

COOKTOWN BOTANIC GARDENS AND GALLOP BOTANIC RESERVE

Masterplan 2018-2028

Revision F - May 2018





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1. INTRODUCTION

Welcome to the Master Plan for the Cooktown Botanic Gardens. This document describes the current condition of the Cooktown Botanic Gardens and makes recommendations for improving, upgrading and modernising the Gardens, where they have been assessed as appropriate.

While this Master Plan concentrates on the Botanic Gardens, it also reviews features and assets of the wider Gallop Botanic Reserve, where they are deemed assessable under the terms of the brief.

This report was commissioned by the Cook Shire Council, in response to community expectations for the improvements of facilities and services in preparation for celebrations of 250th Anniversary of James Cook's Journey up the east coast of Australia which culminates in Cooktown in June 2020. The main features and asset upgrades outlined in this Master Plan are therefore proposed for installation or construction before June 2020. But it should be mentioned that this Master Plan also proposes a program of development over the next ten years to 2028.

The Cooktown Botanic Gardens are one of the oldest Botanic Gardens in Australia. They are heritage listed and a wonderful example of a historical gardens laid out the Gardenesque style of the mid to late 1800s.

This Master Plan is cognisant of the importance of preserving the historical connections and heritage features of these Gardens. Proposals for upgrades that are associated with heritage features have been carefully considered and are only suggested where they will be of benefit.

1.1. ACKNOWLEDGEMENTS

I would like to acknowledge and thank the people of Cooktown for their enthusiasm and support for the Cooktown Botanic Gardens. In particular I would like to mention the following:

- ⊕ Tony Roberts: Curator of the Cooktown Botanic Gardens - for his help, knowledge, encouragement and patience.
- ⊕ Lawrie Smith: Landscape Architectural Consultant – for his support, knowledge, guidance, suggestions and ideas.
- ⊕ The Waymburr Botanic Garden Advisory Committee: for their support and knowledge and for their efforts in initiating the Master Plan process.
- ⊕ The Cook Shire Council: for their support, resources and for commissioning this MP.

And I would also like to acknowledge the Traditional Owners of the land on which the Cooktown Botanic Gardens are built and would also like to pay respects to Elders past and present.

1.2. WHAT IS A BOTANIC GARDEN

Botanic Gardens have traditionally been scientific institutions which are established to collect, study, exchange and display plants for research, education and to identify their economic potential.

Arboreta are essentially Botanic Gardens or parts of Botanic Gardens where woody plants, especially trees, are displayed so that their growth habits can be studied and recorded.

However, while Botanic Gardens and Arboreta are essentially places for science and education, they are also inherently pleasant and attractive places for passive recreation and relaxation.

Public interest and participation in Botanic Gardens is also on the increase as concerns about the environment, climate change and conservation and other factors become more relevant

So, while scientific pursuits remain of fundamental importance, public enjoyment of the Gardens for recreation and relaxation have evolved to equal importance.

1.3. FUNCTION OF A BOTANIC GARDEN

The following sections have been extracted from Landscape Architect Lawrie Smith's excellent descriptions of the functions and benefits of Botanic Gardens.

Traditionally, the title and status of a Botanic Garden has been accorded to only those facilities incorporating an appropriate herbarium. Regional Botanic Gardens, including Arboreta, should keep adequate records, undertake appropriate research and perform several other important functions:

- The most fundamental is the collection and display of living plants organised to demonstrate their natural form and properties; to identify their potential for use in amenity horticulture and landscape design, whether the interest be in their functional value, shade, shelter or ornament; in biological science and education and for personal aesthetic enjoyment;
- The plants displayed to be individually identified, labelled and appropriate records kept; with voucher specimens lodged in the State Herbarium with duplicate copies in the Gardens Herbarium;
- The garden should be carefully planned and designed relative to physical and environmental site opportunities and constraints as they relate to the collection and its particular functions;
- The opportunity to see living plants displayed in cultivation, described and explained by interpretive aids, will provide opportunity for Australia's increasingly urban population to appreciate the natural diversity and horticultural value of the natural flora of the region; such displays will also promote awareness of the need for conservation and environmentally sustainable development;
- The educational role of Botanic Gardens in conservation is particularly significant; a Botanic Garden is definitely not a substitute for the preservation of natural populations in the wild but should provide for the ex situ conservation of rare and threatened species;
- The horticultural advisory role of a botanic garden directly relates to experience gained in growing plants in cultivation, for display and for other purposes. Specific horticultural research shall identify the potential for a range of commercial purposes, such as garden plants, cut flowers or dried ornamental materials. The Botanic Gardens collection provides the opportunity for supply of plants and support facilities for scientific (including pharmaceutical) research;
- Few tourists, whether intrastate, interstate or international, will have the opportunity to gain an understanding of, or observe a comprehensive selection of the native flora of this large and diverse continent. A national system of Regional Botanic Gardens and Arboreta will facilitate this

(Smith, 2010)

1.4. BENEFITS OF A BOTANIC GARDENS

The development of a Botanic Garden has numerous short and long-term benefits, which result directly from the planning, design, construction and operation procedures.

The following are some of the more significant:

Environment Benefits

- To be a practical means of preserving aspects of the national and regional biodiversity;
- To stimulate a wider awareness of and caring for the environment;
- To provide interpretive data to increase awareness of the values of native plant communities and ecosystems;
- To create positive community focus for the conservation movement;

Community Benefits

- To provide expansive areas of attractive open space for passive recreation use by the local community and by visitors;
- To provide a source of specific information about plants and their uses;
- To create a centre for education and research into botany, horticulture and landscape;

- To provide demonstration gardens which assist the local community to establish appropriate home, commercial and industrial landscape environments suited to the local conditions;
- To carry out research to assist industry in environmental stewardship and awareness, e.g. mining rehabilitation, ornamental horticulture;
- To provide facility for local schools and colleges to use for education in botany, biology and other related academic subjects;
- To provide a focus and opportunities for community involvement and various benefits of a social nature for all age groups and abilities;
- To engage with other groups with horticultural/botanical or allied interests;
- To maintain a Friends of the Botanic Garden group which offers a valuable community service opportunity for those with specific interest in botany, horticulture and the environment, as well as for the retired or others not currently in the workforce.

Economic Benefits

- To become a major element attracting tourists to the area, with consequent stimulus to the local economy;
- To stimulate the development of related and flow on projects in the locality, e.g. additional accommodation;
- To stimulate provision of new infrastructure, e.g. roads, water, supply;
- To provide a comprehensive planning and construction strategy for a large open space area which will enable the responsible Local Government to prepare associated long-term budgets with consequent economies of scale;
- To assist in the development and introduction of Australian plants as horticultural subjects and the promotion of their use in the nursery and landscape industry and by the general community.

Political Benefits

- To provide one of the fundamental expressions of Nationalism through the preservation and interpretation of Australian plant material and environments;
- To be the subject of applications for funding from Local, State and Federal sources as well as to the corporate sector;
- To appeal to the 'green vote' with resultant political kudos.

(Smith, 2010)

1.5. THE MASTER PLAN DOCUMENT

What is a Master Plan?

Master Plans can be presented in many forms, but in this instance the Master Plan is a guiding document that reviews the existing conditions of the subject and makes recommendations on improvements, where they are assessed as appropriate. Suggested improvement, (which I have generally described as upgrades in this document) are presented as conceptual descriptions with supporting visual sketches and are further supported by costs estimates.

What this Master plan doesn't do

It is important to understand that this document is a guiding document and is therefore conceptual. It does not provide detailed plans and documentation for any of the proposed upgrades. In almost all cases, the features or assets discussed will require detailed plans and specifications with input from multiple disciplines like engineering, heritage, architectural etc.

Expected Outcomes

The intension of this Master Plan is to provide a guiding document that does the following:

- Overview the condition of the assets and features in the Gardens and discuss the requirements for improvements where necessary.
- Provide conceptual ideas for proposed upgrades to those assets and features requiring attention.
- Review the Botanical Collection and propose a strategy for consolidation and additions to the collection.
- Provide costs estimates and an implementation program for the proposed works.

1.6. ACRONYMS USED

ACOPR	Arboretum & Cricket Oval Precinct
ASQ	The Acclimatization Society of Queensland
BCDT	Botanical Collection Development Team
BGANZ	Botanic Gardens Australia and New Zealand
CBG	Cooktown Botanic Gardens
CMCM	Cooktown Municipal Council Minutes
CSC	Cooktown Shire Council
EPR	Entry Precinct
GBR	Gallop Botanic Reserve
GBRCBG	Gallop Botanic Reserve, incorporating Cooktown Botanic Gardens
HCG	Horticultural Consultancy Group
MBGP	Main Botanic Garden Precinct
MP	Master Plan
MPR	Maintenance Precinct
NPH	Nature's Powerhouse – Visitor Centre
RE	Regional Ecosystem
TQP	Trustees Queen's Park
WBGAC	Wayburr Botanic Gardens Advisory Committee

2. EXECUTIVE SUMMARY

This summary is presented as a table that overview the sections in this report. For readers using the PDF version, section numbers are hyperlinked to the according information section for ease of access.

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
1	Introduction	Information				
1.1	Acknowledgments	Information				
1.2	What is a Botanic Garden	Information				
1.3	Function of a Botanic Garden	Information				
1.4	Benefits of a Botanic Garden	Information				
1.5	The Master Plan Document	Information				
1.6	Acronyms Used	Information				
2	Executive Summary	Information				
3	Background, History & References	Information				
3.1	Cooktown History	Reviews the history of Cooktown				
3.2	The Botanic Gardens Site History	Reviews the history of the Cooktown Botanical Gardens				
3.3	Historical Timeline	Information				
3.4	Heritage Listing	Discusses the Criterion				
3.5	Heritage Listing - Implications for Further Development	Discusses what can be done with heritage listed features	YES	1 & 2		
3.6	Studies, Reports & Documents	Lists reference material				
3.6.1	'A Historical Study of the Site' Review	Reviews this important document				
3.7	Other QLD Regional Botanic Gardens	Review oth4er BG's and connections				
4	Academic, Community & Corporate Connections	Heading				
4.1	Curator and Staff	Overviews maintenance Staff				
4.2	Council	Council Structure				
4.3	The Wayburr Botanic Garden Advisory Committee	Discusses Committee's involvement				
4.4	Local Clubs, Organisations and Associations	Reviews community connections				
4.5	Indigenous Groups	Aboriginal connections				
4.6	Academic Associations	Reviews academic connections				
4.7	Historical Organisations	Reviews historical connections				

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
5	Site Description	Heading				
5.1	Location	Location information				
5.2	Surrounding Site Conditions	Surrounding area description				
5.3	Historical & Current Garden style & Implications for Development	Reviews garden styles in the context of the proposals				
5.4	Town Style & Landscape Character	Opinion on Cooktown's style and character				
5.5	Local Regional Ecosystems	Identifies the local RE's				
5.6	Climate & Climate Change	Heading				
5.6.1	Climate	Local climate description				
5.6.2	Climate Change	Discusses climate change predictions for the Wet Tropics				
5.7	Locations Plan	Location information				
5.8	Botanic Reserve Areas Plan	CBG area				
5.9	Topography Plan	Topography				
5.10	Precincts Plan	Describes Precinct areas				
5.11	Regional Ecosystems plan	Locates the local RE's				
5.12	Geology Plan	Geology Information				
5.13	Existing Assets, Buildings & Features Plan	Locates features and assets etc				
6	Current Site Conditions	Heading				
6.1	Assets, Buildings & Features	Heading				
6.1.1	Entry Precinct	Heading				
6.1.1.1	Entry Road and Carpark	Poor - requires upgrades to roads surfaces and parking	YES		02	1
6.1.1.2	CBG Access Driveway	Poor - requires upgrades to road surfaces and parking	YES		02	1
6.1.1.3	Public Footpath from Cooktown	Good	NO			
6.1.1.4	Pedestrian Access from CP	Average - improve signage & upgrade surface to all weather	YES		02	1
6.1.1.5	Natures Powerhouse Visitor Centre (NPH)	Good	NO			
6.1.1.6	NPH – Visitor Centre Entrance	Poor	YES		04	3
6.1.1.7	Main Botanic Garden Precinct Access Path	Good	YES		04	
6.1.1.8	NPH Staff Parking	Good	NO			
6.1.1.9	Picnic Area	Average - improve facilities	YES		05	2
6.1.1.10	Orchid House	Poor - upgrade	YES		06	3
6.1.2	Main Botanic Garden Precinct	Heading				
6.1.2.1	Heritage Stone Pitched Drains	Good - ongoing maintenance	NO			
6.1.2.2	The Rockpools	Good - investigate condition	YES	3		1
6.1.2.3	The Covered Drain	Average - investigate to establish the original shape - Heritage Consult	YES	4		1
6.1.2.4	The Old Fountain	Average - as for item above	YES	4		4
6.1.2.5	The Big Pond	Good - ongoing maintenance	NO			
6.1.2.6	Old Flower Garden	Average	YES		09	3
6.1.2.7	Wells	Good	YES	5		1

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
6.1.2.8	MBGP Paths	Poor - upgrade	YES			1
6.1.2.9	Fencing	Good	YES		01	2
6.1.2.10	Bridges & Crossings	Average - Inspect bridges; heritage consult crossing		6 & 7		1
6.1.3	Maintenance Precinct	Heading				
6.1.3.1	Maintenance Compound	Good	NO			
6.1.3.2	Main Shed & Office	Good	NO			
6.1.3.3	Shade House & Nursery	Good	NO			
6.1.3.4	Bore & Irrigation	Investigate bore capacity	YES	8		3
6.1.4	Arboretum & Cricket Oval Precincts	Heading				
6.1.4.1	Arboretum	Average - upgrade collection	YES	9 & 10		1
6.1.4.2	Cricket Oval	Good - upgrade barrier	YES		13	1
6.1.4.3	Cricket Amenities etc	Good	NO			
6.1.4.4	Cricket Nets	Good	NO			
6.1.4.5	Access Road	Average	NO			
6.2	Physical Conditions of The Site	Heading				
6.2.1	Geology	Information only	NO			
6.2.2	Soils	Poor - Improve with garden upgrade	YES	11		1&2
6.2.3	Drainage	Poor - upgrade	YES	12		1&2
6.2.4	Irrigation	Poor - upgrade	YES	13,14 & 15		3
6.2.5	Microclimates	Information only	NO			
6.2.6	Garden Edging	Poor - upgrade with gardens	YES	16		1&2
6.2.7	Circulation	Poor - Upgrade	YES	17	14	
6.2.8	Furniture	Good but limited upgrade with shelters	YES		11	2
6.2.9	Services	Good - limited	NO			
6.2.10	Lighting	Poor - upgrade with driveway	YES		02	1
6.2.11	Signage	Poor - upgrade	YES	18		1
6.3	Summary Table of Current Conditions & Required Upgrades	Information Table				
7	Proposed New Features	Heading				
7.1	Entry Precinct - New Feature	Heading				
7.1.1	Entry Gate & Feature Wall	New feature	YES		01	2
7.1.2	New Entry Road & Parking	New feature	YES		02	1
7.1.3	First Peoples Grove	New Feature	YES		03	1
7.1.4	All Access Walkway	New feature	YES		04	3
7.1.5	Picnic Shelters	New feature	YES		05	2
7.1.6	Orientation Centre & Orchid House	New feature	YES		06	3
7.2	Main Botanic Gardens Precinct New Features	Heading				
7.2.1	Fountain Pergola	New feature	YES		07	4
7.2.2	Performance Stage / Shelter	New feature	YES		08	3
7.2.3	Timeline Gardens	New feature	YES		09	3
7.3	Other Precincts, Areas & Features	Heading				
7.3.1	Old Quarry Walk	New feature	YES		10	1
7.3.2	GBR Bush Tracks Upgrade	Upgrade	YES		11	1
7.3.3	GBR Weed Eradication	Upgrade	YES		12	1
7.3.4	Perimeter Protection of the Oval	Upgrade	YES		13	1

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
7.3.5	Primary Path Upgrade	Upgrade	YES		14	1
7.3.6	Shelters	New feature	YES		15	2
7.4	New Features Location Plan	Plan				
7.5	Entry Gate & Feature Wall Sketch	Plan				
7.6	New Entry Road & Parking Sketch	Plan				
7.7	First Peoples Grove Sketch	Plan				
7.8	All Access Walkway Sketch	Plan				
7.9	Picnic Shelter & BBQs Sketch	Plan				
7.10	Orientation Centre	Plan				
7.11	Fountain Pergola	Plan				
7.12	Performance Stage & Shelter Sketch	Plan				
7.13	Time Line Gardens Sketch	Plan				
7.14	Old Quarry Walk Sketch	Plan				
7.15	Shelters Sketch	Plan				
8	The Botanical Collection	Heading				
8.1	Preferred Themes	Information				
8.1.1	Ecological	Information				
8.1.2	Conservation	Information				
8.1.3	Taxonomic	Information				
8.1.4	Ornamental and Landscape	Information				
8.1.5	Biogeographical and Evolutionary	Information				
8.1.6	Ethnobotanical	Information				
8.1.7	Research & Special Collections	Information				
8.2	Botanical Collection Strategy	Information				
8.2.1	Rare & Threatened Species of Cape York	New Feature	YES			1&2
8.2.2	Indigenous Plants	Upgrade	YES			1&2
8.2.3	Banks & Solander	Upgrade	YES			1&2
8.2.4	Vera Scarth-Johnson	Upgrade	YES			1&2
8.2.5	Historical Specimens	Maintain existing				
8.2.6	Special Collections	Heading				
8.2.6.1	Economic Botany	Upgrade existing + new feature				1&2
8.2.6.2	Amenity Horticulture	Upgrade existing + new feature	YES			1&2
8.2.6.3	Weed & Pest Species	New Feature	YES			1
8.3	Collection Recording & Organisation	New Feature	YES			1
8.4	The Botanical Collection Development Team	New Feature	YES	20 & 21		1
8.5	Botanical Collection Strategy Implementation	Information	YES	22		1
8.6	Botanical Collection Key Plan	Upgrade	YES			
8.7	Species Lists	Heading				
8.7.1	Species List 1 - Rare & Threatened Species of CY	Information				
8.7.2	Species List 2 - Banks & Solander Collection	Information				
8.7.3	Species List 3 - Vera Scarth-Johnson	Information				
8.7.4	Species List 4 - Historical Specimens	Information				

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
8.7.5	Species List 4 - Weed Species	Information				
9	Implementation	Heading				
9.1	Cost Estimates	Heading				
9.1.1	Basis of the Estimate	Information				
9.1.2	Economic Evaluation	Information				
9.1.3	Estimated Development Costs	Information				
9.1.4	Development Staging	Information				
9.2	CBG Development Advisory Committee	Information				
9.3	Development Assistance	Information				
9.4	Masterplan Implementation Estimate	Information				
10	References	Information				
11	Appendix A – A4 Plans & Sketches	Information				
12	Appendix B – Old Site Plans	Information				

3. BACKGROUND, HISTORY & REFERENCES

The Cooktown Botanic Gardens is a unique and important place. It one of the oldest Botanic Gardens in Australia and it has a connection with our past which is unlike anything else. The following sections describe the history and background of the Gardens and the surrounding Cooktown area.

3.1. COOKTOWN HISTORY

Aboriginal Heritage:

The area around Cooktown and the Endeavour River was home to the Guugu Yimithirr people for centuries perhaps millennia before Cook's discovery and the subsequent European settlement. Their substantial understanding and knowledge of the plants and animals of the land and waters is significant and the Bush Tucker species are an important part of the Economic Botany Collection, which is based on their traditions and knowledge.

European Discovery and Settlement:

In 1770, Lieutenant James Cook beached his ship on the banks of the river to repair his damaged ship, The Endeavour. For around six weeks the scientific team of Joseph Banks, Daniel Solander, Sydney Parkinson and Alexander Buchan explored the area and collected biological specimens previously known only to Aborigines. They collected over 200 plant species, illustrated 190, and made 313 pages of notes. In the whole of the voyage of the Endeavour, no other area of Australia was studied so intensely. It was from Grassy Hill that Cook determined a passage to open water.

After the departure of Cook, there was no recorded European contact with the area until Lieutenant Phillip Parker and botanist Allan Cunningham landed in the Mermaid while charting the northern coast in 1819. But it was not until 1865 that the possible settlement of the area was considered when John Jardine explored the environs of the Endeavour River and reported it favourable as a port.

Gold was discovered in the area of the Palmer River in 1873 and on 25 October 1873, Cooktown was established as the port for the Palmer Goldfields.

Over the next three years about 15,000 white men and 20,000 Chinese landed at Cooktown, on the way to the Palmer River Goldfield. The prosperity

of the goldfields was reflected in the township of Cooktown and it became the third most significant seaport in Queensland.

Cooktown was proclaimed a municipality in April 1876, and by the 1880s was a thriving community. The Municipal Council became a Town Council and remained so until 1929, when Cooktown became part of the Cook Shire.

However, by the end of the century, Cooktown's status as a northern centre was slowly declining, mainly due to the exhaustion of the gold fields and people began to move away to other centres like Cairns.

There were several natural disasters in Cooktown's early history, including fires in 1874 and 1880 and a cyclone in 1907. However, another major fire in 1919, again destroyed most of the business district and this signalled the beginning of the decline of the town as many buildings were not rebuilt.

The outbreak of World War One did little to arrest the decline and the evacuation of the population in World War Two was a further setback. By 1951 the population was only about 300.

Thereafter it rose again slowly with the increase of visitors to the north, which was becoming accessible both by road and by air. Tourism and the opening of sandmining at Cape Flattery enabled the business centre to expand and visitors made Cooktown their northern destination or diverted through the town on their way to Cape York Peninsula. (Reynolds & Cutler, 1987)

3.2. THE BOTANIC GARDENS SITE HISTORY

The history of the Gallop Botanic Reserve incorporating the Cooktown Botanic Gardens has been well document by a number of authors in various publications. The following is an excellent brief history which I have taken the liberty of extracting from Lavender and Murray's *'Cooktown Botanic Gardens Gallop Botanic Reserve and Grassy Hill Management Plan'*, University of Queensland, Gatton, QLD (1998), which is one of the documents that I have referenced in preparing this master plan.

'Queen's Park was established in 1878, just three years after the first immigrants arrived at Cook's Town in search of riches on the Palmer Goldfield. The concept was first raised in May 1876 as a means of gainful employment for prison labour. By the following year, concerns were being raised that

Chinese market gardeners and charcoal burners were establishing themselves in the proposed garden area. In October 1885, the Council employed a botanist, Anthony Perieh, to lay out a nursery for the Gardens, which were to be established on the portion of the reserve closest to town. Then early in 1886 they contracted with John Welsh to dig over the Gardens, giving him two months to complete the job. In March 1886, young trees and shrubs were ordered from the Queensland Acclimatisation Society in Brisbane, and Mr Perieh was busy getting them established in the Gardens.

Surveyor Starcke completed the necessary survey of 62.3ha (154 acres) in May 1878, and the Council assumed responsibility for development. £10 was offered for the best plan for the Gardens. Surveyor Brittain's plan was adopted, a caretaker appointed, and development started. Road access, walking tracks, fencing and, by 1879, a nursery was constructed.

The next few years appear to have been a period of intense activity although detailed records have been lost. In 1883, consideration was given to leasing the Gardens and fencing and layout of the nursery continued. During the 1880s, Council appears to have made major efforts to develop the Gardens including ordering trees and shrubs from the Acclimatisation Society. It was, perhaps in that period that the stone pitched waterways were completed.

Development faltered briefly in 1887 although a permanent gardener was again employed the following year. Later that decade a well was sunk.

Charles Watson was appointed Gardener in 1890, a position he held until 1902. He was assisted by T Hassett. A well was sunk by Cross and Dufficy; and a pump, tank, and pipe reticulation installed. A second well was sunk at some later stage.

In 1892, a cottage was built on the Reserve and Watson was appointed resident Curator. During this period, the Gardens was enclosed with a paling fence and intensively developed with lawns, shrubs and garden beds, and named Queen's Park. Stone lined paths, stone pitched pools and stone-work foot bridges were built along a creek descending from the hills behind Cherry Tree Bay. In later years, Mr Claussen filled the position of Gardens Curator.

During the period of greatest activity, a wide range of trees and shrubs of both decorative and economic value were planted in the Gardens. Shade and street

trees in the Cook Monument Park, and in the main street were part of the Botanic Gardens activities at this time.

In 1893, administration of the Reserve was passed to a Board of Trustees. Damage from horses entering the reserve and, a short while later, vandalism attracted the attention of the Trustees. A reward of £10 was offered for information leading to the identification of the offenders.

Watson was criticised in 1900 when it was noted he was selling plants privately during working hours and 'was to devote his time to the services of the Trustees and have no right to trade in plants on his own account and further he was not to cultivate flowers or plants as his own property in the Reserve'. His employment was terminated abruptly two years later. The reason was not stated.

His successors continued to sell produce from the Gardens for the benefit of the Trust. By 1905, sales were restricted to specific times so that the Gardener could continue uninterrupted with his other duties.

The 1907 cyclone caused severe damage to the Gardens. Government initially declined to assist with repairs but by midyear a cheque for £56 was extracted from the IE and Treasury following representations to the Premier.

Financial resources continued to be stretched in the attack in ensuing years. By July 1910, it was alleged the Gardens by were being poorly maintained. The then gardener resigned a few weeks later. His replacement, M. Murphy, Troy immediately set to work to clean up the facilities.

Weeding the area had long proved to be a major challenge. It is hardly surprising that by August 1912 Murphy was being castigated for failing to keep the weeds and grass under control.

The additional 5/- remuneration was apparently insufficient encouragement. A few months later Murphy was retrenched, and J. Gallagher appointed as Gardener. Five years later the closure of the reserve was considered inevitable.

Efforts to lease the cottage and Gardens were unsuccessful. Action was taken to sell the assets at a public auction on 24 March 1917. The results of the sale are unknown.

Little further attention was given to the Gardens and they gradually fell into disrepair. In the mid-1970s Mr SE Stephens, Hon. Curator of History, James Cook Museum, identified 18 plant species still

surviving. Some restoration of the stone-pitched pools was undertaken in the early 1980s. By 1990, 35 plant species had been identified as surviving species.

In 1979, the Cooktown Festival of Arts Society sought Council approval to hold a music festival in the Reserve. It was to be the impetus for Council to restore the Gardens.

In 1982, a report was commissioned on which to base the proposal. Recommendations included the retention of the original plantings, employment of a gardener, provision of visitor facilities and development of walking tracks.

Those recommendations have been largely implemented. Initially under the guidance of Paul Burkitt and later Jeff Waldeck, the rockpools were restored, plant species documented, and dead trees removed.'

(Lavender & Murray, 1998)

The following is an extract from the Queensland Heritage Register which continues the history from 1984:

'In 1984 Cook Shire Council commenced reconstruction of the formal botanic gardens, comprising approximately 3.5 hectares, with the assistance of Commonwealth Employment Funding. The original Gardens area was cleared, and lawns established, stonework re-built, and trees removed. A walking track was cleared to Finch's Bay along the old dray track, and another walking track continues from this track to Cherry Tree Bay. Playground equipment was placed in the southeastern corner of the recreation oval. On 19 December 1984, the whole of the reserve was officially re-opened as the Gallop Botanic Reserve, commemorating the contributions of Mr Rollo Darcy Gallop and his son, Mr Graham Darcy Gallop, Administrators of Cook Shire from July 1961 to March 1969 and April 1969 to June 1979 respectively. The Gallops were also civil engineers, practising as Gallop and Associates.

In 1986 Cook Shire Council commissioned a conservation report on the reserve, and in the early 1990s undertook a programme of reconstruction and conservation of the original layout of the botanic gardens. This included the re-instatement of above ground stone drains - mostly with the original stone but some realignment; repairs to the stonework of the crossings over the drainage system; and conversion of an early well to a pump house [with recent stonework].

The botanic gardens, now known as the Cooktown Botanic Gardens, are contained within the Gallop Botanic Reserve. These Gardens have been expanded in the last 10 years with the establishment of an exotic plant section, a palmetum, a section of native plants, and a "Solander's Gardens", and are used extensively by tourists and locals for recreational and educational purposes.'

Reference:

Queensland Heritage Register

<https://environment.ehp.qld.gov.au/heritage-register/detail/?id=601696>

3.3. TIMELINE

Prior to 1770

Cape York has been inhabited by the Aboriginal people for thousands of years prior to European settlement. The traditional owners of the area around the Endeavour River, the Guugu Yimithirr people, had lived on the banks of the river for centuries.

1770

18th of June to the 4th of August: James Cook beached his vessel the Endeavour at the mouth of the Endeavour River for repairs, after striking a reef to the south. Botanists Joseph Banks and Daniel Solander collected more than 320 specimens of flora and fauna.

1865

The area around Cooktown was explored by John Jardine for a possible settlement.

1873

25th October: Cooktown was established as a port of the Palmer gold fields.

1876

April: Cooktown was proclaimed a municipality.
October: Council proposed an area to be set aside for use as a Botanic Garden and recreational area.

1877

March: Submission forwarded to the department of lands applying for a Botanic reserve in the area around Finch Bay.

1878

8th of March: Official proclamation for the reserve was presented.

16th of May: Surveyor A. Starcke completed a survey of the reserve establishing an area of 154 acres for the reserve.

July: Garden area proposed for the Botanic Gardens was fenced

August: original plan of layout for the grounds prepared by surveyor Brittain.

1879

Structural development was undertaken including roads and fencing in the reserve and a nursery and drains in the Gardens.

First gardener employed.

1888

Concrete cricket pitch and upgraded playing grounds established.

1890

First well was sunk.

1893

Botanic reserve name was changed to Queen's Park.

1894 – 1907

Continued development of the Gardens including a gardener's residence, fencing and other structural and horticultural works were undertaken.

1907

19th January: Cyclone hits Cooktown seriously damaging the Gardens.

1910 – 1917

Funding shortfalls resulting in a decline in maintenance and development of the Gardens.

1917

June: Closure of Gardens due to severe funding issues.

1979

Part of the Botanic Gardens area was cleared and used for a music festival in the reserve

1980

December: Council decides to restore Gardens.

1981

Initial reestablishment of the Gardens using machinery including cleaning out of the lower drains and the digging out of wells.

1982

Preparation of a report on the restoration of the reserve prepared by Vince Winkel for the Cooktown Shire Council, which was subsequently accepted by the Council and orders were given to begin restoration works.

1984

May – September: Commonwealth Employment Program was implemented to assist in initial restoration of the Gardens, employing 6 people to clean up the area and clean out the drains.

Vince Winkel submitted a second report including planting strategies for different sections of the Gardens.

November: Part time gardener employed to continue the restoration works.

1986

Site survey and archeologically investigations undertaken by the Material Cultural Unit of the James Cook University, which discovered many historical features including dry-pitched granite open drains and rock pools.

1987

Historical study undertaken by B. Reynolds and B.L. Cutler of the James Cook University.

1990

Renowned Botanical illustrator Vera Scarth-Johnson donated her illustrations to the people of Cooktown.

1996

Brief for the Interpretation Centre undertaken by Bud Brannigan Architects, Brisbane.

1998

Cooktown Botanic Gardens, Gallop Botanic Reserve and Grassy Hill Management Plan prepared by S. Lavender and A. Murray from the University Queensland Gatton.

1999

The visitor centre known as Nature's Powerhouse was built to showcase the flora and fauna of the area and house the Vera Scarth-Johnson collection.

3.4. HERITAGE SIGNIFICANCE & LISTING

GBRCBG is a QLD state heritage listed site. It was entered into the Queensland Heritage Register on 13th October 1997 and its significance is indicated by the following criterion:

Criterion A

The place is important in demonstrating the evolution or pattern of Queensland's history.

Gallop Botanic Reserve, established in 1878 as the Cooktown Botanic Gardens and Recreation Reserve, is important in illustrating the pattern of Queensland's history. Its establishment reflected Cooktown's sudden emergence in the mid-1870s as the principal port of far north Queensland, and

improvements made to the reserve in the last two decades of the 19th century illustrate sustained local and government confidence in Cooktown during this period. Through the early establishment of the Cooktown Botanic Gardens and Recreation Reserve, a substantial area of natural vegetation close to Cooktown has been preserved. This is particularly significant because of the association of Cooktown and its environs with the important work of naturalists Joseph Banks and Daniel Solander, who collected extensive plant specimens from the district in 1770.

Criterion B

The place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage.

Gallop Botanic Reserve is unique in Queensland, comprising not only a formal botanic garden, but also substantial natural forest and ocean frontage. Cooktown Botanic Gardens within Gallop Botanic Reserve are unique for the extent of covered and uncovered early stone-pitching surviving in the grounds, and their 19th layout is one of the most intact in Queensland.

Criterion C

The place has potential to yield information that will contribute to an understanding of Queensland's history.

Cooktown Botanic Gardens within Gallop Botanic Reserve are significant for their potential to reveal further information about late 19th century public gardens location and design, and the social, economic and cultural function of such gardens in a pioneering community.

Criterion D

The place is important in demonstrating the principal characteristics of a particular class of cultural places.

The formal botanic gardens within Gallop Botanic Reserve survive as important evidence of late 19th century public gardens design and planting. Although adaptations occurred in the 1980s, physical evidence suggests that the present layout is broadly similar to that developed in the period 1878-1917. The gardens retain a number of elements of their late 19th century design, including garden terraces, dry-pitched granite rockpools, subsidiary covered stone-pitched drains, stone steps, wells, rock garden survivals and diverse archaeological elements. Some original plantings survived the period of neglect from 1917 to 1979, and at least 90 species originating from the early plantings as a botanic garden have been identified. Other surviving early elements of the

wider reserve include the recreational oval, cricket pitch, and the route of the early dray track through the reserve to Finch's Bay, illustrating the important role of the reserve as a recreational facility since the earliest days of the establishment of Cooktown.

Criterion E

The place is important because of its aesthetic significance.

The Gallop Botanic Reserve has considerable aesthetic value associated not only with the restored formal botanic gardens, but also with the geography of the place, including granite outcrops and a spectacular, unspoilt coastline.

Criterion G

The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

Finch's Bay, part of which is contained within the Gallop Botanic Reserve, has had an important association with Cooktown residents for over 120 years as a place of recreation. The Cooktown Botanic Gardens has a special association for the local community with the establishment and development of their town in the last quarter of the 19th century. Since 1980, Cook Shire Council has invested in the restoration and re-development of the formal gardens and recreation grounds as an historical tourist attraction.

Reference:

Queensland Heritage Register
<https://environment.ehp.qld.gov.au/heritage-register/detail/?id=601696>

3.5. HERITAGE LISTING - IMPLICATIONS FOR FURTHER DEVELOPMENT

This Master Plan does propose some upgrades and/or new features for the CBG, but as described above, the site is of historical significance and is listed in the Queensland Heritage Register. As such any proposed development/s must be rigorously vetted for their appropriateness and suitability before any construction can be undertaken. Selections of materials, colours, style, theme and even construction techniques, must be suitable and complementary to existing features. While there are some new features proposed, it should be noted that there are no proposals to substitute or replace any heritage listed features in this document.

However, where an upgrade proposal is associated with an existing heritage feature and where that feature is in bad condition or subject to

deterioration, (eg the Old Fountain), some repairs may be contemplated to 'make good' or return that feature to its original condition.

In other cases, where some minor works are proposed like replanting of garden beds etc associated with proposed works, a General Exemption Certificate-Queensland Heritage Places under the Queensland Heritage Act 1992 can be applied for.

Generally, this exemption applies to regular maintenance and ongoing care of parks, gardens and other landscape elements and includes:

- *Pruning of trees to control size, shape, flowering and fruiting and to remove dangerous, diseased or dead vegetation.*
- *Replanting to maintain garden beds*
- *Removal of Class 1 declared pest plant species under the Land Protection (Pest and stock route management) Act 2002.*
- *Removal of trees that have been assessed by a qualified arborist or horticulturalist as dead, dangerous or beyond curative repair.*

Any proposed major works in a heritage listed place is an Assessable Development under the Sustainable Planning Act 2009 and requires an application. This includes:

(a) altering, repairing, maintaining or moving a built, natural or landscape feature on the place;

(b) excavating, filling or other disturbances to land that damage, expose or move archaeological artefacts or underwater cultural heritage artefacts, as defined under the Queensland Heritage Act 1992, on the place;

(c) altering, repairing or removing artefacts that contribute to the place's cultural heritage significance, including, for example, furniture and fittings;

(d) altering, repairing or removing building finishes that contribute to the place's cultural heritage significance, including, for example, paint, wallpaper and plaster.

It is important to note that the upgrade proposals set out in this master Plan are concepts only and are intended to complement existing features in the Gardens and enhance the visitor experience. Due to timing and funding issues, they have been developed prior to input from a heritage consultant. Where proposed additional works are associated with existing heritage features, it is recommended that a heritage consultant, with an

appropriate landscape heritage background, be engaged prior to application/s to ensure that proposals meet all the requirements under the Queensland Heritage Act 1992 and the Sustainable Planning Act 2009.

RECOMMENDATION: 1

A General Exemption Certificate - Queensland Heritage Places under the Queensland Heritage Act 1992 applies for '*regular maintenance and ongoing care of parks, gardens and other landscape elements* (section 4.1.5 of the Exemption) '

However, this exemption certificate is only valid until 31 December 2019. Check for requirements after this date.

RECOMMENDATION: 2

Engage a heritage consultant, with an appropriate landscape heritage background at the detailed design stage and prior to development application/s to ensure all proposals meet the Acts

3.6. STUDIES, REPORTS & DOCUMENTS

There have been a number studies and reports done on the CBG over an extended period, as well as many other documents that provide details on various aspects of the Gardens. These include a comprehensive historical study; a management plan; a brief for the construction of the interpretive centre; applications for heritage listing; various list and tables of the current and historical botanical collections; reports and meeting minutes etc of committees; and Council documents and policies.

While all these documents were helpful in developing this master plan, I would like to make special mention of one of these documents which helped considerably. The report done in 1987 by Professor Barry Reynolds of James Cook University based on the thesis by B.L. Cutler titled, *Report on the Cooktown Botanic Reserve - A Historical Study*, not only provided a comprehensive history of the site, but also detailed most of the essential heritage valued part of the Gardens. Because of significance of this document and I have provided a brief description of that study in the following section - 4.6.1.

The list below are the essential documents that were reviewed and, in most cases, referenced during the preparation of this master plan.

Books:

V. Scarth-Johnson, *National Treasures: flowering plants of Cooktown and Northern Australia*, Vera Scarth-Johnson Gallery Association Inc, Cooktown, QLD (2000)

Studies:

B. Reynolds, B.L Cutler, *Report on the Cooktown Botanic Reserve – A Historical Study*, James Cook University, Townsville, QLD (1987) (refer to section 3.6.1 for a review of this study)

Reports:

B. Brannigan, B. Carter, M. Biujis, A. Van der Schans, *Cooktown Botanic Gardens – Brief for an Interpretation Centre*, Bud Brannigan Architects, Brisbane, QLD (1996)

S. Lavender, A. Murray, *Cooktown Botanic Gardens Gallop Botanic Reserve and Grassy Hill Management Plan*, University of Queensland, Gatton, QLD (1998)

Relevant Botanical Documents & Lists

Australian National Botanic Gardens Advisory Committee, *Australian National Botanic Garden Plan of Management 1993*, National Parks and Wildlife, Canberra (1993)

G. A Calvert, *Ethnobotany of the Guugu Yimithirr Aboriginal community (Hopevale, Cape York Peninsula)*, Thesis (B.Sc.(Hons.)) - James Cook University of North Queensland, (1993)

J. Landsberg, J. Clarkson *Threatened plants of Cape York Peninsula*, Queensland parks & Wildlife, QLD (2004)

R. L Jago, *Plants Collected by Banks & Solander in 1770 from North Queensland*, Unpublished with ongoing updates (2017)

L. Smith, *Mackay Regional Botanic Gardens Master Plan 2010 & Other Master Plans and Documents*, Landplan Studios, QLD (2010)

Other Documents:

K.G Lucas, *The Geology of Cooktown 1: 250,000 Sheet Area, North Queensland*, Department of National Development, Bureau of Mineral Resources Geology and Geophysics (1962)

Waymburr Botanic Gardens Advisory Committee, *Waymburr Botanic Gardens and Natures Powerhouse Workshop Report*, Waymburr Botanic Gardens Advisory Committee, Cooktown (11/2016)

Waymburr Botanic Gardens Advisory Committee, *Waymburr Botanic Gardens Precinct Advisory Committee Meeting Minutes December 2016*, Waymburr Botanic Gardens Advisory Committee, Cooktown, (15/12/2016)

Council Documents & Policies:

Cooktown Shire Council, *Cooktown Streetscape Strategy Plan*, Prepared by John Mongard Architects for Cooktown Shire Council, Cooktown, (2007)

Cooktown Shire Council, *Sports, Recreation and Open Space Plan – South East Part of Cook Shire*, Prepared by Strategic Leisure Group for Cooktown Shire Council, Cooktown, (2007)

Cooktown Shire Council, *Plaques, Memorials and Monuments Policy V2*, Cooktown Shire Council, Cooktown, (2013)

Cooktown Shire Council, *Arts and Culture Policy V3*, Cooktown Shire Council, Cooktown, (2017)

Cooktown Shire Council, *Cooktown Shire Council Planning Scheme*, Cooktown Shire Council, Cooktown, (2017)

3.6.1. 'A HISTORICAL STUDY OF THE SITE'

Written as a thesis in 1987 by B.L Cutler and subsequently presented as a report by Professor Barrie Reynolds, this study is a comprehensive history of the Gardens and a detailed study of many aspects of the Gardens that have cultural and heritage value. The study built on previous site work and research undertaken in the early 1980's by the Material Cultural Unit of James Cook University under the direction of Professor Reynolds.

