-only" trails** that provide a mix of options from beginner to intermediate and include some exciting, challenging and scenic features.
- « A dedicated **ridgeline walking trail** for hikers, including several scenic lookout locations.
- « **Shared use trails** providing opportunities for mountain bike riders and walkers to "climb" to the start of descent trails and provide access to the Mount Glen Rock Saddle and the Summit.
- « Shared use trails providing **access to climbing sites** for rock climbers and abseilers.
- « **Connecting** shared use trail (Sandy Creek Fire Break Trail) which links Francis Terrace to Lions Park/ Middle St.
- « **Realignment of the BVRT Horse Bypass Trail** off Russell Street and along the Sandy Creek Fire Break Trail.



Trail heads and access

- « A **main trail head located at Lions Park**, in close proximity to town, and linked to the BVRT Horse Bypass Trail which will allow visitors to ride-in and ride-out to the town itself and will encourage riders to make use of the services and facilities in town.
- « A **'Trail Hub' located near the proposed Hassall Street bridge**, with linkage to the trail network emanating from this point providing a multitude of choices for users. The Hassall St "hub" has direct access to town and will be a key link for walkers and cyclists.
- « A proposed **Day Use Area off Francis Terrace**, provides group access, connection to the walking and MTB trail network and a scenic location for visitors and groups to enjoy the ambience of Mount Glen Rock.
- « Middle Street provides an **additional site access** point. It is not proposed to formally develop a trail head or visitor facilities at this location, to encourage use of Lions Park as the main trail head. Future development of car parking and a secondary trail head at Middle Street could be considered in the longer term subject to demand.

World Trail's Destination Assessment correlates with the Australian Mountain Bike Destination Significance Criteria⁴, identifying Mount Glen Rock as a riding destination of potential Local to Regional Significance.









Figure 3: Extract of Mountain Bike Australia criteria for destinations of local and regional significance

MORE THAN 20KM OF TRAILS	2+ LOOPS
>50% TO 80% SINGLE TRACK	RECOMMENDED 250HA
<10KM FROM HIGHWAYS AND PRIMARY SCHOOLS	>45KM FROM ANOTHER NATIONAL OR REGIONAL SCALE CENTRE
MIX OF TRAIL CLASSIFICATIONS (GREEN AND BLUE AS A MINIMUM)	CAR PARKING
TOILETS	TRAIL HEAD SIGNAGE AND TRAIL MARKERS
A FACILITY FOR A SMALL POPULATION CENTRE OR LARGE COMMUNITY	TOURISM RESOURCE THAT CATERS FOR DAY TRIPS, SHORT BREAKS OR WEEKEND TRIPS

⁴ Derived from Australian Mountain Bike Trail Guidelines - Chapter 7 General Trail Planning, Design and Construction Principles.



9.1. PROPOSED TRAIL NETWORK

TRAIL NO.	DETAIL	TRAIL STYLE	DIFFICULTY RATING	TRAIL LENGTH	TRAIL FEATURES
Trail 1	MTB only Single direction loop to Middle Street and return Starting and finishing at the Trail Hub	Adventure	 EASY	726m	Berms Natural obstacles Multiple line options
Trail 2	MTB only Single direction loop Starting at Trail Hub to rock climbing site 1 and return	Adventure	 EASY	3,147m	Berms Natural obstacles Multiple line options
Trail 3	Shared Use Dual direction walking Single direction (climb only) MTB Access from Trail 2 to rock climbing site 1	Shared Use	  EASY CLASS 3 WALK	843m	Surfaced trail
Trail 4	MTB only Continuation of Trail 3 Descending towards Trail Hub	Flow	 INTERMEDIATE	1,309m	Berms Rollers Optional/ rollable jumps Multiple line choices
Trail 5	MTB only Single direction loop Starting and finishing at Trail Hub Access the old mine site Access to the Francis Terrace Day Use area via Sandy Creek Trail	Adventure	 EASY	1,778m	Berms Natural obstacles Multiple line options
Trail 6	Shared Use Dual direction walking Single direction (climb only) MTB From Trail Hub to Saddle	Shared	  INTERMEDIATE CLASS 3 WALK	1,821m	Surfaced trail Lookout opportunities
Trail 7	MTB only Single direction descent Return path from the Saddle back to the Trail Hub	Flow	 INTERMEDIATE	849m	Berms Rollers Optional rollable jumps Multiple line choices
Trail 8	Shared Use Dual direction walking Single direction (climb only) MTB Continuation of Tail 6 from the Saddle to the top of Mount Glen Rock	Shared	  INTERMEDIATE CLASS 3 WALK	2,208m	Surfaced trail Lookout opportunities



TRAIL NO.	DETAIL	TRAIL STYLE	DIFFICULTY RATING	TRAIL LENGTH	TRAIL FEATURES
Trail 9	MTB only Single direction descent From Mount Glen Rock Summit back to the Saddle Dedicated MTB return trail	Flow	 INTERMEDIATE	2,371m	Berms Rollers Optional/ rollable jumps Multiple line choices
Trail 10	MTB only Single direction From the Saddle to the Eastern Summit	Adventure	 INTERMEDIATE	4,325m	Berms Natural obstacles Multiple line options Scenic adventure
Trail 11	MTB only Single direction descent Return from Eastern Summit to the Saddle	Flow	 INTERMEDIATE	1,492m	Berms Rollers Optional/ rollable jumps Multiple line choices
Trail 12	MTB only Single direction descent From Eastern Summit to the Saddle	Airflow	 INTERMEDIATE	1,225m	Berms Rollers Multiple line choices Optional gap, tabled and transferrable jumps Drops
Trail 13	MTB only Single direction descent Starts at Trail 10 and descends to Esk Creek	Gravity	 INTERMEDIATE	1,585m	Berms; Rollers; Multiple line choices; Optional gap or table jumps; Drops; Off camber corners; Rock slabs; Rock gardens
Trail 14	MTB only Single direction climb Climb from Esk Creek to the Eastern Summit via Trail 10	Adventure	 INTERMEDIATE	3,281m	Berms Natural obstacles Multiple line options
Trail 15	Walking only Dual direction Ridgeline trail between the Saddle and the Eastern Summit	Walking	 CLASS 4 WALK	1,167m	Steps Surfaced trail Multiple lookouts
Trail 16	Walking only Dual direction Short access track to rock climbing Site 3 (off trail 6)	Walking	 CLASS 3 WALK	39m	Steps Surfaced trail
Trail 17	Walking only Dual direction Short access track to rock climbing Site 2 (off trail 6)	Walking	 CLASS 3 WALK	65m	Steps Surfaced trail

Figure 4: Proposed Mount Glen Rock Trail Network



10. PROPOSED CLIMBING SITES

Mount Glen Rock has strong potential as a rock climbing location, catering for beginners through to advanced climbers, and sport climbers. Three sites have been identified for development as climbing sites .

Table 1 – Climbing Sites and Potential Use

SITE	DESCRIPTION*	ACCESS	PROPOSED USE*	INDICATIVE ROUTES*	INDICATIVE DIFFICULTY*
Site 1	Potential for abseiling and limited beginner climbing Majority of rock is poor quality with some good patches of quality rock through the cliff	Access via spur trails off proposed Trail 6 dual use MTB and walking trail accessible from the Hassall Street trailhead and the Francis Terrace trailhead via the Sandy Creek Trail	Potential Abseiling Potential Beginner rock climbing	2-5 potential short climbing routes	Potential beginner
Site 2	Site with excellent potential to be developed into a climbing location Good quality rock, generally high strength, with small patches of poor quality throughout the cliff	Access via spur trails off proposed Trail 6 dual use MTB and walking trail accessible from the Hassall Street trailhead and the Francis Terrace trailhead via the Sandy Creek Trail	Sport climbing	1 established sport climbing route 20-25 potential routes	Intermediate to expert Estimated grades 13-27 on the Ewbank Scale
Site 3	Established, well-developed site Good quality rock with some patches of fractured, poor quality rock throughout the central part of the cliff	Master Plan indicates shared use MTB and walking trail access trail to the base of the cliff from the informal carpark at Council's green waste site off the Brisbane Valley Highway	Sport climbing Consider permit-only access (to be determined in development of Management Plan)	19 established routes 3-5 potential routes	High level/ elite climbing for experienced/ expert climbers Grades between 22-30 on the Ewbank Scale

* Some description, use, route, and difficulty information sourced from SEIMA Safety Mt Glen Rock – Climbing Infrastructure Audit Report

Note: Informal access to Site 3 is available from Council's green waste site off the Brisbane Valley Highway. It is not intended to formally develop car parking or visitor facilities at this site to encourage users to access the site through the formal trail heads located closer to the Esk township. More formal development of this site could be considered in the longer term subject to demand.

The Australian Climbing Association (Queensland) has identified a number of other potential locations for climbing sites throughout Mount Glen Rock. It is recommended that these be further assessed for potential development in the future, subject to demand and geotechnical review.

Further, detailed site investigations by an accredited assessor are recommended to determine if rock climbing and abseiling sites should be open for broad public recreational climbing, or restricted to accredited climbers only through a permit system.

Detailed management planning is recommended in relation to rock climbing and abseiling. Planning and activity management should consider:

- « Activity management, including public, group, school group, commercial, and competition
- « Access management to general use or permit only / restricted access sites
- « Site access, wayfinding and any infrastructure needs such as cliff top access and belay points
- « Cultural Heritage assessment/ impacts, including engagement with Traditional Owners
- « Safety and risk management including:
 - Instructor certification, climbing event standards etc.
 - Geotechnical reviews and monitoring.
- « Ecological impacts and monitoring.
- « Partnership opportunities for activity and site management with climbing stakeholders such as the Australian Climbing Association (Queensland) and or local climbing clubs.

Figure 5: Rock Climbing and Abseiling Sites



11. PUMP TRACK – PIPELINER PARK

Pump tracks are becoming more common. Once hidden in backyards of only the most dedicated MTB riders, pump tracks are now being constructed at the trailheads of or near to MTB destinations and in urban areas where local governments see the value in this emerging form of recreational infrastructure supporting youth spaces and active recreation.

The Mount Glen Rock Master Plan includes a pump track location at Pipeliner Park. The pump track will be an excellent community asset, suitable for use by people of any age and ability. Scooters, skate boards, BMXs of all sizes and mountain bikes can all be ridden on pump tracks. The proposed pump track is also likely to attract families with children and complement the beginner trails at Mount Glen Rock.

The proposed location of the pump track at Pipeliner Park:

- « Provides approximately 1500m² of useable area, which will yield a small to medium-sized asphalt pump track of approximately 300m² to 350m²
- « Is located close to an existing carpark with good access off Esk Hampton Road.
- « Is relatively flat, removing the need for extensive preliminary earthworks
- « Has good visibility and is within close proximity to other 'youth' facilities, such as the skatepark
- « Is situated on the Brisbane Valley Rail Trail providing a connection to Mount Glen Rock. This will provide an additional option for riders who may wish to use the pump track and explore the trails.
- « The proposed pump track is asphalt sealed and can include enhancements such as concrete edging, turf, landscaping and park furniture.

Turfing, landscaping, shelters and furniture can be included to further enhance the appearance and functionality of the pump track.

The photo below shows a pump track constructed in Malanda on the Atherton Tablelands in North Queensland. It has concrete edging, overland flow drainage and turf landscaping. This Pump Track is situated on a parcel of land similar to the preferred site at Pipeliner Park.

=Figure 6: Indicative Pump Track (Photo: World Trail)



12. CULTURAL HERITAGE

Under the Aboriginal Cultural Heritage Act, 2003 all reasonable and practical measures must be taken to ensure activity being carried out does not harm Aboriginal cultural heritage. The Cultural Heritage Duty of Care Guidelines set out reasonable and practical measures for meeting the cultural heritage duty of care.

Prior to any development of Mount Glen Rock, it is recommended that Council undertakes a Cultural Heritage Assessment and engagement with the cultural heritage body for the area, to determine:



Potential cultural heritage significant features that may be on site, and management actions to ensure activities do not harm Aboriginal cultural heritage.



Opportunities to acknowledge Aboriginal culture and incorporate Aboriginal stories and symbolism in the design.

Furthermore, ongoing engagement is recommended with the cultural heritage body throughout future design and construction stages of the project.



13. ECOLOGICAL CONSTRAINTS

13.1. KEY ECOLOGICAL VALUES

Desktop assessment has identified key ecological values which may occur at Mount Glen Rock some of which could constrain the proposed project if they cannot be reasonably avoided or the impact of development minimised. These include:

- « 'Endangered', 'of concern', and 'least concern' regional ecosystems and essential habitat for threatened species over the sites
- « Nine threatened flora species
- « 17 threatened fauna species
- « Potential habitat for 16 migratory species that are considered least concern fauna species
- « Modelled habitat for threatened fauna species: the Brush-tailed Rock-Wallaby, the Squatter Pigeon (southern subspecies) and the Lloyds Native Olive
- « Modelled habitat for least concern fauna species: the Short-beaked Echidna and the Platypus
- « Modelled 'Core' habitat for the Koala, listed as vulnerable.

Several ecological values were identified early in the planning process and have been avoided during design. These include:

- « Category C Regulated Vegetation protected under the Vegetation Management Act 1999 (Queensland)
- « Queensland Wetlands attached to Regional Ecosystems protected under the Vegetation Management Act 1999 (Queensland)
- « Protected watercourses protected under the Water Act 2000 (Queensland).

13.2. POTENTIAL IMPACTS

Mountain bike and walking trails, such as those proposed, are constructed as a form of nature-based recreation and are typically built in a way that minimises or avoids key ecological values wherever possible. For example, through keeping vegetation clearing to the width of the trails only, implementing sensitive construction techniques and avoiding key habitat features.

Nature-based recreation can also positively increase awareness and education around our natural biodiversity, promoting the protection of our natural environments.

While there are positives to such a project, there remains some potential for localised impacts purely from disturbance to land and habitat during construction and use of the trails, and direct and indirect impacts to key ecological values should they be found present during future ecological field work.

The Mount Glen Rock trails have been designed to avoid impacting ecological values wherever possible. To reduce potential impacts of the trails, it is recommended that, following field ecological surveys, the trails have a final alignment to avoid sensitive areas and sustainable construction techniques (mitigation options) be used where possible to best avoid areas of significant ecological value when confirmed on the ground and minimise potential impacts. During construction, the trail construction company should implement a maintenance and management program to ensure that impacts continue to be managed throughout the life of the trails and not just during the construction phase.