In the preface Cutler states:

'The primary aim of the present study is to reconstruct the early physical features of the Cooktown Botanic Gardens and to identify subsequent changes. It also examines the history of the Gardens and their changing roles, scientific and social, within the community. In doing so it considers the historical interaction with botanic institutions such as the Brisbane Botanic Gardens, the Acclimatisation Society and other scientific bodies'.

The study provides a detailed history of Cooktown and the CBG from its inception in 1876 to the work undertaken by the Material Culture Unit in 1984 and Cutler's own site investigations in 1986. Cutler provides many sources of information including the minutes and correspondence from the Cooktown Municipal Council; Queensland State Archives documents; the Trustees Queen's Park correspondence and account ledger and various newspaper articles from the Brisbane Courier and a number of Cooktown newspapers.

There is also detailed information on 24 identified features with photos, drawings and descriptions of those features. Some were indicated as 'possible' features and recommended for further investigation, while others were clearly part of the original works.

It is clear from reading the study that there are aspects of the Gardens which have changed significantly since this study was conducted, either through active attempts to reconstruct or through unplanned clearing and expansions.

For example, the main granite lined drain, which is a major feature of the Gardens, was originally built as a 'covered' drain. During the Council's redevelopment of the Gardens the 1980s, it was dismantled and later re-built as an 'open' drain, (refer to Section 6.1.2.1 for further details).

Also, the 'Big Pond', which is the largest water feature on the site, is not original and was built around the same time as the granite main drain re-build in the late 1980s.

As a result, there are a number of important implications for the ongoing development of these Gardens, as the 'heritage' value of some of these features is questionable. This MP examines all the heritage features associated with proposed upgrades and discusses the implications of their development.

From a historical point of view this study also now provides a further point of interest in that it serves as a timestamp for the state of the Gardens in 1987.

3.7. OTHER QUEENSLAND REGIONAL BOTANIC GARDENS

The Brisbane Botanic Garden Mt Coot-tha is the principal Botanic Garden of the State. Developed by Brisbane City Council the Gardens now also house the State Herbarium.

There is a strong association between the CBG and the Brisbane Botanic Gardens, which dates to the inception of the CBG when considerable assistance was provided by Brisbane for the initial development of the CBG. Recent times have seen a reduction in activity between the two, but it is important to re-establish the relationship with both the Brisbane Botanic Gardens and the State Herbarium.

The principal Botanic Gardens in the central and North Queensland regions are the following:

Cairns

Cairns Botanic Gardens is renowned for its collection of the wet tropical vegetation of Australia and the world. It is a major tourist destination and fundamental part of the tropical experience. In the study into the feasibility of establishing a National Tropical Botanic Gardens, Cairns Botanic Gardens was one of seven gardens forming a network to interpret and display the flora of the Australian tropics. The core garden was to be located in Cairns with annexes in Mareeba, Innisfail, Ravenshoe, Chillagoe, Daintree and Cooktown. This significant proposal has never been implemented.

Townsville

A Master Planning strategy was implemented in Townsville to upgrade three existing parks into a composite Botanic Gardens. The Palmetum contains one of the best collections of palms in the world, Anderson Gardens will display flora of the dry tropics region, and Queens Gardens will display the heritage flora of the 'British Empire'.

Whitsunday Regional Botanic Gardens

These gardens are unusual in that they bound a mangrove area of Pioneer Bay in Cannonvale. As such they showcase regional coastal species in their natural environment. A master plan for development of these Regional Botanic Gardens was developed by Landscape Architect Lawrie Smith (AM) in 2008 and Stage 1 of the gardens was constructed in 2010. The gardens are currently under development stage.

Mackay

Mackay Botanic Gardens is one of the newer Regional Botanic Gardens. The original Master Plan

was developed by Landscape Architect Lawrie Smith AM, in 2000, which led to construction of the first two stages. An updated MP was delivered by Lawrie Smith in 2010, which provided the framework for the next stage – Meadowlands. Mackay Botanic Gardens is still in the development stage, but already is regarded as one of the premier Regional Botanic Gardens in Australia.

Rockhampton

Rockhampton Botanic Gardens is a long established traditional style botanic gardens exhibiting a primarily exotic plant collection. Kershaw Gardens, opened in 1988, was developed as a collection of native plants suitable for the local climate of central Queensland.

Gladstone

Tondoon Botanic Gardens was opened in 1988 as a major regional botanic garden to primarily exhibit the flora of the Port Curtis region. It has established a strong scientific reputation and development is continuing to reinforce its position as the major tourist attraction in Gladstone.

4. ACADEMIC, COMMUNITY & CORPORATE CONNECTIONS

4.1. CURATOR AND STAFF

The Curator

The current Curator is Tony Roberts who has at the helm since December 2016.

Tony has a Bachelor of Science (Botany) from James Cook University and an Associate Diploma of Applied Science (Tropical Horticulture) from Northern Territory University, Darwin.

Tony worked at the Cairns Botanic Gardens from 2007 to 2016, firstly with a contract to develop The Living Collection Management System and then as the Interpretive Officer from 2010 to 2016.

Tony experience and knowledge make him ideally suited to implementing the MP.

Maintenance Staff

There is a small maintenance team of three with one leading hand and two labourers. Staffing and maintenance in general was excluded from the scope of works for the development of this MP, however it should be stated that three staff are insufficient to maintain these Gardens to an appropriate standard and engage in the development proposed in this MP. Fortunately, it is anticipated that most of the development will be

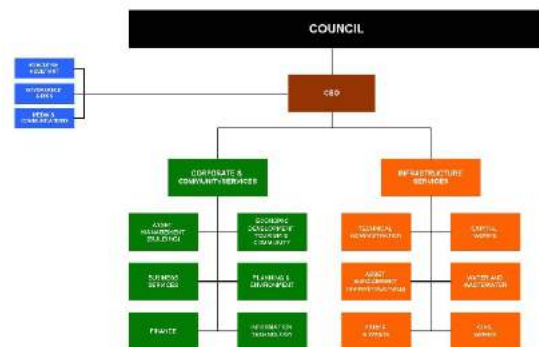
contracted, so the burden on the team should be limited. However, the upgrades to the Gardens will mean increased maintenance which will require additional labour resources if the Gardens are to efficiently and effectively maintained.

4.2. COUNCIL

The Cook Shire Council manages the GBRCBG. The council includes a Mayor and six Councillors and the Chief Executive Officer and Executive Services team along with two departments, Corporate and Community Services and Infrastructure Services.

Democratic elections are held every four years to elect the Mayor and Councillors.

The Council has the following Organisational Structure:



The CBG is run by the Parks & Waste Department under Infrastructure Services

4.3. THE WAYMBURR BOTANIC GARDEN ADVISORY COMMITTEE

The Waymburr Botanic Garden Advisory Committee is the current CBG community development entity. Their stated purpose is to: *‘oversee, guide and advise Council on the revitalisation of Nature’s Powerhouse facility and the Botanic Gardens precinct in preparation of the 2020 celebrations’.*

It included members from the local Indigenous Community; The Cook Shire Council; The Cooktown Chamber of Commerce; The Vera Scarth-Johnson Association; The Kindred Café; Local Community Members; QPWS and the CBG Curator.

They have been instrumental in recommending the development of this MP and their involvement and participation will be crucial to the ongoing developments outlined in this MP, and the author

encourages the members to be involved and continue their good work.

Please review Section 9.2 for a discussion on the proposed CBG Development Advisory Committee, which may be an extension of the current Waymburr Botanic Garden Advisory Committee or just a continuation of it.

4.4. LOCAL CLUBS, ORGANISATION AND ASSOCIATIONS

There are number of clubs which have connections with the CBG. Their support and help are also encouraged, as many of their members will benefit from the development of the Gardens.

Two with physical connections are the Vera Scarth-Johnson Association, the custodians of her collection, who display her illustrations in NPH and the Cricket Club, who's playing oval is part of the GBR.

Other associations include BGANZ and Queensland Parks and Wildlife Service, who have particular interests in the management and development of the Gardens.

4.5. INDIGENOUS GROUPS

There have been strong associations between the CBG the Aboriginal Community. These associations include development of the Bush Tucker Collection and membership of the Waymburr Botanic Garden Advisory Committee to name a few.

Members of the Aboriginal Community are strongly encouraged to continue with their help and support, especially with a number of projects proposed in this MP. One special project which couldn't be successfully completed without the help of the Aboriginal community, is the proposed First Peoples Grove. For details please refer to Section 7.1.3.

4.6. ACADEMIC ASSOCIATIONS

There are no current programs or active connections with academic institutions, however there have been in the past.

The most notable was site work and research undertaken in the early 1980's by the Material Cultural Unit of James Cook University under the direction of Professor Reynolds, which was followed in 1987 by the comprehensive 'Historical Study of the Site' (Reynolds & Cutler, 1987) reviewed above.

It is highly recommended that further inquiries and possible connections are explored with the James Cook University, especially with respects to the Heritage features and assets discussed in this MP.

4.7. HISTORICAL ORGANISATIONS

The Trustees Queen's Park (TQP)

In 1878, The Cooktown Municipal Council appointed a group of Trustees for the 'Reserve for Botanic Gardens and Recreation' which operated under the jurisdiction of the Council until 1893, when the Council officially handed over Botanic Reserve to the Trustees. Around that time the Botanic Reserve was renamed Queen's Park, although there doesn't appear to be any record of an official name change. In any case, the Trustees became the Trustees Queen's Park and they administered the park until June 1917, when the accounts of the TQP were closed.

The Acclimatization Society of Queensland (ASQ):

The Acclimatization Society of Queensland was formed in 1862. Their main objective was to develop functional horticulture:

The objectives of the Queensland Acclimatisation Society were the introduction, acclimatisation and domestication of innocuous flora and fauna. Plant species were experimented with in order to perfect, propagate and hybridize newly introduced or already domesticated plants. (Reynolds & Cutler, 1987)

They showed early interest in developing a tropical garden in Cooktown when it was reported:

'the Secretary of the Acclimatisation Society Council would be glad to hear that the Society had been able to render important assistance in forming this garden [Cooktown Botanic Gardens]. He thought this would become an extremely important experimental ground, and in the course of the season and next spring Bowen Park [Acclimatisation Society's operational garden] would make some further valuable contributions to this interesting new institution.'
(Brisbane Courier 2/6/1877).

They had an important influence on the development of the original CBG, from both a practical and ideological point of view, and they provided many of the original trees and plants that were planted in the Gardens. Some of the original fruit trees that are still in the Gardens were supplied by the ASQ. In fact, the TQP maintained links with the ASQ until at least 1902 and were members of the Society from at least 1885 to 1902.

5. SITE DESCRIPTION

5.1. LOCATION

Cooktown is located on the Far North Queensland coast, approximately 320km (by road) from Cairns and 2,000 km north of Brisbane. The town is the administrative centre of the Cook Shire and the Cook Shire Council has its main administration offices in the town. The Cook Shire is Queensland's biggest Shire with an area of 106,188 km². At the time of the 2016 census, Cook Shire had an estimated population of 4,424, with approximately half (2,631) living in Cooktown. Please refer to the Plan at Section 5.7 for location details

The Cooktown Botanic Gardens (CBG) which is the main subject of this Master Plan, is an area of approximately 5.82ha (all precincts) located in the Gallop Botanic Reserve (GBR). The GBR has an overall area of 62.32ha (inclusive of the CBG area) and extends from Cherry Tree Bay in the north-east to Finch Bay in the south-east and has Cooktown on its western boundary.

Please refer to Plan PL02 at Section 5.8 for site location details.

5.2. SURROUNDING SITE CONDITIONS

The GBRCBG includes coastal areas with beaches, sand dunes and rocky shore lines, hills and ridges with granite outcrops and valleys with seasonal wetlands.

Topographically it extends from sea level on the eastern coast line to approximately 80m on the northern ridges, with the higher areas generally in the central and northern part and the lowlands in the south-east and south-west.

Although the Botanic Gardens are located near the coast, they are separated from Finch Bay (the closest coastal beach), by a hilly ridge on its eastern boundary, which does help to protect it slightly from the worst effects of the strong prevailing South easterly winds.

5.3. HISTORICAL & CURRENT GARDEN STYLE & THE IMPLICATIONS FOR DEVELOPMENT

Originally the Gardens were designed to reflect the Gardenesque style, which was the dominant garden style in 1878. The Gardenesque style was developed by John Claudius Loudon (1783–1843) and it put an emphasis on the formal or artistic, as

opposed to naturalistic, (Picturesque style) display of plants. Loudon described the main idea behind the Gardenesque style of planting as the 'Principle of Recognition' and asserted that '*Any creation, to be recognised as a work of art, must be such as can never be mistaken for a work of nature*'.

The economic value of horticulture was a prime driver of Queensland's economy in these early days and the scientific role of Botanic Gardens played an import role in developing the horticultural industry, as they were the centres for experimentation. The Gardenesque style was therefore well suited these ideals, where the emphasis was placed upon experimentation with economic exotics and not on native plants without economic benefit.

These ideals and the associated style persisted for the first 40 years of the Gardens history, until they were closed in 1917.

When the Gardens were reopened in 1980, there were different priorities and although there was some emphasis placed on preservation of the historical content, the botanical and contemporary development of the Gardens were the main focus. In 1982, the Cooktown Council employed Vince Winkle, a consultant from Cairns, to prepare a report on the restoration of the reserve. He considered it important retain the botanical integrity of the Gardens and this included the preservation of original plantings and indigenous flora associations within the Reserve. His recommendations included:

... a planting strategy for different sections of the Gardens: Banks Garden showing plants collected by Banks and Solander during their stay at Cooktown in 1770; an economic garden which would include plants of a horticultural nature; a natives section to include examples of tropical indigenous flora; an indigenous food plants section and a Palmetum containing different species of palms found in the tropics. (Reynolds & Cutler, 1987)

Unfortunately, the restoration of the Gardens began before Winkles input and before a thorough investigation of the heritage features was conducted, so some of the early clearing works,

although well intentioned, had an impact on some heritage features and no doubt altered the original layout.

The current focus for Regional Botanic Gardens (RBGs) is on collecting and displaying regional indigenous vegetation. There is often an emphasis on their horticultural and/or economic potentials, with appropriate species displayed and arranged to show both their potential for use amenity horticulture and their natural ecosystem habitats. Other area of RBGs may focus on displays of rare and endangered species, bush tucker, historical specimens or other regional specific themes.

Today the CBG is an amalgam of retained heritage features, (including original trees), re-constructed historical features, contemporary buildings (NPH) and indigenous and exotic botanical specimens, with an extended Eucalypt Open Forest dominating most of the rest of the Gallop Botanic Reserve.

As such the current Gardens cannot be said to have a particular style, although of course there are still many elements that retain the original Gardenesque themes.

In the opinion of the author therefore, there is no reasonable reason why additional development in the CBG cannot be undertaken, provided that adequate precautions are taken to preserve and where appropriate repair the areas and features with heritage value.

This Master Plan attempts to identify and describe those heritage areas and features, and where appropriate recommend further study, repair and/or complementary development. For other areas that have little if any historical connections, other upgrade works are proposed with the objective of improving their functional and aesthetic value and the overall Cooktown Botanic Gardens experience for residents and visitors alike.

5.4. TOWN STYLE AND LANDSCAPE CHARACTER

Town Style

Typical of many Queensland rural towns, the streets of Cooktown are very wide, and this creates a sense of openness. As a town with an interesting history and with influences from a number of different cultural backgrounds, the town cannot be said to have a particular style, although there are aspects of the town which makes it unique.

In particular, the granite lined gutters and drains are a wonderful example, which punctuates the historical and heritage values of the town.



Landscape Character

There is no discernible or identifiable landscape character to Cooktown. The streets are wide and for the most part street shade trees are limited to a few areas on some of the main roads. However, a Cooktown Streetscape Strategy has been adopted and CSC is implementing the strategy.

Other than the CBG, other parks and gardens are limited, with the most notable being Endeavour Park at the Northern end of Charlotte St beside the Endeavour River.

However, the most dominating landscape features are natural landscapes of the surrounding hills, mountains and rivers, with the vegetation of Grassy Hill and Mt Cook and the mangrove and sandy channels of the Endeavour River providing a pleasant backdrop.

5.5. LOCAL REGIONAL ECOSYSTEMS

There are a number of Regional Ecosystems (RE) associated with the GBRCBG. In terms of area, the site is dominated by Eucalypt Open Forest or Woodland (RE 7.12.53), which covers a substantial amount of the up-land areas, hills and ridges, generally above the 20m contour. This RE is most noticeable on the northern and eastern boundaries of the CBG and is generally separated from the actual botanical collection areas by a fence.

Below the 10m contour and primarily to the south and east of the CBG is an extensive area of Melaleuca Open Forest (RE 7.3.6) which is on poorly drained sandy alluvial soils subject to seasonal flooding.

There are a number of endangered ecosystems on the site including RE 7.2.1c, RE 7.3.6 & RE 3.12.7

Plan **PL05** shows an extract of the Pre-Clearing Regional Ecosystem Mapping for the site. The Pre-Clearing map is included rather than the Remnant

map, because of the possible inclusion of RE 3.12.7 in the north-western corner of the CBG site, which is not shown on the remnant map.

The following are descriptions of the site specific Regional Ecosystems:

RE 3.12.7 (Endangered)

Open forest of *Corymbia clarksoniana* (Clarkson's bloodwood) and *Eucalyptus brassiana* (Cape York redgum) +/- *C. stockeri* (gum topped bloodwood) +/- *E. cullenii* (Cullen's ironbark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). A sparse to mid-dense sub-canopy can contain *Melaleuca nervosa* (woodland paperbark), *Acacia* spp., *Allocasuarina littoralis* (black she-oak) as well as rainforest species such as *Euroschinus falcatus*, *Chionanthus ramiflorus* (northern olive), *Calophyllum sil* (alligator bark), *Buchanania arborescens* (satinwood) and *Celtis paniculata*. The sparse shrub layer can contain canopy species as well as *Alyxia spicata* (chain fruit), *Wikstroemia indica* and *Dendrolobium umbellatum* (horse bush). The very sparse to sparse grassy ground layer include *Heteropogon* spp. or *Imperata cylindrica*. Occurs on granite ranges. Occurs on granite ranges. (BVG1M: 9c)

Note – remnant maps do not include this RE in the CBG area, but I believe it is worth noting as pre-clearing maps show that it was likely to have been present around the ACOPR prior to Cooktown's development. It was also the dominant RE where Cooktown is now built.

RE 3.12.48b (Of Concern)

3.12.48b: Tussock grassland of *Themeda triandra* (kangaroo grass) +/- *Heteropogon* spp. +/- *Cassytha filiformis* +/- *Zornia muriculata*. Scattered emergent windswept shrubs of *Terminalia* spp., and *Cochlospermum gillivraei* (kapok) are sometimes present. Occurs on igneous headlands and islands. (BVG1M: 32b)

RE 7.2.1c (Endangered)

Closed forest with *Calophyllum inophyllum*, *Terminalia arenicola*, *Dillenia alata*, *Myristica insipida*, *Planchonella obovata*, *Millettia pinnata*, and *Hibiscus tiliaceus*. Beach ridge deposits adjacent to the foredune, in the very wet rainfall zone. (BVG1M: 3a)

RE 7.3.6 (Endangered)

Melaleuca dealbata (cloudy tea tree) +/- *Melaleuca leucadendra* (weeping tea tree) open forest. Poorly drained alluvial plains. (BVG1M: 22b)

RE 7.12.53 (No Concern at Present)

Corymbia clarksoniana +/- *C. tessellaris*, +/- *Eucalyptus drepanophylla* +/- *C. intermedia* open forest to woodland, or *E. drepanophylla* woodland, of moist to dry lowlands, foothills and uplands on granite and rhyolite

Other Regional Ecosystems in the immediate area (+/- 1km) but not actually on the site include:

RE 7.2.11c (Of Concern)

Melaleuca viridiflora, *Lophostemon suaveolens* and *Allocasuarina littoralis* open shrubland. Swampy sandplains of beach origin. Floodplain (other than floodplain wetlands). (BVG1M: 22b)

RE 7.11.34 (Of Concern)

Complex of shrublands, low heathy or shrubby woodland and low open forest, with *Corymbia tessellaris* (Moreton Bay ash) and *C. intermedia* (pink bloodwood) or *Melaleuca viridiflora* (broad leaf tea tree), *Allocasuarina* spp. (sheoaks) and *Acacia* spp. (wattles). Metamorphic coastal headlands and islands. (BVG1M: 9c)

RE 7.12.9 (Of Concern)

Acacia celsa (brown salwood) open forest to closed forest. Foothills, uplands and highlands on granites and rhyolites, of the very wet and wet rainfall zone. (BVG1M: 5d)

RE 7.12.16 (No Concern at Present)

Simple to complex notophyll vine forest, including small areas of *Araucaria bidwillii* (Bunya pine). Uplands and highlands on granites and rhyolites, of the cloudy wet to moist rainfall zones. (BVG1M: 6b)

RE 7.12.34 (No Concern at Present)

Eucalyptus portuensis (white mahogany) and/or *E. drepanophylla* (ironbark), +/- *C. intermedia* (pink bloodwood) +/- *C. citriodora* (lemon-scented gum), +/- *E. granitica* (granite ironbark) open woodland to open forest. Uplands on granite, of the dry rainfall zone. (BVG1M: 9d)

5.6. CLIMATE AND CLIMATE CHANGE

5.6.1. CLIMATE

Cooktown has a tropical savanna climate with a Köppen climate classification of Aw. The wet season from December to April, is typically hot and humid but sea breezes and rainfall keep temperatures at bay. The dry season from May to November is less hot and humid, though unlike most of tropical Australia onshore winds still produce some light showers.

Rainfall

The highest daily rainfall in Cooktown has been 405.4 millimetres on 22 January 1914 and the record monthly rainfall 1,322.6 millimetres in January 1979. The driest calendar year was 2002 with only 732.5 millimetres recorded at Cooktown Airport and the wettest 1903 with 3,128.1 millimetres.

The mean rainfall for the last 18 years is 1489.9mm 2017 recorded a higher than average rainfall with 1699.4mm.

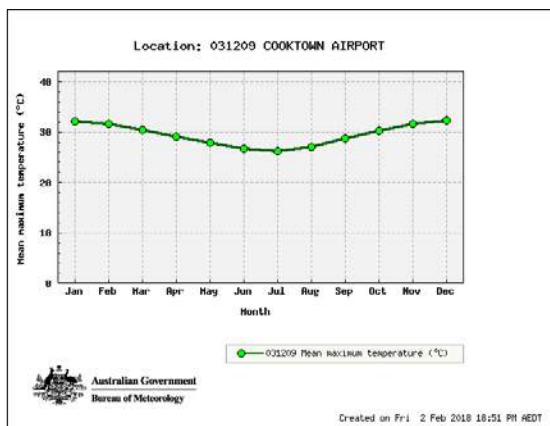


BOM rainfall chart showing the mean rainfall 18 yrs.

Temperature

Mean maximum temperature is 29.5C over the last 18 years with the warmest month in December with 32.3

Mean minimum temperature is 22.5C over the last 18 years with the coolest month in July with 18.1



5.6.2. CLIMATE CHANGE

There is a general worldwide consensus amongst scientists and the Governments of most nations, that the world’s climate is changing rapidly. Naturally this will include all areas of Australia including the Wet Tropics.

The site ‘Climate Change in Australia’ is an initiative of the Australian Bureau of Meteorology and the CSIRO and they have produced climate change

forecasts for all parts of Australia. For the Wet Tropic they predict the following:

The Wet Tropics cluster comprises four NRM regions in northern Queensland. The cluster contains considerable biodiversity assets, for example within national parks and the Great Barrier Reef World Heritage area.

The climate of this cluster is characterised by two seasons; the monsoonal wet season (from around December to April), which is dominated by prevailing north-westerly winds, and the dry season (May to November), when south-easterly trade winds dominate.

KEY MESSAGES

- Average temperatures will continue to increase in all seasons (*very high confidence*).
- More hot days and warm spells are projected with *very high confidence*.
- Changes to rainfall are possible but unclear.
- Increased intensity of extreme rainfall events is projected, with *high confidence*.
- Mean sea level will continue to rise and height of extreme sea-level events will also increase (*very high confidence*).
- With *medium confidence*, fewer but more intense tropical cyclones are projected.
- On annual and decadal basis, natural variability in the climate system can act to either mask or enhance any long-term human induced trend, particularly in the next 20 years and for rainfall.

Reference:

<https://www.climatechangeinaustralia.gov.au/en/climate-projections/future-climate/regional-climate-change-explorer/sub-clusters/>

While the impacts of climate change are unlikely to directly affect the proposals outlined in this MP, at least in the 10-year time period that it covers, the message is that beyond this period and certainly towards the later part of this century, there will be significant impacts. Future works must therefore seriously consider the implication of climate change.

5.7. LOCATION PLAN



QUEENSLAND



FAR NORTH QUEENSLAND



COOKTOWN

CO-ORDINATES OF GALLOP BOTANIC RESERVE @ VISITOR CENTRE :
 15°28'17.28"S : 145°15'30.75"E



LOCATION

PL COOKTOWN BOTANIC GARDENS
 01 MASTER PLAN - 2017 NTS @ A4

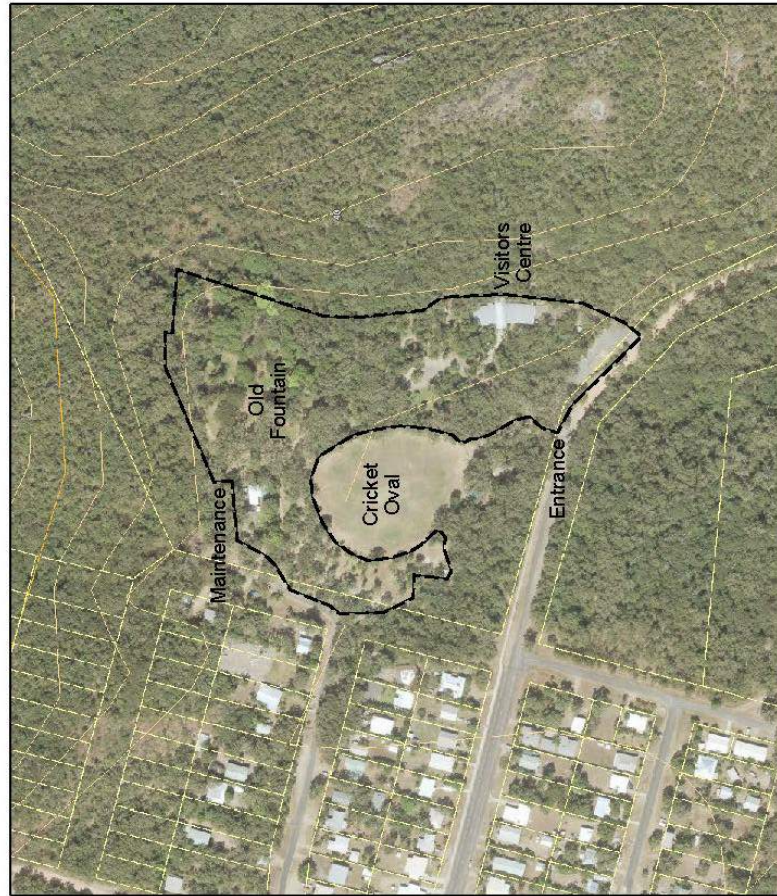
5.8. BOTANIC RESERVE AREAS PLAN

BOTANIC RESERVE AND GARDEN AREAS:

The Gallop Botanic Reserve is an extensive area of 62.32ha, which includes large areas of natural bushland on various terrain types, mangrove areas and approximately 1.2km of coast line. The Cooktown Botanic Gardens is located in the south western part of the Gallop Botanic Reserve and is approximately 4.58ha in area.



GALLOP BOTANIC RESERVE - 62.32 ha (1:20,000)



BOTANIC GARDEN AREA - 4.58 ha (1:5,000)



PL COOKTOWN BOTANIC GARDENS
MASTER PLAN - 2017 1:5000 & 1:20000 @ A4



BOTANIC RESERVE & BOTANIC GARDEN AREAS

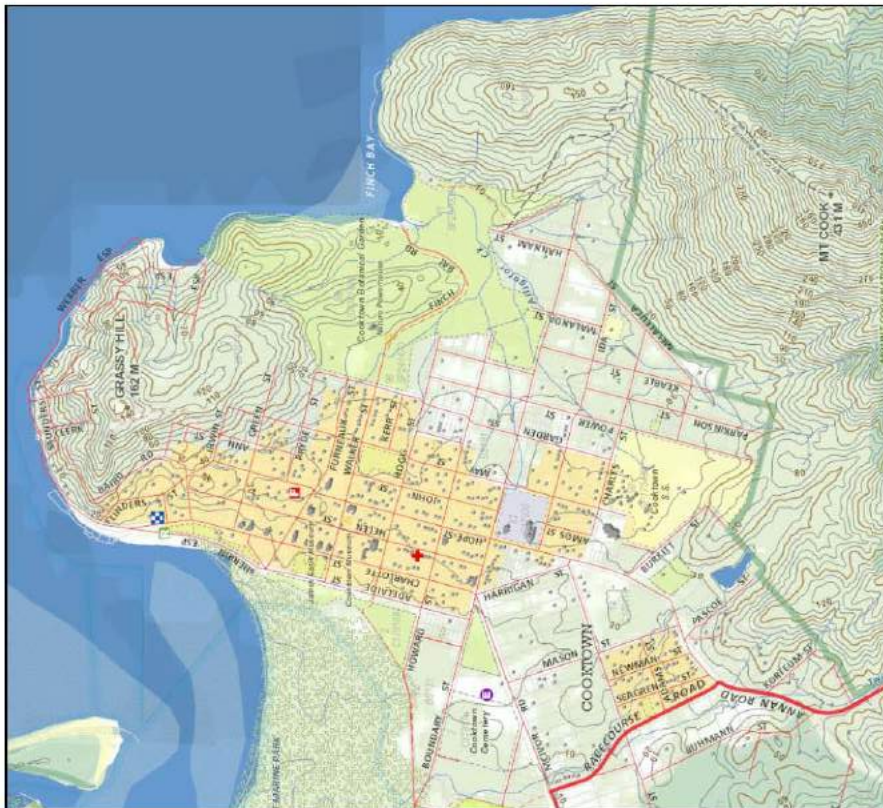
5.9. TOPOGRAPHY PLAN



BOTANIC GARDENS AREA - 1:5,000



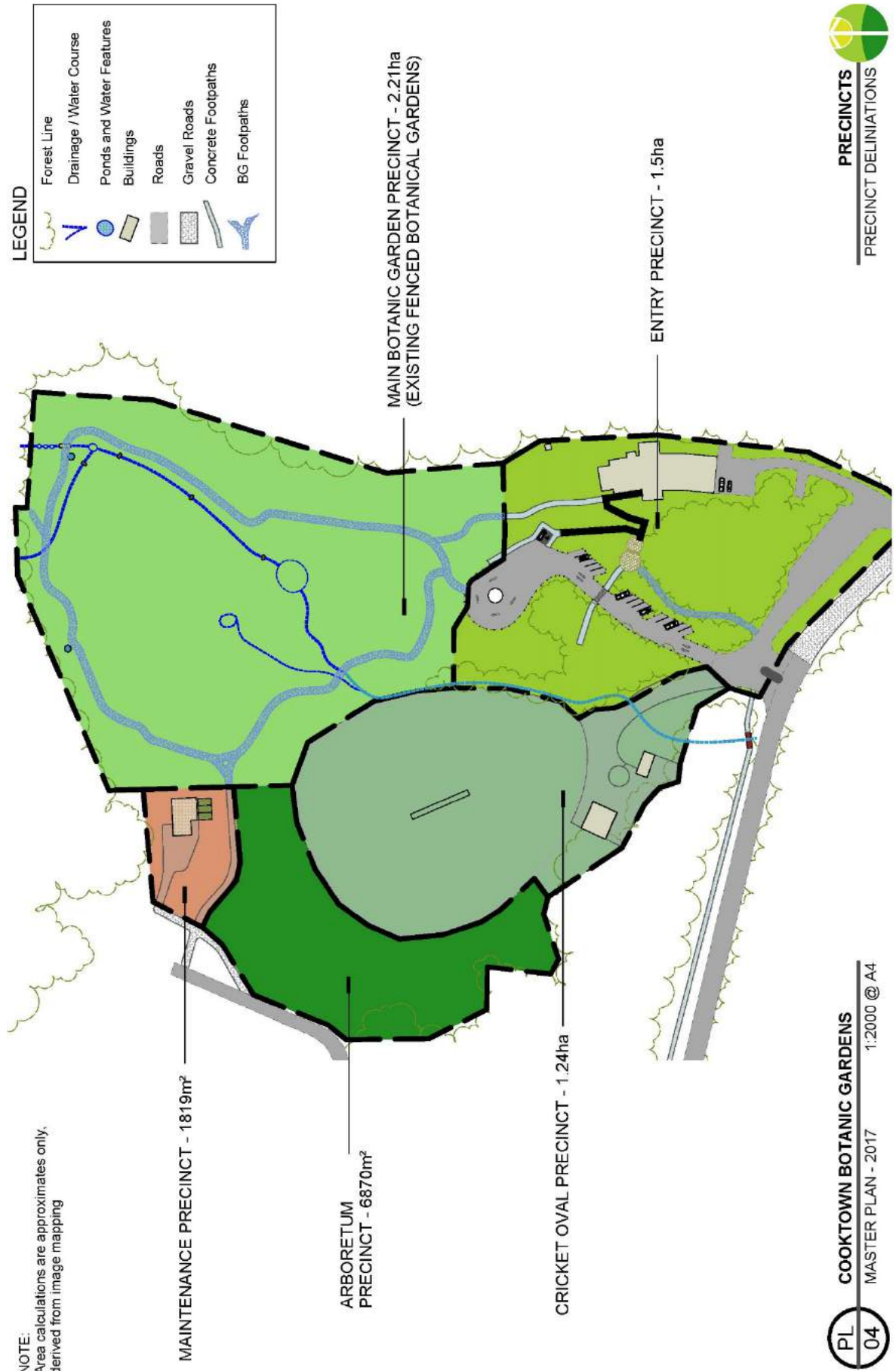
TOPOGRAPHY



COOKTOWN AREA - 1:30,000

PL COOKTOWN BOTANIC GARDENS
03 MASTER PLAN - 2017

5.10. PRECINCTS PLAN



5.11. REGIONAL ECOSYSTEMS PLAN

REGIONAL ECOSYSTEMS ASSOCIATED WITH THE SITE:

RE: 7.12.53 / 3.12.48b / 7.2.1c

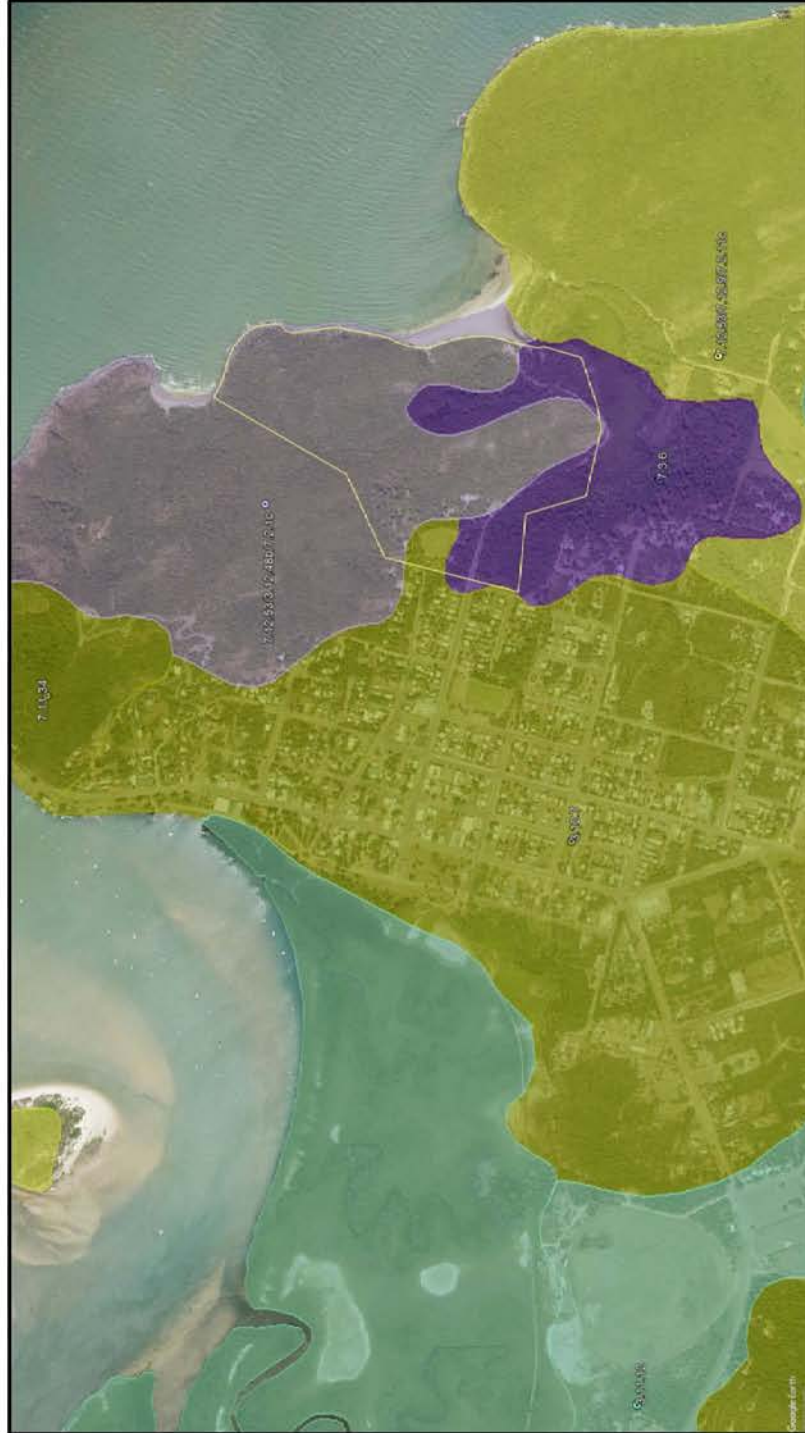
80% - 7.12.53 - *Corymbia clarksoniana*.... open forest to woodland, of moist to dry lowlands, foothills and uplands on granite and rhyolite.

15% - 3.12.48b - Tussock grassland of *Themeda triandra* +/- *Heteropogon* spp. +/- *Cassytha filiformis* +/- *Zornia muriculata* on rocky igneous coastal headlands and islands.

5% - 7.2.1c - Closed forest with *Calophyllum inophyllum*, *Terminalia arenicola* on beach ridge deposits adjacent to the foredune, in the very wet rainfall zone (Endangered)

RE: 3.12.7 - *Eucalyptus brassiana* and *Corymbia clarksoniana* open forest on granite ranges (Endangered)

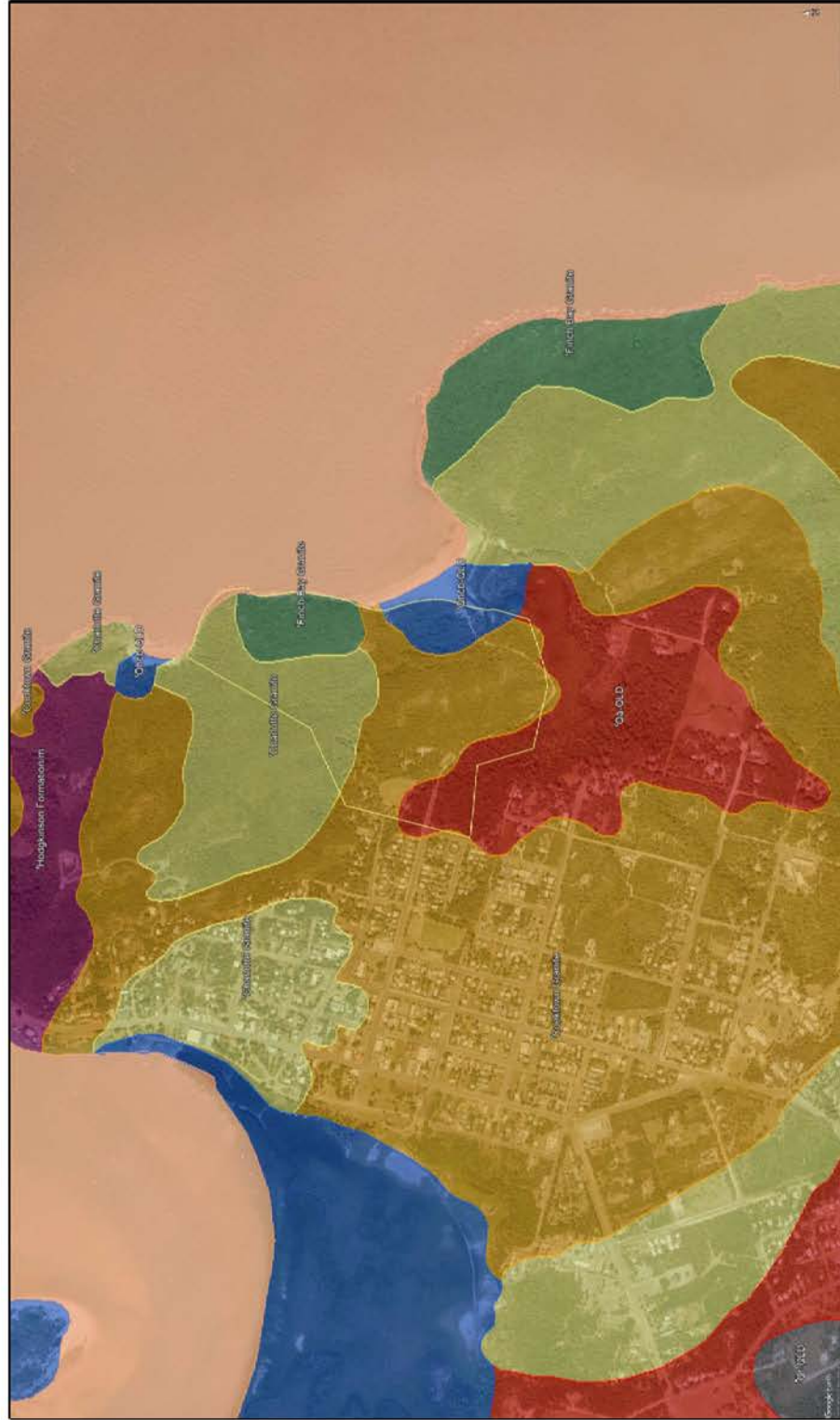
RE: 7.3.6 - *Melaleuca dealbata* +/- *Melaleuca leucadendra* open forest, on poorly drained alluvial plains (Endangered)



5.12. GEOLOGY PLAN

GEOLOGY ASSOCIATED WITH THE SITE:

COOKTOWN GRANITE : White to pale grey, sparsely porphyritic to equigranular (cordierite-) (tourmaline-) muscovite-biotite granite.
CHARLOTTE GRANITE : Pale grey to white, moderately to slightly porphyritic, fine- to medium grained (garnet-)cordierite (altered)- tourmaline-muscovite-biotite granite; scattered enclaves and miarolitic cavities.
Qa-QLD : Clay, silt, sand and gravel; flood-plain alluvium



PL 06
COOKTOWN BOTANIC GARDENS
 MASTER PLAN - 2017
 1:20,000 @ A4

5.13. EXISTING ASSETS, BUILDINGS & FEATURES PLAN



**6. CURRENT SITE CONDITIONS:
ASSETS & FEATURES & PHYSICAL
CONDITIONS OF THE SITE**

This section describes the site as it is, including existing buildings, assets and features and the physical conditions, like soils, drainage, and irrigation etc. Refer to section 5.13 - Plan PL07 for a site map showing locations of features.