13.3. FURTHER ECOLOGICAL ASSESSMENT

It is recommended that extensive field ecological surveys be completed during the next phase of the project to confirm the presence of the key ecological values identified in the preliminary analysis. The field surveys should:

- « Determine the true impact of the development and provide further mitigation options to avoid 'high risk' ecological values.
- « Cover the entire trail alignment and confirm the 'on-ground' location of ecological values.
- « Include as a minimum:
 - Validation of Regional ecosystem mapping, targeted threatened flora surveys using a 10m buffer either side of the proposed trails (total 20m width)
 - Targeted threatened fauna surveys (only at representative sites containing suitable habitat due to the large size of the study area). These should comply with the applicable *Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth) survey guidelines for species listed as potentially present within the study area if available.
 - Conduct of field surveys during the peak flowering periods for threatened flora and peak activity periods for threatened fauna. Due to the number of threatened flora and fauna considered likely to occur within the study area, this should include a main survey event conducted from late April to July, which is an optimal time for flowering for most of the threatened flora species, and a follow up survey event in spring, which is an optimal time for vegetation surveys and coincides with increased activity during the breeding season for most fauna species.

14. CIVIL DESIGN CONSIDERATIONS

A review of civil design elements in relation to the Master Plan was undertaken, with the following key considerations identified for the future detailed design stage of the project.

Francis Terrace

- « Swept paths developed for the master planning should be considered in future layout of potential obstacles, including signage, bollards etc., and appropriate consideration should be given to providing give way or stop signage and mirrors at the intersection.
- « Consideration to providing a location for a service, event or emergency vehicle access to the site (i.e. lock rail, gate). Such a gate was included in the Sandy Creek concept designs, and therefore coordination of the existing Sandy Creek trail and new carpark/ trailhead should be considered as part of subsequent design.
- « Ensure appropriate pavement design is undertaken as part of future detailed design, considering likely traffic loading and resilience.
- « Further engagement with Urban Utilities in the form of a Services Advice Notices (SAN) should be undertaken as part of future design phases to confirm the suitability of any proposed connections and requirements in relation to building over/ adjacent to services.
- « NBN assets may be located in proximity to the trailhead and should be located prior to construction.

Lions Park

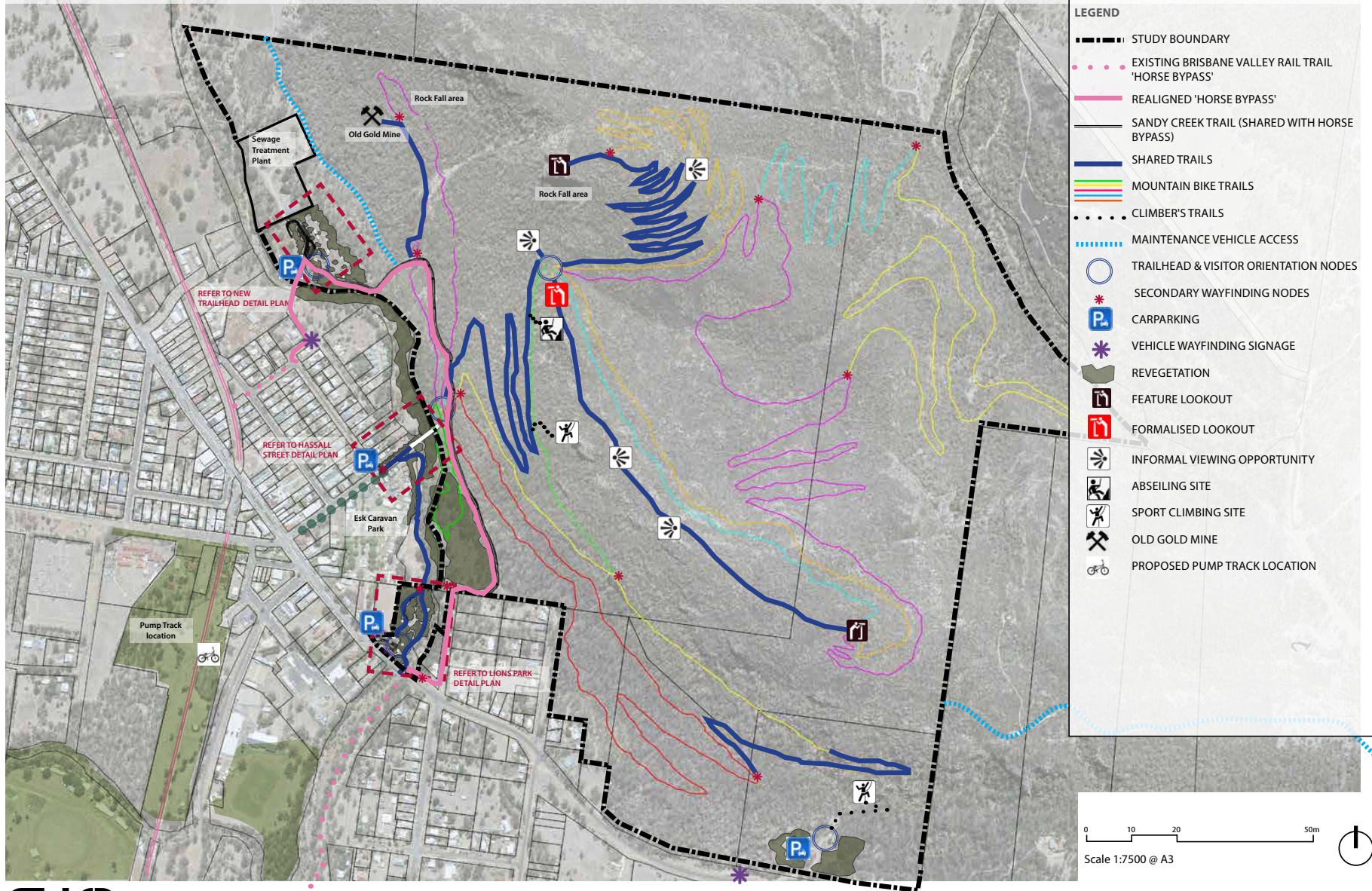
- « More detailed consideration of the following is required as part of detailed design of Lions Park to confirm the final layout:
 - Ensuring compliant grades/ crossfall with site topography, including consideration of flood impacts from any necessary earthworks
 - Accurate location of existing overhead electrical services and coordination within the new carpark design.
 - Traffic engineering input to confirm required queue lengths from Ipswich St intersection to the first parking bay
 - Confirm of service vehicle requirements for Somerset Regional Council
 - Engagement with Department of Transport and Main Roads to confirm any necessary requirements at Ipswich St, including lighting, line marking, medians etc.
- « Flood impact assessment is recommended during future design stages to ensure that the development does not result in worsening of flood levels or hydraulic hazard and risks to people and properties can be managed appropriately.
- « Additional consideration by Somerset Regional Council regarding the feasibility of proposed trailhead developments within the Somerset Regional Council Flood Hazard Overlay and applicable planning approval requirements as part of future design stages.

Hassall Street

- « Consideration of appropriate manoeuvring room at site lines at the Hassall Street/ Russell Street intersection should be ensured during subsequent design if car parking is to be provided
- « Further engagement with Urban Utilities in the form of a Services Advice Notices (SAN) should be undertaken as part of future design phases to confirm the suitability of any proposed connections and requirements in relation to building over/ adjacent to services.
- « Overhead electrical and NBN is located adjacent to the site and should be located prior to construction.