A table of items discussed in this section, along with comments on their condition and recommendations for improvements where necessary, is included at Section 6.3. Proposed improvements and/or upgrades on recommended items are outlined in Section 7.

6.1. ASSETS, BUILDINGS & FEATURES

The following sections describe the buildings, assets and main features of the site as it is at the time of writing this MP. Descriptions are included for items in the 5 precincts which are shown on Plan PL04. There is no comment on the ownership or lease status of the items discussed.

6.1.1. ENTRY PRECINCT (EPR)

The Entry Precinct includes the entry road and parking area, access road, pedestrian footpath, visitor centre, garden areas, the Orchid House, lawns areas and retained natural bush areas. Currently this precinct is outside the fenced protected areas, so is vulnerable to damage from feral animals.

The EPR is also mainly outside the bounds of the original historical Botanic Gardens area, which is generally regarded as the area inside the current boundary fence.

There were no historical/heritage features identified in the EPR. Most of the feature and buildings etc in this precinct have been built since the 1980's.

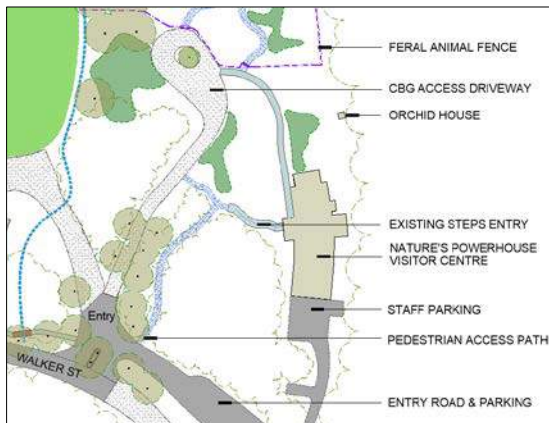


Figure 1: Existing Entry Precinct (EPR)

There are some significant issues with many aspects of this precinct. Problems include, variable road conditions with poor delineation of roads and parking areas with a mix of surface materials; drainage and erosion; pedestrian access; signage; inadequate, uneven and poorly defined parking, ingress by feral animals; poor and/or inadequate infrastructure like irrigation.

However, this precinct is also the one with the most potential for immediate change and the one that can have the biggest impact on the visitor experience.



6.1.1.1. ENTRY ROAD & CAR PARK

The existing entry consists of a bitumen road which accesses off Walker Street. The entry is bisected by a median garden (in and out lanes) which has two mature Melaleucas growing in it, which will need to be retained.

The entry is generally in poor condition with broken and/or patched bitumen and large gravel areas subject to erosion during the wet.

The site's only designated parking area is located in this area, to the east of the entrance road, with pedestrian access via a separate path to the east of the road entry

The most notable (and valuable) asset in this area is the extensive canopy of mature Melaleucas and Eucalypts which is very appealing and will provide a wonderful backdrop for a revised entry feature.

6.1.1.2. COOKTOWN BOTANIC GARDEN ACCESS DRIVEWAY

The access driveway leading into the Gardens is located opposite the Entry, off the NW end of the Entry road. It is a gravel driveway of variable width, with no edging and is generally in poor condition. There is no official parking provided, but visitors tend to park on the outside edges near the round-a-bout at the northern end off the road. A small signed disabled parking bay has been provided. A small informal garden with two trees is located around the centre of the round-a-bout, which makes larger vehicle turning difficult. Generally, the Access Road is unappealing, in poor condition and lacking parking and suitable access for all types of visitors.

Refer to Section 7.1.2 for proposed upgrade details.



6.1.1.3. PUBLIC FOOTPATH FROM COOKTOWN

Pedestrian access to Gardens from Cooktown is via a concrete footpath along Walker St. Generally, this footpath appears to be in good condition, having been installed relatively recently. Given the tropical heat and the distance from the town, the inclusion of street trees along this footpath would be of great benefit, as it would improve the aesthetics of the street, help to

punctuate the garden entrance and provide shade for pedestrians.



6.1.1.4. PEDESTRIAN ACCESS PATH FROM THE ENTRY CARPARK

Pedestrian access from the entry and carparking area to NPH is via a gravel path, which weaves through a band of remnant Eucalypt Open Forest. It is pleasant and shady walk and a good entry experience for visitors, but is not always used by pedestrians, as signage is poor, and the access driveway is also used especially by pedestrians walking from Cooktown.



Improved directional signage and the installation of an all-weather surface with improved drainage would improve usage, and with additional lighting

and an entry feature this would be a wonderful pedestrian entry feature.

6.1.1.5. NATURE’S POWERHOUSE VISITOR CENTRE (NPH)

The Visitors Centre is currently named Nature’s Powerhouse. This name was chosen by renowned botanical illustrator Vera Scarth-Johnson from a number of suggestions made by the community. As an environmentalist, she felt it best reflected the ideas that inspired her works and ultimately the building.

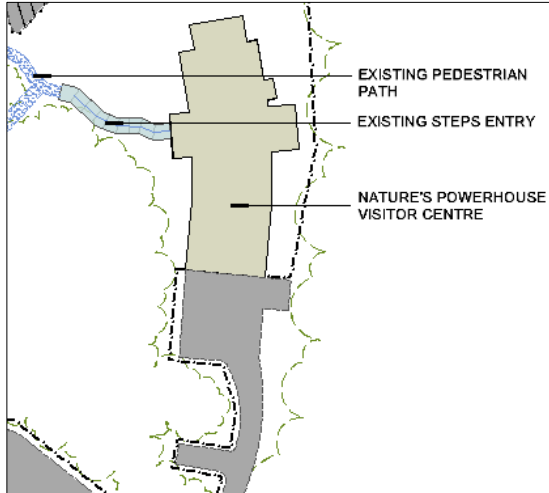


Figure 2: NPH & Access

However, while it is a unique and somewhat interesting name and has a strong connection to Vera Scarth-Johnson herself, it is nonetheless an ambiguous name for visitor’s centre. It has no direct and obvious connection to the CBG, Vera Scarth-Johnson or indeed to any botanical theme. Comments received from the community during consultation period, especially the workshop, indicated that a name change and/or rebranding should be considered. It was felt that a name that made more of a direct connection with the Botanic Gardens and/or Vera Scarth-Johnson, may encourage more visitations to the Gardens and the centre, with the obvious flow on effect of more interest and more sales for the shop and café. However, for the purposes of this MP, I will refer to it as simply NPH.

NPH was built in 1999, after a development brief was prepared in 1996 by Bud Brannigan Architects (Brannigan & Carter, 1996). It is a contemporary styled building with a corrugated iron façade and curved roofed portico entrance.

It is nicely positioned against the base of the Eucalypt open forest ridge to its east and has a westerly aspect that looks across Gardens and the access road which is roughly 40m west & 4m downslope from the portico/entrance.

The building has a gallery, reception /shop and café with outdoor verandah seating for the café.

The centre currently houses the original works of Vera Scarth-Johnson, who donated her collection to the people of Cooktown in 1986. Her works are



displayed in the main gallery.

There are no proposals to change or upgrade NPH, apart from establishing a suitable access connection interface with the proposed new entry walkway and the existing access path leading from NPH to the main Gardens.

6.1.1.6. NATURE’S POWERHOUSE – VISITOR CENTRE ENTRANCE

The main entrance to the Visitors Centre is currently via a gravel path leading off the midpoint of the Access Driveway ending in a series of steps that ascend to NPH portico. These steps are constructed with several different materials, including stone and concrete and there is a central handrail. There is also no access for disabled visitors from this entrance. Step heights and tread widths are variable and some steps slope downwards and from a safety point of view there is a real risk of injury for visitors using this access, especially during the wet season when the steps are slippery.

A second access in the form of a concrete path (see description below at 6.1.1.7), is located at the

northern end of the access driveway near the current disabled parking bay. This path provides abled and disabled access to the Main Botanic Gardens Precinct (MBGP) and NPH.



However, because the MBGP entrance is only a few metres along this path from the driveway, many visitors simply enter the Gardens from here and don't continue to follow the path up to NPH. So, it is confusing or even difficult for first time visitors to find NPH and/or the MBGP entrance as there is no clear indication as to where the actual main entrance is.



And it is therefore very likely that many visitors completely bypass NPH or at best only briefly visit after walking the Gardens and preparing to leave. While visitor numbers have not been recorded to



confirm this, observations taken during field trips confirmed that this is very likely the case. Another issue is that NPH is partially hidden from the access driveway by thick vegetation, so it is not immediately obvious where it is. Community feedback was strongly in favour of keeping NPH enveloped in foliage, for shade, ambiance and aesthetics and the consultancy team agrees that maintaining as much of the canopy and screening foliage is a priority.

However, given these issues, it is obvious that a redesign of the entry to both NPH and the MBGP is necessary and would greatly improve both the visitor experience and the profitability of NPH. A design that provides one entrance to the Gardens via NPH for all visitors, abled and disabled, and that improves safety, security and the visitor experience is highly desirable. Refer to Sketch SK04 Section 7.1.4 for details about proposed All Access Walkway



6.1.1.7. MAIN BOTANIC GARDEN PRECINCT ACCESS PATH

Access to MBGP from NPH is provided via a concrete path. The path currently starts at NPH portico and proceeds down a disabled access ramp north towards the MBGP entrance. Generally, the path is in good condition, with only a few areas requiring minor adjustments, but it is doubtful that the disabled access ramp is



compliant with current Australian Standards and/or building codes and needs to be replaced, (note - proposed NPH access upgrades include replacement of this ramp – see Sketch SK04 in Section 7.1.4).

This path will also provide access, (or pass through) the proposed new Orientation and Orchid House, which is to be located roughly half way between the MBGP and NPH.

As discussed above, proposed upgrades to NPH entry and access, will also require an adjustment to the connections and alignment of this path.

6.1.1.8. VISITORS CENTRE STAFF PARKING

Parking and centre access for staff is located on the southern end of the Visitors Centre with access via a separate driveway to the east of the existing entry road. This area is in reasonable condition and upgrades are not included in this MP.

However, new fencing that returns to the end of the Visitors Centre will have to be added to protect the Gardens to west of this driveway from feral animals.

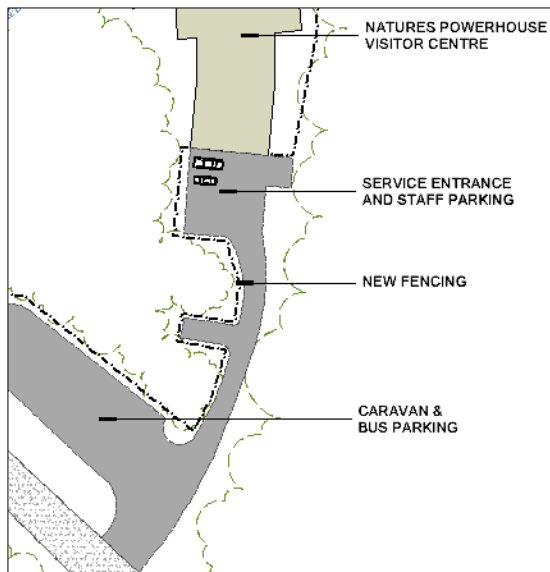


Figure 3: Staff Parking & Building Access



6.1.1.9. PICNIC AREA

The picnic area is located on the western side of the access driveway in a large grassed flat area with good shade. There are two old picnic table settings, but no shelters or BBQ facilities are provided.

This area is ideally suited and well located for picnics, as it is close to the access driveway, NPH and the cricket oval.

Upgrades to the facilities and surrounding area would be relatively cost effective and the inclusion of shelters to protect visitors from sun and rain would improve the usability of the area. Also, in the opinion of the consultancy team, the provision of BBQ facilities would encourage more visitation from both locals and visitors, without detracting from café sales, as BBQ facilities cater for more self-sufficient visitors, who would otherwise look for these facilities elsewhere.

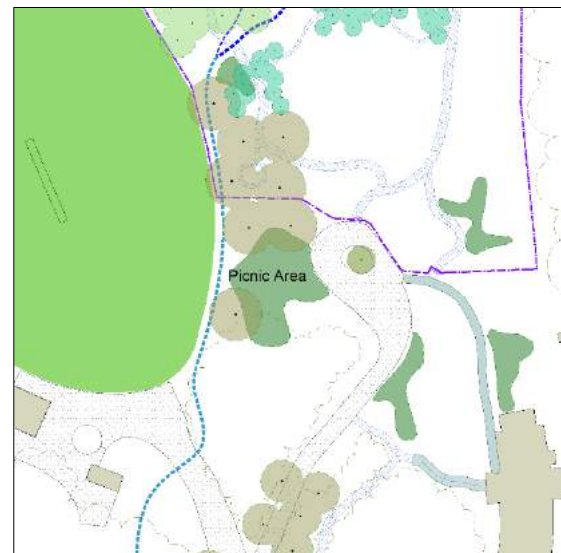


Figure 4: Picnic Area



6.1.1.10. THE ORCHID HOUSE

The existing Orchid House is a small open sided wire mesh structure with a shade cloth roof. The wire mesh is necessary to protect the orchids and other displayed plants from feral animals (and occasional theft), as this part of the garden is not currently fenced.



Opportunities for displaying orchids etc is therefore limited and the overall facility is tired and generally in poor condition.

Given the importance of orchids, especially the Cooktown Orchid, to Cooktown, Cape York and Queensland, an upgraded facility for displaying the many wonderful species is highly desirable. Proposed upgrades to this part of Gardens will include an Orchid house and improved fencing for protection.

6.1.2. MAIN BOTANIC GARDEN PRECINCT (MBGP)

The area described as the MBGP in this MP, is essentially the original botanic gardens area. It is currently separated from the other precincts by a perimeter fence, which protects the Gardens and features etc, from damage by feral animals. It includes the main botanical display gardens, trees, palms and lawns, heritage listed features like stone

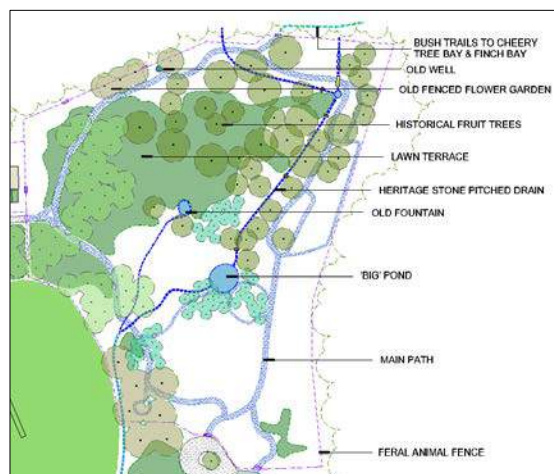


Figure 5: Main Botanic Garden Precinct (MBGP)

pitched drains, ponds and fountains etc and paths, structures and signage.

This precinct includes all the main heritage listed features of the CBG.

While some additional features and upgrades to some of the infrastructure etc is proposed in this MP, it is important to stress that maintaining the overall structure, as well as the look and feel of this precinct is an essential part of this MP.

6.1.2.1. HERITAGE STONE PITCHED DRAINS

The original drains probably date from the late 1870's or early 1880's, but there is no actual record of when and who built them. One theory postulated in 'A historical Study' (Reynolds & Cutler, 1987) is that a Cornish Stone mason, Tom Pascoe, built them around the time that he built many of Cooktown's stone drains.



The current main drain's alignment and location, may not necessarily be where the original drain was constructed. In 1986 it was noted that the major portion of the drain (approximately 106m) had been dismantled by the Council.

'This feature had an approximate width of 1.75 metres and extended 106 metres from the intersection of Feature 2B and Feature 2C (see opposite) in a southwest direction. The termination point of the covered drain could be identified by changes in characteristic width and depth of the channel. There was no evidence to suggest that the covered drain continued further south. The drain was dismantled by the Cooktown Shire Council in 1984 and the granite placed in piles alongside for future reconstruction. Prior to this dismantling, only a few sections of the drain had collapsed...' (Reynolds & Cutler, 1987)

Reynolds and Cutler refer to this drain as 'covered', so the assumption is that it was originally covered with granite top stones, and only became an open drain during its reconstruction after 1986.

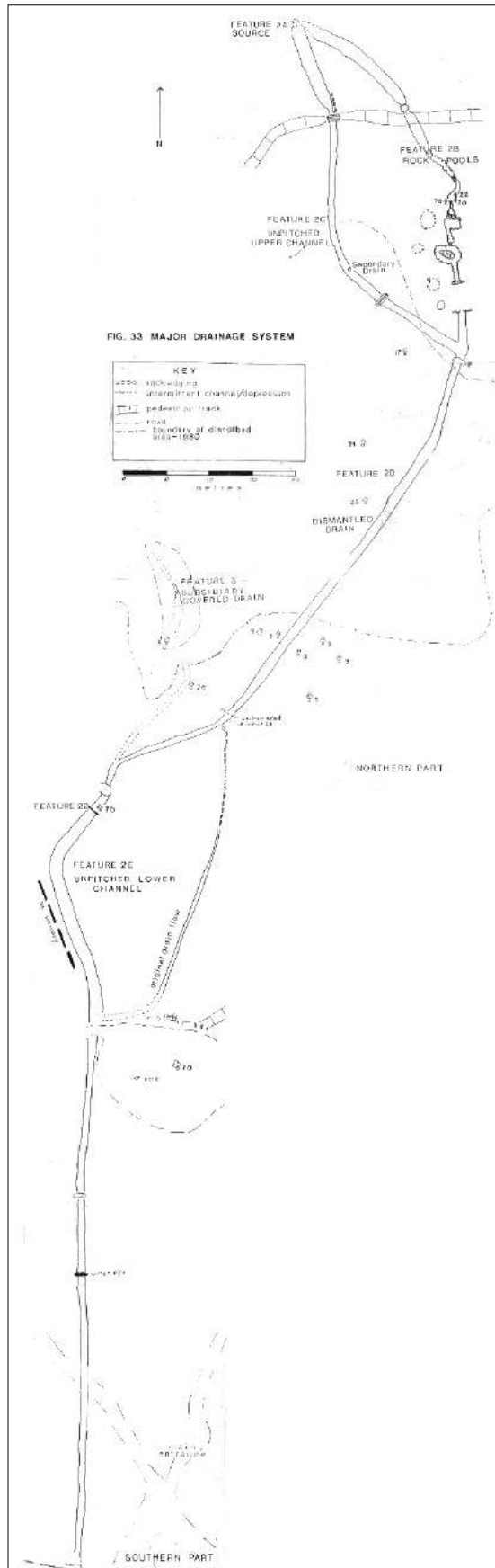


Figure 6: Major Drainage System from the Historical Study (Reynolds & Cutler, 1987)

However, this cannot be confirmed, as details of the reconstruction have not been determined at this time.

It is also notable that the ‘Big Pond’ is not mentioned in the study, and therefore must have been built as a new feature, most probably at the same time the main drain was reconstructed. There are no proposals to change or alter the main drain in this MP.

6.1.2.2. THE ROCKPOOLS

Evidence collected in 1986 suggests that the Rockpools are an original construction, dating to early 1880’s. They consist of a series of open dry-pitched granite pools with interconnecting channels, located at the northern end of the drainage system, between the natural creek/drain source and the lower reconstructed main drain:

‘The Rockpools ran in a north -south direction for 45 metres and consisted of a series of open dry-pitched granite pools with interconnecting channels. They were covered at intervals with granite top stones or divided by lowset granite and earth. This feature terminated at the southern end of an earth covered bridge near Well A. The Rockpools were cleaned out during the 1984 Commonwealth Employment Programme. Most pools and channels had granite-pitched floors and walls when they were exposed.....The individual pools varied in size and shape; each was stepped, and the gradient allowed for some pools to end in waterfalls. Pool A had a relic fern garden as a centre piece. Today the Pools form a significant part of the Gardens.’ (Reynolds & Cutler, 1987)

The area around the Rockpools is currently called the Enchanted Forest and is mainly planted with tropical exotics and timber trees. Given the historical significance of this feature, it is important to ensure that degradation from vegetation, especially root zones from trees, is limited and that the pools are protected and where possible and appropriate, re-established and refurbished. Therefore, it is recommended that a detailed assessment of the current condition of the Rock Pools is undertaken, with an emphasis on the impact of vegetation, especially roots.

RECOMMENDATION: 3

Curator to review the current condition of the Rock Pools and evaluate threat from roots and vegetation etc. Engage a heritage consultant to advise on repairs and refurbishment if repairs are necessary

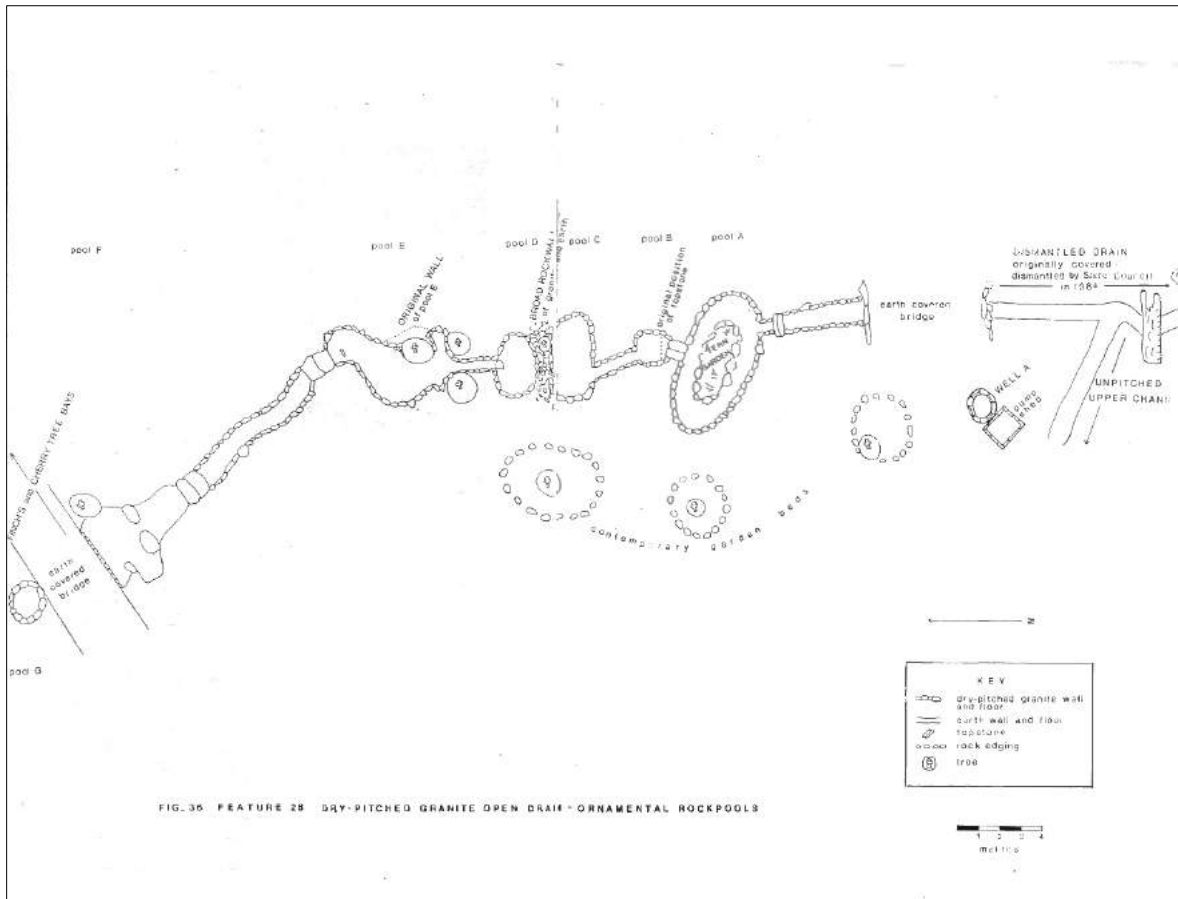


Figure 7: Plan of the Rock Pools in 1986, (Reynolds & Cutler, 1987)

An initial review should be done by the Curator, and if the area is considered under threat, then further investigations and recommendations should be sought from a heritage expert.

6.1.2.3. THE COVERED DRAIN

The covered drain is a complex of subsurface drainage which may be quite extensive. In 1986, excavation of part of the area identified a main drain which exited under a top stone into a circular area which was 'suggestive of a large rockpool or even the proposed fountain referred to by the Trustees in 1911'. (Reynolds & Cutler, 1987) (this rockpool is now the location of the 'Old Fountain').

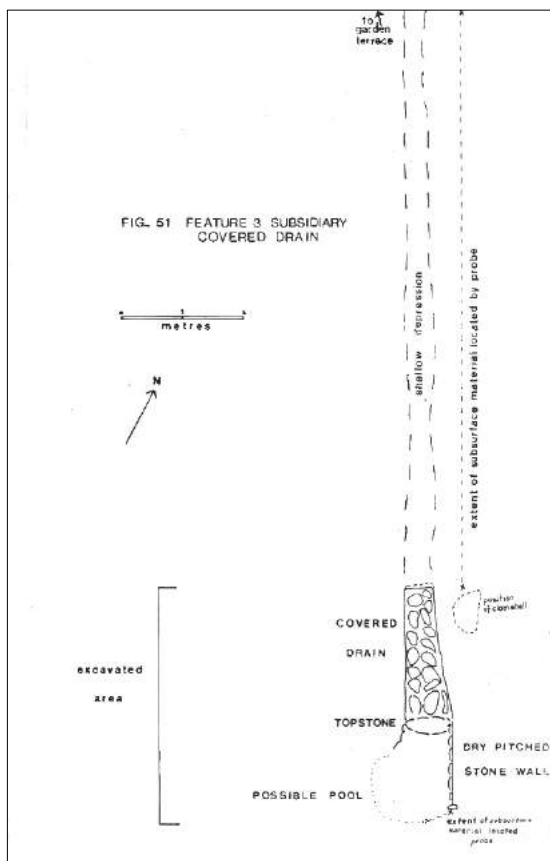


Figure 8: Cover Drain Plan (Reynolds & Cutler, 1987)

There was evidence of other possible covered or subsurface drains connecting to this, which may have been installed to drain the large grassed terrace immediately to the north of this feature:

'In view of the central location of this feature and the steep slope to the north west, a network of yet unlocated covered drains may exist in the surrounding area.' (Reynolds & Cutler, 1987)

The rockpool, now known as the Old Fountain, was probably built during the Council's reconstruction of the main drain in the mid-1980's, but since then there have been other additions to the drainage.

A Y-shaped stone lined drain around a tree south of the Old Fountain, (see photo below) is one example. However, in this case the materials and techniques used to construct it are not consistent with other stone drains on the site. There was also no mention of this drain in the 1986 study, although it may have been discovered since.



A thorough investigation of this area could very well uncover other features with heritage value and establish the original dimensions and shapes of the drain and rockpool/fountain.

Initial survey by GPR (ground penetrating radar) is one cost effective method for determining if further investigation by archaeologist is warranted and funding for initial testing and further investigations is very likely available from state and federal institutions for heritage related assets like these.

RECOMMENDATION: 4

Conduct an initial GPR survey followed by further investigations of the area around the Covered Drain and Old Fountain to determine the extent and nature of these features. Apply for grants and/or funding from appropriate state and/or federal sources to fund the works.

6.1.2.4. THE OLD FOUNTAIN

The Old Fountain, as discussed above, is probably not its original size and shape and its exact location is also unknown. The current fountain and surrounding garden area was most probably constructed by the Council during the mid-1980's. The original fountain appears to have been commissioned in 1911 by the Trustees of the Queen's Park Reserve (TQP) when they requested quotations for *'an ornamental bowl of some kind to be used in connection with a water fountain'* (TQP letterbook 1911: June 19).

Possible Evidence of this ornamental bowl was uncovered in 1986 by the Material Culture Unit from James Cook University when they undertook preliminary fieldwork at Cooktown:

'At the north-east corner of the excavated stonework, a large clam shell, measuring 72 centimetres by 34 centimetres, was located in situ two centimetres below the surface (fig. 53). Its function is unknown, but it was possibly a decorative feature of a fountain or rockpool.' (Reynolds & Cutler, 1987)



Further investigation of the fountain area is warranted, and this would be included in the survey suggested in Recommendation 4, discussed above.



Possible upgrades to this feature are discussed in Section 7, which proposes a Fountain Pergola (new feature 08).

6.1.2.5. THE BIG POND

As discussed in section 6.1.2.1 above, the Big Pond is not mentioned in the 1987 Historical Study by Reynolds and Cutler, which thoroughly documented all the features that were identified by the Material Culture Unit from JCU in 1986 when they did their fieldwork on the site. It is therefore reasonable to assume that this feature did not exist prior to the mid to late 1980's and was probably constructed by the Council during the reconstruction of the main drain.

At the location where the pond is now, Reynolds and Cutler noted:

'This feature extended from the southern end of the dismantled covered drain and flowed in two directions. The eastern arm, now disused, flowed due south and met the western arm of the channel at the north-west end of the car park.....The northern end of the western arm was a small ill-defined channel which ran in a south-west direction and led into the main drainage. This was an earthen gully which ran in a southerly direction through the south-west section of the present Gardens.' (Reynolds & Cutler, 1987).



While this feature may not be original, (in terms of the original drainage system), it is never-the-less an attractive and well-constructed water feature, which appears to be consistent with the materials, style and construction methods employed along the main drain. It adds interest and is worth retaining without alteration.

Regular maintenance to remove sediment and repair any damaged to the structure should be undertaken.

6.1.2.6. OLD FLOWER GARDEN

The Old Flower Garden is located near the northern central boundary of the fenced area in this precinct. It is described as the Garden Terrace Complex by Reynolds and Cutler who determined that it was most probably an original feature of the Gardens.

It is currently fenced, but there is no evidence to suggest that the idea of fencing the area is original, and in fact it most probably wasn't fenced.

It consists of a number of terraces supported by low granite stone walls, rocks and mounds. Reynolds and Cutler noted:

'There was no record to indicate when the terraces were constructed but it was probable that they were the flower beds referred to in early Trustees' reports. The evidence of a terrace complex indicated that the Botanic Gardens had elaborate flower gardens. These would have enhanced the appearance of the Gardens during the period when formal flower gardens formed an important feature of old botanic gardens.'

It is important to maintain the original design and structure of this feature, as it is historically significant and has heritage value.

In section 7 there is a proposal to include or incorporate this feature into the 'Time Line Gardens', (new feature #09). The idea is to display plants, garden styles and features typical of 19th to 21st centuries. This area would of course represent the 19th century.



6.1.2.7. WELLS

There are two original wells in the Gardens and at least one dates to 1890. The wells were referred to as the Top Well (Well B), located about 4m east of the Old Flower Garden, and the Bottom Well (Well A) located between the two drainage channels, 4m west of the Rockpools lower channel (see Fig 7 'Well A').

Evidence suggests that both wells were originally constructed at ground level and then Council stone pitched both wells above ground in 1984, Well A for 40 centimetres and Well B for 1.6 metres, then covered with steel mesh covers. Both are about 8m deep.

The original idea behind the location of the wells was to provide irrigation for the Gardens, using a gravity feed system, *'The positioning of the well was carefully considered as 'the whole of the Gardens could be watered by gravitation'' (CMCM 1890: Aug 28a).*

Extensive underground pipes were also installed in 1890 to deliver water to various parts of the Gardens and additional underground pipes were added till 1917 when *'a quantity of underground piping [was] about the garden, the length of which cannot be ascertained...'* (TQP corr 1917: Mar 22).

Both wells were dug out and cleaned in 1981 by the Council, but no other record of work to the wells has been determined since then.

There are no proposals to change or alter the appearance or structure of the wells in this MP, however their usefulness as a water source for irrigation should be investigated. It is possible that they may be used as an alternative or additional water source for the irrigation system. Refer to Section 6.2.4 for a discussion on irrigation.



The Top Well (Well B)

RECOMMENDATION: 5

Curator should investigate the water capacity of both wells to determine their usefulness as an additional water source. Initial investigations should concentrate on determining their depth and storage capacity over the seasons, by monitoring levels for each month for a year. Additional archival information on the wells should be researched. Water quality should also be tested to determine suitability for irrigation

6.1.2.8. MAIN BOTANICAL GARDEN PRECINCT PATHS

There is little evidence about the location of the original path system, other than one or two stone features that survived the long period of the Gardens disuse between 1917 and 1980. The current path system probably dates from the late 1980's during the Council ongoing restoration of the Gardens, and it is not clear that the current alignment follows the original.

Figure 9 below shows the path system at the time of the study in 1987, and it is clear from this that the path system did not provide access to the western side of this precinct at that time. Most likely access to these parts of the garden would have been via grassed area.

There is no historical evidence as to what materials were used for the original path system, other than the parts that were stone lined, but is unlikely to have been a permanent hard surface like bitumen and was most likely gravel or some other type of weatherable material, which was typical of garden paths of the time, and available locally.

The current path system dates from after the Historical Study was published, as the site plan from that study does not include the current path system.



Primary Path near the MBGP entrance

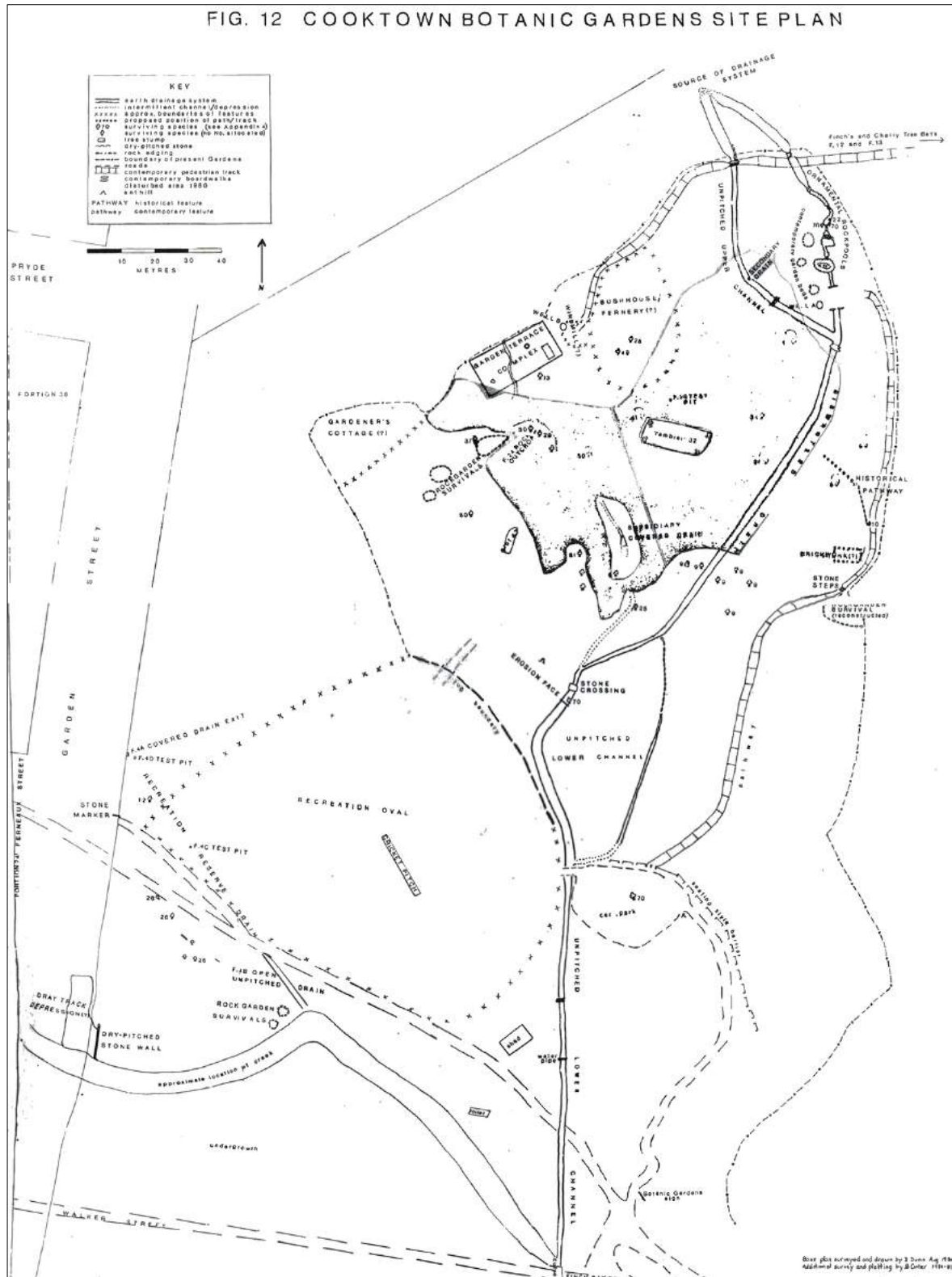


Figure 9: Site plan showing location of paths and features from 'A Historical Study...'. (Reynolds & Cutler, 1987)
 Note – the historical path along the eastern fence is the only original path remaining. The current path was probably built during the late 1980's

Current paths have a gravel surface, but there appears to be no substrate, or formal construction methodology used to construct them, so they are subject to regular erosion and damage from stormwater flow. There were many examples of

this erosion noted during the field trips, and anecdotal accounts from the maintenance team indicated that extensive lengths of the paths had to be re-established after every wet season.

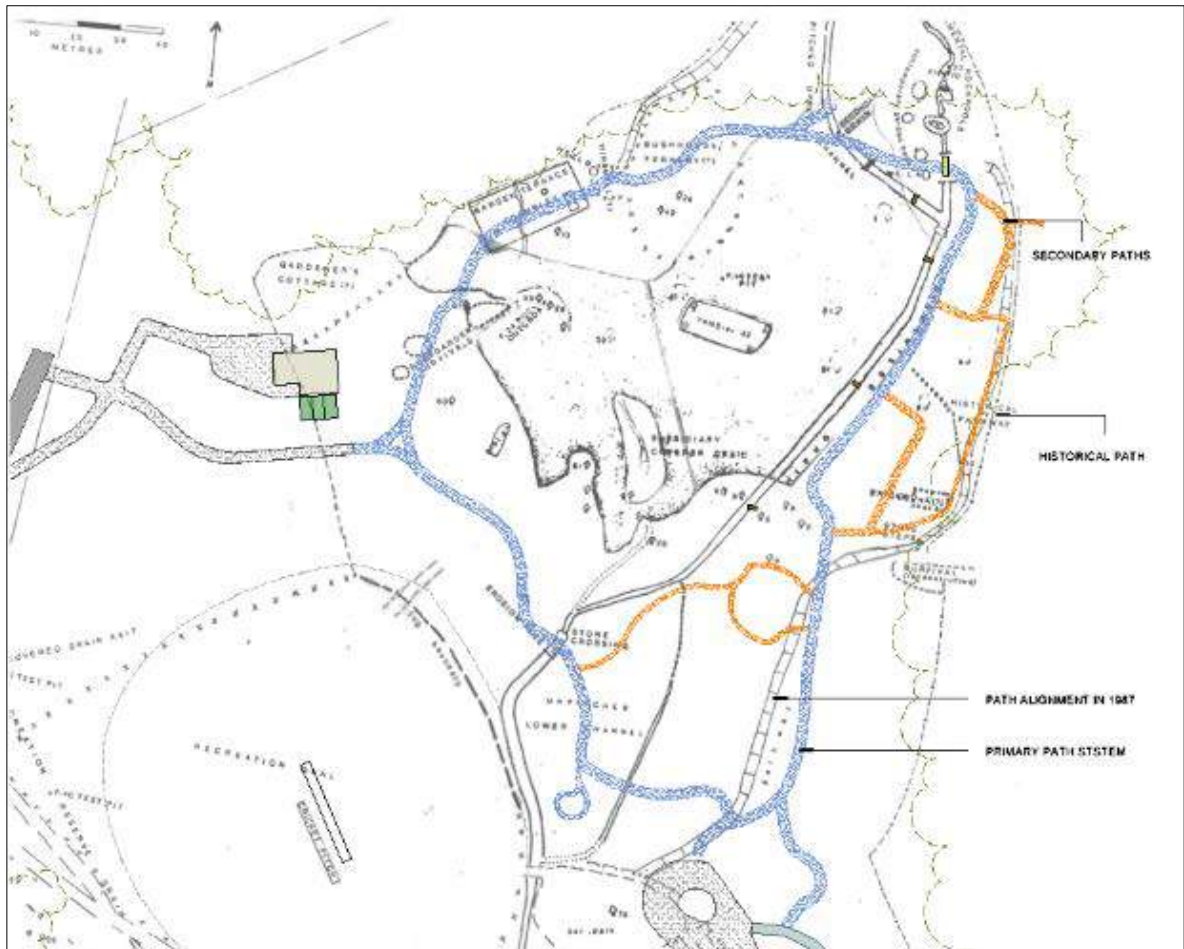


Figure 10: 1987 Site plan with current path system overlaid (primary paths shown in blue, secondary in orange). Note: there was a significant increase in the number and length of paths installed after The Historical Study was published.