15. CONCEPT PLANS

SITE WIDE LANDSCAPE MASTERPLAN

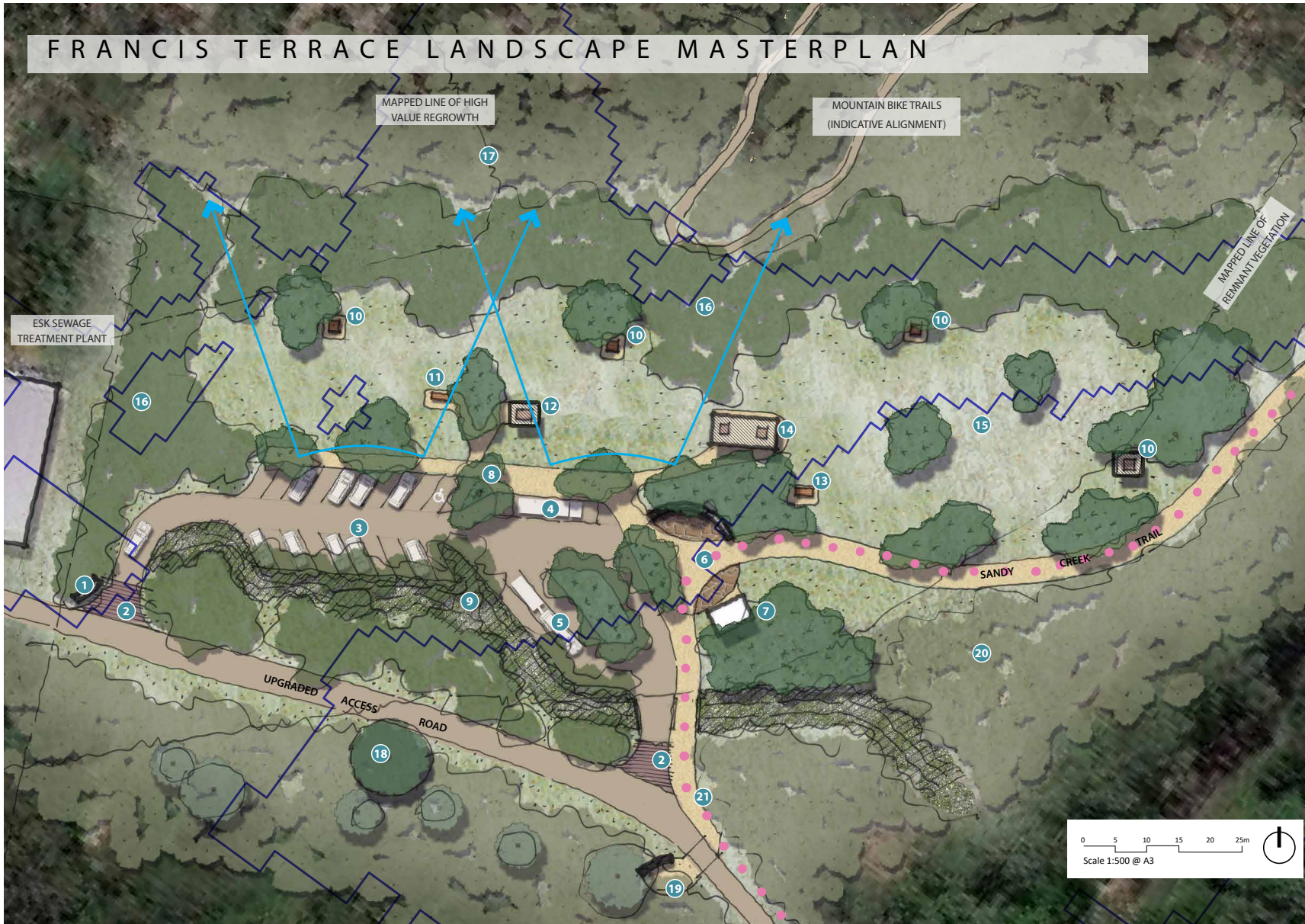


Mount Glen Rock Master Plan

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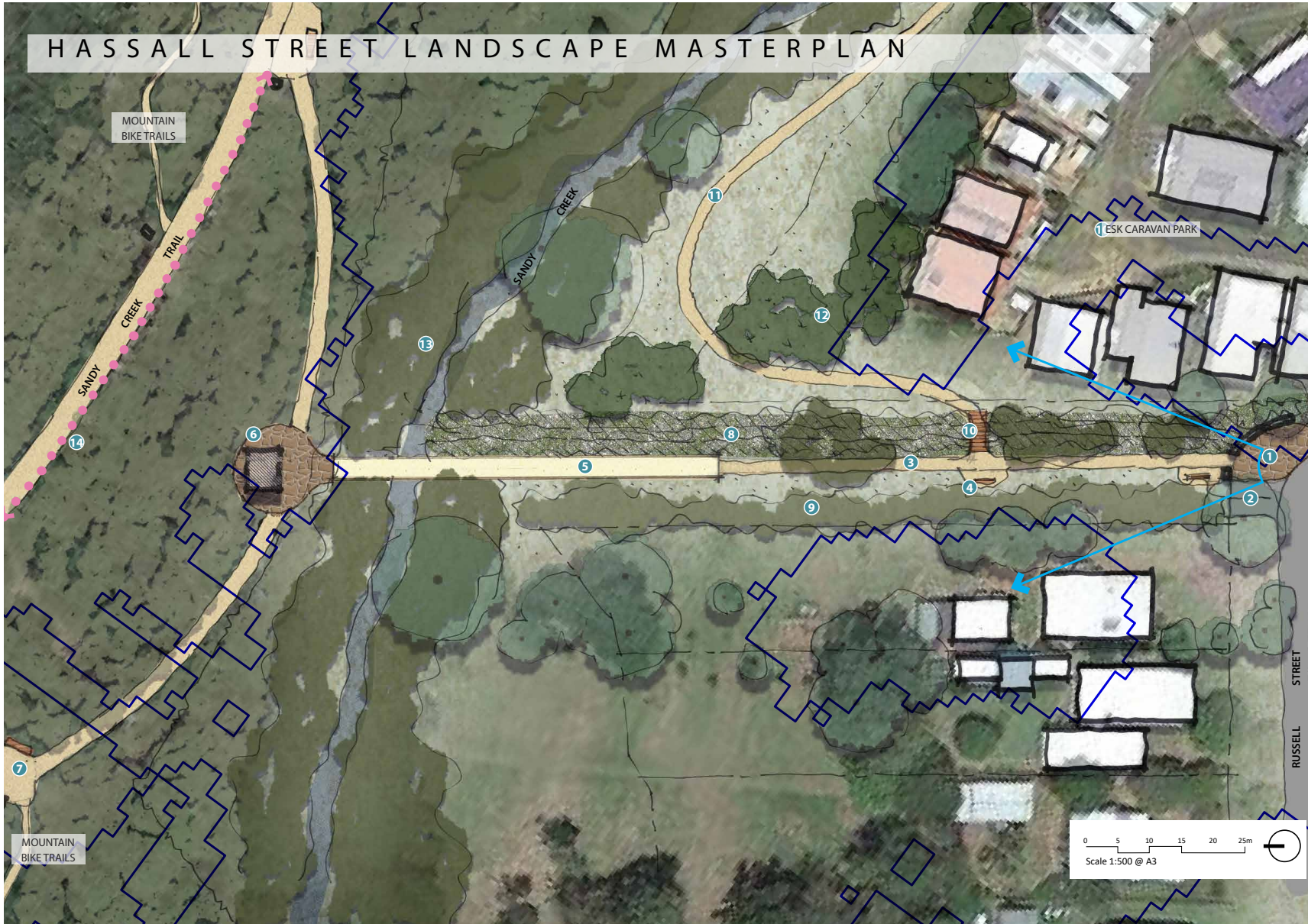
FRANCIS TERRACE LANDSCAPE MASTERPLAN