Refer to Section 6.2.7 for further discussion of the circulation system and 7.3.5 for recommendations of the Primary Paths upgrade

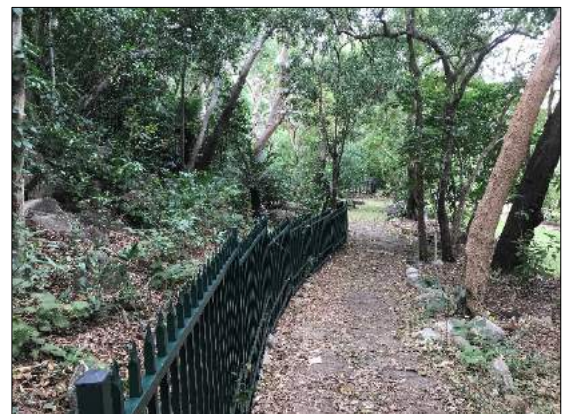
6.1.2.9. FENCING

Fencing in this precinct protects the botanical collection, including heritage trees, from damage by animals. The biggest potential threat is from feral pigs, but native species including wallabies, could also potentially damage the collection. Its second function is to restrict entry from unauthorised vehicles.

The current fence is a powder coated alloy pool style fence painted in dark green. It encloses the whole of this precinct and appears to be doing a good job of protecting the Gardens, while appearing fairly unobtrusive. It is in good condition and should only require regular maintenance for at least the next five years. It is essential that organic material like leaf litter and mulch be regularly removed from the base of the fence to reduce corrosion etc.

This MP does not propose alterations to the fence in this precinct, however it does propose extending this fence to include the whole of the EPR, which would essentially protect the whole CBG from damage from wildlife and unauthorised vehicle entry.

Refer to upgrade plan SK02 for proposed alignment of the new fence.



6.1.2.10. BRIDGES AND CROSSINGS

There are two types of bridges in this precinct, wooden bridges and earth/path crossings that span drainage channels.

The timber bridges are located along the main drainage line approximately 40m apart. They are simple structures with a handrail on each side and provide access from the primary path to the western side of the main drain. Originally, the main drain was covered, so bridges would not have been installed, and the assumption is therefore, that these bridges are not original and have no particular heritage value.



It is recommended that an evaluation of these structures be undertaken to establish their condition and suitability for the task. This should include a review by Council's engineers to ensure that they meet current Australian Standards and building codes.

Ongoing maintenance is essential for these structures and this should include an annual inspection of all fixtures, fittings and hardware.

There is also one stone crossing located at the end of the stone lined drainage channel below the Big Pond, where the primary path crosses near the cricket oval. This is part of an original feature noted as Feature 8 in the Historical Study, but its exact history is unknown, as it has not been documented elsewhere. Whether the current crossing is original or has been reinstated cannot be determined at this time. The end of this crossing exits into the un-pitched 'creek' drain by dropping over a rock retained feature described as Feature 22 in the historical study.

One unfortunate feature of this crossing is that it seasonally floods and cuts access to the western part of this precinct via this route, but alteration to this feature by inclusion of a bridge or stepping stones, may not be possible if the crossing is an original heritage feature. This MP does not propose alteration to this feature, but it could be considered if its heritage value can be confirmed.



Stone Crossing

It is recommended that a heritage consultant be engaged to review its heritage value prior to any future upgrade.

Other earth/path crossings include the primary path crossing near the Rockpools, where drainage is delivered under the path through an original covered granite drain – refer to section 6.1.2.2 for further details of this area.

RECOMMENDATION: 6

Inspect and review the wooden bridges for condition, stability and suitability for their task. Initial inspection by Council's Engineer should also include an evaluation of the structures against current Australian Standards and building codes

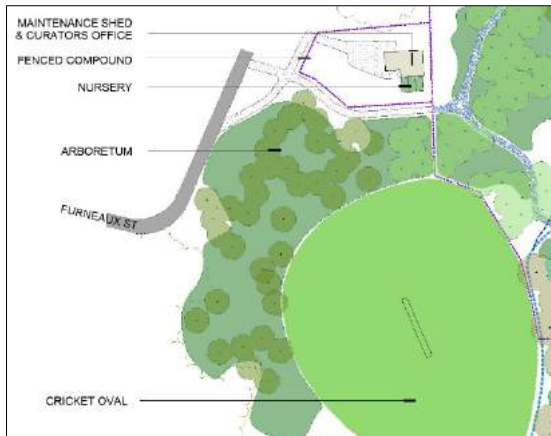
RECOMMENDATION: 7

A Heritage Consultant should be engaged to review the stone crossing, described as Feature 8 in the Historical Study, prior to any proposed upgrade

6.1.3. MAINTENANCE PRECINCT (MPR)

The Maintenance precinct is located in the north-western corner of the CBG, west of the MBGP. It is a fully fenced area that includes, maintenance sheds, Curators office, nursery and a compound area.

This MP does not propose any alteration or amendments to the MPR, as it is outside the terms of the brief, but some suggestions are included where appropriate.



6.1.3.1. MAINTENANCE COMPOUND AREA

The maintenance compound is a fenced area of approximately 1,400m². It has a gravel driveway and entrance and includes the maintenance shed and office, shade house and nursery, irrigation bore and other storage sheds. It is accessed from the end of Furneaux St.

There is also a gravel driveway on the southern side of the compound, outside the fenced compound, which provides an alternative entrance to the Gardens.

6.1.3.2. MAINTENANCE SHEDS & CURATORS OFFICE

The maintenance shed is a standard corrugated iron shed approximately 15m x 10m. It includes areas for machinery and material storage, tools and maintenance equipment, a staff room, lunch area and the Curators office



6.1.3.3. SHADE HOUSE & NURSERY

On the southern side of the maintenance shed is a shade house, used for propagation of plant stock. It is a simple galvanised pole and shade cloth structure. Between the Shade House and the entrance along the southern boundary of the compound is the nursery/hardening off area, which is mostly under full sun.

6.1.3.4. BORE & IRRIGATION SUPPLY

A bore, which was used to supplement irrigation water supply to the Gardens, is also located in the compound, between the driveway and the nursery. There was limited information available on the capacity of the bore and its usefulness for year-round irrigation supply, but maintenance staff accounts indicated that it is a limited supply.

The main source of irrigation water is via town supply mains. The mains supply is fed from the water mains in Furneaux St to an irrigation supply point next to the bore. The supply point is an upstand with water meter and non-return valve (RPZ), which feeds the irrigation supply lines downstream of the RPZ valve.



As the town potable water is a finite and expensive resource, it is very costly to irrigate with it. A major part of the maintenance budget has been expended on water in the past, and though currently its cost is not assigned against the budget, it is likely to be again in the future. So, if an alternative water source can be secured, then then the budgetary resources that would otherwise be used for water supply can be diverted to more productive areas, like additional labour, material and/or machinery.

Please refer to Section 6.2.4 for further information and discussion on the irrigation system.



RECOMMENDATION: 8
 Investigate the capacity of the bore for each month over the course of a year, to establish its seasonal capacity and usefulness for irrigation supply. Initially consult Council record to establish its installation and pump details. Conduct water test to determine its mineral and salt content and continue to test its capacity over the seasons.

6.1.4. ARBORETUM & CRICKET OVAL PRECINCTS (ACOPR)

These two precincts occupy the western edge of the Gallop Botanic Reserve and are the closest areas of the CBG to the residential properties.

The Arboretum Precinct bounds the MPR to its north and the Cricket Oval Precinct to its south.

The Cricket Oval is surrounded by other CBG precincts, with the Arboretum to the north, EPR to the south east and MBGP to the north east.

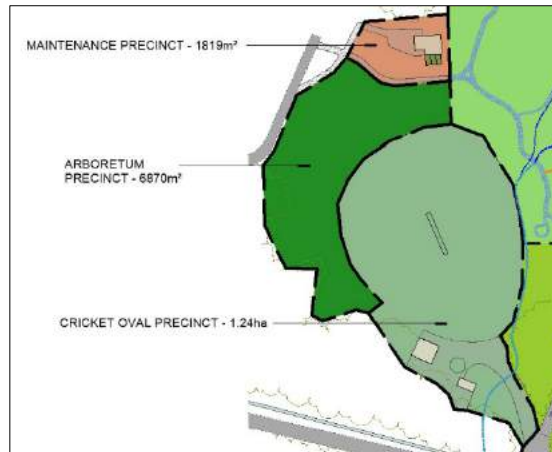


Figure 12: Arboretum and Cricket Oval Precincts

There is a small area of retained natural vegetation to the south, between this precinct and Walker Street.

6.1.4.1. ARBORETUM

An Arboretum is a botanic garden or part of a botanic gardens which is devoted to growing and displaying woody plants, primarily trees, for conservation, scientific research and education. It is a term (but not idea) invented by John Loudon and is particularly apt in this instance because the original design and style of the Gardens was Gardenesque, a style also invented by Loudon (refer to Section 5.3 for further information on Gardenesque style).

Arboreta often specialise in the growing of particular types of trees, while others may display many species, which can sometimes be arranged in collections or groups. At other times individual trees are planted as single specimens to showcase their particular features or habit.

There are many wonderful examples of Arboreta in other botanic gardens and in Australia the National Arboretum in Canberra is most notable. It features 94 forests of rare, endangered and symbolic trees from around Australia.



In the case of this Arboretum, there appears to be no organisation or focus on any particular type, (eg genus or family), or botanical characteristic (eg hardwoods, softwoods etc) of trees, and there is also randomness to their distribution. This is most

likely because the area was probably not planted as a specific Arboretum but was probably cleared to provide shaded viewing of the Cricket Oval. There are records however of tree planting in the general area of the Recreational Reserve (see Cricket Oval below) in 1897, so there is some precedence for the idea.

Part of the Arboretum area appears to include remnant or regrowth of RE 3.12.7, which includes Eucalypt and Melaleuca species, and was the dominant RE for most of the town area of Cooktown, pre-clearing (see plan PL05).

The Historical Study by Reynolds & Cutler did identify a few features which were mainly located in the southern part of this precinct and seemed to be associated with the track access from Garden and Furneaux Streets and drainage associated with the roads and cricket oval (see fig. 13). They noted:

'Construction of part of the Recreation Reserve drain (Feature 4A) may have been in 1911, at the specific request of the Cooktown Cricket Club for a drain to be installed.....The function of this drain was apparently to assist in the drainage of Garden Street. The drain may have followed Garden Street and crossed the south-west portion of the present Recreation Oval (Feature 14) to the open drain near the creek'. (Reynolds & Cutler, 1987)

These features were not sighted during the field trips, as the area described is now heavily vegetated, (30 years of regrowth since the study). However, if they are heritage features then they should be re-found and investigated for their significance and value.

While there is no historical reference to this area being designated as an Arboretum, it is never-the-less an area that is appropriate for the task, as it is little used and could be developed further without disturbing any existing features or the Recreational Reserve.

RECOMMENDATION: 9
Initially, Curator to investigate the area identified in the Historical Study (Fig 13 above), to determine location and condition of features. If found a Heritage Consultant should be engaged to review the features and recommend strategies for restoration if appropriate.

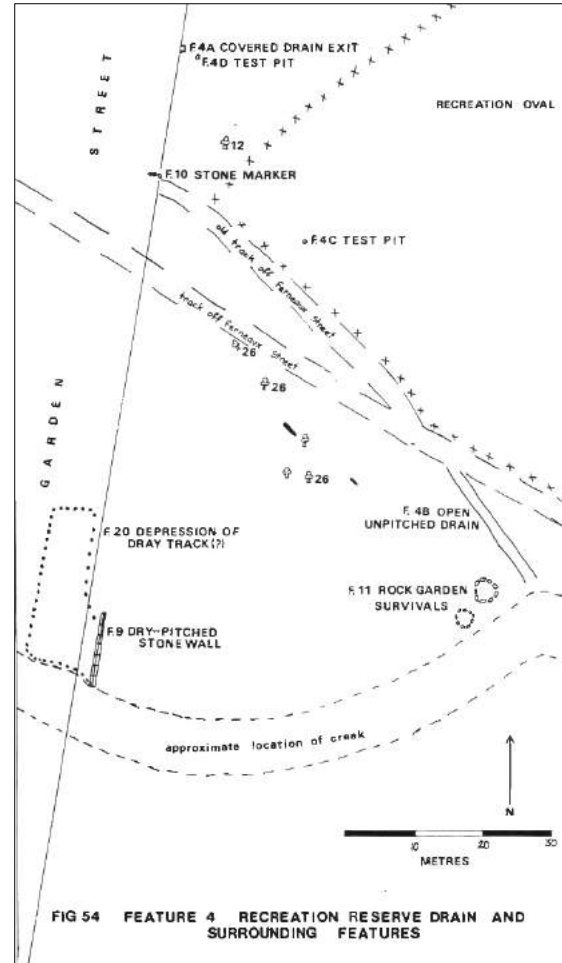


Figure 13: Plan showing heritage features identified in the Historical Study (Reynolds & Cutler, 1987)

The current collection should be reviewed, with species identified, their location plotted, and their condition described. Underperforming or damaged plants should be removed at this stage.

The Curator should then develop a program to build a collection suitable and consistent with aims and focus of the CBG Botanical Collection.

RECOMMENDATION: 10
Curator to identify the trees species in the Arboretum and determine their value and condition. Curator to develop a list of suitable species for inclusion in the Arboretum, based on the Botanical Collection criteria

6.1.4.2. CRICKET OVAL

The Cricket oval, historically known as the Recreational Reserve, is one of the original features of the Gallop Botanic Reserve. Its actual date of construction is not recorded, but it was well established by the mid-1880s and a concrete

cricket pitch was installed in 1888, with additional funds from the Cricket Club.

The Cricket Club took over the maintenance of oval in 1899 and by 1910 the Cricket Club was holding an annual Cricket match each Boxing Day.

As well as Cricket the reserve was used for football and matches were played there as early as 1891.

Little is known of condition of the oval between the closure of the reserve in 1917 and the reopening in 1979, when it was used for a music festival and some clearing of the area was done in preparation for the festival.

In December 1980 the Council decided to restore the Gardens and the oval restoration was undertaken as part of those works.

In December 2001 an irrigation plan for the oval was prepared and later irrigation was installed. Refer to Section 6.2.4 for further details on the oval irrigation system.

While there are no specific works proposed for the oval and associated facilities, protection from unauthorised vehicular access to the oval surface, pitch and irrigation is a priority.

Currently vehicle access is restricted by a series of boundary logs, which are position around the perimeter. However, many are now in poor condition and do not provide adequate protection.



Upgrading this protection is recommended and a proposal for this is included in Section 7.3.4 Perimeter Protection of the Oval.

6.1.4.3. CRICKET AMENITIES & CLUB HOUSE

An amenity building, with toilets and change rooms is located opposite the oval car park. It's a concrete block building with corrugated iron roof approximately 10m x 5m.



The Cricket Club House is a corrugated iron building approximately 10m x 10m which sits about 20m NW of the amenities building



6.1.4.4. CRICKET NETS & SPECTATOR STAND

Two cricket practice nets are located about 60m NW of the Club House and a small spectator stand is positioned under a shade tree, between the nets and the Club House building.

6.1.4.5. ACCESS ROAD

The oval, amenities and club house are all accessed from a gravel driveway that branches off the Entry Road near Walker Street. The driveway is approximately 60m long and terminates at a car park which is roughly circular. About half way along, the driveway crosses the lower end of the drainage/creek from the northern precincts.



6.2. PHYSICAL CONDITIONS OF THE SITE

For the purposes of this MP, physical conditions refer to all other aspects of the CBG which are not considered building or historical features and that have not been discussed above. These include both natural and environmentally generated elements like soil, drainage and microclimate and manmade elements like irrigation, lighting and signage etc.

6.2.1. GEOLOGY

Cooktown, and in particular the CBG part of the GBR, is dominated by Cooktown Granite - refer to the Geology Plan (Section 5.12) for Geological formation boundaries.

Cooktown Granite and the other associated granites in the immediate area (Cooktown Suite), began to form around the late Permian (290+/- mybp), when hot molten magma below what is now Cooktown, began to slowly crystallise to form granite, (granite in this case is an igneous rock made of feldspar, glassy quartz and muscovite-biotite).

Over a long period, the land surface rose, and the covering of rocks and soils eroded leaving the resistant granites as rounded hills and mountains in the coastal plain. The Gallop Botanic Reserve occurs on one such resistant outcrop.

Because the texture of granite is even, weathering also tends to be even, resulting in the rounded forms typical of granite outcrops, and there are many examples of this through the reserve. However, along cracks, depressions and faults in the granite, water is concentrated, and soil develops. Microbial activity and moisture speed the weathering processes, allowing plants to establish, which further expands cracks and crevasses which in-turn produces further weathering. Over time this results in more complex soils able to support more complex ecosystems.

However, despite knowing the underlying geology of the site, there was no detailed information in any of the documentation researched, which discussed the physical structures under the CBG, so certain assumptions have been made in the following sections, based on observation and research.

6.2.2. SOILS

The underlying soil in the CBG part of the reserve can generally be described as a sandy clay loam, where the parent material forming the soil is

porphyritic granite. The feldspar minerals in the granite weather relatively easily leaving quartz to provide the sand particles in the soil. Because of this the soils in the reserve are sandy and highly erodible particularly if the vegetation cover is removed. Where vegetation is disturbed or removed, high seasonal rainfall quickly results in the surface soil being washed down hill, and this can be seen in the typical scouring of gullies on the hillsides and in the surface erosion seen around parts of the Gardens during the wet season. These eroded materials are moved downstream and eventually form alluvial deposits, which on this site are the alluvial deposits and mud flats etc, located towards the bottom of the Entrance and Cricket Oval Precincts and east along the creek to Finch Bay.

Granite based soils are generally more acidic and less fertile than many other soils, but as described above over long periods weathering and microbial activity in gullies and faults in the granite, build more complex soils. Over time areas that are less prone to erosion develop into deeper profiled sand clay loams, as additional organic materials are added.

Also, over the last 140 years, imported material including soils and organic material like mulch etc used to amend soils, have been added to form a complex mixture of soil types across different areas of the Gardens.

Where areas are more open and have had less cultivation, like the Lawn Terrace, and a large proportion of the area west of the main drain, soils have been subject to higher water sheet flow, moving surface material and depositing them further downslope. As such the soils in these areas probably have a shallower A horizon¹ with a greater amount of coarse sandy material and this is evident in the erosion seen around the base of some trees, especially near sloped areas, where surface roots are exposed.

It is also notable that these areas support the larger proportion of the remnant stands of Eucalypt woodland and open forest species, which have evolved in these soil types.

Other areas that are more protected, for example along the eastern boundary where there is a permanent canopy and less erosion, soils have a deeper profile, with more organic material and are undoubtedly more fertile. These areas can support taller trees and are far more suitable for growing rainforest species.

¹ The A horizon is the upper part of a soils profile which usually has more organic material

Another consequence of the sandy nature of the site soil is its permeability. This manifests in a reasonably rapid movement of water through the soil profile, with the result that during the wet season there are many areas where continual seepage results in semi-permanent wet conditions. As the seasons continue however, the weather dries out and the water table drops, and the soils quickly dry out, as they have poor water holding capacity.

This of course makes site management problematic, as conditions are either very wet or very dry.

Given the distribution of different soils types across the site, there is no single solution to improving soil fertility. Each garden area must be analysed separately to determine the required amendments, based on the soil profile, its location and its proposed botanical collection.

RECOMMENDATION: 11

The soil in all gardens should to be tested and analysed to determine its suitability for the intended botanical species and/or collection to be displayed, prior to any upgrade or additional plantings. This would be done concurrently with garden upgrades associated with the Botanical Collection review discussed in Section 9

There is one factor however, that does impact on soil quality across the whole site – drainage.

6.2.3. DRAINAGE

Drainage is perhaps the most important factor affecting the site. It has major implications for soil quality, access, usability, and maintenance, and the cost in terms of materials and labour to repair the damage cause by poor drainage is a major burden on the budget.

Historically, drainage has been an important issue and many attempts have been made over the years to deal with the problem. Many of the historical efforts have been discussed above, including the Heritage Stone Pitched Drain (6.1.2.1) and The Covered Drain (6.1.2.3), however no comprehensive drainage plan has been discovered in the historical documents reviewed for this MP, although it’s very likely that there would have been plans.



There are basically two separate drainage issues on the site. The first is surface flow and the resultant damage caused from stormwater runoff during the wet season. The second is subsurface seepage and waterlogging.

SURFACE DRAINAGE:

Stormwater runoff is a major issue during the wet season and as discussed above, has been acknowledged by previous works in the Gardens. The main function of the Stone Pitched Drain was to move stormwater collected from the natural creeks and drainage lines at the bottom of the northern hills, off the site. But it is unclear whether it was also intended to collect site water, as it was originally designed as a covered drain and there doesn’t appear to be any obvious side channels other than the junction at the top of the site near The Rockpools.

Other historic drains also collect water eg the Covered Drain, but it may have been intended to collect seepage as it appears to have been designed as a subsurface drain – see discussion below.



A few more recent drains have been added recently and one example is the stone pitched drain between NPH and the Orchid House, which connects to a subsurface pipe system that removes water from this area to a pit below the driveway. However, the existing system of drains is not capable of removing all stormwater off the site and the result is seasonal damage to Gardens, paths and infrastructure and the subsequent costs to repair the damage



Sheet flow down the Primary path



Runoff damage to the Entrance Driveway



Erosion of Primary Path

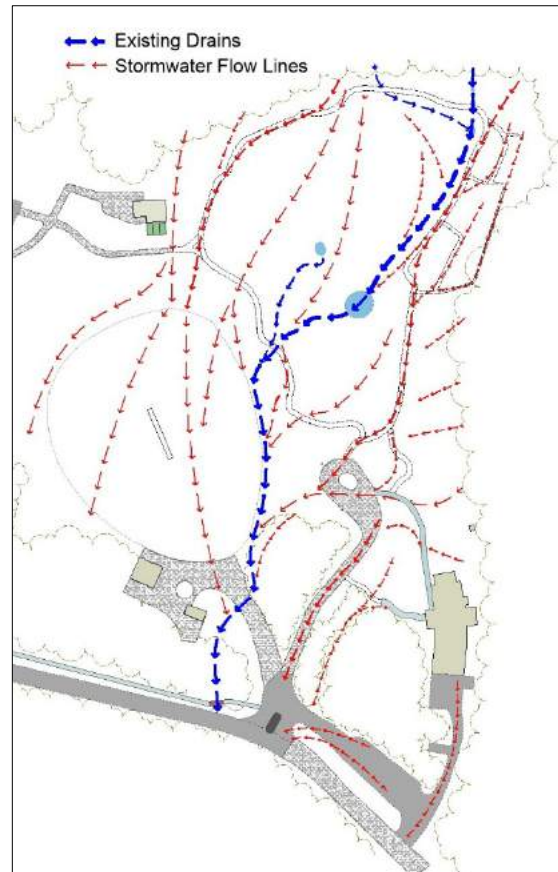


Figure 14: Existing Drainage - Blue lines indicate existing drainage; Red indicates stormwater flow. (Note: stormwater flow lines are approximations only, based on observation and photos)

Figure 14 shows an approximation of the main stormwater flow lines, which essentially flow across the site from the NE to SW. On this site, stormwater often flows down the paths and roads, where the most extensive damage is caused.

Also, a considerable amount of soil and debris finds its way into the main drain from cross flow points, where sediment build up in the drain reduces efficient water disposal.

Collection and control of surface runoff can be reasonably straight forward when collection at major sources is possible. In these Gardens, the Heritage Stone Pitched Drain (6.1.2.1), collects and distributes the main flow from the creek / gully that feeds from the high ground above the northern boundary. Under normal periodic rain this can collect and move a good proportion of the water, but as the ground becomes saturated and/or when there is heavy rain, water sheets off the sides of the hills to the north and east and enters the Gardens at multiple spots.

Collection of these sources could be achieved by installing swale drains along the northern and eastern garden boundaries, possibly following the general alignment of the fence lines.

The other source of stormwater is from the site itself, which on a site this size is considerable. Collection of site water can be achieved by installing swale drains along the topside of paths and roads, installing field and gully pits at the low points of open areas like grassed areas, and installation of agg drains around the low side of gardens. Naturally all these drains are connected to a system of drainage pipes, that empty into the main drainage system, which in this instance is the Heritage Stone Pitched Drain.

SUBSURFACE SEEPAGE:

The second problem is subsurface seepage. During the wet season the water table rises substantially and quickly, so that in some areas of the Gardens it is at or just below the surface. However as soon as the wet finishes it drops quickly, and within a few months conditions have become very dry. This rapid movement of the water table can be directly observed by monitoring the wells, where the water depth can be easily measured, and this was noted during the two field trips in April and June 2017.

As discussed in the Soils section above (6.2.2), the sandy nature of the soil means that there is a reasonably high rate of water movement through the soil. Gravity, (and to some degree the subsurface geology) along with the sandy soil result in continual seepage in some areas down slope from the northern boundary area (and the general level of the wells), so that some areas are continually wet, unmanageable and therefore unsightly and unusable.



Collection and re-distribution of seepage is a more difficult problem than control of surface runoff. It requires either collection at the source, the outlet or in between. In this instance collection at the source is unfeasible as it would require major engineering to control the water table. Collection at the outlet/s is usually done by installation of strip or box drains or subsurface drainage pits, like gravel pits which are connected

to a drainage system and these methods could be used in some instances in these Gardens. Collection in between is often used where there are large open areas, as is the case with many areas in these Gardens, and is achieved by installing subsurface agg drains, often in a herringbone or grid pattern. The lateral drains are connected to a main or central drainage line which empties into the stormwater system. It is quite possible that some of the heritage features like The Covered Drain, (which possibly has a network of subsurface stone lined drains) was an attempt to do just this.

Given the scale of the site, the problems of stormwater and seepage and the resultant damage, a comprehensive drainage plan detailing the management of drainage on the site is essential if the Gardens are to be improved. This should be prepared concurrently with other site plans that detail upgrades to paths and garden beds etc. Ideally this should be prepared by a Civil or Hydraulic Engineer who would look at all the issues and prepare a site drainage plan.

RECOMMENDATION: 12
 Prepare a detailed site drainage plan to address the stormwater and seepage issues. This should be drafted with other site upgrade plans that detail paths, roads and gardens etc, as drainage must be integrated with those.

6.2.4. IRRIGATION

Irrigation is a fundamental requirement for a healthy Botanic Gardens. It allows garden managers to adjust the conditions for each garden or area, so that different collections of plants can be grown in optimal conditions. At the CBG there is a higher demand for irrigation in the dry season (May-November) when the poor water holding capacity of the soil is combined with low rainfall. During the wet season (December-April), the high-water table together with high rainfall and humidity results in a reduction of days requiring irrigation.

MBGP IRRIGATION SYSTEM:

In these Gardens there has been a long history of irrigating. The wells installed in the late 1800's, were designed to provide watering to various parts of the garden under a gravity feed system, and historical references describe installation of

extensive pipe work to deliver the water (please refer to the Wells section 6.1.2.7 for more detail).

After the Gardens were reopened in the 1980s, new irrigation was installed that included modern poly pipework, sprinklers, valve stations, isolation valves and a bore. Details about when the various works were installed have not been determined, but it is clear that they were installed in stages.

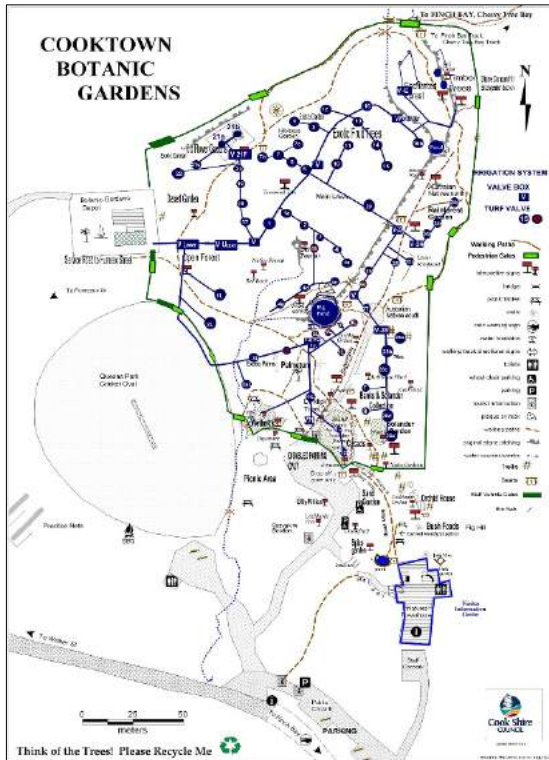


Figure 15: Irrigation layout in 2014 (Refer to Appendix C For a full-size plan)

Figure 15 shows the current system in the MBGP, (this was the only irrigation plan for this precinct reviewed for this MP, although it's possible that more detailed plan/s are in Council's archives). While it does provide irrigation feeds to most parts of the Gardens, it certainly doesn't provide full coverage, and this is a manual system, requiring staff to activate sprinklers and zones individually. Manual irrigation is time consuming and inefficient as it relies on staff remembering to turn off sprinklers. Gardens with a small maintenance crew and a large workload, (which is the case at CBG) cannot be expected to be 100% efficient due to workload. The result is inefficiency and waste, with irrigation either being left to run too long or not long enough. Naturally this impacts on many aspects of the Gardens, including plant performance and maintenance and budget issues.

CRICKET OVAL SYSTEM:

There is a second system for supply to the Cricket Oval. This system was not tested during the field trips and details about its current operational status have not been determined for this MP.

Figure 16 shows the irrigation plan from 2001, when it was installed. Again, it is a manual system, using quick couplers and keys to activate water feeds to manual sprinklers which are moved around as required. Water supply is via a separate meter with the main isolation valve located near the cricket nets.

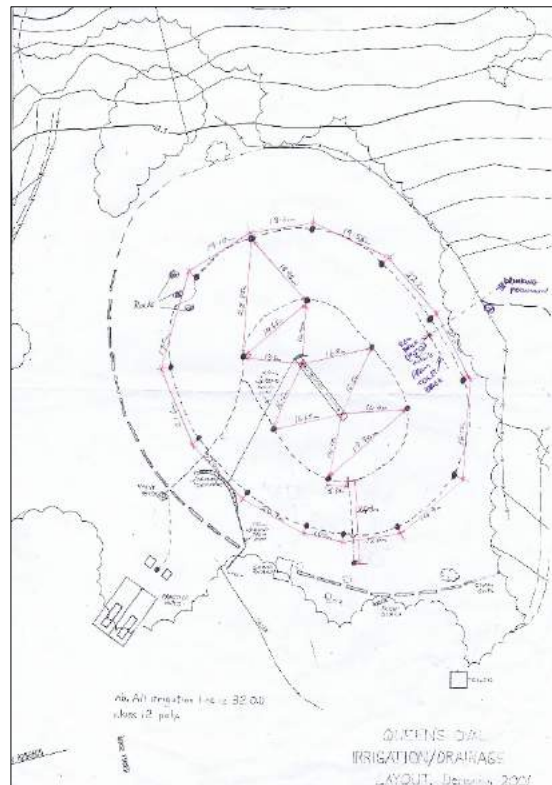


Figure 16: Irrigation layout for the Cricket Oval in 2001 (Refer to Appendix C For a full-size plan)

WATER SUPPLY:

Water for the CBG is currently supplied from town mains, which is connected to the system in the Maintenance Compound (refer to section 6.1.3.4 for details). There is also a bore located next to this connection point, but it seems not to be operational or its supply is unreliable so most if not all water for irrigating comes from the town supply. As the town water supply is limited, it is highly likely that the future cost of supply will be a major burden on the maintenance budget, which takes resources away from other works. Given the likelihood of this cost and the limits of supply, an alternative water source is highly recommended and there are two options on site which could at least augment supply if not provide all the supply. These are the bore and the wells.

Both these options are discussed in their relevant sections, (Wells - 6.1.2.7 & Bore - 6.1.3.4) but they both have at stages in the past provided water for irrigation and there's no reason why they couldn't again. Given their histories, it's likely that individually they don't have the capacity or the rate of supply to be used directly for irrigating, but as part of a number of sources they might supply enough if they were all to feed into a holding tank, which would in turn would supply the system directly.

It is therefore highly recommended that further investigations be undertaken to establish the capacities and supply rates of the bore and wells over the course of a year, (please refer to Recommendations 5 & 9).

A detailed assessment of the existing irrigation systems is also essential. Firstly, the systems need to be accurately surveyed to establish the precise locations of sprinklers, valves and all other irrigation items. Secondly, a detailed analysis of the distribution of water by the static sprinklers, (in-situ not manually moved) to the various gardens and turf areas is needed to establish coverage and distribution efficiency. Thirdly, pressure testing of the entire system will establish the quality of the existing system and determine which parts need replacement.

With this information a designer can begin to prepare a detailed irrigation plan that provides the right type of coverage to the various areas of the Gardens. This system would consider all the various requirements for the different botanical collections and would include sprinklers, dripper irrigation and misting systems where appropriate. It is anticipated that all or part of the existing system would be utilised and/or adapted with extensions added to areas that are not covered now. Coverage would be extended to include the other precincts which have little or no irrigation now.

It is also essential that this system is automated. Automation would free up precious labour resources, reduce water usage and the subsequently costs, and allow for irrigating overnight, which has many benefits both for plants and for site usability.

RECOMMENDATION: 13
 Surveyors to prepare a detailed survey of the irrigation system locating all irrigation items. This could be included in the site survey.

RECOMMENDATION: 14
 Curator or designer to prepare a plan describing the current distribution of the static system.
 Curator or Plumber to pressure test the system, to determine its status and upgrade requirements.

RECOMMENDATION: 15
 An irrigation designer should prepare an irrigation plan/s detailing all the requirements for full coverage of the CBG. The plan/s must include strategies for effective delivery to different botanical collections based on their requirements

6.2.5. MICROCLIMATES

Microclimates are specific site conditions that relate to small areas, as opposed to the climate of a general area, like Cooktown or a region like Cape York.

In the context of this MP it refers to both the conditions around individual garden beds and the conditions of larger areas of the Gardens, like those under shade and those not.

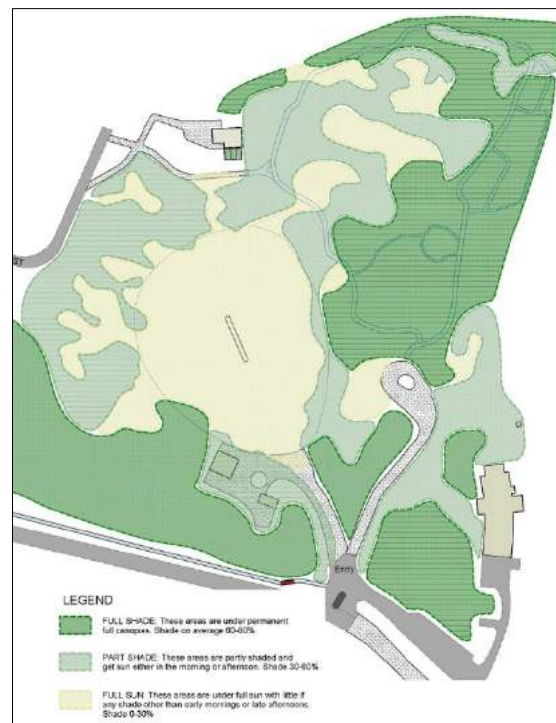


Figure 17: Plan showing Shade distribution in the gardens. (See Plan PL08 in Appendix A)

There are many factors that affect microclimates, including soil, moisture, topography, mulch, wind and the plants in the immediate and surrounding area etc. However, one factor is arguably the most important when it comes to growing specific botanical specimens – shade.

Figure 17 shows part of Plan PL08, (see Appendix A) which is a representation of the shade distribution in the Gardens. This has been developed from a satellite image and does not account for topography and seasonal changes in canopy density. However, it demonstrates quite well the distribution of sun, shade and semi-shade which are critical factors in the development of an area’s microclimate. (Note: a detailed microclimatic analysis for selected specific sites should be undertaken during the detail design stage to establish conditions during mid-summer, mid-winter and equinox at 9am noon & 3pm).

The main open areas are concentrated on the western side of the MBGP and large parts of ACOPR including the Cricket Oval of course. These areas of sun and semi-shade have far less shade overall, more wind and higher evaporation rates, so local conditions are harsher. These areas are more suitable for growing and displaying woodland, open forest and heathland species.

On the eastern side, especially along the Heritage Stone Pitched Drain, there is a dense canopy from the existing trees and palms, which provides a more protected environment. These areas retain more moisture and are better protected from wind, so they are more suited to growing and displaying shade tolerant species like rainforest plants.

The importance of retaining the heritage components of the botanical collection mean that large adjustments to this distribution pattern is unlikely, although some thinning of some of canopy shaded areas is likely and even desirable. Also planting of new species in the more open areas may increase shade in those areas.

As such, selecting the right species for the right environment is essential for the successful development of the botanical collection in this garden, as microclimate conditions for most areas are unlikely to change to any great degree. Designers will have to carefully consider the microclimates of each garden during the development of planting plans.

6.2.6. GARDEN EDGING

There is no evidence that any of the current garden edging is historical, or even that the style is original. There are several different edging styles around the garden, including natural logs, but small rounded rock and boulder edging is the dominant type. Most appears to have been installed in the last 10 to 20 years, although there may be some older.

For the most part, while this edging is somewhat functional, it doesn’t add anything to the aesthetic value of the Gardens and is certainly not consistent with the granite building materials used to construct other heritage features in the Gardens, as that is angular.

Although there is no historical reference it can be reasonably assumed that originally edging, where it existed, was probably more formal, following the ideas of the Gardenesque style. They were most likely either spade or axe edged or in some instance granite may have been used. Where gardens were raised, it is likely that they were dry stacked granite.

Despite the fact that the style of the Gardens today can be seen as a combination of the historical base Gardenesque style and more modern influences (see discussion at Section 5.3), the use of spade



and granite edging is still relevant and appropriate in this instance.

Given this, it is recommended that all of the garden edging be upgraded to better reflect the original style of the Gardens.

Where gardens bound grassed areas and are not subject to drainage or stormwater flow issues, axe or spade edging will probably be the most appropriate.

Where gardens bound paths, or are subject to drainage issues, then granite edging, (or a modern available material that imitates that colour and texture) should be used.

For raised gardens, dry stacked granite (or again a modern material that imitates that colour and texture) should be used.

This could be achieved gradually by the maintenance staff during upgrades and replanting of individual beds or garden areas. Or, where edging is associated with other works, like drains and path upgrades, it would be constructed concurrently.

A detailed plan outlining the extent of the individual garden beds should be prepared to define and identify garden areas. This plan should also specify the type of edging that is appropriate for each garden based on its location and usage. Specific site conditions such as surrounding hardscape features, drainage, microclimate and associations with heritage features will need to be considered for each garden.

RECOMMENDATION: 16
 Upgrade all garden edging to better reflect the original Gardenesque style, using either spade or granite edging. Develop detailed garden plans defining all gardens beds, specifying edging type for each garden. These plans would be drafted along with other site plans, including paths, irrigation, drainage and planting plans etc.

6.2.7. CIRCULATION

The extent of the path system is described in sections 6.1.1.4 (Pedestrian Access Path from the Entry Carpark), 6.1.1.7 (MBGP Access Path) and 6.1.2.8 (MBGP Paths), but by far the most extensive lengths of paths are located in the

MBGP. In the MBGP paths include the primary path circuit and the secondary paths.

Generally, the primary path circuit (535m in length) follows a logical route around the Gardens, looping more or less around the perimeter of the fenced area and providing good access to most areas. Secondary paths branch off the primary at intervals, providing access to the more remote gardens and features along the eastern boundary and Big Pond areas.

Primary paths are generous and range between 3m and 4m and are used by both visitors and garden staff. Garden staff use the primary paths to move vehicles and machinery around the site, so any proposed upgrade would need to be capable of carrying at least light rigid trucks and machinery.

Secondary paths are generally between 1m and 2.5m and are surfaced with a variety of materials including mulch, stone and gravel.

Given the heritage sensitivity of the site there are no proposals in this MP to realign the primary or secondary paths, however the paths do need to be upgraded. All paths need to be better defined with standardised materials and dimensions and all need to be protected from stormwater damage and other traffic and weathering factors. In addition to this, the primary paths need to provide abled and disabled all weather access.

Since it has been established that the current path system is not original and was constructed post 1987, there is no reason, at least from a heritage perspective, why these works should require further heritage consultation, and therefore could be upgraded at any time, subject to funding and appropriate detailed planning. Note however, that as these works would be undertaken within a heritage listed site, the appropriate approvals and or permits must be obtained prior to works commencing.