- 1 ENTRY SIGNAGE
- 2 THRESHOLD TREATMENT
- 3 VISITOR CARPARK. ONE-WAY VEHICLE CIRCULATION. 20 CARPARK BAYS INCLUDING PWD. GRAVEL PAVEMENT. SHADE TREES. DELINEATED WITH BOLLARDS, LOGS AND/OR POST & RAIL
- 4 SHUTTLE AND COACH DROP OFF / PICK UP
- 5 3 PULL THROUGH BAYS FOR LARGE VEHICLES AND/OR TRAILERS
- 6 TRAILHEAD & VISITOR ORIENTATION NODE. INFORMAL SEATING, DRINKING FOUNTAIN, BIKE PARKING, LITTER BINS
TRAILHEAD SIGNAGE TO INCLUDE:
Site map showing trails and climbing areas
Trail information – type, difficulty, length
Climbing site information
Visitor code of conduct
General safety and emergency information
Contact information
QR code for link to info website and maps
- 7 AMENITIES BUILDING. 3 UNISEX CUBICLES INCLUDING PWD AND AMBULANT
CONNECTED TO SEWER. POTABLE WATER SUPPLY
- 8 SHARED PATH / INTERNAL CIRCULATION. GRAVEL PATHS WITH SHADE TREES
- 9 VEGETATED STORM WATER QUALITY TREATMENT SWALE. CULVERT CONNECTION TO CREEK
- 10 PICNIC SETTING. MIX OF COVERED AND UNCOVERED SETTINGS
- 11 WHEELCHAIR ACCESSIBLE BBQ SETTING (GAS OR ELECTRIC) INCLUDING POTABLE WATER TAP
- 12 WHEELCHAIR ACCESSIBLE PICNIC SETTING & SHELTER
- 13 BBQ SETTING (GAS OR ELECTRIC), INCLUDING POTABLE WATER TAP
- 14 GROUP SHELTER WITH PICNIC SETTINGS. WHEELCHAIR ACCESSIBLE CONNECTION TO CARPARK. 3 PHASE POWER AND POTABLE WATER TAP FOR EVENTS. LOCATE LITTER BINS AWAY FROM SHELTER.
- 15 EVENT SPACE SUITABLE FOR MARQUEES ETC / 3 PHASE POWER BOLLARD. RESTRICTED VEHICLE ACCESS (EVENT APPROVAL ONLY). INFORMAL SEATING WITH VIEWS TO MOUNT GLEN ROCK
- 16 BUFFER PLANTING – REVEGETATION WITH LOCALLY ENDEMIC WOODLAND SPECIES TO SCREEN / FILTER VIEWS
- 17 INFRASTRUCTURE & VEGETATION TO FRAME VIEWS TO MOUNT GLEN ROCK
- 18 EXISTING FIG TREE
- 19 INTERPRETATIVE SIGNAGE OVERLOOKING FLYING FOX COLONY. INCLUDE WARNING OF HAZARDS
- 20 REVEGETATION / REHABILITATION OF SANDY CREEK CORRIDOR
- 21 REALIGNED HORSE BYPASS SHARED WITH SANDY CREEK TRAIL. CONNECTION TO BRISBANE VALLEY RAIL TRAIL VIA FRANCIS TERRACE

- Q100 FLOOD LINE
- VIEWS TO MOUNT GLEN ROCK

HASSALL STREET LANDSCAPE MASTERPLAN

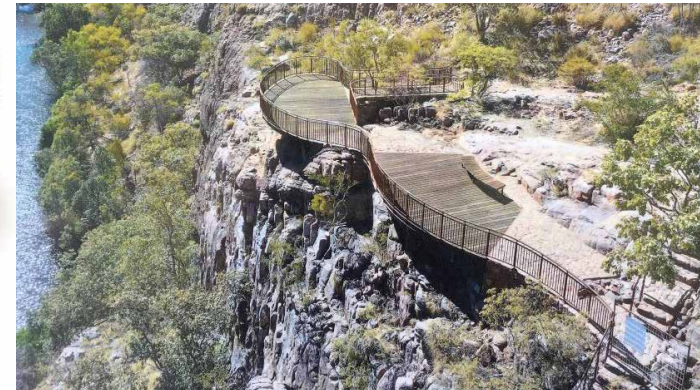
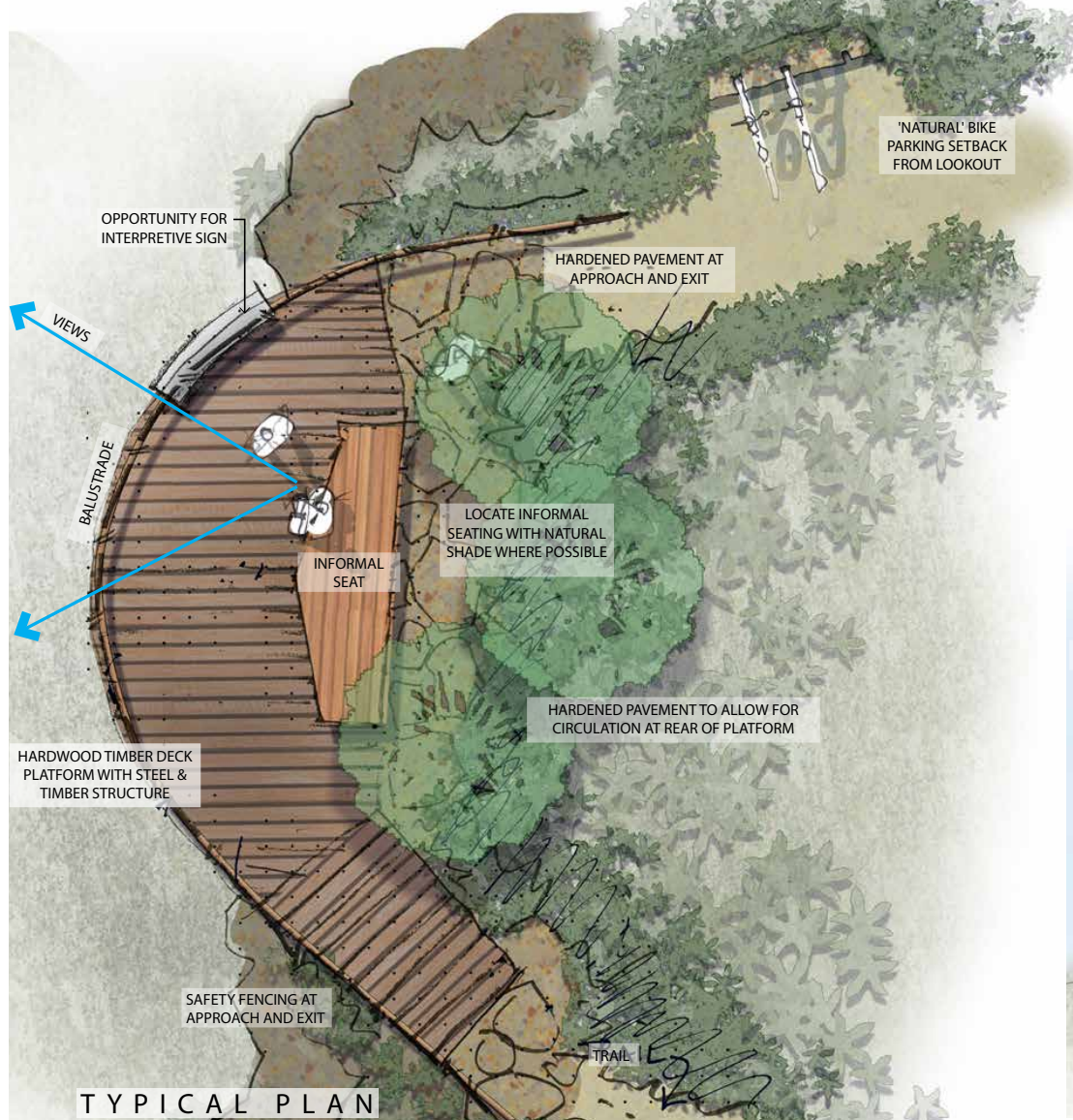