RECOMMENDATION: 17
 Upgrade the primary paths with suitable construction methods and materials to provide all weather access for abled and disable visitors. Develop detailed construction plans

6.2.8. FURNITURE

There are very few pieces of furniture in the Gardens, with only a couple of picnic settings

around the picnic area and entrance to the MBGP, and the occasional wooden park bench seat.

Picnic settings are constructed with stone pillars and wooden seats and table. While these are certainly unique and somewhat functional, they are not standard in terms of their dimensions and are not practical from a maintenance perspective.



Seats are mainly park bench style wooden seats, with many crafted from local timbers displaying the different wood grains. These have obviously been made specifically for the Gardens and should be retained as they are well made, functional, and unique. However, their placement is somewhat random and doesn't always take advantage of the best views and vistas.



A review and reorganisation of the seating locations is recommended, and additional seating should be installed to provide more opportunities for rest and observation.

Picnic settings should be replaced with more robust and serviceable products and placed with the shelters designated as picnic shelters. Refer to Sketch SK11, which details the proposed new shelters.

6.2.9. SERVICES

These include water, power, sewerage and telecommunications. Currently services are provided to three locations within the site, NPH, the Cricket Club and amenities and the Maintenance Precinct.

Future additions to these services cannot be determined at this time but will need to be included with plans for specific projects like BBQs and shelters.

6.2.10. LIGHTING

Currently, other than NPH building lighting, there is only two other areas with lighting; the pedestrian access path from the bottom carpark to NPH and the concrete access path to the MBGP from NPH. These are limited services, turned on when there is a function at NPH. They consist of green bollard lights on a concrete pedestal, distributed periodically along the paths.

The style of these lights is quite dated (but not heritage) and should be upgraded along with new driveway lights to reflect the style of the entrance feature and the bollard and chain driveway guides, (refer to Section 7.1.2 for indicative style)

Generally, it is not anticipated that there will be access to the Gardens at night, so lighting would only be required around car parking areas and any



Access path from the carpark to NPH. Note dated bollard light style, which needs upgrading

access paths to NPH.

Additional bollard or lamp post style lighting could be added to the primary path system if regular functions or other night time uses were to be proposed, but the cost to install would be prohibitive, so it is unlikely that the cost could be justified.

6.2.11. SIGNAGE

There are four main signage types in the Gardens, main entry signage, directional, interpretive and botanical specimen.

The main entry sign is located at the entrance to the bottom carpark and entry driveway directly off Walker St.



This sign has recently been installed, replacing the old signage. While it is functional and directs visitors to NPH and the Gardens, it is a generic sign, without branding and contains very little information. In essence this is a directional sign, but currently is the only announcement, or statement for the Gardens.

Directional signage is also limited. A new sign at the entrance to the pedestrian access path from the carpark, directs visitors to NPH, but does not mention the Botanic Gardens.

There is also another recently installed sign located at the top of the driveway which directs visitors to the Gardens and NPH.



Interpretive signs are mainly located along the primary paths of the MBGP. They display information about features and botanical collections and are generally informative and well presented. However, many are now showing signs of weathering and some will not be relevant to the revised focus of the botanical collection, outlined in section 8.



Botanical specimen signs display the family, botanical and common names of individual specimens in the Gardens. This is vital information for a botanic garden and is an important educational tool.

There are a number of a good examples of botanical signs in the Gardens following a similar format and style (laser engraved alloy plates, see the example above), which is simple but effective. While the plates are fine, the supporting post are timber, and many have degenerated from weathering, rot and/or termites, so a replacement material other than timber is recommended.



Overall, signage in the CBG is poor and badly in need of an upgrade. This was identified by the Wayburr Botanic Gardens Advisory Committee (WBGAC) and highlighted in their Workshop Report of November 2016, where they identified signage as inadequate and branding as confusing and virtually no-existent. Their report recommended improved signage and rebranding as key strategies to improve recognition and visitation.

It is therefore recommended that a signage strategy be developed, which will address the various requirements for effective signage.

It is also recommended that re-branding be considered. This should include development of a motif, and consideration of appropriate and identifiable naming for the Gardens and the visitors centre etc, (consistent use of brand names was a key recommendation of the WBGAC report). This should involve a thorough discussion with key stakeholders and the Cooktown community.

RECOMMENDATION: 18
 Develop a detailed signage strategy that addresses the various requirements for effective signage in the gardens. This should include development of an identifiable brand for the gardens and visitors centre etc.

6.3. SUMMARY TABLE OF CURRENT SITE CONDITIONS & REQUIRED UPGRADES

SECTION	AREA	COMMENTS	ACTION REQUIRED	RECOMMEND	UPGRADE FEATURE	IMPLEMENT STAGE
6	Current Site Conditions	Heading				
6.1	Assets, Buildings & Features	Heading				
6.1.1	Entry Precinct	Heading				
6.1.1.1	Entry Road and Carpark	Poor - requires upgrades to roads surfaces and parking	YES		02	1
6.1.1.2	CBG Access Driveway	Poor - requires upgrades to road surfaces and parking	YES		02	1
6.1.1.3	Public Footpath from Cooktown	Good	NO			
6.1.1.4	Pedestrian Access from CP	Average - improve signage & upgrade surface to all weather	YES		02	1
6.1.1.5	Natures Powerhouse Visitor Centre (NPH)	Good	NO			
6.1.1.6	NPH – Visitor Centre Entrance	Poor	YES		04	1
6.1.1.7	Main Botanic Garden Precinct Access Path	Good	YES		04	
6.1.1.8	NPH Staff Parking	Good	NO			
6.1.1.9	Picnic Area	Average - improve facilities	YES		05	2
6.1.1.10	Orchid House	Poor - upgrade	YES		06	1
6.1.2	Main Botanic Garden Precinct	Heading				
6.1.2.1	Heritage Stone Pitched Drains	Good - ongoing maintenance	NO			
6.1.2.2	The Rockpools	Good - investigate condition	YES	3		1
6.1.2.3	The Covered Drain	Average - investigate to establish the original shape - Heritage Consult	YES	4		1
6.1.2.4	The Old Fountain	Average - as for item above	YES	4		4
6.1.2.5	The Big Pond	Good - ongoing maintenance	NO			
6.1.2.6	Old Flower Garden	Average	YES		09	2
6.1.2.7	Wells	Good	YES	5		1
6.1.2.8	MBGP Paths	Poor - upgrade	YES			1
6.1.2.9	Fencing	Good	YES		01	2
6.1.2.10	Bridges & Crossings	Average - Inspect bridges		6 & 7		1
6.1.3	Maintenance Precinct	Heading				
6.1.3.1	Maintenance Compound	Good	NO			
6.1.3.2	Main Shed & Office	Good	NO			
6.1.3.3	Shade House & Nursery	Good	NO			
6.1.3.4	Bore & Irrigation	Investigate bore capacity	YES	8		2
6.1.4	Arboretum & Cricket Oval Precincts	Heading				
6.1.4.1	Arboretum	Average - upgrade collection	YES	9 & 10		1
6.1.4.2	Cricket Oval	Good - upgrade log barrier	YES		13	1
6.1.4.3	Cricket Amenities etc	Good	NO			
6.1.4.4	Cricket Nets	Good	NO			
6.1.4.5	Access Road	Average	NO			
6.2	Physical Conditions of The Site	Heading				
6.2.1	Geology	Information only	NO			
6.2.2	Soils	Poor - Improve with garden upgrade	YES	11		1&2
6.2.3	Drainage	Poor - upgrade	YES	12		1&2
6.2.4	Irrigation	Poor - upgrade	YES	13,14 & 15		2
6.2.5	Microclimates	Information only	NO			
6.2.6	Garden Edging	Poor - upgrade with gardens	YES	16		1&2
6.2.7	Circulation	Poor - Upgrade	YES	17	14	
6.2.8	Furniture	Good but limited upgrade with shelters	YES		11	2
6.2.9	Services	Good - limited	NO			
6.2.10	Lighting	Poor - upgrade with driveway	YES		02	1
6.2.11	Signage	Poor - upgrade	YES	18		1

7. PROPOSED NEW FEATURES & INFRASTRUCTURE & ASSET UPGRADES

This section describes the proposed upgrades for the various features discussed above. Descriptions, discussions and justifications for the proposed upgrades can be reviewed in Section 6. Sketches further describing the proposed upgrades are included at the end of Section 7.

The following sections describe the works proposed for the various precincts:

- 7.1 reviews new features and upgrades to the EPR.
- 7.2 reviews new features and upgrades to the MBGP.
- 7.3 reviews new features and other infrastructure and asset upgrades for the other precincts, additional areas and features.

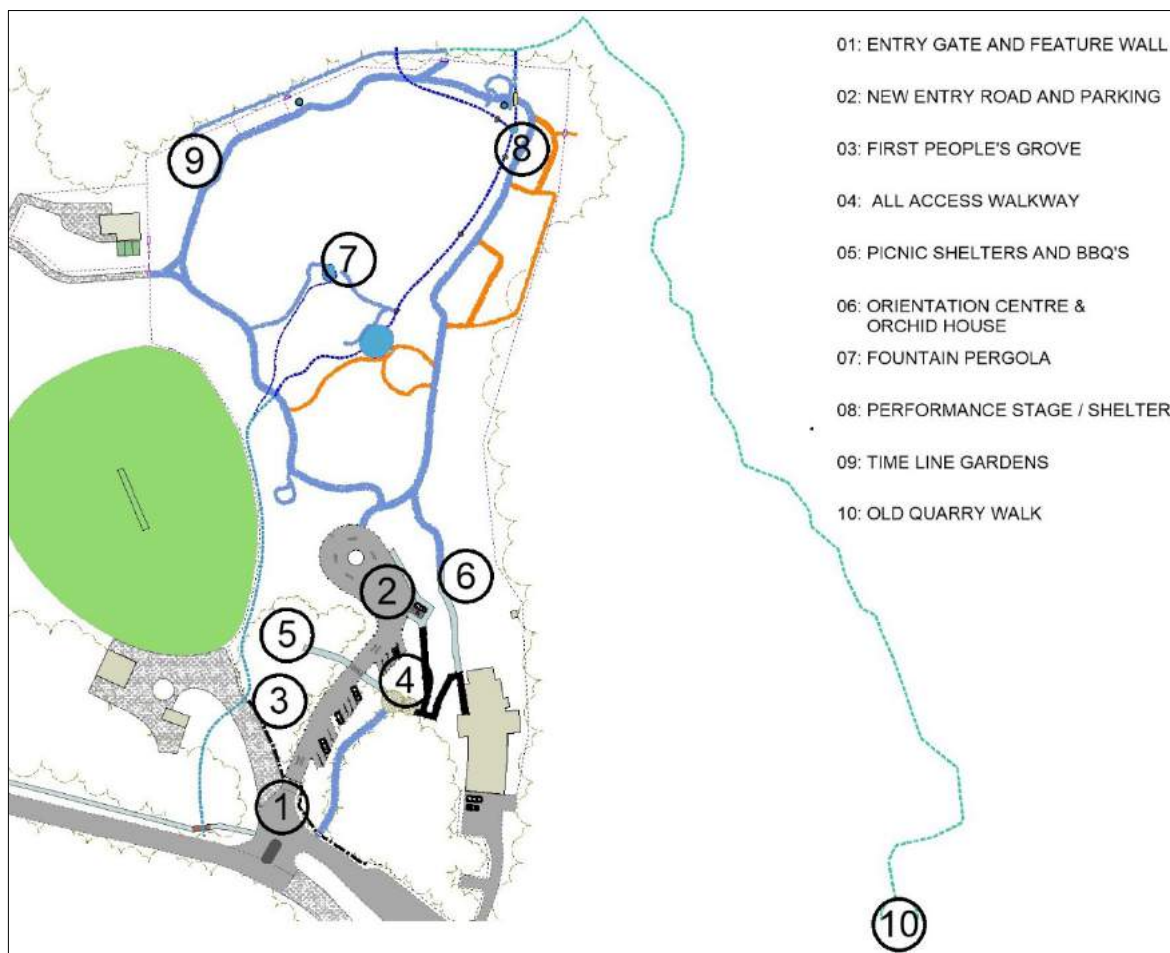


Figure 18: New Feature locations – refer to Section 7.4 for full size plan

7.1. ENTRY PRECINCT – NEW FEATURES

The EPR is described in Section 6.1.1 and as noted in its description (and name), is where visitors enter the Gardens and gain access all the features in the CBG and the forest, beaches and trails of the Gallop Botanic Reserve (GBR). As such it is essentially the shopfront for the GBRCBG and is the key precinct for parking, amenities, orientation and information.

Currently, other than NPH building, visitor services and facilities are poor and badly in need of upgrading. Proposed upgrades for this precinct include the following new features:

- 01: Entry Gate and Feature Wall
- 02: New Entry Road and Parking
- 03: First Peoples Grove
- 04: All Access Walkway
- 05: Picnic Shelters and BBQ Area
- 06: Orientation Centre and Orchid House

7.1.1. ENTRY GATE AND FEATURE WALL (01 - NEW FEATURE)

This feature would be representative and reminiscent of the grand entrances to historical Gardens, typical of the period of when the Gardens were established. Typically, a fence of this sort would be constructed with wrought iron vertical rod panels and stone columns between, with the gate itself made of wrought iron. The wrought iron gate could be fashioned to represent a motif or emblem of the Gardens or some other historical or natural shape.

Ideally, local granite would be used to construct the columns, but if a suitable and appropriate local source cannot be located, then an alternative natural stone should be considered. Alternatively, a more cost-effective option would be to construct the columns from concrete block and clad the structure with a veneer of suitable stone.

In this option, the fence extends from the creek intersection on the Oval driveway, across the front of the Driveway Entrance up to caravan carparking area, a total of 80m. A new perimeter fence (powder coated alloy to match the existing) extends from the existing fence in the MBGP and joins the entrance wall/fence at both ends, fully enclosing all the Gardens and protecting them from feral animals.

It is intended that the main gate would be closed every night to maintain security and protection from feral animals. Pedestrian access would still be available via the pedestrian entrance path via a self-closing gate.

Refer to Sketch SK01 at the end of Section 7 for location and additional information.



Visualisation 1: Model overlayed on a site photo of existing driveway entrance



Visualisation 5: New gate & fence on the site terrain model showing new driveway and parking behind



Visualisation 3: Gate Model

NOTE: these visualisations are intended to be examples only, conveying style and scale. Final designs and materials may vary significantly depending on detailed designs and Council and community requirements

7.1.2. NEW ENTRY ROAD AND PARKING (02 - NEW FEATURE)

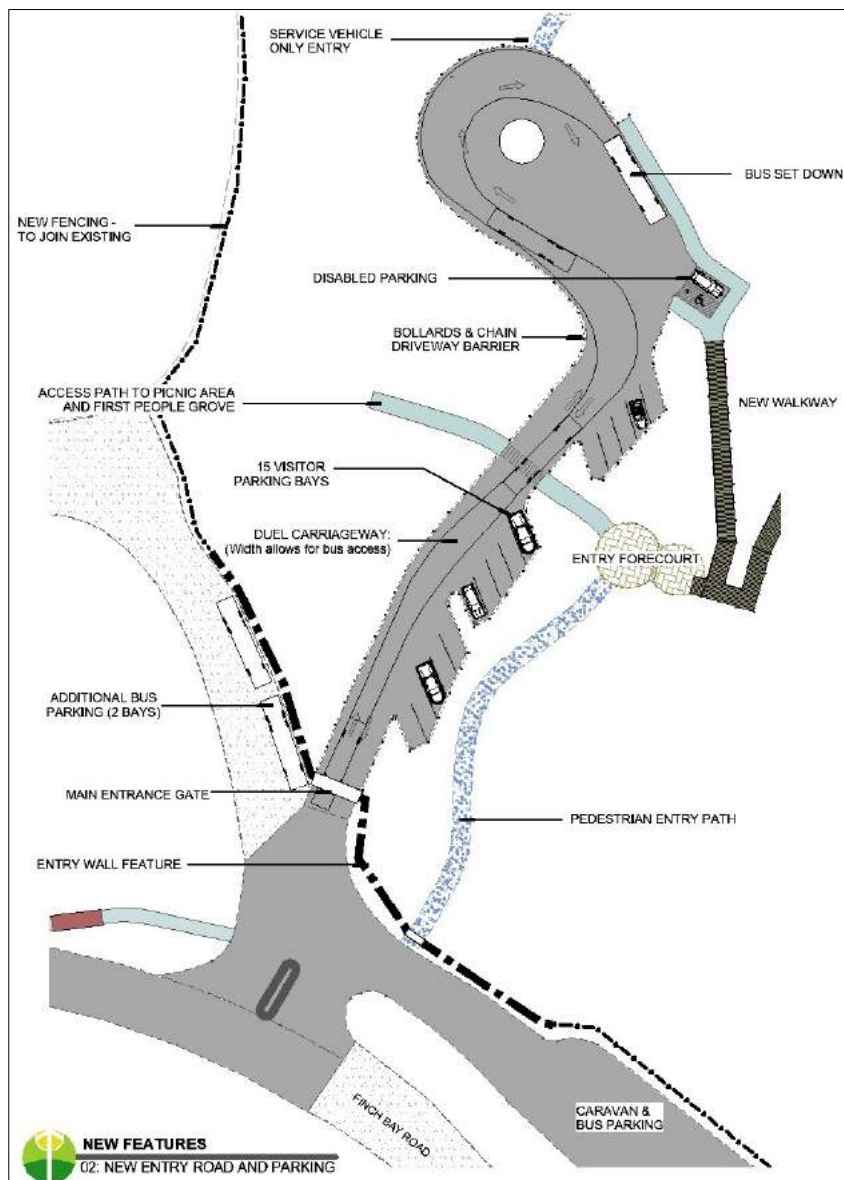
The entry road, parking and access to the Botanic Gardens is reconfigured in this design. It also allows for bus access, circulation and set down, disabled parking and 15 visitor parking bays.

Surface material would be all weather, most likely bitumen to match existing road access. Vehicle and access to areas outside the parking and driveway areas would be controlled by bollards with chain loops between the bollards, similar to the existing, but with more solid and ornate bollards to match the entrance style. Access for service vehicles is provided at the head of the cul-de-sac with a removable section of the chain.

The road and driveway design must include adequate provision for drainage, as this is currently a major issue on the site. Additionally, sub surface storage of runoff from the driveway should be considered as an additional source for irrigation.

Design and construction considerations:

- All areas and items must be designed and constructed to all relevant building codes and Australian standards, including but not limited to AS1428 Design for Access and Mobility; AS2890 On and Off-Street Car Parking and AS4586 Slip Resistance of Pedestrian Surface Materials.



Example of a Bollard & Chain barrier fence

Figure 19: New Road, Driveway & parking (refer to the Plan at Section 7.6)

7.1.3. THE FIRST PEOPLES GROVE (03 - NEW FEATURE)

An area dedicated to Aboriginal history and culture is considered an important addition to the CBG. As the first people to live in Australia, they have millennia of connection with the land and their knowledge and understanding of fauna and flora of the Cooktown area, Cape York and Australia is important and significant.

The area indicated is essentially a blank canvas, with unlimited potential and It is ideally located near the entrance, visitors centre and picnic area. This area is not intended as a replacement for the Bush Tucker collection or any other Aboriginal associations with the Gardens.

It is hoped that the area would be developed by or with the help of the Aboriginal Community.

The term First People's grove is a place holder, with the final naming to be decided during development.



Photo looking NE across the 'grove' from the Oval entrance driveway



Looking NE across the Oval driveway. The Grove area is centre right in this photo and would be behind the new feature entrance wall/fence. An access gate could be provided in the fence to allow external access to and through the area

7.1.4. ALL ACCESS WALKWAY (04 - NEW FEATURE)

The existing entrance to the visitor’s centre requires an upgrade as it is both a mix of materials and styles and has the potential for safety issues with slippery surfaces and varying step heights, (review the current condition of the area in Section 6.1.1.6).

This proposed design reconfigures the access and entry to the visitor’s centre allowing for one access ramp for abled and disabled visitors. The bottom of the ramp connects with the disabled parking bay, with the footpath extending around the disabled parking bay to the bus set down area. Additional access in the form of stairs is included off the end of the paved forecourt for abled visitors entering via the path system or the new parking bays.

This design proposed using hardwood timber for all walkway structures, ideally using locally sourced hardwoods, although it is acknowledged that this may be difficult. Alternative materials, including metal and/or composite materials is also an option, depending on budget and costs. The walkway would also provide opportunities for interpretive signage and for viewing of the surrounding plant collections including the Vera Scarth-Johnson Collection which is featured in this area.

Design and construction considerations:

- The walkway must be designed and constructed to all relevant building codes and Australian standards, including but not limited to AS1428 Design for Access and Mobility; AS2890 On and Off Street Car Parking and AS4586 Slip Resistance of Pedestrian Surface Materials



Visualisation 8: Model of the proposed walkway (note surrounding vegetation is not shown)



Visualisation 10: View of ramp from disabled parking

Visualisation 12: Stairs from the Forecourt entrance

NOTE: these visualisations are intended to be examples only, conveying style and scale. Final designs and materials may vary significantly depending on detailed designs and Council and community requirements

7.1.5. PICNIC SHELTER AND BBQS (05 -NEW FEATURE)

This area is ideally suited for picnics and has been used for this in the past. It is a relatively open grassed area with some excellent shade trees and close to parking, the cricket oval and Nature's Powerhouse - Visitor Centre. The old and tired picnic tables would be replaced with new settings and the areas would benefit from the inclusion of one or two shelters.

Shelters could be a simple and cost-effective structure such as the skillion roofed shelter a more elaborate style like a Gazebo. Construction material would be hardwood, with roof colours to blend with the background, or as decided during the detailed design stage to match other features.



Skillion Roof Shelter



Gazebo Shelter



Photos looking SW across the existing picnic area



Photo looking NW from the general area of the proposed new access path. The picnic area is the grassed area through the centre of this photo extending to the far centre right. The First Peoples Grove is out of shot to the far left in this photo

7.1.6. ORIENTATION CENTRE AND ORCHID HOUSE (06 – NEW FEATURE)

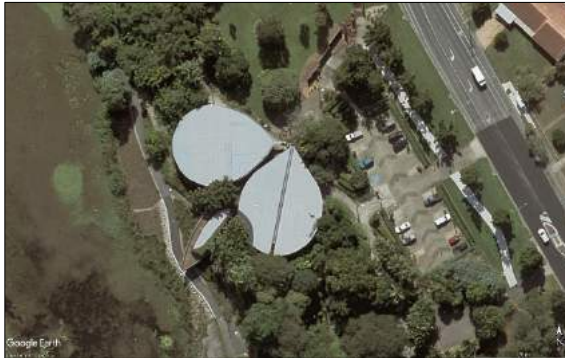
This feature would combine an orientation centre with interpretive and information displays with an orchid display house. It would provide information on the various area and features in the Gardens and could include a variety of media and display types, including visual audio, and interactive.

In addition to the interpretive centre, it could include an orchid house to display and showcase the local Cooktown Orchid and other rare and endangered orchids and suitable plant species.

It is envisaged that the structure would be as open as possible with a combination of roof types, like pergolas for climber displays and some areas weatherproofed for shelter and protection of displays. The structure would possibly be organically shaped, for example the roof areas might take the shape of an orchid, leaf or other natural feature.



Organic shaped roofs and building (note the size of these structure is not representative of the proposed building)



Mackay RBG visitor centre roof design



Mackay Orchid House



Singapore Orchid House

NOTE: Note: these examples are not representative of the scale of the proposed structure. The proposed building will be considerably smaller

7.2. MAIN BOTANIC GARDEN PRECINCT - NEW FEATURES

The MBGP is described in Section 6.1.2 and is essentially the original Botanic Gardens area. It currently includes the main botanical display gardens, trees, palms and lawns, heritage listed features like stone pitched drains, ponds and fountains etc and paths, structures and signage. This precinct includes all the main heritage listed features of the CBG.

While some additional features and upgrades to some of the infrastructure etc is proposed below, it is important to stress that maintaining the overall structure, as well as the look and feel of this precinct is an essential part of this MP.

Proposed upgrades for this precinct include the following new features:

- 07: Fountain Pergola
- 08: Performance Stage/Shelter
- 09: Timeline Gardens

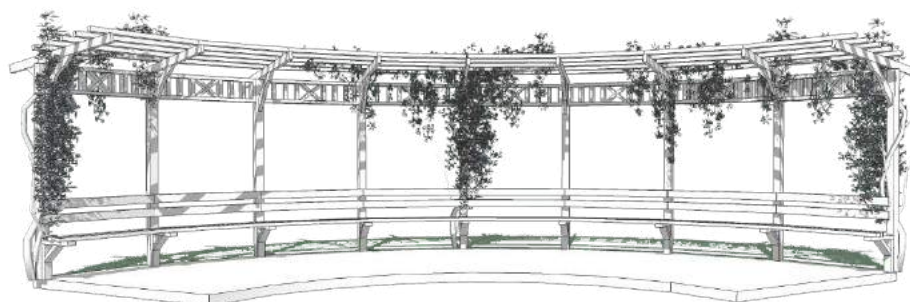
7.2.1. FOUNTAIN PERGOLA (07 – NEW FEATURE)

This feature includes a semicircular paved area using local stone to match existing stone work with an arbor or pergola, orientated towards the Old Fountain. It would provide seating and shade and would allow for extended views across the fountain to the heritage tree collection. It could also be used for weddings, or other celebrations and may also include a new path system to access the feature from the primary path system. This area also provides a major visual access point for the central part of the Gardens.

It is important to stress that it is intended that the structure would not damage or detract from the fountain but would instead frame it and be complementary to it. However, as discussed in Section 6.1.2.4, it must also be noted that while the fountain is part of the heritage listed features of the CBG, its current configuration is probably not original. Therefore, during the design development stage of this feature, it is recommended that a thorough investigation of the Fountain be undertaken by a heritage expert, to determine what, if any, remedial work should be undertaken to return the fountain to its original working condition. Further design development of this proposed feature must only be undertaken once this has been established. Development of this feature will need to gain Queensland Government approval prior to construction.



Visualisation 14: Model overlaid on-site photo (note: colours are not accurate)



7.2.2. PERFORMANCE STAGE/SHELTER (08 – NEW FEATURE)

This feature would serve as a shelter for visitors to rest and enjoy the views and could also provide a stage for various musical or artistic performances. It would be orientated towards the lawn opposite, which is slightly sloped and creates a natural amphitheatre. It would include a timber deck performance area (the example below is 5m x 5m) and would have an open sided roof to provide shade and cover from rain.

Services, like power and water would also be supplied along with some basic storage and seating. It is envisaged that the primary path would pass through the structure.

During performances, access around the stage is already provided with the secondary path that loops behind this area.

The shelter could also include some interpretive signage displaying aspects of the botanical collection and/or details about the history of the Gardens.



Visualisation 16: Example structure overlaid on a site photo (note: colours are indicative only)



Visualisation 18: Stage area allows for performance opportunities

NOTE: these visualisations are intended to be examples only, conveying the general idea and scale. Final designs and materials may vary significantly depending on detailed designs and Council and community requirements. The skillion roof style shown in this model is also speculative.

7.2.3. TIMELINE GARDENS (09 – NEW FEATURE)

These Gardens would display plants, garden styles and feature typical of the 19th, 20th & 21st centuries and would also include a Gondwana section preceding the other Gardens, which would include examples of Cape York plant genera and species with evolutionary connections to Gondwana.

The Gardens could include facades of building with historical context to the period being displayed. They could be styled to show features common to all periods, for example they could represent what typical front yards would look like for each period.

Note: It is important to retain the Old Flower Garden, as this is a heritage feature. The Historical Study (Reynolds & Cutler, 1987) indicated that this feature was likely more extensive than its current configuration, so further research and investigation of this feature must be undertaken before any upgrade plans are prepared.



View looking NE towards the Old Flower Garden – location of the 19th & 20th Century gardens



View looking NW towards the maintenance Precinct – location of the 20th & 21st Century gardens



Example building facade – 19th Century



Example building facade – 20th Century

7.3. OTHER PRECINCTS, AREAS & FEATURE

This section describes all other proposals are not included in the ERP and MBGP.

Proposed new features and asset upgrades include the following:

- 10: Old Quarry Walk
- 11: GBR Bush Tracks Upgrade
- 12: GBR Weed Eradication Program
- 13: Perimeter protection of the Oval
- 14: Primary Paths Upgrade
- 15: Shelters

7.3.1. OLD QUARRY WALK (10 – NEW FEATURE)

This recently rediscovered feature was identified by satellite imagery. It is the site of a quarry where stone was excavated for building in Cooktown and possibly in the Gardens. It shows examples of the historical techniques used to extract the stone and is of historical and cultural significance. As its age and usage details are unclear, it is recommended that more research be undertaken to establish its history.

As a feature it could add historical and cultural value to the CBG and provide value to the CBG experience. It is proposed that the current, (approximately 400m long) unofficial track, that branches off the existing Finch Bay track be formalised, and that the old vehicular track, down to Finch Bay Road, be reinstated. Total distance from NPH via the new track would be approximately 750m. It is also possible that a more direct route could be considered as an option, which would be accessed from the caravan park area at the entrance, as this would be less than 200m, but would most likely require installing steps.



Photo show extent of the Quarry works. Location is approximatly 15° 28.332'S : 145° 15.602'E



Iron wedges used to split the rock



Quarry face showing drill holes used to insert the iron

7.3.2. GALLOP BOTANIC RESERVE BUSH TRACKS UPGRADE (11 – ASSET UPGRADE)

The Gallop Botanic Reserve (GBR) walking tracks to Finch Bay (FB) and Cherry Tree Bay (CTB) start from the northern end of the MBGP. These are wonderful assets for the Gardens and allow visitors to access the beaches of FB & CTB directly from the Gardens.

The FB track is approximately 720m long, starting just north of the Rockpools and follows an easterly path over ridges and valleys, passing through areas of Eucalypt Open Forest and Melaleuca Open forest. The CTB track starts at a T intersection, approximately 620m along the FB track. It takes a northerly route over the north ridges to CTB which is located at the extreme northern boundary of the GBR. Conditions appear harsher on these ridges and the vegetation is Eucalypt woodland.

These tracks are in very poor condition. Track surfaces are eroded and, in some cases, have been completely washed away, creating hazardous conditions in some sections. There are also issues with steps have been installed on erodible substrates, especially in sandy areas near beaches, where many have been badly damaged by stormwater events and are uneven and/or have exposed retaining pegs, which create potential trip and injury hazards.

Signage is very limited and mostly directional with no warnings or description of the track conditions, so visitors/walkers are not adequately informed about the conditions of the tracks. This presents a possible liability issue and Council should address this as a matter of urgency.

Weeds are also a major concern, with a profusion of species including declared species, and areas with dense thickets dominating the indigenous vegetation. Discussion of a weed eradication program is discussed below, but priority should be given to removal of weeds along the tracks.

A major upgrade of the path system is required if these tracks are to be promoted as a feature. Works should include:

- Initiation of a weed removal program (refer to the next section for further discussion).
- Repair and/or upgrade all tracks to Grade 4, as defined by Australian Standard AS2156.1 -2001 Walking Tracks – Classification and Signage.
- Install Track grade signage at all entry/exit points to AS2156.1



Stairs access from CTB (now removed)



Weed infested damaged Track to CTB



Eroded unsafe steps on the FB track

7.3.3. GALLOP BOTANIC RESERVE WEED ERADICATION PROGRAM (12 – ASSET UPGRADE)

Weeds are a major concern in the GBR. There are significant areas of weed infestation, especially along the tracks, (noted above) and in the peripheral areas of the CBG, especially the slopes of the northern and eastern hills facing the Gardens, where *Falcataria moluccana* and *Cassia siamea* are prominent weeds.

Current workload commitments of the gardens maintenance team does not allow time for an intensive eradication program in the GBR, as they only have enough resources to concentrate on the internal gardens and the immediate boundary areas.

It is therefore recommended that a weed eradication program be considered as a special project, with the objective of reducing weed numbers in the GBR to a point where the gardens maintenance team can maintain an acceptable ongoing standard with a limited monthly labour commitment.

Funding for this may be possible through Queensland or Federal Government grants. One example is the Queensland Governments Community Sustainability Action Grants, which provides funding for *'eligible community groups and individuals for innovative projects which seek to address climate change, conserve Queensland's natural and built environment and protect our unique wildlife'*

7.3.4. PERIMETER PROTECTION OF THE OVAL (13 – ASSET UPGRADE)

The condition of the Oval's perimeter protection is described in Section 6.1.4.2. Essentially, access by vehicles is restricted by a series of logs which form a barrier around the edge of the oval. However, many of these logs are in bad condition and require replacement.

Various options for replacing the perimeter barrier have been reviewed, including a picket fence which would be consistent with the Gardenesque style.

A less expensive solution however, would be to install a bollard and chain barrier with pedestrian access points at regular intervals. The barrier would be installed at both ends of the oval as separate sections, with the norther section placed between Furneaux St and the perimeter fence at the top of the oval and the southern section between the oval and the Cricket Club car park.

7.3.5. PRIMARY PATH UPGRADE (14 – ASSET UPGRADE)

The extent and location of the path system is described in Sections 6.1.1.4, 6.1.1.7 & 6.1.2.8, and the condition of all these paths is discussed in Section 6.2.7 – Circulation, where the conclusion is that all paths need upgrading. In particular, the Primary Paths that provide access to most of the CBG for visitors and maintenance staff must be upgraded to provide all weather access for both abled and disabled users.

Recommendation 17 at the end of Section 6.2.7 calls for an upgrade to the Primary paths and to support that recommendation the following notes and observations are offered.

- The Primary path needs to be able to support pedestrian and vehicle traffic. It should have a minimum width of 3m, but also include alcoves or passing spots at regular intervals to allow for maintenance vehicles to stop without restricting pedestrian access.
- It is essential that adequate drainage is included with any design. Drains must be able to remove stormwater without damage to the surface or undercutting the paths. Drainage will need to include spoon drains, strip drains and drainage collection pits that distribute stormwater to the main drain system.
- Paths must be designed to comply with AS1428.1-2009 Design for Access and Mobility.
- Surface material: normally an all-weather surface would mean an impervious surface such as concrete, but also weatherable surface such as gravel or decomposed granite should be considered. It is likely historically, that as well as some granite steps and paving, many of the other paths would have been made with these kinds of materials. To provide a suitable, stable and hard surface, an interlocking geogrid reinforcement structure could be installed over a properly constructed sub-base and then backfilled with a suitable surface material. See examples below.
- The alternative to the weatherable material discussed above would be Asphalt. This would provide a permanent all-weather surface, is cost effective and could be effectively maintained by Council, as they already have the resources which they use to maintain Council roads.



7.3.6. SHELTERS (15 – NEW FEATURES)

Shelters are important for visitor comfort. They provide seats for resting and enjoying views and protection from the sun and rain. Shelters can incorporate signage with information about the surrounding features and details about the botanical collection and they are ideal supporting structures for vines and climbers. Ideally, shelters should be located about 100m apart, so visitors can still enjoy the Gardens during showery weather.

The locations shown on the plan below are suggestions based on the locations of proposed new features and on the principle of ideal spacing and are as follows:

A: Picnic Lawn and BBQ shelters proposed with New Feature 05.

B: Orientation Centre and Orchid house

C: This could be a small shelter or arbor over a bench seat. It is located under heavy canopy around the midpoint between B & E.

D: Fountain Arbor. Currently concept is for a fairly open structure, but once covered with climbers would provide some shelter. Or it could include some covered sections.

E: Performance Stage/Shelter

F: Timeline Gardens, which may include facades to showcase the period be described. One of these facades could be used as a shelter. Alternatively, if facades are not to be included, then a small shelter of appropriated design to match the surrounding timeline garden could be installed.

G: Located at the end of the Stone Drain under Melaleucas. Could be a small shelter similar to C.

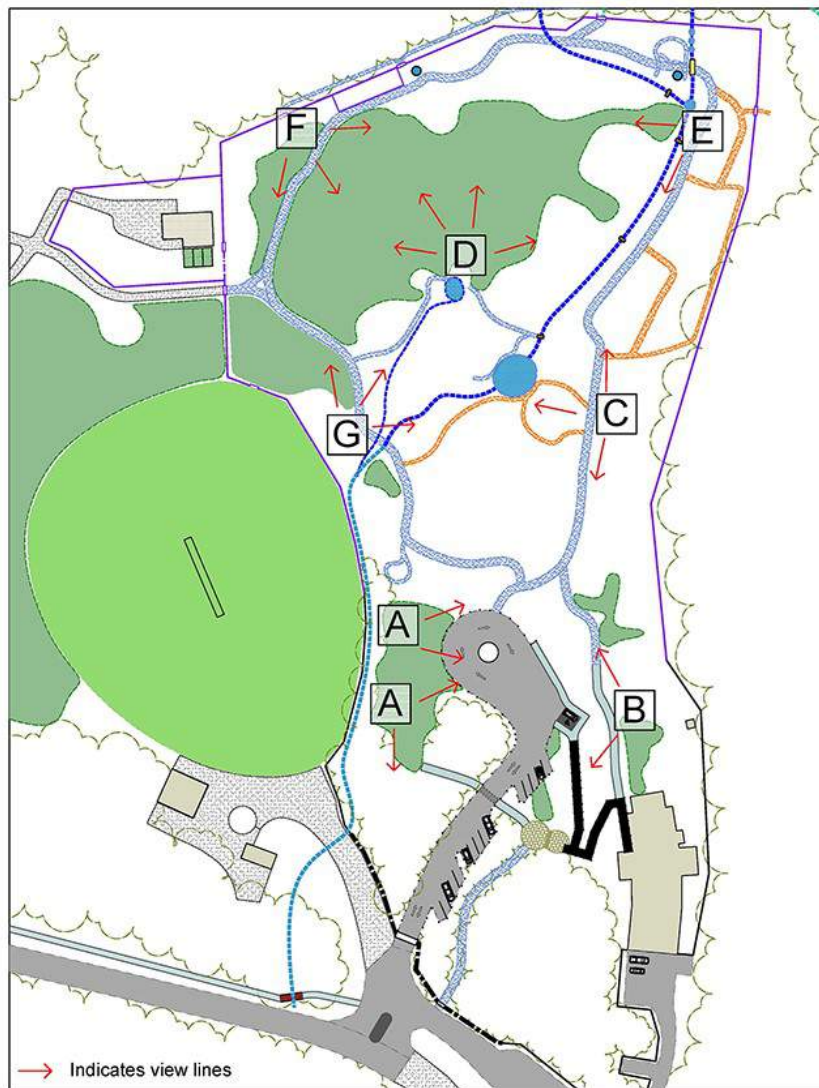
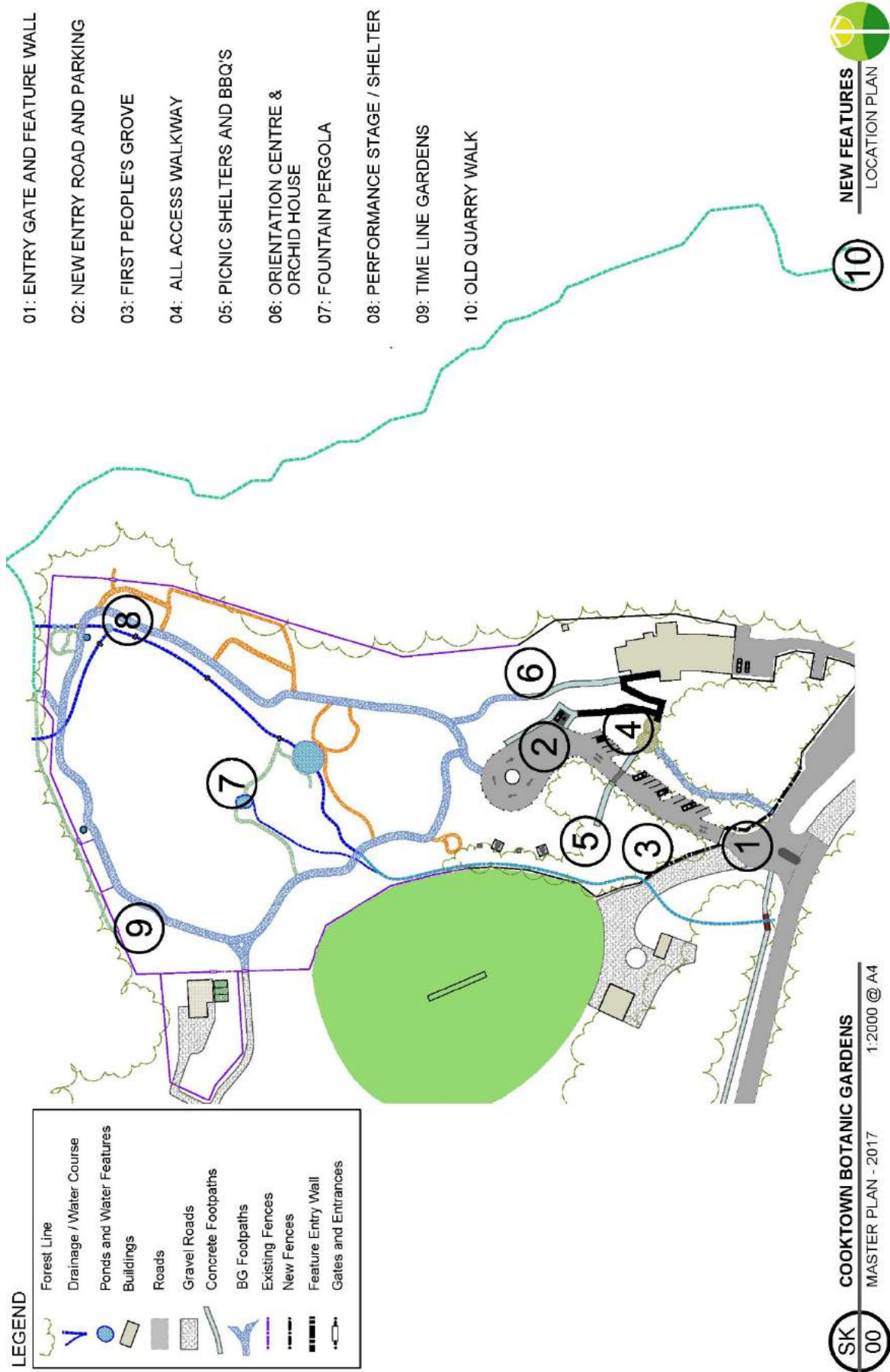
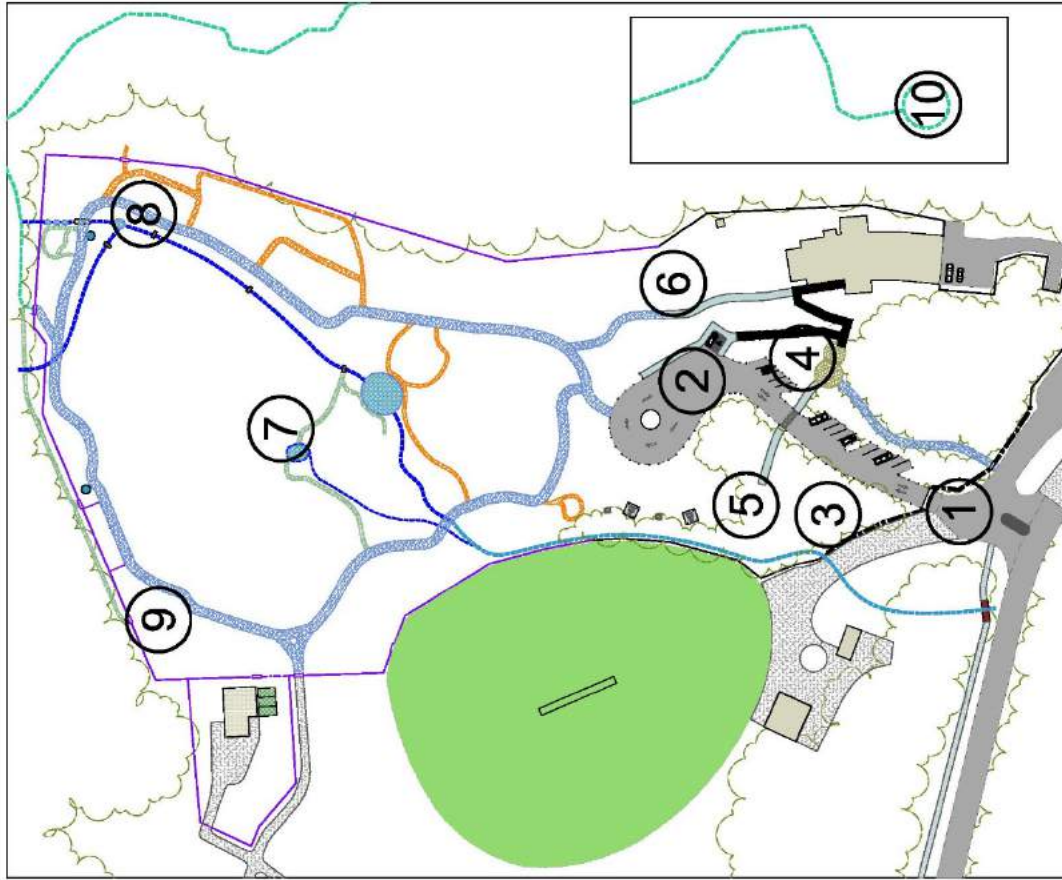


Figure 18: Proposed shelter locations

7.4. NEW FEATURES LOCATION PLAN



7.5. ENTRY GATE AND FEATURE SKETCH



01: ENTRY GATE AND FEATURE WALL

This feature would be representative and reminiscent of the grand entrances to historical gardens, typical of the period of when the gardens were established. Typically, a fence of this sort would be constructed with wrought iron vertical rod panels and stone columns between, with the gate itself made of wrought iron. The wrought iron gate could be fashioned to represent a motif or emblem of the gardens or some other historical or natural shape.

VISUALISATION SHOWING PROPOSED LOCATION AND STYLE (upgraded road and signage etc not shown)



GATE DETAIL



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



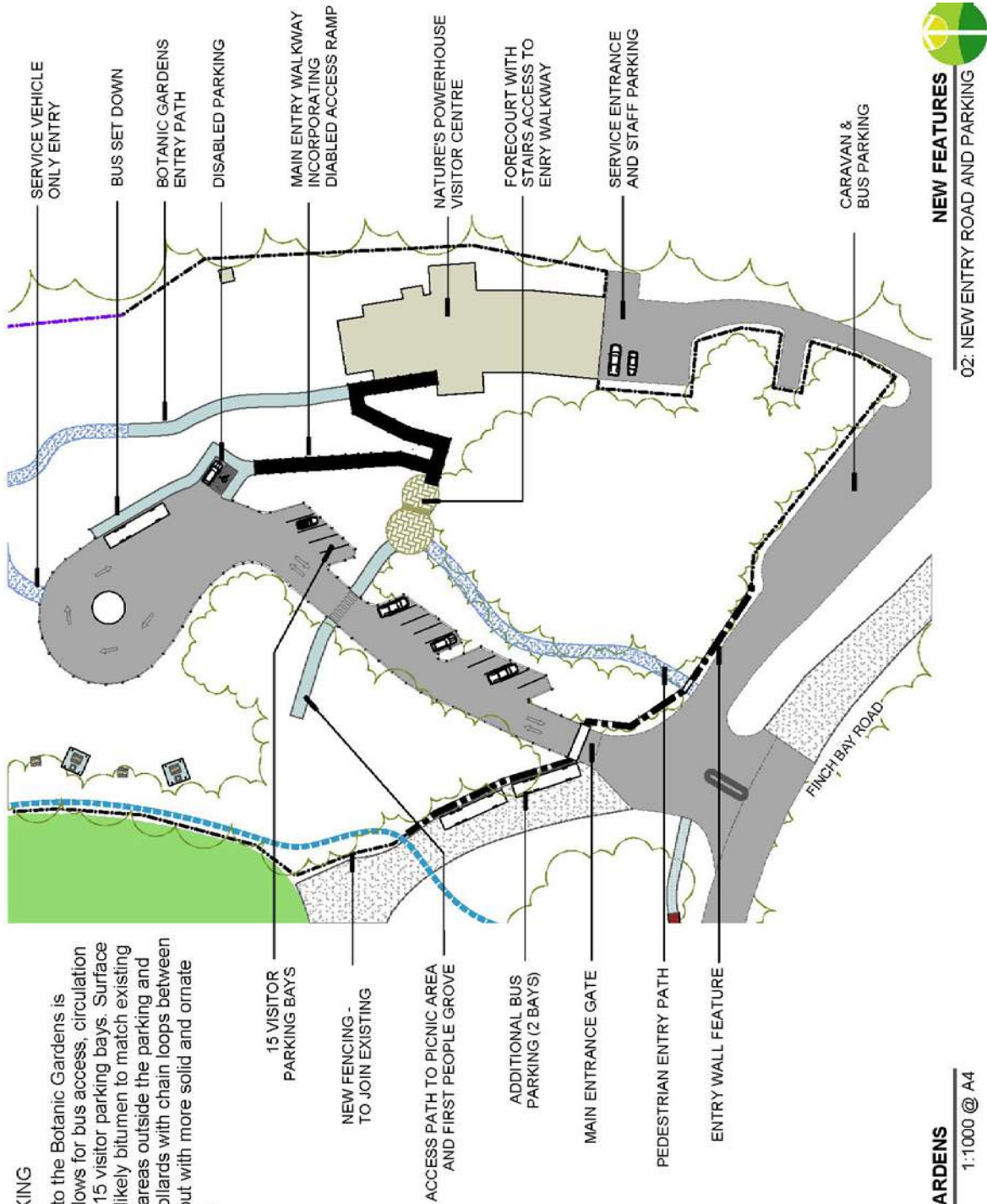
COOKTOWN BOTANIC GARDENS

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1:2000 @A4

NEW FEATURES
01: ENTRY GATE AND FEATURE WALL

7.6. NEW ENTRY ROAD AND PARKING SKETCH



02: NEW ENTRY ROAD AND PARKING

The entry road, parking and access to the Botanic Gardens is reconfigured in this design. It also allows for bus access, circulation and set down, disabled parking and 15 visitor parking bays. Surface material would be all weather, most likely bitumen to match existing road access. Vehicle and access to areas outside the parking and road areas would be controlled by bollards with chain loops between the bollards, similar to the existing, but with more solid and ornate bollards to match the entrance style.

LEGEND

	Forest Line
	Drainage / Water Course
	Ponds and Water Features
	Buildings
	Roads
	Gravel Roads
	Concrete Footpaths
	BG Footpaths
	Existing Fences
	New Fences
	Feature Entry Wall
	Gates and Entrances



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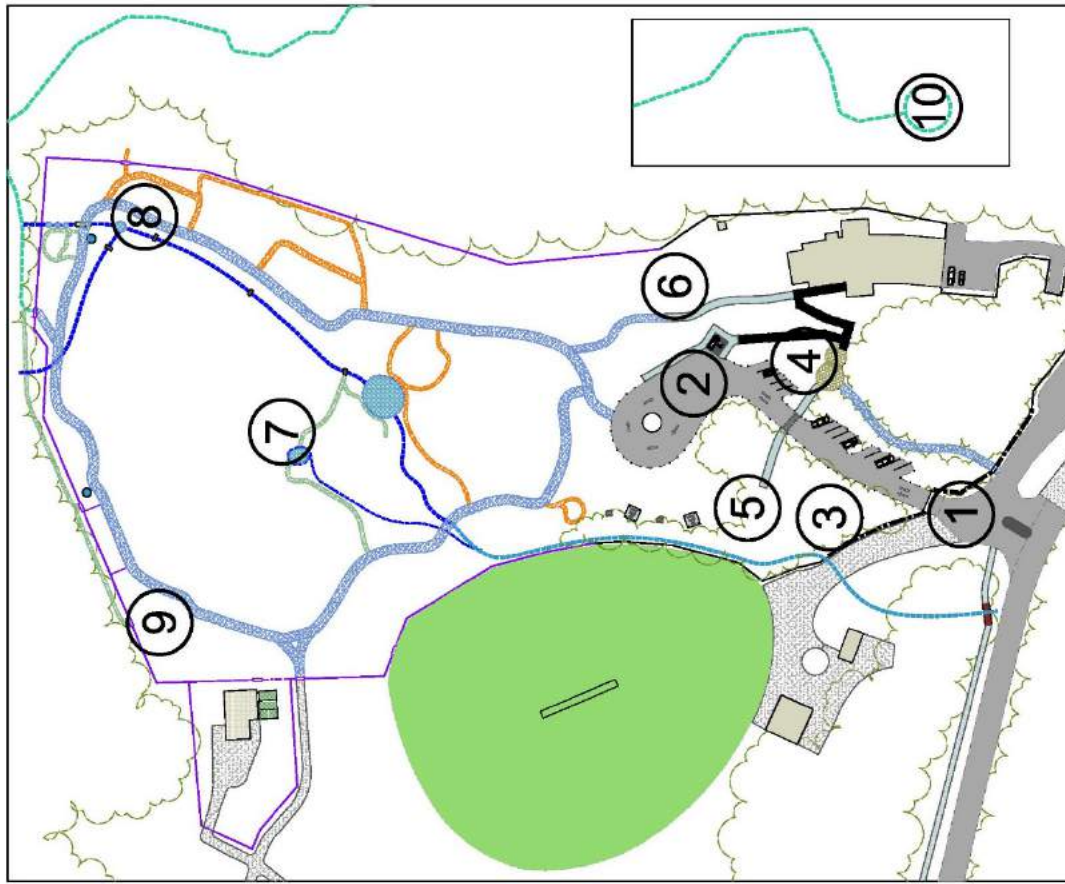
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NEW FEATURES

02: NEW ENTRY ROAD AND PARKING

7.7. FIRST PEOPLES GROVE SKETCH



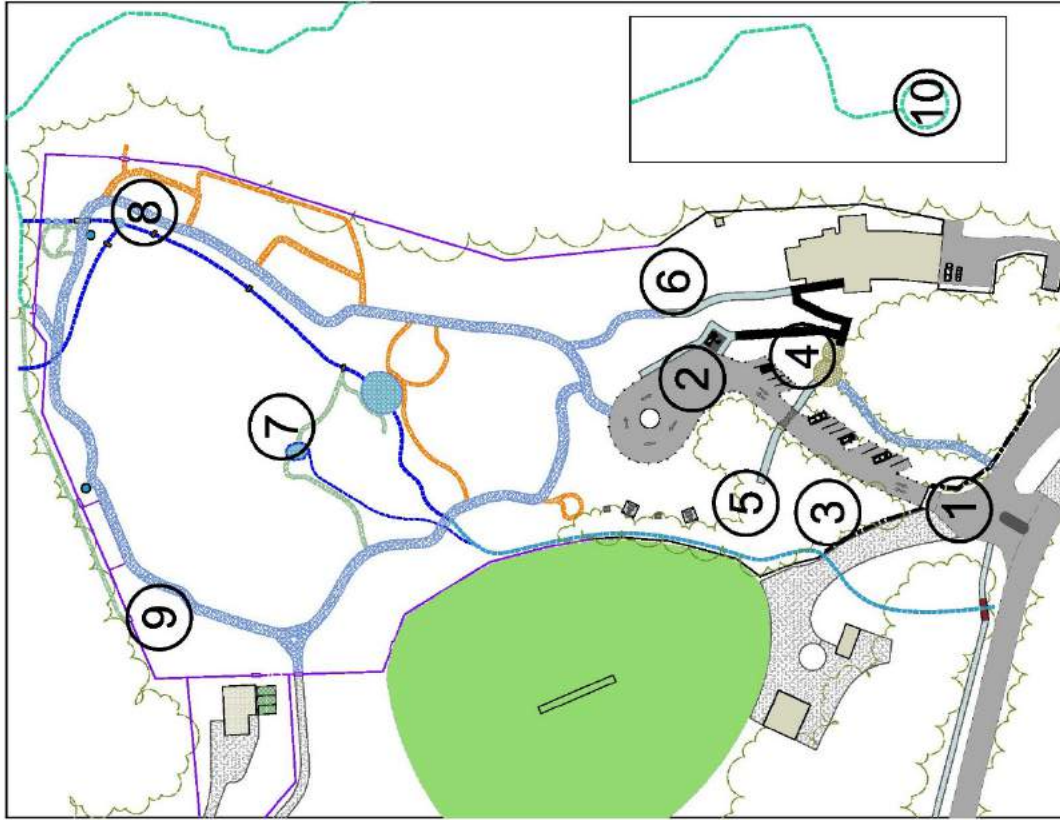
NEW FEATURES
03: FIRST PEOPLES GROVE

03: FIRST PEOPLES GROVE
An area dedicated to Aboriginal history and culture is considered an important addition to the CBGs. As the first people to live in Australia, they have millennia of connection with the land and their knowledge and understanding of fauna and flora of the Cooktown area. Cape York and Australia is important and significant. The area indicated is essentially a blank canvas, with unlimited potential. It is also ideally located near the entrance, visitors centre and picnic area. This area is not intended as a replacement for the Bush Tucker collection or any other Aboriginal associations with the gardens. It is hoped that the area would be developed by or with the help of the Aboriginal Community. The term First People's grove is a place holder, with the final naming to be decided during development.



SK COOKTOWN BOTANIC GARDENS
03 MASTER PLAN - 2017 1:2000 @A4

7.8. ALL ACCESS WALKWAY SKETCH



NEW FEATURES
04: ALL ACCESS WALKWAY

04: ALL ACCESS WALKWAY

The existing entrance to the visitor's centre requires an upgrade as it is both a mix of materials and styles and has the potential for safety issues with slippery surfaces and varying step heights. This proposed feature reconfigures the access and entry to the visitor's centre allowing for one access ramp for abled and disabled visitors. The bottom of the ramp connects with the disabled parking bay, with the footpath extending around the disabled parking bay to the bus set down area. Additional access in the form of stairs is included off the end of the paved forecourt for visitors entering via the path system or new parking bays. The walkway would also provide opportunities for interpretive signage and for viewing of the surrounding plant collections including the Vera Scarth-Johnson Collection which is featured in this area.

VISUALISATIONS SHOWING PROPOSED LOCATION AND STYLE
(Note that surrounding vegetation is not shown so that the structure can be clearly seen)

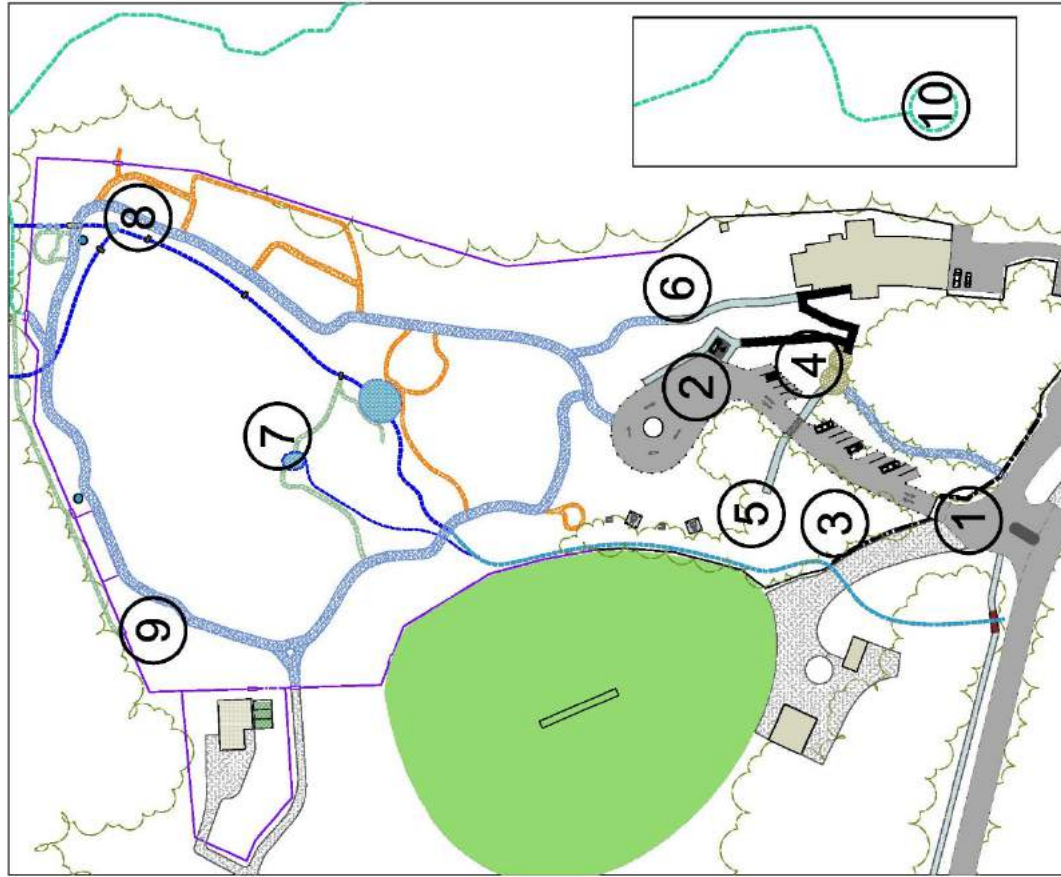


NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



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7.9. PICNIC SHELTER AND BBQ SKETCH



NEW FEATURES
05: PICNIC SHELTERS AND BBQ'S

05: PICNIC LAWN WITH SHELTERS

This area is ideally suited for picnics and has been used for this in the past. It is a relatively open grassed area with some excellent shade trees and close to parking, the cricket oval and Nature's Powerhouse - Visitor Centre. The old and tired picnic tables would be replaced with new settings and the area would benefit from the inclusion of one or two shelters. Shelters could be a simple and cost-effective structure such as the skillion roofed shelter a more elaborate style like a Gazebo.

Photo looking North towards the picnic area from near the access path



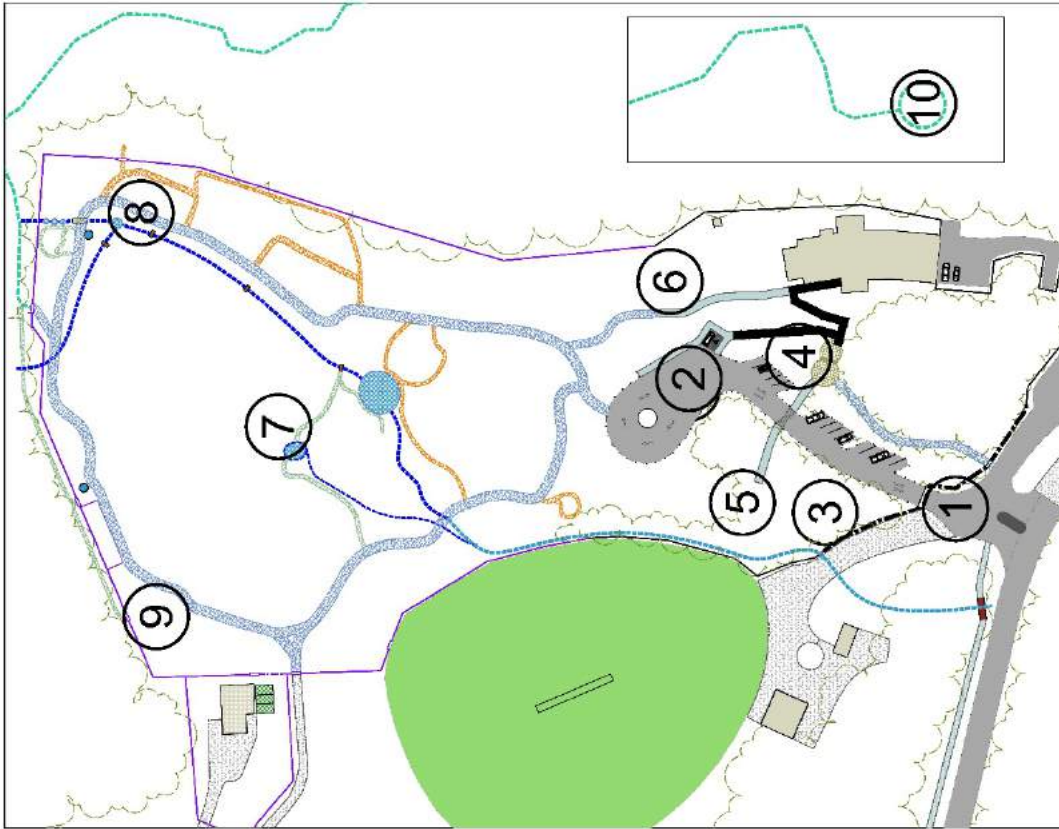
Skillion Roofed Style Shelter



Gazebo Style Shelter

SK COOKTOWN BOTANIC GARDENS
05 MASTER PLAN - 2017 1:2000 @ A4

7.10. ORIENTATION CENTRE & ORCHID HOUSE SKETCH



06: ORIENTATION CENTRE & ORCHID HOUSE

This feature would combine an orientation centre with interpretive and information displays with an orchid display house. It would provide information on the various area and features in the gardens and could include a variety of media and display types, including visual and audio, and interactive.

In addition to the interpretive centre, it could include an orchid house to display and showcase the local Cooktown Orchid and other rare and endangered orchid and suitable plant species. It is envisaged that the structure would be as open as possible with a combination of roof types, like pergolas for climber displays, and some areas weatherproof for shelter and protection of displays. The structure would possibly be organically shaped, for example the roof areas might take the shape of an orchid, leaf or other some other natural feature.



Mackay BG Visitors Centre Roof Design



Examples of organic shaped roofs and buildings



Mackay Orchid House

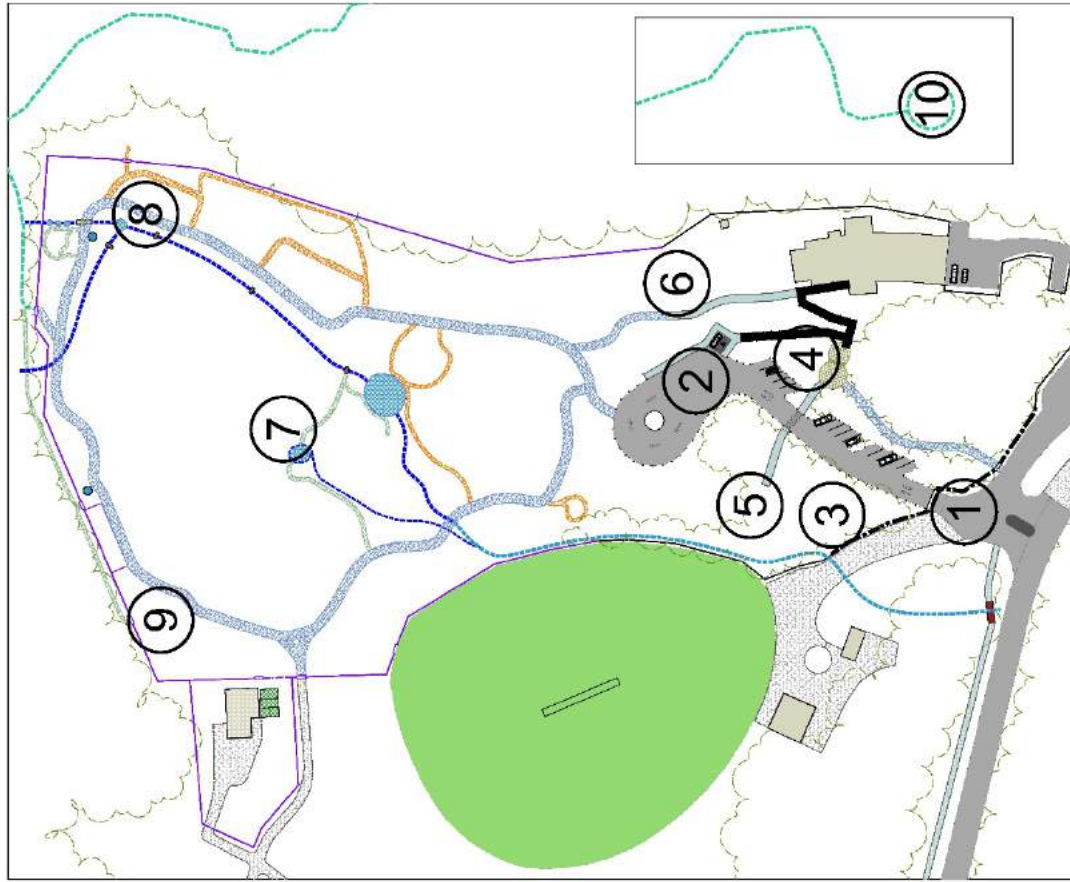


Singapore Orchid House

Note: these examples are not representative of the scale of the proposed structure. The proposed building will be considerably smaller



7.11. FOUNTAIN PERGOLA SKETCH



07: FOUNTAIN PERGOLA

This feature includes a semicircular paved area using the local stone to match existing stone work with an arbor or pergola over, orientated towards the Old Fountain. It would provide seating and shade and would allow for extended views across the fountain to the heritage tree collection. It could also be used for weddings, or other celebrations and may also include a new path system to access the feature from the primary path system. This area also provides a major visual access point for the central part of the gardens.

It is important to stress that it is intended that the structure would not damage or detract from the fountain, but would instead frame it and be complementary to it. It must also be noted that as the fountain is part of the heritage listed features of the CBG, any proposal will need to gain Queensland Government approval prior to construction.

During development of this feature it is anticipated that remedial work would be undertaken to return the fountain to its original working condition.

VISUALISATIONS SHOWING PROPOSED LOCATION AND STYLE



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



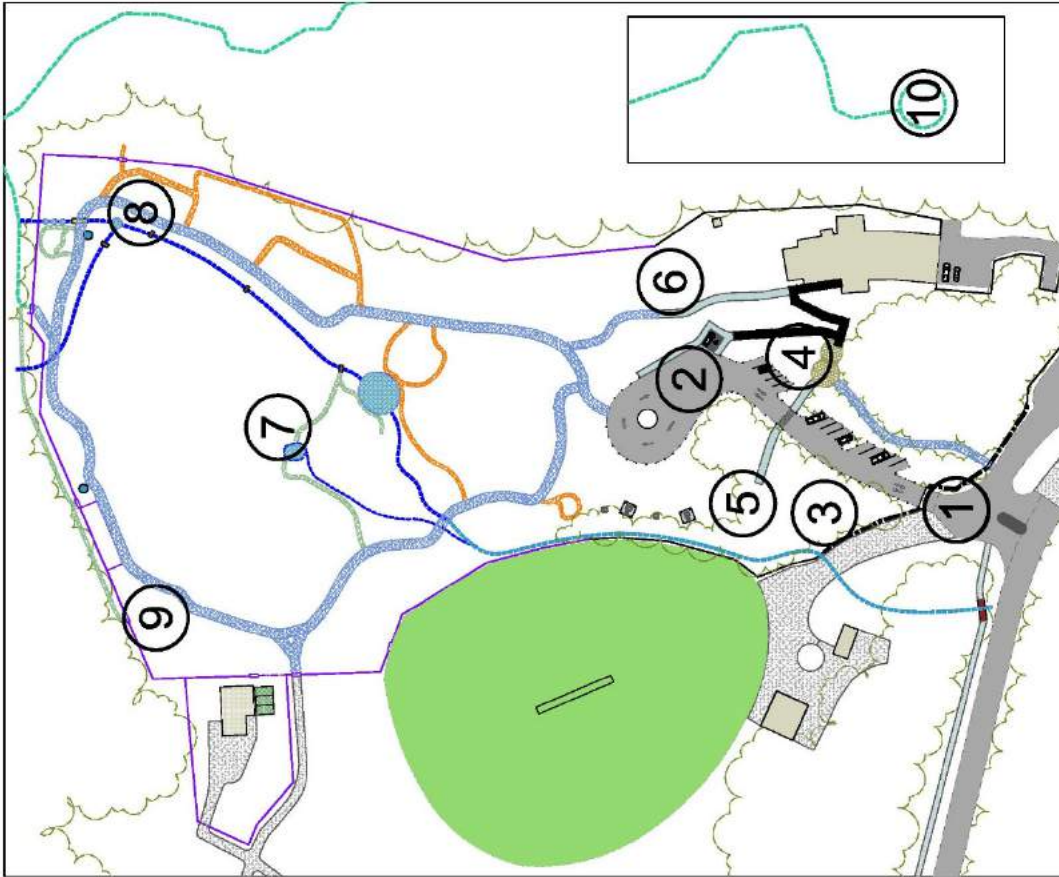
COOKTOWN BOTANIC GARDENS

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NEW FEATURES
07: FOUNTAIN PERGOLA

7.12. PERFORMANCE STAGE/SHELTER SKETCH



08: PERFORMANCE STAGE / SHELTER

This feature would serve as a shelter for visitors to rest and enjoy the views and could also provide a stage for various musical or artistic performances. It would be orientated towards the lawn opposite, which is slightly sloped and creates a natural amphitheatre. It would include a timber deck performance area (the example below is 5m x 5m) and would have an open sided roof to provide shade and cover from rain. Services, like power and water would also be supplied along with some basic storage and seating. It is envisaged that the primary path would pass through the structure. During performances, access around the stage is already provided with the secondary path that loops behind this area. The shelter could also include some interpretive signage displaying aspects of the botanical collection and/or details about the history of the gardens.

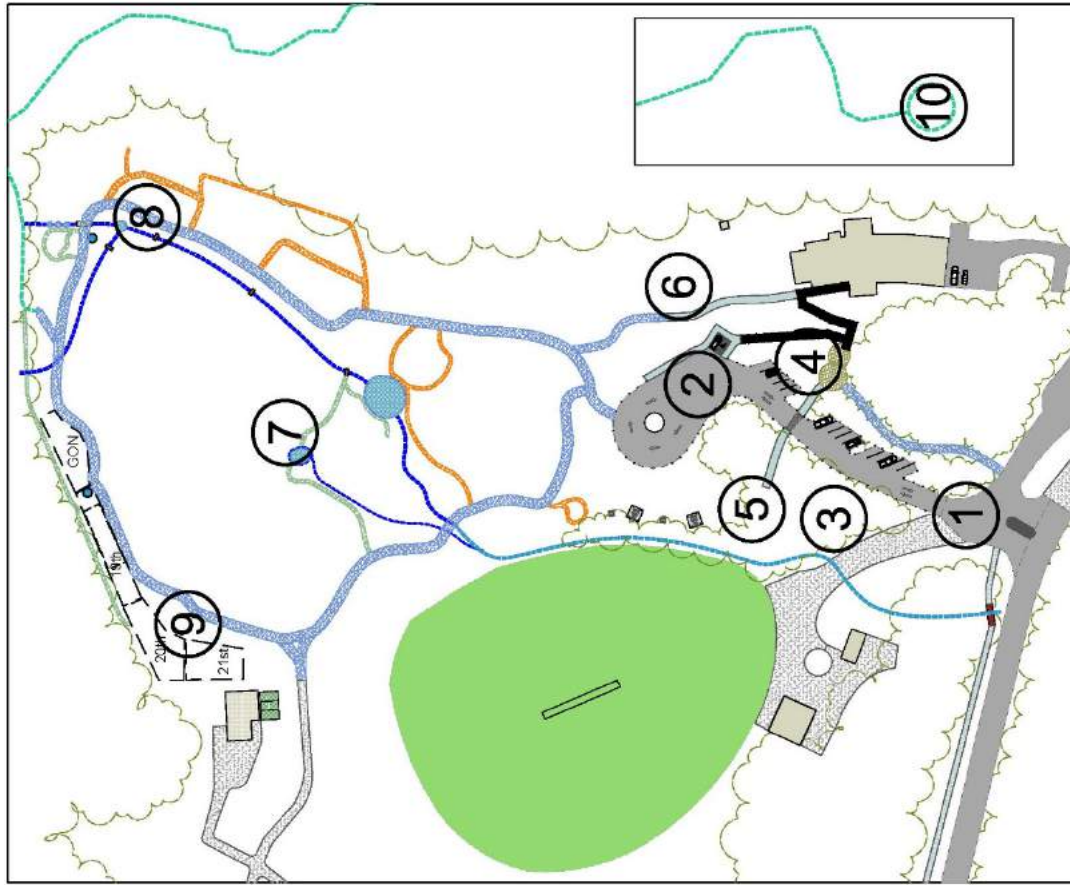
VISUALISATION SHOWING PROPOSED LOCATION AND STYLE
(note: upgraded landscaping etc not shown)



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



7.13. TIME LINE GARDENS SKETCH




NEW FEATURES
 09: TIME LINE GARDENS

09: TIME LINE GARDENS

These gardens would display plants, garden styles and feature typical of the 19th, 20th & 21st centuries and would also include a Gondwana section preceding the other gardens, which would include examples of Cape York plant genera and species with evolutionary connections to Gondwana. The gardens could include facades of buildings with historical context to the period being displayed. They could be styled to show features common to all periods, for example they could represent what typical front yards would look like for each period.



Photo SW at the intended area for the 19th, 20th & 21st gardens



CBGs existing 1800's fenced display garden would be incorporated into the feature



Cranbourne BG Display Garden



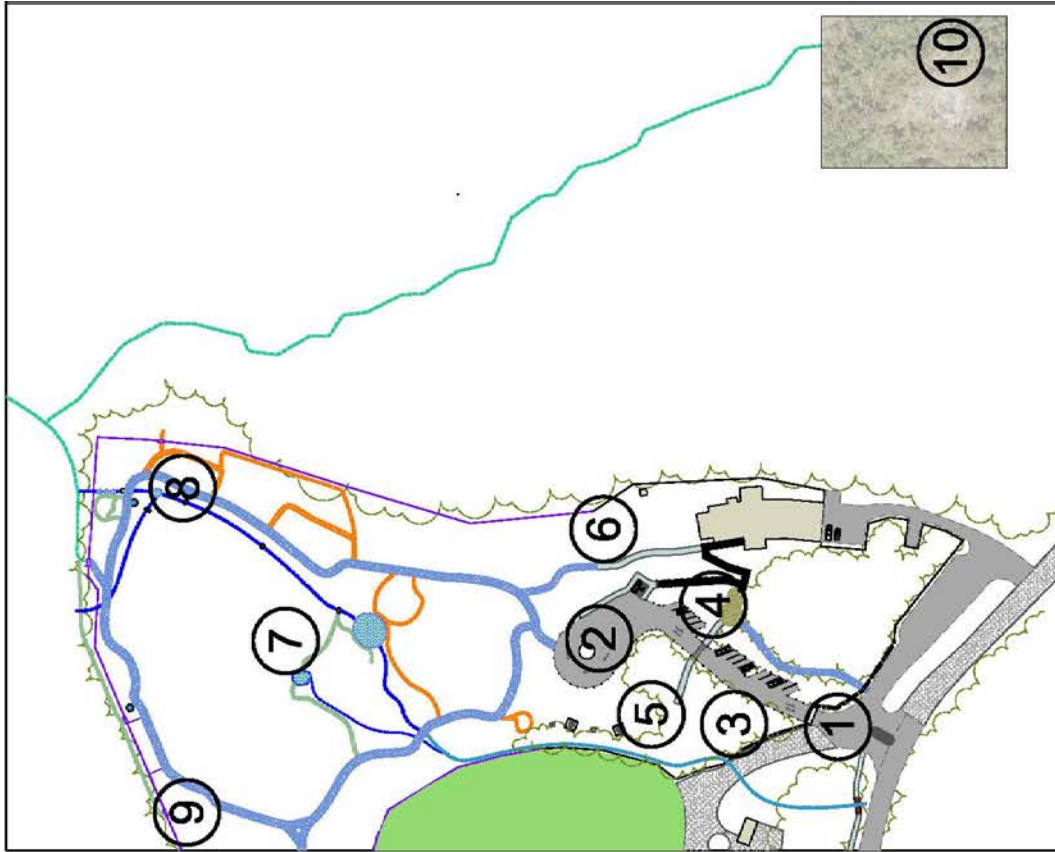
Historical Facade Display Garden



Cranbourne BG Promenade Plaza

SK **COOKTOWN BOTANIC GARDENS**
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7.14. OLD QUARRY WALK SKETCH



NEW FEATURES
10: OLD QUARRY WALK

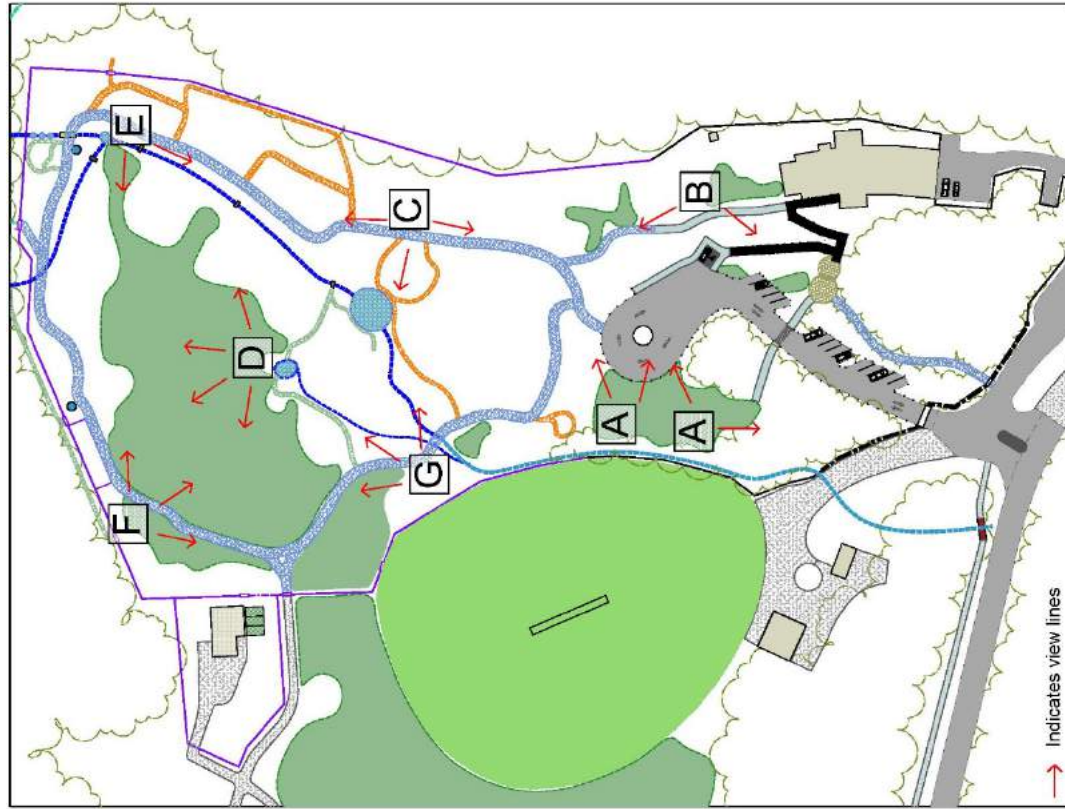
10. OLD QUARRY WALK

This recently rediscovered feature was identified by satellite imagery. It is the site of a quarry where stone was excavated for building in Cooktown and possibly in the gardens. It shows examples of the historical techniques used to extract the stone and is of historical and cultural significance. As it's age and usage details are unclear, it is recommended that an archaeological survey be undertaken to establish its history. As a feature it could add historical and cultural value to the CBG and provide value to the CBG experience. It is proposed that a new track be built to access it from the existing walking track to Finch Bay.



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10
COOKTOWN BOTANIC GARDENS
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7.15. SHELTERS SKETCH



NEW FEATURES
15: SHELTERS

15: SHELTERS

Shelters are important for visitor comfort and provide seats for resting and enjoying views and protection from the sun and rain. Shelter can incorporate signage with information about the surrounding features and details about the botanical collection and they are ideal supporting structures for vines and climbers. Ideally, shelters should be located about 100m apart, so visitors can still enjoy the gardens during showery weather.