- 1 VISITOR ORIENTATION NODE. INFORMAL SEATING, DRINKING FOUNTAIN, BIKE PARKING, LITTER BINS
- 2 VISITOR CARPARK. 2 CARPARK BAYS INCLUDING PWD. GRAVEL PAVEMENT, DELINEATED WITH BOLLARDS AND/OR POST & RAIL.
- 3 SHARED PATH / INTERNAL CIRCULATION. GRAVEL PATH WITH SHADE TREES
- 4 SHADED PARK SEATING
- 5 PROPOSED SHARED USE BRIDGE
- 6 TRAILHEAD SHELTER. STRUCTURE FORMS VISUAL MARKER AT THE ENTRY INTO THE TRAIL NETWORK. INCLUDE INFORMAL SEATING AND BIKE PARKING
TRAILHEAD SIGNAGE TO INCLUDE:
Site map showing trails and climbing areas
Trail information – type, difficulty, length
Climbing site information
Visitor code of conduct
General safety and emergency information
Contact information
QR code for link to info website and maps
- 7 MOUNTAIN BIKE TRAIL WAYFINDING NODE (SECONDARY NODE)
- 8 VEGETATED STORM WATER QUALITY TREATMENT SWALE. NATURALISATION OF EXISTING CONCRETE DRAIN TO IMPROVE AMENITY AND ECOLOGICAL VALUES
- 9 BUFFER PLANTING – REVEGETATION WITH LOCALLY ENDEMIC WOODLAND SPECIES TO SCREEN / FILTER VIEWS
CULVERT OR BRIDGE CROSSING
- 10 SHARED TRAIL ON THE ALIGNMENT OF THE EXISTING HORSE BYPASS
- 11 LANDSCAPE BUFFER TO PROVIDE PRIVACY TO CARAVAN PARK RESIDENTS FROM PARKLAND. FRAME VIEWS TO MOUNT GLEN ROCK.
- 12 REVEGETATION / REHABILITATION OF SANDY CREEK CORRIDOR
- 13 REALIGNED HORSE BYPASS SHARED WITH SANDY CREEK TRAIL
- 14 Q100 FLOOD LINE
- 15 VIEWS TO MOUNT GLEN ROCK

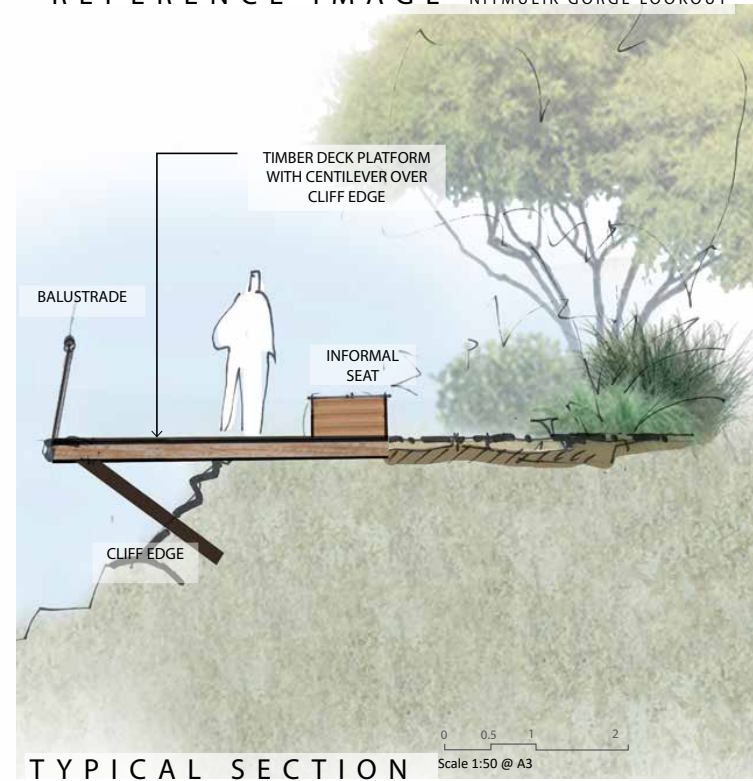


- 1 ENTRY SIGNAGE
 - 2 THRESHOLD TREATMENTS
 - 3 VISITOR CARPARK. 15 CARPARK BAYS INCLUDING PWD. ASPHALT PAVEMENT. DELINEATED WITH BOLLARDS AND/OR POST & RAIL. SETOUT TO PROTECT EXISTING TREES. SETOUT TO BE CO-ORDINATED WITH EXISTING OVERHEAD POWERLINES
 - 4 BICENTENNIAL TIME CAPSULE
 - 5 EXISTING COUNCIL SIGNAGE
 - 6 TRAILHEAD & VISITOR ORIENTATION NODE. INFORMAL SEATING, DRINKING FOUNTAIN, BIKE PARKING, LITTER BINS
TRAILHEAD SIGNAGE TO INCLUDE:
Site map showing trails and climbing areas
Trail information – type, difficulty, length
Climbing site information
Visitor code of conduct
General safety and emergency information
Contact information
QR code for link to info website and maps
 - 7 AMENITIES BUILDING. 3 UNISEX CUBICLES INCLUDING PWD AND AMBULANT
CONNECTED TO SEWER. POTABLE WATER SUPPLY
 - 8 SHARED PATH / INTERNAL CIRCULATION. GRAVEL PATHS WITH SHADE TREES. WHEELCHAIR ACCESSIBILITY TO BE EXPLORED IN DETAILED DESIGN
 - 9 VEGETATED STORM WATER QUALITY TREATMENT SWALE TO INTEGRATE WITH EXISTING HEADWALL. CULVERT CONNECTION TO CREEK UNDER HORSE BYPASS TRAIL
 - 10 PICNIC SETTING. MIX OF COVERED AND UNCOVERED SETTINGS. WHEELCHAIR ACCESSIBLE PICNIC SETTING TO BE EXPLORED IN DETAILED DESIGN. LOCATE LITTER BINS AWAY FROM SHELTER.
 - 11 WHEELCHAIR ACCESSIBLE BBQ SETTING (GAS OR ELECTRIC) INCLUDING POTABLE WATER TAP
 - 12 EXISTING SHADED LAWN AREA. INCLUDE SHADED INFORMAL SEATING
 - 13
 - 14 BRISBANE VALLEY RAIL TRAIL HORSE BYPASS REALIGNED TO CONNECT TO SANDY CREEK TRAIL AT MIDDLE STREET
STABILISE EXISTING CREEK CROSSING
 - 15 WAYFINDING AND INTERPRETATIVE SIGNAGE NODES. WAYFINDING FOR TRAIL LINKS TO SANDY CREEK TRAIL, TOWN CENTRE, VISITOR INFORMATION CENTRE AND HASSALL STREET BRIDGE
 - 16 EXISTING HORSE BYPASS CONNECTION UNDER BRIDGE. OPPORTUNITY FOR ARTWORK & SIGNAGE TO IMPROVE AMENITY
 - 17 AMENITY PLANTING TO REINFORCE THE BRIDGE AS A TOWN GATEWAY
 - 18 EXISTING REVEGETATION / REHABILITATION OF SANDY CREEK CORRIDOR
 - 19 SANDY CREEK BANK STABILISATION AT MIDDLE STREET CUL-DE-SAC. PROTECT EXISTING STAND OF HOOP PINES
 - 20 BUFFER PLANTING – REVEGETATION WITH LOCALLY ENDEMIC WOODLAND SPECIES TO SCREEN / FILTER VIEWS
- Q100 FLOOD LINE