The locations shown on the plan opposite are suggestions based on the locations of proposed new features and on the principle of ideal spacing and are as follows:

- A: Picnic Lawn and BBQ shelters proposed with New Feature 05.
- B: The Orientation Centre and Orchid house
- C: A small shelter or arbor over a bench seat. It is located under heavy canopy around the mid point between B & E.
- D: The Fountain Arbor. Currently concept is for a fairly open structure, but once covered with climbers would provide some shelter. Or it could include some covered sections.
- E: The Performance Stage/Shelter
- F: The Timeline Gardens, which may include facades to showcase the period be described. One of these facades could be used as a shelter. Alternatively if a facade are not to be included, then a small shelter of appropriated design to match the surrounding timeline garden could be installed.
- G: Located at the end of the Stone Drain under Melaleucas. Could be a small shelter similar to C.



Skillion Roofed Style Shelter



Gazebo Style Shelter



Arbor Style Shelters options for C & G



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COOKTOWN BOTANIC GARDENS
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8. THE BOTANICAL COLLECTION

The Cooktown Botanic Gardens is unique. Its geographic location, as the most northern Botanic Gardens in Queensland and its proximity to the coast, make it ideally suited for displaying a large variety of species. Its fabulous history as one of the oldest Botanic Gardens and its wonderful historical botanical collection are rare and precious assets, not only for Cooktown residents, but for all Australians. CBG has the potential to attain national significance, given the varied site characteristics which provide the opportunity to establish a diverse range of regional plant communities and associations.

There is considerable botanic and horticultural value in developing a collection that specifically researches and displays plants as components of various bioregional environments. One specific emphasis should be on the ex-situ conservation of rare and threatened species of the Cape York region when it is practical to provide suitable conditions for their establishment and long-term survival.

The collection should be arranged in ways that maximise the botanic and horticultural attributes to create an essentially unique assemblage of plants which extends throughout the various garden components and themes which are planned to be developed over time.

THEMES AND COLLECTION COMPONENTS

8.1. PREFERRED THEMES

It is generally accepted by most Botanic Gardens that the thematic structure of the Gardens and the associated plant collection should primarily follow ecological groupings, (which are preferable to taxonomic groupings on horticultural grounds), and for their greater educational and interpretative value. Other themes have become important in recent decades – conservation, ethno-botany, climate change and sustainability. These reflect the growing worldwide concern for conservation of the threatened natural environments and for preserving and researching cultural initiatives.

The following descriptions outline the main thematic structure generally used for the plant collections of Botanic Gardens as described in the Australian National Botanic Garden Plan of Management 1993 (Australian National Botanic Gardens Advisory Committee, 1993) .

8.1.1. ECOLOGICAL

Plantings with an ecological theme have become a major focus in the development Regional Botanic Gardens, reflecting increasing public interest in the natural environment. Such plantings display a wide taxonomic range of species from the same or similar habitats (Regional Ecosystems), providing an excellent basis for interpretative and educational programs. They are easier to manage because the same environmental conditions and horticultural management are appropriate to the entire planting. The problems of pests and diseases are also reduced, in that a pest or disease specific to a certain taxonomic group of plants does not devastate the entire planting.

8.1.2. CONSERVATION

The past decade has been marked by increasing worldwide awareness of the richness and diversity of our botanical heritage, its value to humanity, and the need for active conservation in the face of the rapidly accelerating impacts of human development. Botanic Gardens have both an opportunity and a responsibility for significant involvement in these conservation efforts. The International Convention on Conservation of Biodiversity, adopted in Rio de Janeiro in 1992, recognised and brought to the fore this important role of Botanic Gardens.

8.1.3. TAXONOMIC

Historically, Botanic Gardens have used the taxonomic theme as a method of displaying plant collections. This was primarily because many of the early Botanic Gardens were attached to universities where the medicinal properties and the systematics of plants were being studied. Taxonomic plantings have been used regularly by researchers, educators and students, taking advantage of the convenience of having plants to be studied and compared growing in the one location. Consequently, there will be limited use of this theme.

8.1.4. ORNAMENTAL AND LANDSCAPE

The way in which a botanic garden displays its plants is often considered an indication of the horticultural and design expertise as well as the professionalism within the organisation. For this reason, aesthetically designed horticultural displays using native annuals, cultivars and mixed plantings are important features. Such plantings also demonstrate the potential use of Australian

plants and encourage people to use and value them in cultivation.

In various areas of the Gardens, such as around buildings and in service and amenity areas, the need to provide an attractive landscape setting takes a high priority. Areas can be designed and planted according to accepted landscape principles, to enhance the built environment or to provide aesthetically pleasing areas for visitor enjoyment and to demonstrate the possible use of such plants for commercial and residential gardens.

8.1.5. BIOGEOGRAPHIC AND EVOLUTIONARY

Consideration of the origin and relationships of Australian vegetation is important to an understanding of the flora as it currently exists. The evolution and biogeography of the Australian flora has long been accepted as a distinct aspect of the thematic character of botanic gardens.

Material on the evolution and biogeography of the Australian flora has largely been limited to interpretative signs and brochures, however an interpretative display dealing with the origins and relations of Australian plants in the Cape York region is proposed in the Gondwana Garden, the first element in the Timeline Gardens (Feature 09)

8.1.6. ETHNOBOTANICAL

Ethno-botany, the study of human use of plants, has always been of public interest and is becoming a major theme of many Botanic Gardens. The planning and management of these elements should involve the local traditional owners or other relevant migrant communities.

Local representatives of the Aboriginal Community have assisted with the establishment of the relative components in the CBG, like the Bush Tucker plantings, and they are encouraged to continue to work with the Curator and Advisory Board to continue with their contribution. Other opportunities and areas will be available for continuing their work, especially with the First Peoples Grove (Feature 03).

8.1.7. RESEARCH & SPECIAL COLLECTIONS

These are specific collections which demonstrate or are assembled to facilitate scientific research by Cooktown Botanic Gardens staff and/or in collaboration with other organisations.

Historically, many areas of the site have been previously used for research, firstly by the Acclimatisation Society and later by the Queensland Department of Primary Industries and there are remnant examples of their collections still in the Gardens, for example some of the fruit trees on the upper lawn terrace.

More recently, research includes the evaluation of local bioregional species for introduction into commercial horticulture for landscape use and associated horticultural practices or products.

And special collections may also include the display of pest and weed species specific to the region, which is a valuable educational tool for visitors and staff.

Also maintaining accurate records of all the collections is a core responsibility, to ensure optimum scientific research value.

8.2. BOTANICAL COLLECTION STRATEGY & COMPONENTS

As noted above, these Gardens have historical specimens which are heritage listed and must be retained. Their value is not only historical but aesthetic as well, as they play an important role in creating the style and ambiance of the Gardens.

Along with the heritage, are the historical connections with the Cooktown area which have been and are important elements of the Botanical Collection, like the species collected by Banks and Solander in 1770 and those described by Vera Scarth Johnson.

To these, the ongoing development of the Botanical Collection must consider current ideas and the inclusion of the progressive themes outlined above.

Therefore, this MP proposes that the strategy for ongoing development of the Botanical Collection should include maintenance of the heritage collection, displays of the historical connections and an expanded emphasis on regional ecosystems, conservation and research. Five basic collection are proposed, which are:

- Rare and Threatened Species of Cape York
- Indigenous Plants
- Banks and Solander
- Vera Scarth Johnson
- Historical Specimens

While these will be the main focus for the Botanical Collection, additional special collections will display species for research and education, based on the requirements of the Curator and/or in collaboration with other organisations. Ongoing development of the collection will require input from various sources, including landscape architects & designers, horticulturalist & botanists and specialist with knowledge about specific collections (eg Bush Tucker experts etc).

In developing and expanding the collections, designers must consider the following two important elements:

- Existing Elements:
Naturally this relates to the existing collections, their locations, physical and cultural conditions and the appropriateness of adding to or expanding the collection/s.
- Allied Elements:
Relates to the provision of vital services like irrigation and other associated requirements like maintenance access, soil amendments, microclimate adjustments etc

Please refer to the Botanical Collection Key plan at Section 8.6 for the locations of the various collections and their associated gardens.

8.2.1. RARE AND THREATENED SPECIES OF CAPE YORK

Conservation of the Rare and Threatened (R&T) species of Cape York is an important focus for the collection. Human encroachment into undeveloped areas and the likely effects of global warming have, and will, put increasing pressure on natural ecosystems, especially where they are in marginal areas. This is most applicable to rare and threatened species which are the most vulnerable.

This collection will look to conserve as many of Cape York's R&T species as can be collected and successfully grow in the Gardens.

The collection will be co-ordinated and arranged by the current Curator, whose knowledge, experience and connections with other Botanic Gardens makes him ideally suited to the task.

Display Arrangement:

Placement of selected species must be determined by horticultural consideration, that is, the right environmental conditions must be paramount in the selection of the location. Consideration for the environmental requirements of individual species may require

special needs locations for some species, for example displaying orchid species in the Orchid House

A list of species is included in Species List 1 at the end of Section 9.

8.2.2. INDIGENOUS PLANTS

The Indigenous plant collection includes the RE species associated with the GBR, those in the Cooktown region and species from Cape York and Far North Queensland. While the collection will include species from a wider area, it will concentrate on displaying local RE species.

A description of the relevant REs can be found in Section 5.5.

The collection will be co-ordinated and arranged by the Curator, with assistance from the Horticultural Consultancy Group (HCG), (refer to Section 8.4 for a description of the HCG).

Display Arrangement:

The display of indigenous plants is best arranged under ecological principals, where plantings display a wide taxonomic range of species from the same or similar ecosystems. An example is the SGAP Garden located near the existing MBGP entrance (Garden 6). Another example, currently not utilised, is the remnant Eucalypt Open Forest area between NPH and the bottom carpark (Garden 1).

Species can also be displayed in other collections, when they have special features or attributes that make them applicable, for example Economic Horticulture (Bush Tucker).

The species list is extensive, so is not included in this document.

8.2.3. BANKS AND SOLANDER COLLECTION

A Banks and Solander Collection has been included in the Gardens since its reopening in the 1980's. The connection with Cook's journey and Banks and Solander's collection of botanical specimens during their stay in Cooktown, is a unique and wonderful legacy for the CBG, and one that must be continued.

Currently the collection is located near the existing entrance to the MBGP (Gardens 7 & 8).

The collection will be co-ordinated and arranged by the Curator, with assistance from the HCG.

Display Arrangement:

The display of Banks & Solander plants is currently arranged under ecological principals, where the gardens display a wide taxonomic range of species from the same region. While of course not all species belong to the same RE, they are all from the immediate Cooktown or Cape York region, so often have the same or similar cultural requirements.

However, species can also be displayed in other collections, when they have special features or attributes that make them applicable, for example Indigenous Plants.

It is suggested that the individual garden beds displaying the Banks plants and the Solander plants, should be included with the SGAP garden to create a group of gardens named the 1770 Collection.

A list of species collected by Banks & Solander is included in Species List 2 at the end of Section 9.

8.2.4. VERA SCARTH JOHNSON

The renowned botanical illustrator Vera Scarth-Johnson has a special connection with Cooktown and the CBG. Her collection of illustrations was donated to the people of Cooktown in 1990 and is currently housed in NPH, where many are displayed for visitors to enjoy.

An existing display of some of the plants she illustrated is located around NPH entrance (Garden 3) but will require re-organising and replanting during the EPR upgrade works.

Display Arrangement:

Vera Scarth Johnson plants are currently arranged under ecological principals, where the garden displays a wide taxonomic range of species from the same region. While not all species belong to the same RE, they are all from the immediate Cooktown or Cape York region, so often have the same or similar cultural requirements.

However, species can also be displayed in other collections, when they have special features or attributes that make them applicable, for example Amenity Horticulture.

The collection will be co-ordinated and arranged by the Curator, with assistance from the Horticultural Consultancy Group.

A list of species illustrated by Vera Scarth Johnson is included in Species List 3 at the end of Section 9

8.2.5. HISTORICAL SPECIMENS

Many of the original exotic tree species planted during the initial development of the Gardens (1879 to 1917) have not survived, however, there are a few areas where a number have. The exotic fruit trees on the Lawn Terrace (Garden 19) has the largest collection, and these include several fine old specimens.

Maintenance of this collection is important, both for its historical and aesthetic values, and of course because it is part of the heritage listed assets. While no specific list has been found on the Queensland Heritage Register that identifies which specimens are relictual, the ones that are historical can be determined by examining historical records.

There are no specific proposals to add to the collection, as of course the retained specimens are the collection, however where a specimen dies or critically damaged by natural events, remedial work or replacement can be undertaken under a General Exemption Certificate that applies to regular maintenance and ongoing care of parks, gardens and other landscape elements.

Monitoring and maintaining the collection is a standard part of the Curators scope of works.

A list of retained species can be found in Species List 4 at the end of Section 9, along with a plan of their location.

8.2.6. SPECIAL COLLECTIONS

Special collections display species for research and education, or for interest and are generally based on the requirements of the Curator and/or in collaboration with other organisations or are existing collections.

8.2.6.1. ECONOMIC BOTANY

Economic botany includes species that have or can have an economic value, or that are usable by humans for food, clothing, shelter etc. It includes ethnobotanical themes, like indigenous species used by the Aboriginal Community.

In the CBG there are two pre-existing collections which are examples of this, Bush Tucker plants and the Historical Specimens.

Bush Tucker species examples are located near NPH (Garden 5). The collection has been prepared with the help of the Aboriginal Community and it is hoped that this collaboration will continue.

A new area is also proposed – the First Peoples Grove (New Feature 03). This area has great potential for the expansion of this collection and collaboration with the Aboriginal Community on this project is vital.

Historical Species, discussed in Section 8.2.5 is primarily composed exotic fruit trees, which is of course, a more traditional example of Economic Botany.

Display Arrangement:

Displays of Bush Tucker plants usually arranged under ecological principals, where the garden displays a wide taxonomic range of species from the same region.

The collection will be co-ordinated and arranged by the Curator, with assistance from the Aboriginal Community and the Horticultural Consultancy Group.

8.2.6.2. AMENITY HORTICULTURE

Amenity Horticulture, in this context, is the selection, arrangement and display of plants species that have the potential for use in recreational and ornamental gardens. It includes all types of plants from ground covers to trees.

In Regional Botanic Gardens, displays are often arranged to showcase the usage potential for various indigenous species, for example how a particular species can be used for hedging and/or screening, as an alternative to usual commercially available non-indigenous species.

Amenity Horticulture is not only an excellent education tool for both professional horticulturists and the general public, it also often provides a proving ground for experimental horticulture, where indigenous species are trialled for their economic potential.

There are several gardens or parts of gardens where displays of plants are arranged in this way, often associated with other collections. However, the new proposed Timeline Gardens (Gardens 1-4), will showcase examples of Amenity Horticulture presented as examples for the current and previous centuries.

Display Arrangement:

Display of Amenity Horticulture are best arranged under ecological principals, where plantings display a wide taxonomic range of species with both indigenous and exotic plants included. Microclimate is often an important factor, where species are selected based on their cultural

requirements, for example their ability to thrive in either full sun, part shade or full shade.

The collection will be subject to planting plan/s development by a landscape designer or architect with assistance from the Curator and the Horticultural Consultancy Group.

8.2.6.3. WEED AND PEST SPECIES

A displays of local weed species is a special joint project between Council's Bio-Security Department and Botanic Gardens Maintenance Team. The objective is to provide examples for public education and for scientific experimentation, where the cultural requirements of weeds can be studied, so strategies can be developed to better cope with them.

The collection is subject to agreement from Councils Bio-security Department and exemption permits from the Queensland Government and Council's Bio-Security Department. It will be co-ordinated and arranged by the Curator, with assistance from the Horticultural Consultancy Group and its intended location is indicated as Garden 15.

A list of potential species is included in Species List 5 at the end of Section 9.

8.3. COLLECTION RECORDING AND ORGANISATION

Plant Specimen Recording:

It is vital that the location and specific details of all specimens planted in the CBG is known and documented in a comprehensive and scientifically based record system.

CBG has had a number of plant recording systems in the past, but these have been limited in the information recorded. They were based on a fairly simple numbering system, but their detailed locations and other specifics were not recorded.

The definition and organization of a records system is one of the major components of the detail design phase involving simple but exact location methods, supported by a comprehensive database recording all aspects of the specific plants including: nomenclature, collector, collection location, production, establishment and development.

As this is a vital and essential element for the ongoing development of the Gardens, a comprehensive relational database is now being developed by the Curator and this will assist with

the planning and design process for the Gardens. Records of specimens will be kept and regularly updated relative to scientific nomenclature, site location, name tags, health, growth and general maintenance. The Queensland State Herbarium are assisting the Curator in this process and will be able to suggest strategies which can be used to integrate with the systems adopted nationally and internationally.

Discussions are also continuing within BGANZ (Botanic Gardens Australia and New Zealand) toward establishing a comprehensive database system that can be used and accessed by all Botanic Gardens.

To ensure that accurate records are compiled and maintained, the precise location of plants and their associated gardens must be determined by georeferencing. This could be done in two ways – by engaging a surveyor or by purchasing an instrument designed for the purpose.

A surveyor's job is naturally to locate things and they are ideally suited to this task, but they can be expensive and because of the very large volume of plants to be located in the Gardens, the cost would be prohibitive.

The alternative is to purchase an instrument like a Total Station, which is an instrument used by surveyors. The Curator and/or his team could then locate the existing plants and other assets and features in the Gardens and would also be able to accurately record future works and plantings. Second hand Total Stations are available and very reasonably priced and would be a very useful asset for the Curator and his team.

RECOMMENDATION: 19

Purchase a Total Station to allow the Curator to accurately record the locations of plants, features and assets.

Garden Organisation:

An identification system that locates and identifies the various gardens areas and components is also vital for the ongoing development of the CBG. A garden identification system is an integral part of the record system. It locates gardens and their associated collections relevant to a wider spatial context, and it is a vital tool for planning and designing.

There are a number of identification systems, but a common one used is based on a grid system

usually developed from a baseline where the grids are numbered in consecutive order from one end of the baseline to the other.

Development of the garden numbering system will be undertaken during the detailed design stage, when planting plans are developed.

8.4. THE BOTANICAL COLLECTION DEVELOPMENT TEAM

Implementation of the Botanical Collection Strategy must be driven by the Curator, who will require appropriate support from professionals and volunteers.

For the purposes of this MP, the term Development Team, relates to The Curator and any team members who will assist him with the planning and implementation stages.

Key members of the Development Team should include the following:

The Curator:

In addition to his existing managerial and botanical commitments, The Curator is tasked with guiding and facilitating the implementation of the Botanical Collection Strategy and the wider MP.

Horticultural Consultancy Group (HCG):

The main purpose of a HCG is to help The Curator with advice and knowledge, especially with respects to the selection, placement and cultivation of indigenous plants.

The Horticultural Consultancy Group should ideally consist The Curator as Chair, local professionals from the nursery industry, arborist, botanists and horticulturist, knowledgeable gardeners and plant growers and with specific knowledge of local species and their growing conditions. A member or members of the local or regional SGAP would also be highly desirable if available. The landscape designer who is tasked with developing detailed planting plans should be included and if possible, a member of the original consultancy team for the development of this MP.

RECOMMENDATION: 20

Form a Horticultural Consultancy Group

Landscape Designer:

The landscape designer is a vital member of the Development Team. The designer works under instruction from The Curator and with the other members of the team to produce detailed planting plans based on the framework of the MP.

Detailed planting plans are an important requirement for efficient and effective planning of Botanic Gardens and they are essential for estimating costs and for tendering for installation of softscapes.

RECOMMENDATION: 21

Engage a Landscape Designer to prepare plans.

8.5. BOTANICAL COLLECTION STRATEGY IMPLEMENTATION

Consolidation:

Consolidation of the existing Botanical Collection should be undertaken before any new specimens, collections or gardens are installed. In this instance, consolidation means the identification, location and condition appraisal of all the plant specimens in the Gardens. This is done in conjunction with the development of the plant record database, which is currently being undertaken by the Curator.

Once the database has been completed, and the condition of the existing collection is determined, decisions about the requirements of individual specimens can be made. In some instances, additional information may be required from specialists, for example damaged or diseased trees will need an assessment by an Arborist to determine their requirements.

With this information, the Curator with support from the HCG, can make decisions about the collection/s and individual specimens. It may be determined that some specimens will be replaced or removed depending on their condition and/or the development requirements outlined in this MP.

Once consolidation has been completed, implementation of the new Botanical Collection Strategy outlined in this MP can begin with the development of detailed plans by the landscape designer.

RECOMMENDATION: 22

The Curator should complete the plant database as a priority.

Establishing New Collections and Gardens:

Expansions to the existing collections and the establishment of new gardens and collections are a core part of this MP.

Their development will add enormous value to the Gardens and stimulate continuous ongoing interest for both locals and visitors, long after the excitement of the new upgrades to features and assets are completed.

The Curator is tasked with project managing the implementation of all the proposed upgrades in this MP, but the maintenance and development of the Botanical Collection will always be a primary role.

Once consolidation of the existing collection is completed the Curator can begin the task of implementing the Botanical Collection Strategy with support from The Botanical Collection Development Team (BCDT). The BCDT should be established during the consolidation stage, so it can provide support and help at an early stage for the many tasks required.

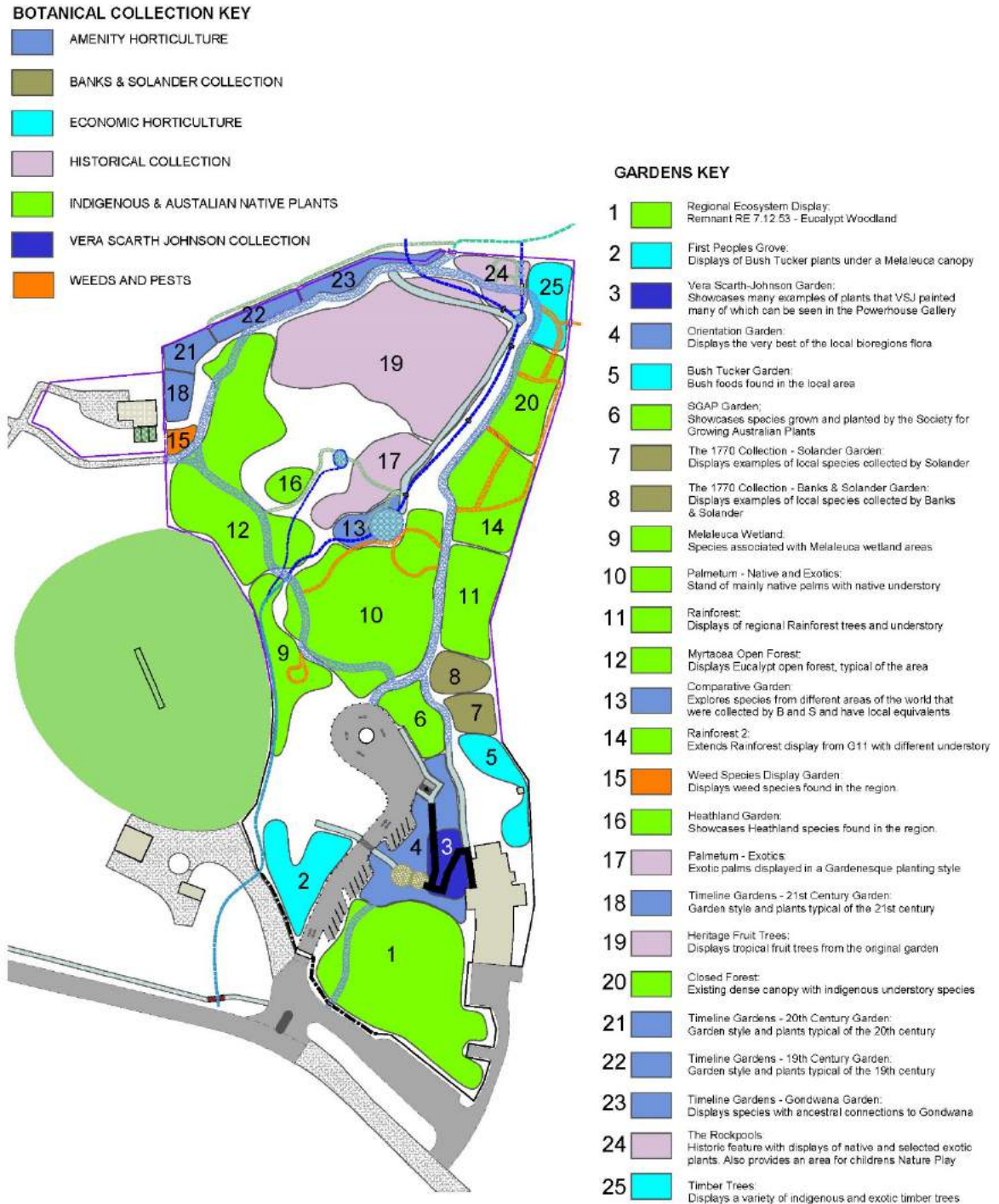
The BCDT must begin with the development of an implementation program, which will prioritise the botanical collection upgrades and installation based on the MP. This program should include all the necessary information to allow construction and installation of the collections, gardens and plants and as a minimum should include the following:

- Scope of Works for all proposed works.
- Prioritised list of works and tasks
- Program timing.
- Costs and estimates

Based on this program The Curator can then seek appropriate funding, engage designers to develop detailed plans and costings and ultimately proceed to construction tendering and/or installations by garden maintenance team.

8.6. BOTANICAL COLLECTION KEY PLAN

This plan displays the suggested locations of the main gardens and collections. It is intended to be used as a guide for the development of the collections, but it is important to state that it is not definitive. It is likely that variations and adjustment will need to be made during the detailed planning stage based on site specifics.



8.7. SPECIES LISTS

The following lists are discussed in the relevant sections above.

8.7.1. SPECIES LIST 1 - RARE AND THREATENED SPECIES OF CAPE YORK

This list describes the listed status and life forms of the 67 species of plants occurring on Cape York Peninsula as listed in November 2003 under Commonwealth or Queensland legislation as Endangered (E) or Vulnerable (V), or under Queensland legislation as Rare (R) (a category not recognised by the Commonwealth. There are 168 species from Cape York Peninsula listed as R in Queensland, but only the ones listed as V or E by the Commonwealth are included here.

Note – not all species will be displayed - subject to The Curators determination.

Scientific Name	Family	Life Form*	Status on Commonwealth lists	Status on Qld lists
<i>Acacia guymeri</i> Tindale	Mimosaceae	S	V	V
<i>Acacia solenota</i> Pedley (syn <i>A. sp. Mclvor</i> R (J.R.Clarkson 5475))	Mimosaceae	T	V	V
<i>Acriopsis javanica</i> Reinw. ex Blume	Orchidaceae	EH	V	V
<i>Alectryon repandodentatus</i> Radlk.	Sapindaceae	T	-	E
<i>Arenga australasica</i> (H.Wendl. & Drude) S.T.Blake	Arecaceae	P	V	V
<i>Babingtonia tozerensis</i> A.R.Bean	Myrtaceae	S	V	V
<i>Brachychiton vitifolius</i> (F.M.Bailey) Guymer	Sterculiaceae	S	V	R
<i>Bulbophyllum blumei</i> (Lindl.) J.J.Sm.	Orchidaceae	EH	-	E
<i>Bulbophyllum gracillimum</i> (Rolfe) Rolfe	Orchidaceae	EH	V	V
<i>Bulbophyllum longiflorum</i> Thouars	Orchidaceae	EH	V	V
<i>Calamus warburgii</i> K.Schum.	Arecaceae	V	V	V
<i>Calophyllum bicolor</i> P.F.Stevens	Clusiaceae	T	V	V
<i>Canthium</i> sp. (Thursday Island E.Cowley 10)	Rubiaceae	T	-	V
<i>Carmona retusa</i> (Vahl) Masam.	Boraginaceae	S	V	V
<i>Centotheca philippinensis</i> (Merr.) C.Mon	Poaceae	G	V	R
<i>Chamaesyce carissoides</i> (F.M.Bailey) D.C.Hassall ex P.I.Forst. & R.J.F.Hend.	Euphorbiaceae	F	V	V
<i>Coix gasteenii</i> B.K.Simon	Poaceae	G	-	E
<i>Ctenopteris blechnoides</i>	Grammitidaceae	Fe	V	V
<i>Cyathea exilis</i> Holttum	Cyatheaceae	Fe	E	E
<i>Cyathea felina</i> (Roxb.) C.V.Morton	Cyatheaceae	Fe	-	E
<i>Cycas semota</i> K.D.Hill	Cycadaceae	P	-	V
<i>Cycas silvestris</i> K.D.Hill	Cycadaceae	P	V	V
<i>Cycas tuckeri</i> K.D.Hill	Cycadaceae	P	-	V
<i>Dendrobium antennatum</i> Lindl.	Orchidaceae	EH	E	E
<i>Dendrobium bigibbum</i> Lindl.	Orchidaceae	EH	V	V
<i>Dendrobium carronii</i> Lavarack & P.J.Cribb	Orchidaceae	EH	V	V
<i>Dendrobium johannis</i> Rchb.f.	Orchidaceae	EH	V	V
<i>Dendrobium phalaenopsis</i> Fitzg.	Orchidaceae	EH	V	V
<i>Dendrobium x superbiens</i> Rchb.f.	Orchidaceae	EH	V	V
<i>Dipodium pictum</i> (Lindl.) Rchb.f.	Orchidaceae	F	E	E
<i>Ectrosia blakei</i> C.E.Hubb.	Poaceae	G	V	V
<i>Eremochloa muricata</i> (Retz.) Hack.	Poaceae	G	E	E
<i>Freycinetia marginata</i> Blume	Pandanaceae	V	-	V
<i>Freycinetia percostata</i> Merr. & L.M.Perry	Pandanaceae	V	-	V
<i>Gardenia psidioides</i> Puttock	Rubiaceae	S	V	V
<i>Grastidium tozerense</i> (Lavarack) M.A.Clem. & D.L.Jones	Orchidaceae	EH	V	V
<i>Gulubia costata</i> (Becc.) Becc.	Arecaceae	P	V	V

Habenaria macraithii Lavarack	Orchidaceae	G	E	E
Hodgkinsonia frutescens C.T.White	Rubiaceae	S	V	-
Huperzia carinata (Desv. ex Poir.) Trevis.	Lycopodiaceae	Fe	E	E
Huperzia phlegmarioides (Gaudich.) Rothm.	Lycopodiaceae	Fe	V	V
Huperzia squarrosa (G.Forst.) Trevis.	Lycopodiaceae	Fe	E	E
Jedda multicaulis J.R.Clarkson	Thymelaeaceae	S	V	V
Macadamia claudiensis C.L.Gross & B.Hyland	Proteaceae	T	V	V
Marsdenia paludicola P.I.Forst.	Asclepiadaceae	V	V	V
Muellerargia timorensis Cogn.	Cucurbitaceae	V	-	E
Myriophyllum coronatum Meijden	Haloragaceae	AH	V	V
Myrmecodia beccarii Hook.f.	Rubiaceae	EH	V	V
Nepenthes mirabilis (Lour.) Druce	Nepenthaceae	F	-	E
Philotheca acrolopha Paul G.Wilson	Rutaceae	S	V	V
Pomatocalpa marsupiale (Kraenzlin) J.J.Sm.	Orchidaceae	EH	V	V
Prostanthera sp. (Mt Tozer L.J.Brass 19478)	Lamiaceae	S	-	V
Quassia sp. (Kennedy River J.R.Clarkson 5645)	Simaroubaceae	S	-	V
Rhinerrhizopsis moorei (Rchb.f.) Ormerod	Orchidaceae	EH	V	V
Sarcochilus hirticalcar (Dockrill) M.A.Clem. & B.J.Wallace	Orchidaceae	EH	V	V
Solanum dunalianum Gaudich.	Solanaceae	S	V	V
Spathoglottis plicata Blume	Orchidaceae	F	V	V
Stackhousia sp. (McIvor River J.R.Clarkson 5201)	Stackhousiaceae	F	-	E
Stemona angusta I.Telford	Stemonaceae	V	V	V
Stylidium longissimum A.R. Bean (syn S. sp. (Wakooka J.R.))	Stylidiaceae	F	-	V
Syzygium velarum B.Hyland	Myrtaceae	T	V	V
Thelepogon australiensis B.K.Simon	Poaceae	G	-	V
Trichoglottis australiensis Dockrill	Orchidaceae	EH	V	V
Tylophora williamsii P.I.Fors	Asclepiadaceae	V	V	-
Vanda hindsii Lindl.	Orchidaceae	LF	V	V
Wodyetia bifurcata A.K.Irvine	Arecaceae	P	V	V
Xanthostemon youngii C.T.White & W.D.Francis	Myrtaceae	T	V	R

*T = Tree, S = Shrub, P = Palmoid (palm or palm-like tree or shrub), V = Vine, G = Graminoid (grass or grass-like terrestrial herb), F = Forb (non-graminoid terrestrial herb), EH = Epiphytic Herb, LH = Lithophytic (rock-growing) Herb, AH = Aquatic Herb, Fe = Fern

8.7.2. SPECIES LIST 2 - BANKS AND SOLANDER COLLECTION

The following list was compiled by J. L Jago (Jago, 2017)

Note – Not all species will be displayed, and other species may be included during the detailed design stage.

Plants Collected by Banks & Solander in 1770 from North Queensland

Introduction

A recent search of the internet failed to find a compressive list of plants collected by Banks and Solander in 1770 during their visit to North Queensland. The lists available from several sites appear to be based only on specimens illustrated. It seems surprising that after some 240 years a complete list of plants collected in North Queensland by Banks and Solander is not readily available. The following list is not exhaustive. It contains species illustrated as well as specimens cited in various botanical journals and revisions and duplicates held at the Queensland Herbarium (BRI). A full list of all references will be included. Many of the plants collected by Banks and Solander in 1770 are of common occurrence around Cairns and the northern beaches.

Ferns & Fern Allies

Adiantaceae

Cheilanthes caudata R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Cheilanthes pumilio (R.Br.) F. Muell. Holotype Loc: Endeavour River. Occurs in Cairns Region.

Blechnaceae

Doodia media R.Br. Type Loc: Endeavour River. Common in the Cairns Region.

Davalliaceae

Davallia denticulata (Burm.f.) Mett. Loc: Endeavour River. Common in the Cairns Region.

Dennstaedtiaceae

Microlepia speluncae (L.) T. Moore Loc: Endeavour River. Common in the Cairns Region.

Lindsaeaceae

Lindsaea obtusa J.Sm. Loc: Endeavour River. This species is common in the Cairns Region.

Polypodiaceae

Drynaria rigidula (Sw.) Bedd. Loc: Endeavour River. Common in the Cairns Region.

Pyrrhosia longifolia (Burm.f.) C.V. Morton Loc: Endeavour River. Common in Cairns Region.

Pteridaceae

Pteris ensiformis Burm.f. Loc: Endeavour River. Common in the Cairns Region.

Selaginellaceae

Selaginella ciliaris (Retz.) Spring Loc: Endeavour River. Occurs in the Cairns Region.

Thelypteridaceae

Cyclosorus interruptus (wild) H. Ito. Loc: Endeavour River. Common in the Cairns Region.

Monocotyledons

Araceae

**Colocasia esculenta* (L.) Schott Loc: Endeavour River. Taro is commonly naturalised in the Cairns Region. This species is regarded as a pre-European introduction in Australia.

Burmanniaceae

Burmannia juncea Sol. ex R.Br. Loc: Endeavour River.

Centrolepidaceae

Centrolepis banksii (R.Br.) Roem. & Schult. Type Loc: Endeavour River. Occurs in Cairns Region.

Centrolepis exserta (R.Br.) Roem. & Schult. Loc: Endeavour River.

Colchicaceae

Schelhammera multiflora R.Br. Loc: Endeavour River. Common in the Cairns Region.

Commelinaceae

Aneilema acuminatum R.Br. Loc: Endeavour River. Occurs in the Cairns Region.

Cartonema spicatum (R.Br.) Loc: Endeavour River. Occurs in the Cairns Region.

Pollia macrophylla (R.Br.) Benth. Loc: Endeavour River. Common in the Cairns Region.

Cyperaceae

Arthrostylis aphylla R.Br. Loc: Endeavour River.

Cyperus aquatilis R.Br. Loc: Endeavour River. This species is common in the Cairns Region.

Cyperus pedunculatus (R.Br.) J. Kern Loc: Endeavour River. Common in the Cairns Region.
Cyperus polystachyos Rottb. Loc: Endeavour River. Common in the Cairns Region.
Cyperus squarrosus L. Loc: Endeavour River.
Eleocharis geniculata (L.) Roem. & Schult. Loc: Endeavour River. Common in Cairns Region.
Eleocharis spiralis (Rottb.) Roem & Schult. Loc: Endeavour River. Common in Cairns Region.
Fimbristylis acicularis R.Br. Loc: Endeavour River. Common in the Cairns Region.
Fimbristylis furva R. Br. Loc: Endeavour River & Booby Island. Occurs in the Cairns Region.
Fuirena arenosa R.Br. Loc: Lookout Point.
Fuirena ciliaris (L.) Roxb. Loc: Endeavour River. Common in the Cairns Region.
Fuirena umbellata Rottb. Loc: Endeavour River. Common in the Cairns Region.
Lepironia articulata (Retz.) Domin Loc: Endeavour River. Common in the Cairns Region.
Rhynchospora brownii Roem. & Schult. Loc: Endeavour River. Common in Cairns Region.
Rhynchospora corymbosa (L.) Britton Loc: Endeavour River. This species is common in the Cairns Region.
Schoenus calostachyus (R.Br.) Roem. & Schult. Loc: Endeavour River. This species is common in the Cairns Region.
Scleria caricina (R.Br.) Benth. Loc: Endeavour River. Common in the Cairns Region.
Scleria polycarpa Boeck. Loc: Endeavour River. Common in the Cairns Region.
Scleria pygmaea (R.Br.) Loc: Endeavour River. This species occurs in the Cairns Region.
Scleria rugosa R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Eriocaulaceae

Eriocaulon depressum R.Br. ex Sm. Type Loc: Endeavour River. Occurs in the Cairns Region.
Eriocaulon fistulosum R.Br. ex Sm. Loc: Endeavour River.
Eriocaulon pusillum R. Br. Loc: Endeavour River.

Haemodoraceae

Haemodorum coccineum R.Br. Loc: Endeavour River. Common in the Cairns Region.

Hemerocallidaceae

Dianella caerulea Sims Loc: Endeavour River. This species is common in the Cairns Region.

Laxmanniaceae

Eustrephus latifolius R.Br. ex Ker Gawl. Loc: Endeavour River
Lomandra banksii (R.Br.) Lauterb. Type Loc: Endeavour River. Occurs in the Cairns Region.
Lomandra multiflora (R.Br.) Britten Loc: Endeavour River. Occurs in the Cairns Region.
Thysanotus banksii R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Orchidaceae

Dendrobium canaliculatum R.Br. Loc: Endeavour River.
Dendrobium discolor Lindl. Loc: Cape Grafton & Endeavour River. Common in the Cairns Region.
Dockrilla rigida (R.Br.) Rauschert Loc: Endeavour River. Occurs in the Cairns Region.

Philidraceae

Philydrum lanuginosum Banks & Sol. ex Gaertn. Loc: Endeavour River. This species is common in the Cairns Region.

Poaceae

Capillipedium parviflorum (r.Br.) Stapf Loc: Endeavour River. Occurs in the Cairns Region.
Coelachne pulchella R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.
Dimeria acinaciformis R.Br. Loc: Endeavour River.
Eragrostis stenostachya (R.Br.) Steud. Loc: Endeavour River. Occurs in the Cairns Region.
Eriachne mucronata R.Br. Loc: Endeavour River.
Eriachne pallescens var. *pallescens* R.Br. Loc: Endeavour River. Occurs in the Cairns Region.
Eriachne squarrosa R.Br. Loc: Endeavour River.
Heteropogon contortus (L.) P.Beauv. ex Roem. & Schult. Loc: Endeavour River. This species occurs in the Cairns Region.
Ischaemum fragile R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.
Leptaspis banksii R.Br. Loc: Endeavour River. This species is common in the Cairns Region.
Sacciolepis myosuroides (R.Br.) A. Camus Loc: Endeavour River. Occurs in the Cairns Region.
Schizachyrium fragile (R.Br.) A. Camus Loc: Endeavour River. Occurs in the Cairns Region.
Sporobolus pulchellus R.Br. Loc: Endeavour River.
Thuarea involuta (G.Forst.) R.Br. ex Roem & Schult. Loc: Endeavour River. This species is common in the Cairns Region.

Restionaceae

Dapsilanthus ramosus (R.Br.) B.G. Briggs & L.A.S. Johnson Loc: Endeavour River. This species occurs in the Cairns Region.

Stemonaceae

Stemona australiana (Benth.) C.H. Wright Loc: Endeavour River.

Xyridaceae

Xyris indica L. Loc: Endeavour River.

Xyris pauciflora Willd. Loc: Endeavour River.

Dicotyledons**Acanthaceae**

Acanthus ilicifolius L. Loc: Endeavour River. This species is common in the Cairns Region.

Hygrophila angustifolia R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Nelaonia campestris R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Pseuderanthemum variabile (R.Br.) Radlk. Loc: Endeavour River. Common in Cairns Region.

Rostellularia adscendens (R.Br.) F.Muell. Loc: Endeavour River. Occurs in the Cairns Region.

Aizoaceae

Sesuvium portulacastrum (L.) L. Loc: Endeavour River. Common in the Cairns Region.

Amaranthaceae

Deeringia arborescens (R.Br.) Druce Loc: Endeavour River. Occurs in the Cairns Region.