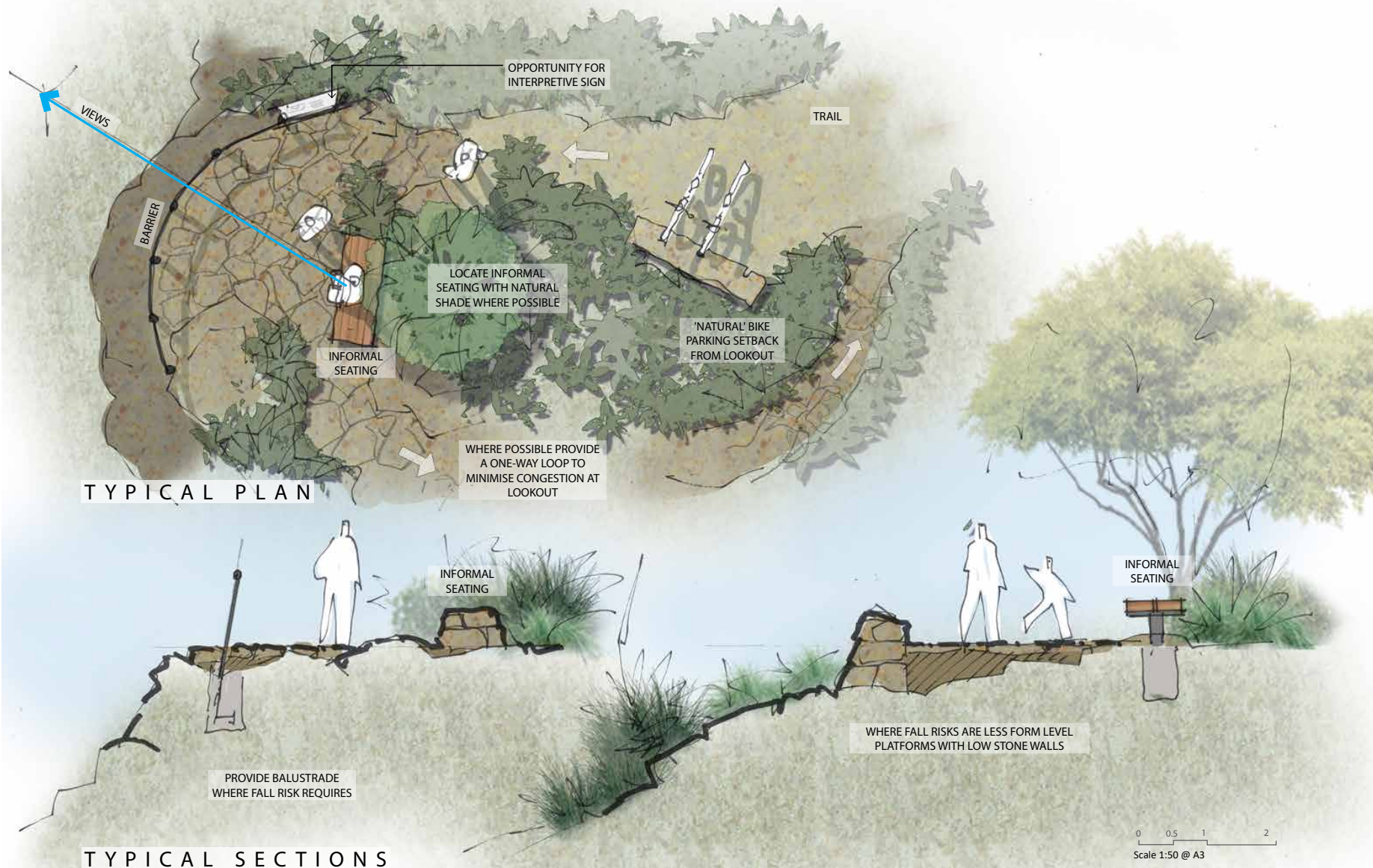
TYPICAL FEATURE LOOKOUT CONCEPT



REFERENCE IMAGE NITMULIK GORGE LOOKOUT



TYPICAL FORMALISED LOOKOUT CONCEPT



16. POSSIBLE PROJECT COSTS

A high-level estimate for the development of the Mount Glen Rock Master Plan has been prepared by a Quantity Surveyor and advice of World Trail in regard to trail network and pump track construction.

LIONS PARK TRAIL HEAD	
Capital works	\$723,245.00
Consulting fees and approvals (10%)	\$72,324.50
SUBTOTAL	\$795,569.50
Construction contingencies (15%)	\$119,335.42
Subtotal Lions Park Trail Head	\$914,904.92

FRANCIS TERRACE DAY USE AREA	
Capital works	\$1,153,480.00
Consulting fees and approvals (10%)	\$115,348.00
SUBTOTAL	\$1,268,828.00
Construction contingencies (15%)	\$190,324.20
Subtotal Francis Terrace Day Use Area	\$1,459,152.20

HASSALL STREET TRAIL ACCESS	
Capital works	\$63,149.00
Consulting fees and approvals (10%)	\$6,314.90
SUBTOTAL	\$69,463.90
Construction contingencies (15%)	\$10,419.58
Subtotal Hassall Street Trail Access	\$79,883.48

FEATURE LOOKOUT	
Capital works	\$71,609.00
Consulting fees and approvals (10%)	\$7,160.90
SUBTOTAL	\$78,769.90
Construction contingencies (10%)	7,876.99
Subtotal Lookouts (per lookout)	\$86,646.89

FORMALISED LOOKOUTS (2 LOOKOUTS)	
Capital works	\$96,120.00
Consulting fees and approvals (10%)	\$9,612.00
SUBTOTAL	\$105,732.00
Construction contingencies (10%)	\$10,573.20
Subtotal Lookouts (per lookout)	\$116,305.20

TRAIL NETWORK	
Trail Construction (incl. construction management plans, bridges, retaining walls, surface treatments, vegetation clearing, wayfinding signage)	\$3,046,992.00
Subtotal Trails	\$3,046,992.00

PUMP TRACK (PIPELINER PARK)	
Pump track standard offering	\$300,000.00
Pump track landscaping	\$100,000.00
Subtotal Trails	\$400,000.00

TOTAL COSTS	
Lions Park Trail Head	\$914,904.93
Francis Terrace Day Use Area	\$1,459,152.20
Hassall Street Trail Access	\$79,883.49
Feature Lookout	\$86,646.89
Formalised Lookouts x 2	\$116,305.20
Trail Network	\$3,046,992.00
Pump Track (Pipeliner Park)	\$400,000.00
TOTAL (ex. GST)	\$6,103,884.70

17. IMPLEMENTING THE MASTER PLAN

17.1. KEY RECOMMENDATIONS

The following is recommended to further progress the Mount Glen Rock project:



Undertake field ecological surveys to confirm the presence of the key ecological values identified in the preliminary analysis and consult with relevant authorities to seek required approvals.



Undertake a Cultural Heritage Assessment and engagement with the cultural heritage body for the area to determine:

- « Potential cultural heritage significant features that may be on site, and management actions to ensure activities do not harm Aboriginal cultural heritage; and
 - « Opportunities to acknowledge Aboriginal culture and incorporate Aboriginal stories and symbolism in the design.
-



Continue to engage with the cultural heritage body throughout future design and construction stages of the project.



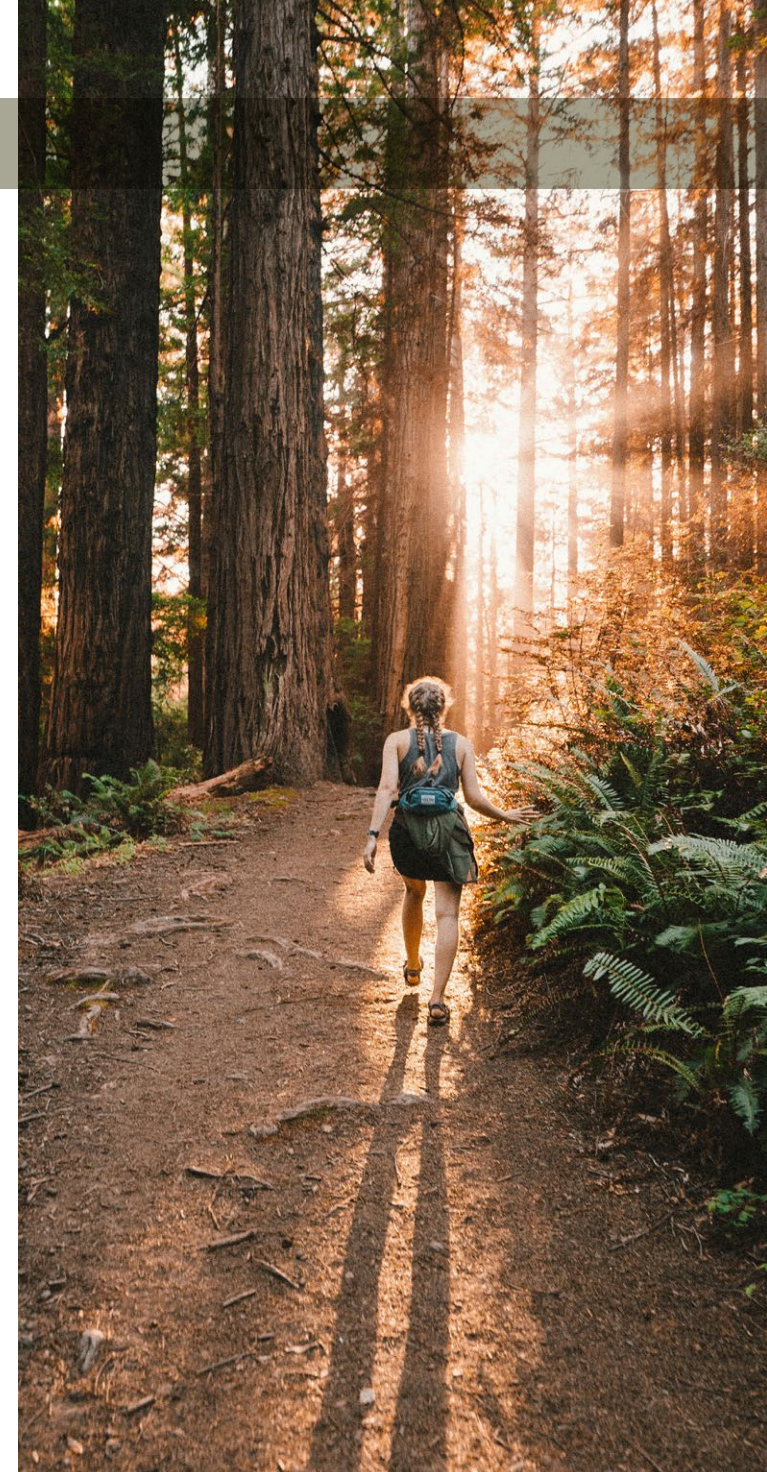
Undertake management planning to manage maintenance of the site, and the activities on-site, particularly in relation to commercial, club, group or education use, and public climbing/ abseiling access and use.



Consider and investigate the potential for partnership opportunities with local and regional organisations (e.g. mountain biking, hiking, tourism, climbing organisations) to contribute to future operation and maintenance of the trails, climbing sites and site features.



In the longer term, subject to demand, investigate options to provide access for a shuttle service to the Eastern Summit, which could support commercial opportunities for mountain biking, hiking, rock climbing and abseiling.



17.2. FROM CONCEPT PLANNING TO CONSTRUCTION

The following provides a broad overview of possible implementation steps to progress the project from concept plan stage through to construction.



DETAILED PLANNING

- Community & stakeholder engagement
- Management planning
- Partnership opportunities
- Cultural Heritage assessment & engagement
- Ecological assessments
- Funding and investment opportunities



DESIGN DEVELOPMENT

- Ground truthing
- Exact trail alignments and GPS marks
- Detailed mapping
- Detailed design
- Consultation with relevant stakeholders and authorities
- Accurate costing



SECURE FUNDING

- Lump sum or staged
- Grants
- Partnerships



PERMITS AND APPROVALS

- Establish project plan
- Seek approvals from relevant authorities
- Finalise implementation plan



CONSTRUCTION

- Community and stakeholder information and engagement
- Engage suitable project management and construction contractor
- Trail and trailhead construction



18. WARRANTIES AND DISCLAIMERS

The information contained in this report is provided in good faith. While Otium Planning Group has applied their own experience to the task, they have relied upon information supplied to them by other persons and organisations.

We have not conducted an audit of the information provided by others but have accepted it in good faith. Some of the information may have been provided 'commercial in confidence' and as such these venues or sources of information are not specifically identified. Readers should be aware that the preparation of this report may have necessitated projections of the future that are inherently uncertain and that our opinion is based on the underlying representations, assumptions and projections detailed in this report.

There will be differences between projected and actual results, because events and circumstances frequently do not occur as expected and those differences may be material. We do not express an opinion as to whether actual results will approximate projected results, nor can we confirm, underwrite or guarantee the achievability of the projections as it is not possible to substantiate assumptions which are based on future events.

Accordingly, neither Otium Planning Group, nor any member or employee of Otium Planning Group, undertakes responsibility arising in any way whatsoever to any persons other than client in respect of this report, for any errors or omissions herein, arising through negligence or otherwise however caused.





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