Anacardiaceae

Blepharocarya involucrigera F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Buchanania arborescens (Blume) Blume Loc: Endeavour River. Common in Cairns Region.

Pleiogynium timoriense (DC.) Leenh. Loc: Endeavour River. Common in the Cairns Region.

Apiaceae

Centella asiatica (L.) Urb. Loc: Endeavour River. Common in the Cairns Region.

Apocynaceae

Alyxia spicata R.Br. Loc: Cape Grafton & Endeavour River. Common in the Cairns Region.

Cynanchum pedunculatum R.Br. Loc: Endeavour River.

Dischidia nummularia R.Br. Loc: Endeavour River. Common in the Cairns Region.

Hoya australis subsp. *australis* R.Br. ex Traill Type Loc: Cape Grafton also collected from the Endeavour River. This species is common in the Cairns Region.

Parsonsia velutina R.Br. Loc: Endeavour River. This species is common in the Cairns Region.

Sarcostemma viminale subsp. *brunonianum* (Wight & Arn.) P.I.Forst. Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Tabernaemontana orientalis R.Br. Loc: Endeavour River & Lookout Point. This species is common in the Cairns Region.

Aristolochiaceae

Aristolochia acuminata Lam. Loc: Endeavour River. Occurs in the Cairns Region.

Araliaceae

Schefflera actinophylla (Endl.) Harms Loc: Endeavour River. Common in the Cairns Region.

Tachymene hookeri (Domin) A.E.Holland Loc: Endeavour River.

Asteraceae

Acmella grandiflora var. *brachyglossa* (Benth.) R.K. Jansen Loc: Endeavour River.

Adenostemma lavenia (L.) Kuntze Loc: Endeavour River.

Allopterigeron filifolius (F.Muell.) Dunlop Loc: Endeavour River.

Blumea saxatilis Zoll. & Moritzi Loc: Endeavour River.

Cyanthillium cinereum (L.) H.Rob. Loc: Endeavour River. Common in the Cairns Region.

**Elephantopus scaber* L. Loc: Endeavour River. Common in the Cairns Region.

Epaltes australis Less. Loc: Endeavour River. This species is common in the Cairns Region.

Helichrysum rupicola DC. Loc: Cape Grafton & Endeavour River. Common in the Cairns Region.

Minuria macrorhiza (DC.) Lander Loc: Endeavour River.

Olearia arguta (R.Br.) Benth. Loc: Endeavour River.

Peripleura hispidula var. *setosa* (N.T.Burb.) G.I.Nesom Loc: Endeavour River. This species occurs in the Cairns Region.

Phacellothrix cladochaeta (F.Muell.) F.Muell. Loc: Endeavour River.

Wollastonia uniflora (Willd.) Orchard Loc: Cape Grafton & Endeavour River. Common in Cairns
Xerochrysum bracteatum (Vent.) Tzvelev Loc: Endeavour River.

Avicenniaceae

Avicennia marina subsp. *eucalyptifolia* (Valeton) J.Everett Loc: Endeavour River. This species is common in the Cairns Region.

Bignoniaceae

Deplanchea tetraphylla (R.Br.) F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Dolichandrone alternifolia (R.Br.) Seem. Loc: Endeavour River.

Boraginaceae

Heliotropium sarmentosum (Lam.) Craven Loc: Endeavour River. Occurs in the Cairns Region.

Byblidaceae

Byblis liniflora Salisb. Loc: Endeavour River. This species occurs in the Cairns Region.

Byttneriaceae

Abroma molle DC. Loc: Endeavour River. This species is common in the Cairns Region.

Commersonia bartramia (L.) Merr. Loc: Endeavour River. Common in the Cairns Region.

Caesalpiniaceae

Chamaecrista nomaname var. *nomame* (Siebold) H. Ohashi Loc: Endeavour River. This species is common in the Cairns Region.

Cynometra iripa Kostel Loc: Endeavour River. Common in the Cairns Region.

Erythrophleum chlorostachys (F.Muell.) Baill. Loc: Endeavour River. This species occurs in the Cairns Region.

Campanulaceae

Wahlenbergia communis Carolin Loc: Endeavour River.

Capparaceae

Capparis lucida (DC.) R.Br. ex Benth. Loc: Endeavour River. Common in the Cairns Region.

Chenopodiaceae

Salsola kali L. Loc: Endeavour River. This species occurs in the Cairns Region.

Chrysobalanaceae

Parinari nonda F.Muell. ex Benth. Loc: Endeavour River.

Cochlospermaceae

Cochlospermum gillivraei Benth. Loc: Endeavour River. Common in the Cairns Region.

Combretaceae

Lumnitzera littorea (Jack) F.Voigt Loc: Endeavour River. Occurs in the Cairns Region.

Terminalia muelleri Benth. Loc: Endeavour River. This species occurs in the Cairns Region.

Convolvulaceae

Evolvulus alsinoides var. *decumbens* (R.Br.) Ooststr. Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Ipomoea eriocarpa R.Br. Loc: Endeavour River.

**Ipomoea indica* (Burman) Merr. Loc: Endeavour River. This species is common in the Cairns Region. Regarded by BRI as naturalised.

Ipomoea macrantha Roem. & Schult. Loc: Endeavour River. Occurs in the Cairns Region.

Lepistemon urceolatus (R.Br.) F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Xerostegia tridentata (L.) D.F.Austin & Staples Loc: Endeavour River. This species occurs in the Cairns Region.

Cucurbitaceae

Diplocyclos palmatus (L.) C. Jeffrey Loc: Endeavour River. Common in the Cairns Region.

Zehneria cunninghamii F.Muell. Loc: Endeavour River. Occurs in the Cairns Region.

Dilleniaceae

Dillenia alata (R.Br. ex DC.) Martelli Loc: Endeavour River. Common in the Cairns Region.

Hibbertia banksii (R.Br. ex DC.) Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Droseraceae

Drosera banksii R.Br. ex DC. Loc: Endeavour River.

Drosera burmanni Vahl. Loc: Endeavour River & Lizard Island. Occurs in the Cairns Region.

Drosera indica L. Loc: Cape Grafton & Endeavour River. This species occurs in the Cairns Region.

Drosera petiolaris R.Br. ex DC. Loc: Endeavour River. Occurs in the Cairns Region.

Ericaceae

Leucopogon lavarackii Pedley Loc: Endeavour River.

Leucopogon ruscifolius R.Br. Loc: Endeavour River. Occurs in the Cairns Region.

Euphorbiaceae

Euphorbia mitchelliana Boiss. Loc: Endeavour River. This species occurs in the Cairns Region.

Euphorbia pallens Dillwyn Loc: Endeavour River. This species occurs in the Cairns Region.

Claoxylon hillii Benth. Loc: Endeavour River. This species is common in the Cairns Region.

Homalanthus novoguineensis (Warb.) K.Schum. Loc: Endeavour River. Common in Cairns Region.

Macaranga involucrata var. *mallotoides* (F.Muell.) L.M. Perry Loc: Endeavour River.

This species is common in the Cairns Region.

Macaranga tanarius (L.) Muell. Arg. Loc: Endeavour River. Common in the Cairns Region.

Mallotus ficifolius (baill.) Pax & K.Hoffm. Loc: Endeavour River. Common in Cairns Region.

Mallotus philippensis (Lam.) Muell.Arg. Loc: Endeavour River. Common in Cairns Region.

Mallotus polyadenos F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Microstachys chamaelea (L.) A.juss. ex Hook.f. Loc: Endeavour River. This species is common in the Cairns Region.

Shonia tristigma subsp. *borealis* Halford & R.J.F.Hend. Loc: Endeavour River.

Tragia finalis P.I.Forst Loc: Endeavour River. This species is common in the Cairns Region.

Fabaceae

Aphyllodium biarticulatum (L.) Gagnep. Loc: Endeavour River. Common in Cairns Region.

Cajanus reticulatus (Dryland.) F.Muell. Loc: Endeavour River. Occurs in the Cairns Region.

Canavalia rosea (Sm.) DC. Loc: Endeavour River. Common in the Cairns Region.

Castanospermum australe A.Cunn.& Fraser ex Hook. Loc: Endeavour River. This species is common in the Cairns Region.

Crotalaria calycina Schrank Loc: Endeavour River. This species occur in the Cairns Region.

Crotalaria verrucosa L. Loc: Endeavour River. This species occurs in the Cairns Region.

Desmodium trichostachyum Benth. Loc: Endeavour River and/or Cape Grafton. This species is common in the Cairns Region.

Eriosema chinense Vogel Loc: Endeavour River. This species occurs in the Cairns Region.

Erythrina vespertilio Benth. Loc: Endeavour River. This species occurs in the Cairns Region.

Galactia tenuiflora var. *lucida* Baker Loc: Endeavour River. Occurs in the Cairns Region.

Gompholobium nitidum Sol. ex Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Glycine tomentella Hayata Loc: Endeavour River. This species occurs in the Cairns Region.

Indigofera colutea (Burm.f.) Merr. Loc: Endeavour River.

Indigofera linifolia (L.f.) Retz. Loc: Endeavour River.

Indigofera pratensis F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Jacksonia thesioides A.Cunn. ex Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Lamprolobium fruticosum Benth. Loc: Endeavour River.

Mucuna gigantea (Willd.) DC. Loc: Endeavour River. Common in the Cairns Region.

Ormocarpum orientale (Spreng.) Merr. Loc: Endeavour River.

Rhynchosia acuminatissima Miq. Loc: Endeavour River. Occurs in the Cairns Region.

Smithia conferta Sm. Loc: Endeavour River.

Tephrosia brachyodon var. *brachyodon* Domin Loc: Endeavour River.

Tephrosia filipes subsp. *filipes* Benth. Loc: Endeavour River.

Tephrosia filipes subsp. *latifolia* Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Tephrosia juncea Benth. Loc: Endeavour River. Common in the Cairns Region.

Tephrosia leptoclada Benth. Loc: Endeavour River. This species occurs in the Cairns Region.

Tephrosia sp. (Iron Range L.J.Brass 19242) Loc: Endeavour River. Occurs in the Cairns Region.

Tephrosia purpurea var. *sericea* Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Tephrosia reticulata R.Br. ex Benth Loc: Endeavour River.

Uraria lagopoides (L.) DC. Loc: Endeavour River. This species occurs in the Cairns Region.

Vandasina retusa (Benth.) Rauschert Loc: Endeavour River. Common in the Cairns Region.

Vigna lanceolata var. *filiformis* Benth. Loc: Endeavour River.

Vigna radiata var. *sublobata* (Roxb.) Verdc. Loc: Endeavour River. Occurs in Cairns Region.

Vigna vexillata var. *angustifolia* (Schumach. & Thonn.) Baker Loc: Cape Grafton & Endeavour River.

This species occurs in the Cairns Region.

Gentianaceae

Canscora diffusa (Vahl.) r.Br. ex Roem. & Schult. Loc: Endeavour River. This species occurs in the Cairns Region.

Goodeniaceae

Goodenia pilosa (R.Br.) Carolin Loc: Endeavour River. Occurs in the Cairns Region.

Goodenia pumilio R.Br. Type Loc: Endeavour River.

Lechenaultia filiformis R.Br. Loc: Endeavour River.

Lamiaceae

Callicarpa pedunculata R.Br. Loc: Endeavour River. Common in the Cairns Region.

Clerodendrum costatum R.Br. Loc: Endeavour River.

Clerodendrum floribundum R.Br. Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Clerodendrum inerme (L.) Gaertn. Loc: Endeavour River. Common in the Cairns Region.

Gmelina dalrympleana (F.Muell.) H.J. Lam. Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Leucas decemdentata (Willd.) Sm. Loc: Endeavour River. Occurs in the Cairns Region.

Plectranthus apreptus S.T.Blake Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Plectranthus congestus R.Br. Loc: Endeavour River.

Plectranthus foetidus Benth. Loc: Endeavour River. Common in the Cairns Region.

Plectranthus graveolens R.Br. Loc: Endeavour River. Occurs in the Cairns Region.

Teucrium argutum R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Vitex rotundifolia L.f. Loc: Endeavour River. Common in the Cairns Region.

Lauraceae

Endiandra glauca R.Br. Loc: Endeavour River. Common in the Cairns Region.

Litsea breviumbellata C.K. Allen

Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Neolitsea brassii C.K. Allen Loc: Endeavour River. Common in the Cairns Region.

Lentibulariaceae

Utricularia albiflora R.Br. Loc: Endeavour River.

Utricularia caerulea L. Loc: Cape Grafton & Endeavour River. This species occurs in the Cairns Region.

Utricularia chrysantha R.Br. Loc: Endeavour River & Lookout Point.

Utricularia limosa R.Br. Loc: Endeavour River.

Utricularia uliginosa Vahl. Loc: Cape Grafton & Endeavour River. This species occurs in the Cairns Region.

Loganiaceae

Mitrasacme ambigua R.Br. Loc: Endeavour River.

Mitrasacme connata R.Br. Loc: Endeavour River.

Mitrasacme laricifolia R.Br. Loc: Endeavour River.

Mitrasacme multicaulis R.Br. Loc: Endeavour River.

Mitrasacme phascoides R.Br. Loc: Endeavour River.

Mitrasacme polymorpha R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Mitrasacme stellata R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Loranthaceae

Amyema biniflora Barlow Loc: Endeavour River.

Decaisnina brittenii subsp. *brittenii* (Blakely) Barlow Loc: Endeavour River. This species occurs in the Cairns Region.

Lythraeae

Ammannia baccifera L.

Loc: Endeavour River.

Rotala mexicana Cham. & Schtdl. Loc: Endeavour River. This species occurs in the Cairns Region.

Rotala tripartita Beesley Loc: Endeavour River.

Malvaceae

Abutilon albescens Miq.

Loc: Cape Grafton & Endeavour River. This species occurs in the Cairns Region.

Hibiscus meraukensis Hochr.

Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Hibiscus normanii F. Muell.

Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Melastomataceae

Melastoma malabathricum subsp. *malabathricum* L. Loc: Endeavour River. This species is common in the Cairns Region.

Meliaceae

Xylocarpus granatum K.D.Koenig Loc: Endeavour River. Common in the Cairns Region.

Menispermaceae

Hyserpa decumbens (Benth.) Diels Loc: Endeavour River. common in the Cairns Region.

Tinospora smilacina Benth. Loc: Endeavour River. Common in the Cairns Region.

Mimosaceae

Acacia calyculata A.Cunn. ex Benth. Loc: Endeavour River. Common in the Cairns Region.

Acacia flavescens A.Cunn. ex Benth. Loc: Endeavour River. Common in the Cairns Region.

Acacia holosericea A.Cunn. ex G.Don Loc: Endeavour River. This species is common in the Cairns Region.

Acacia humifusa A.Cunn. ex Benth. Loc: Endeavour River. This species occurs in the Cairns Region.

Acacia legnata Pedley Loc: Endeavour River.

Acacia multisilqua (Benth.) Maconochie Loc: Endeavour River.

Archidendron grandiflorum (Sol. ex Benth.) I.C. Nielsen Loc: Endeavour River. This species is common in the Cairns Region.

Moraceae

Ficus obiqua G.Forst. Loc: Endeavour River. This species occurs in the Cairns Region.

Ficus racemosa L. Loc: Endeavour River. This species is common in the Cairns Region.

Ficus rubiginosa Desf. ex Vent. Loc: Endeavour River. This species occurs in the Cairns Region.

Myristicaceae

Myristica globosa subsp. *muelleri* (Warb.) W.J.de Wilde Loc: Endeavour River. This species is common in the Cairns Region.

Myrsinaceae

Aegiceras corniculatum (L.) Blanco Loc: Endeavour River. Common in the Cairns Region.

Myrsine urceolata R.Br. Loc: Endeavour River. Common in the Cairns Region.

Myrtaceae

Asteromyrtus angustifolia (Gaertn.) Craven Loc: Endeavour River.

Eucalyptus platyphylla F.Muell. Loc: Endeavour River. Common in the Cairns Region.

Leptospermum polygalifolium Salisb. Loc: Endeavour River. Common in the Cairns Region.

Lithomyrtus obtusa (Endl.) N. Snow & Guymer Loc: Cape Grafton; Endeavour River & Lookout Point. This species is common in the Cairns Region.

Lophostemon suaveolens (Sol. ex Gaertn.) Peter G. Wilson & J.T. Waterh. Loc: Endeavour River. This species is common in the Cairns Region.

Melaleuca cajuputi subsp. *platyphylla* Barlow Loc: Endeavour River & Possession Island. This species is common in the Cairns Region.

Melaleuca viminalis (Sol. ex Gaertn.) Byrnes Loc: Endeavour River. This species is common in the Cairns Region.

Melaleuca viridiflora Sol. ex Gaertn. Loc: Endeavour River. Common in the Cairns Region.

Neofabricia myrtifolia (Gaertn.) Joy Thomps. Loc: Endeavour River.

Rhodomyrtus macrocarpa Benth. Loc: Endeavour River. Common in the Cairns Region.

Syzygium banksii (Britten & S. Moore ex S.Moore) B.Hyland Loc: Endeavour River. This species occurs at Yarrabah.

Syzygium suborbiculare (Benth.) T.G. Hartley & L.M. Perry Loc: Endeavour River. This species occurs in the Cairns Region.

Thryptomene oligandra F.Muell. Loc: Endeavour River & Lookout Point. Occurs in the Cairns Region.

Oleaceae

Chionanthus axillaris R.Br. Loc: Endeavour River. Common in the Cairns Region.

Onagraceae

Ludwigia octovalvis (Jacq.) P.H.Raven Loc: Endeavour River. Common in the Cairns Region.

Passifloraceae

Passiflora aurantia var. *aurantia* G.Forst. Loc: Endeavour River. Common in Cairns Region.

Phyllanthaceae

Flueggea virosa subsp. *melanthesoides* (F. Muell.) G.L. Webster Loc: Endeavour River.

This species is common in the Cairns Region.

Phyllanthus dallachyanus Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Picrodendraceae

Neoroepera banksii Benth. Loc: Endeavour River.

Petalostigma banksii Britten & S.Moore Loc: Endeavour River.

Piperaceae

Piper caninum Blume Loc: Cape Grafton & Endeavour River. Common in the Cairns Region.

Polygalaceae

Comesperma secundum Banks ex DC. Loc: Endeavour River.

Polygala exsuarrosa Adema Loc: Endeavour River. This species occurs in the Cairns Region.

Polygala linariifolia Willd. Loc: Endeavour River.

Polygala longifolia Poir. Loc: Endeavour River. This species occurs in the Cairns Region.

Polygala rhinanthoides Sol.ex Benth. Loc: Endeavour River. Occurs in the Cairns Region.

Salomonina ciliata (L.) DC. Loc: Endeavour River. This species occurs in the Cairns Region.

Polygonaceae

Muehlenbeckia rhyticarya F.Muell. Loc: Endeavour River. This species occurs in the Cairns Region.

Persicaria attenuata (R.Br.) Sojak Loc: Endeavour River. Common in the Cairns Region.

Portulacaceae

Calandrinia arenicola Syeda Loc: Endeavour River.

Portulaca bicolor F.Muel. Loc: Endeavour River. This species occurs in the Cairns Region.

Proteaceae

Banksia aquilonia (A.S.George) A.S.George Loc: Endeavour River. Common in the Cairns Region.

Banksia dentata L.f. Loc: Endeavour River. This species occurs in the Cairns Region.

Grevillea glauca Banks & Sol. ex Knight Loc: Endeavour River. Common in the Cairns Region.

Grevillea parallela Knight Loc: Endeavour River. This species is common in the Cairns Region.

Grevillea pteridifolia Knight Loc: Endeavour River & Lookout Point. Occurs in the Cairns Region.

Persoonia falcata R.Br. Loc: Endeavour River. This species is common in the Cairns Region.

Rhizophoraceae

Carallia brachiata (Lour.) Merr. Loc: Endeavour River. This species is common in the Cairns Region.

Rhizophora mucronata Lam. Loc: Endeavour River. This species is common in the Cairns Region.

Rubiaceae

Cyclophyllum rostellatum S.T. Reynolds & R.J.F. Hend. Loc: Endeavour River.

Ixora timorensis Decne. Loc: Endeavour River. This species is common in the Cairns Region.

Morinda citrifolia L. Loc: Endeavour River. This species is common in the Cairns Region.

Morinda reticulata Benth. Loc: Endeavour River.

Myrmecodia beccarii Hook.f. Loc: Endeavour River. Common in the Cairns Region.

Oldenlandia biflora L. Loc: Endeavour River. This species occurs in the Cairns Region.

Oldenlandia mitrasacmoides subsp. nigicans Halford Loc: Endeavour River.

Psychotria polioSTEMMA Benth. Loc: Endeavour River.

Psydrax banksii S.T.Reynolds & R.J.Hend. Loc: Endeavour River. Common in Cairns Region.

Scyphiphora hydrophylacea (Hook. & Arn.) H.S.Irwin & Barneby Loc: Endeavour River. This species is common in the Cairns Region.

Timonius timon (Spreng.) Merr. Loc: Endeavour River. Common in the Cairns Region.

Rutaceae

Boronia alulata Sol. ex Benth. Loc: Endeavour River.

Eriostemon banksii A. Cunn. ex Endl. Loc: Endeavour River

Micromelum minutum (G.Forst.) Wight & Arn. Loc: Endeavour River. Common in Cairns Region.

Santalaceae

Anthobolus filifolius R.Br. Loc: Endeavour River.

Santalum lanceolatum R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.

Sapindaceae

Distichostemon hispidulus var. hispidulus (Endl.) Baill. Loc: Endeavour River.

Dodonaea vestita (Hook.) Loc: Endeavour River.

Sapotaceae

Planchonella obovata (R.Br.) Pierre Loc: Endeavour River. Common in the Cairns Region.

Scrophulariaceae

Adenosma caerulea R.Br. Loc: Endeavour River.

- Buchnera linearis* R.Br. Loc: Endeavour River.
Buchnera tetragona R.Br. Loc: Endeavour River.
Centranthera cochinchinensis (Lour.) Merr. Loc: Endeavour River.
Lindernia crustacea (L.) F.Muell. Loc: Endeavour River. Common in the Cairns Region.
Lindernia subulata R.Br. Loc: Endeavour River.
Mimulus uvedaliae Benth. Loc: Endeavour River.
Striga curviflora (R.Br.) Benth. Loc: Endeavour River.

Solanaceae

- Solanum viridifolium* Dunal Loc: Cape Grafton & Endeavour River. This species is common in the Cairns Region.

Sparrmanniaceae

- Triumfetta repens* (Blume) Merr. & Rolfe Loc: Endeavour River. Common in Cairns Region.

Stylidiaceae

- Stylidium alsinoides* R.Br. Type Loc: Endeavour River. Occurs in the Cairns Region.
Stylidium capillare R.Br. Type Loc: Endeavour River.
Stylidium fissilobum F.Muell. Loc: Endeavour River.
Stylidium pedunculatum R.Br. Type Loc: Endeavour River.
Stylidium rotundifolium R.Br. Loc: Endeavour River. This species occurs in the Cairns Region.
Stylidium tenerum Spreng.
 Loc: Endeavour River. This species occurs in the Cairns Region.

Thymelaeaceae

- Thecanthes cornucopiae* (Vahl.) Wilkstr. Loc: Cape Grafton and Endeavour River. This species is common in the Cairns Region.

Ulmaceae

- Celtis paniculata* (Endl.) Planch. Loc: Endeavour River. Common in the Cairns Region.

Urticaceae

- Dendrocnide moroides* (Wedd.) Chew Loc: Endeavour River. Common in the Cairns Region.
Pipturus argenteus (G.Forst.) Wedd. Loc: Endeavour River. Common in the Cairns Region.

Violaceae

- Hybanthus enneaspermus* (L.) F. Muell. Loc: Endeavour River. Common in the Cairns Region.

Vitaceae

- Clematicissus opaca* (F.Muell.) Jackes & Rossetto Loc: Endeavour River.
Leea novoguineensis Valetton Loc: Endeavour River. This species is common in Cairns Region.

Zygophyllaceae

- Tribulopsis solandri* R.Br. Loc: Endeavour River.

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8.7.3. SPECIES LIST 3 - VERA SCARTH-JOHNSON

The following list is taken from the index of 'National Treasures: Flowering Plants of Cooktown and Northern Australia' (Scarth-Johnson, 2000) and only includes botanical names. Note that not all these species can be displayed, in particular most of the tree species are not suitable for the display area. Also, other species not included in this list may be included during the detailed design stage.

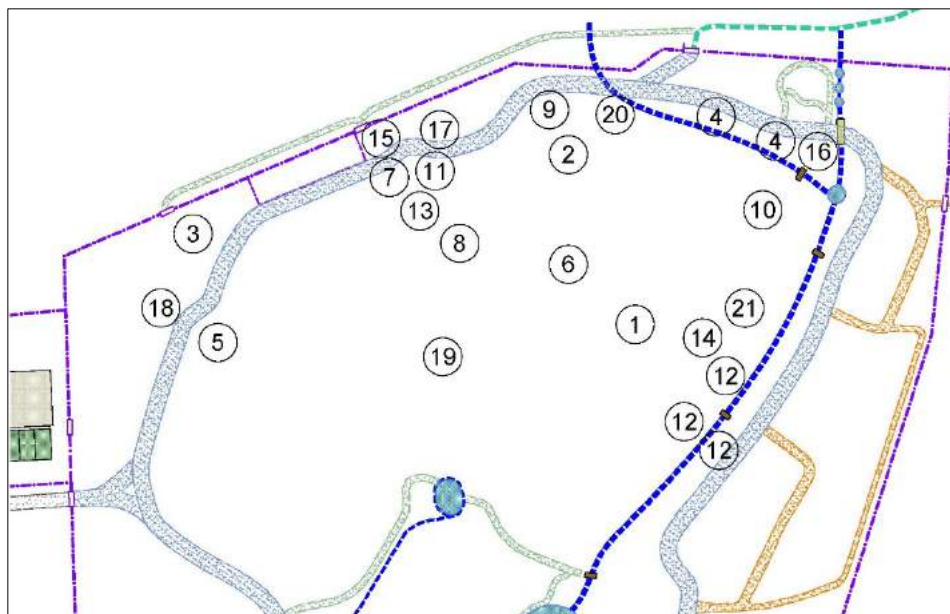
<i>Abelmoschus moschatus</i> var. <i>tuberosa</i>	<i>Dendrobium semifusum</i>
<i>Abrus precatorius</i>	<i>Dendrobium teretifolium</i>
<i>Acacia calyculata</i>	<i>Deplanchea tetraphylla</i>
<i>Acacia crassicarpa</i>	<i>Dianella pavopennacea</i>
<i>Acacia farnesiana</i>	<i>Dillenia alata</i>
<i>Acacia flavescens</i>	<i>Dianella pavopennacea</i>
<i>Acacia holosericea</i>	<i>Diospyros maritima</i>
<i>Acacia humifusa</i>	<i>Diplatia grandibractea</i>
<i>Acacia leptocarpa</i>	<i>Dipodium punctatum</i>
<i>Acacia simsii</i>	<i>Dischidia nummularia</i>
<i>Acanthus ilicifolius</i>	<i>Elaeocarpus arnhemicus</i>
<i>Aegialitis annulata</i>	<i>Erythrina vespertilio</i>
<i>Aegiceras corniculatum</i>	<i>Eucalyptus intermedia</i>
<i>Amomum dallachyi</i>	<i>Eucalyptus phoenicea</i>
<i>Amyema sanguineum</i>	<i>Exocarpos latifolius</i>
<i>Archidendron hendersonii</i>	<i>Excoecaria agallocha</i>
<i>Avicennia eucalyptifolia</i>	<i>Ficus racemosa</i>
<i>Balanophora fungosa</i>	<i>Flagellaria indica</i>
<i>Banksia dentata</i>	<i>Geodorum densiflorum</i> syn. <i>G. pictum</i>
<i>Barringtonia</i>	<i>Grevillea dryandri</i>
<i>Bombax ceiba</i>	<i>Grevillea glauca</i>
<i>Boronia alulata</i>	<i>Grevillea parallela</i>
<i>Bruguiera gymnorhiza</i>	<i>Grevillea pteridifolia</i>
<i>Buchanania arborescens</i>	<i>Guettarda speciosa</i>
<i>Callistemon polandii</i> var. <i>polandii</i>	<i>Hakea pedunculata</i>
<i>Callistemon viminalis</i>	<i>Helichrysum rupicola</i>
<i>Calophyllum inophyllum</i>	<i>Heritiera littoralis</i>
<i>Canavalia maritima</i>	<i>Hibbertia banksii</i>
<i>Canavalia rosea</i>	<i>Hibiscus heterophyllus</i>
<i>Canthium coprosmoides</i>	<i>Hibiscus meraukensis</i>
<i>Capparis lucida</i>	<i>Hibiscus tiliaceus</i>
<i>Carallia brachiata</i>	<i>Hoya australis</i>
<i>Castanospermum australe</i>	<i>Hybanthus enneaspermus</i>
<i>Cerbera manghas</i>	<i>Hybanthus monopetalus</i>
<i>Ceriops tagal</i> var. <i>australis</i>	<i>Jagera pseudorhus</i>
<i>Chiloschista phyllorhiza</i>	<i>Kailarsenia ochreata</i>
<i>Clematis aristata</i>	<i>Labichea buettneriana</i>
<i>Clerodendrum floribundum</i>	<i>Lophostemon suaveolens</i>
<i>Cochlospermum gillivraei</i>	<i>Lumnitzera littorea</i>
<i>Crinum pedunculatum</i>	<i>Lumnitzera racemosa</i>
<i>Crotalaria verrucosa</i>	<i>Mackinlaya macrosciadea</i>
<i>Curcuma australasica</i>	<i>Melaleuca acacioides</i>
<i>Cymbidium canaliculatum</i> var. <i>sparkesii</i>	<i>Melaleuca viridiflora</i>
<i>Cymbidium madidum</i>	<i>Melastoma affine</i>
<i>Cymbidium suave</i>	<i>Merremia dissecta</i>
<i>Dendrobium bigibbum</i>	<i>Monochoria cyanea</i>
<i>Decaisnina brittenii</i>	<i>Morinda citrifolia</i>
<i>Dendrobium canaliculatum</i>	<i>Morinda reticulata</i>
<i>Dendrobium discolor</i> and <i>D. discolor</i> var. <i>broomfieldii</i>	<i>Mucuna gigantea</i>
<i>Dendrobium rigidum</i>	<i>Myrmecodia beccarii</i>
	<i>Myristica insipida</i>

Myrtella obtusa	Santalum lanceolatum
Nauclea orientalis	Sarcostemma australe
Nelumbo nucifera	Scaevola sericea
Neofabricia myrtifolia syn. Leptospermum flavescens	Schelhammera multiflora
Nymphaea sp.	Semecarpus australiensis
Omalanthus novoguineensis	Siphonodon pendulus
Orthosiphon australis	Sonneratia alba
Osbornia octodonta	Sonneratia caseolaris
Pandorea pandorana	Spathoglottis plicata
Parinari nonda	Stephania japonica var. timorensis
Passiflora aurantia	Syzygium suborbiculare
Persoonia falcata	Syzygium tierneyanum
Phaius tankervilleae	Tabernaemontana pandacaqui
Philydrum lanuginosum	Terminalia muelleri
Piper banksii	Thryptomene oligandra
Pittosporum ferrugineum	Tinospora smilacina
Planchonia careya	Turraea brownii
Proiphys amboinensis	Typhonium angustilobium
Pseuderanthemum variable	Vandasia retusa, syn Hardenbergia retusa
Rhizophora stylosa	Wedelia biflora
Salacia chinensis	Xylocarpus australasicus
	Xylocarpus granatum

8.7.4. SPECIES LIST 4 - HISTORICAL SPECIMENS

List and locations compiled by Curator Tony Roberts

IDENT #	BOTANICAL NAME	COMMON NAME
1	<i>Aegle marmelos</i>	Bael Tree, Bael Fruit
2	<i>Agave sisalana</i>	Sisal-hemp
3	<i>Allamanda cathartica</i>	Yellow Allamanda
4	<i>Arecastrum romanzoffianum</i> syn <i>Syagrus romanzoffianum</i>	Queen Palm
5	<i>Caesalpinia coriaria</i>	Divi-divi
	<i>Cassia fistula</i>	Cascara Bean, Golden Shower
6	<i>Combretum paniculatum</i>	Combretum
7	<i>Crinum uniflorum</i>	Native Spider Lily
8	<i>Elaeis guineensis</i>	African Oil Palm
9	<i>Eugenia uniflora</i>	Brazilian Cherry, Pitanga
10	<i>Flacourtia jangomas</i>	Paniala, Indian Plum
11	<i>Furcraea gigantea</i>	Giant False Agave
12	<i>Gliricidia maculata</i>	Mother of Cocoa
	<i>Holmskioldia sanguinea</i>	Chinaman's Hat
13	<i>Hymenocallis peruvianna</i>	Spider Lily
14	<i>Ixora coccinea</i>	Ixora, Flame of the Woods
15	<i>Lagerstroemia indica</i>	Crepe Myrtle
16	<i>Mangifera indica</i>	Mango, Common Mango, Indian Mango
17	<i>Nauclea orientalis</i>	Leichhardt Tree, Yellow Cheesewood
18	<i>Proiphys amboinensis</i>	Northern Christmas Lily, Cardwell Lily
19	<i>Tamarindus indica</i>	Tamarind Tree
20	<i>Tectona grandis</i>	Teak or Burmese Teak
21	<i>Terminalia catappa</i>	Tropical Almond, Indian Almond, Beach Almond



Approximate location of the Historical Specimens (numbers relate to the table above)

8.7.5. SPECIES LIST 5 - WEED SPECIES

Note – some species may not be displayed, and additional species may be included during the detailed design stage.

BOTANICAL NAME	COMMON NAME
<i>Andropogon gayanus</i>	Gamba Grass
<i>Annona glabra</i>	Pond Apple
<i>Asparagus africanus</i>	Asparagus Fern
<i>Bryophyllum delagoense</i>	Mother of Millions
<i>Calotropis procera</i>	Calotrope
<i>Cascabela thevetia</i>	Yellow Oleander
<i>Cassia siamea</i>	Cassia
<i>Cryptostegia grandiflora</i>	Rubber Vine
<i>Cyperus aromaticus</i>	Navua Sedge
<i>Falcataria moluccana</i>	Falcataria
<i>Hedychium coronarium</i>	Scented Ginger
<i>Jatropha gossypifolia</i>	Bellyache Bush
<i>Lantana camara</i>	Lantana
<i>Senna obtusifolia</i>	Sickle pod
<i>Sphagneticola trilobata</i>	Singapore Daisy
<i>Sporobolus spp</i>	Giant Rat's Tail Grass

9. IMPLEMENTATION

9.1. COST ESTIMATES

9.1.1. BASIS OF THE ESTIMATE

A broad scale estimate of costs has been prepared for the Botanic Gardens, based on the planning and design data outlined in the text, illustrations and drawings of this MP. Consequently, appropriate assumptions have been made relative to specific quantities, areas and particular items.

Estimates are based on the authors experience and knowledge and do not make any provision for location, which may increase costs for many items, especially with respects to construction. Also, the estimates are based on m² rates, which is the only reliable way of estimating costs prior to the detailed design stage and therefore they don't account for site specific variation. And the assessment of the construction costs does not cover every aspect of the overall project as there are many factors requiring final determination, e.g. heritage status etc.

It is expected that some of the development tasks will be carried out by Cooktown Council staff and by volunteers, and this will influence the final actual cost. Also, educational institution input could lead to a considerable savings in many areas, for example heritage consultancy costs could be mitigated with the involvement of Universities like archaeology and history faculties.

The next phase of the project will progressively develop the Master Plan to specific detail planning and design development documentation. This process will provide more accurate estimates for the specific elements in the MP.

The following figures are therefore presented as an indicative cost for the design concepts as outlined in the MP. They will assist in identifying the relative value of the various components planned for the development of this Botanic Gardens site, and to determine logical and viable annual budgets, allocation of funds, related extent of development and a time frame for their progressive implementation.

The estimate will need to be progressively reviewed to determine the budget costs relative to the following items:

- Project Management and Administration
- Detail Design Documentation and Tendering
- Construction by Contract

- Construction by Council Resources
- Construction by Voluntary Labour
- Maintenance and Operations – Staffing and Equipment
- Marketing and Promotion
- Accessing Funding and Sponsorship

Opportunities also exist for the Council to use the Master Plan as a basis for applications to source funding for the continuing development of this Botanic Gardens. These other source funds may involve State and Federal Government grants or subsidies as well as corporate and private sponsorship for specific elements within the Botanic Gardens.

9.1.2. ECONOMIC EVALUATION

The overall development of the Botanic Gardens will of necessity continue over an extended period and should be directly related to the economic and social benefits that such expenditure could stimulate.

It is expected that the long-term economic stimulus would be of significant consequence, primarily related to the flow on benefits to existing and proposed community initiatives engendered through the development of the Gardens. The analysis and assessment of the economic benefits is one of the most important components, which can be used by Council to justify expenditure and source sponsorship for the development of the project.

It is obvious that the capital cost of developing the Botanic Gardens is high and not easily justified without the benefit of a comprehensive cost benefit analysis. So, it is strongly recommended that a cost-benefit and economic evaluation study be carried out as an integral part of the design development and detail planning phase.

9.1.3. ESTIMATED DEVELOPMENT COSTS

Refer estimate spreadsheet in Section 1.1 , which itemises the principal elements of the continuing CBG development to 2028.

The following summaries outline the combined cost estimated for the feature and asset upgrade for the main Precincts. Following these are the estimated costs for the Botanical Collection and Other Associated Costs. Note GST is not included in these figures.

Entry Precinct

ITEM	FEATURE	ESTIMATE
01	Entry Gate & Feat Wall	\$186,175
02	Entry Road & Parking	\$359,661
03	First Peoples Grove	\$18,638
04	All Access Walkway	\$280,464
05	Picnic Shelters	\$66,825
06	Orientation Centre	\$359,700
Total		\$1,271,462

Main Botanic Garden Precinct

ITEM	FEATURE	ESTIMATE
07	Fountain Pergola	\$20,691
08	Performance Stage	\$45,771
09	Timeline Gardens	\$85,259
Total		\$151,721

Other Precincts & Features

ITEM	FEATURE	ESTIMATE
10	Old Quarry Walk	\$8,195
11	GBR Bush Track Upgrades	\$22,000
12	GBR Weed Eradication	\$8,250
13	Oval Perimeter	\$76,473
14	Primary Path Upgrade	\$227,043
15	Shelters	\$53,955
Total		\$395,916

The Botanical Collection

ITEM	FEATURE	ESTIMATE
16	Total Station	\$2,500
17	Landscape Designer	\$36,000
18	Collection Acquisitions	\$20,000
19	Landscaping	\$132,000
Total		\$200,500

Other Associated Costs

ITEM	FEATURE	ESTIMATE
20	Heritage Consultant	\$15,000
21	Site Survey	\$50,000
22	Irrigation	\$25,000
23	Signage	\$6,000
24	Secondary Paths	\$46,575
25	Extend Protection Fence	\$29,450
Total		\$172,025

Total Estimated Costs

PRECINCT	ESTIMATE
ENTRY	\$1,271,462
MAIN BOTANIC GARDEN	\$151,721
OTHER PRECINCTS	\$395,916
BOTANICAL COLLECTION	\$200,500
ASSOCIATED COSTS	\$172,025
TOTAL	\$2,191,624

9.1.4. DEVELOPMENT STAGING

The time and budget constraints dictate that it will not be possible to develop the Botanic Gardens in one process. The logical implementation of the MP requires a staged process of works based on the combination of variable factors of construction, user demand, labour availability and budgetary constraints.

Therefore, due to the size of the capital cost for the whole development, it is recommended that the works be staged over a ten-year period to spread the burden. It is therefore proposed that development occurs over four stages, with the initial two stages in the 2018/2019 and the 2019/2020 financial years and the third and fourth stages over the following eight years.

The timing and the scale of the first two stages is designed to achieve the biggest impact for the activities, associated with the 250th Anniversary of Cooks journey up the east coast of Australia and Endeavor’s 6 week stay in Cooktown, in June 2020.

Naturally it is in the best interests of the residents of Cooktown, and the wider Queensland community, that the Gardens are presented in their best light, given the historical botanical connection with Cook, Banks and Solander. And for these historic celebrations, it is likely that the Federal and/or State governments will provide funding for these celebrations and Cooktown should be eligible for a portion of that funding.

Therefore, this MP proposes that the bulk of the upgrades and new features be constructed in the next two financial years.

Following 2020, the remainder of the proposals would be installed over the remaining eight years, with the largest remaining item, the Orientation Centre and Orchid House, (programmed for the 2020/2024 period), to be funded by applications for a special grant/s. The remaining items could also be funded by grants or budgeted for by Council.

The suggested staging costs for the period 2018 to 2028 are:

Staged Development Costs

STAGES	ESTIMATE
STAGE 1 - 2018/2019	\$992,834
STAGE 2 - 2019/2020	\$369,405
STAGE 3 - 2020/2024	\$803,695
STAGE 4 - 2024/2028	\$25,691
TOTAL	\$2,191,624

9.2. CBG DEVELOPMENT ADVISORY COMMITTEE

It will be necessary to develop a detailed Action Plan for the continuing development of this Botanic Gardens site once specific budgets and time lines have been set. This is a fundamental and important part of the implementation process. An Action Plan will define the priorities for action and their recommended timing.

To facilitate this and to provide ongoing support for The Curator during the Implementation stage, it is recommended that a CBG Development Advisory Committee be formed.

This committee could simply be an extension of the existing Wayburr Botanic Garden Advisory Committee, or it could be formed as a separate entity.

As a minimum it should include the following:

- The Curator (as Chair)
- Additional Council Officers, including financial and administrative officers in senior roles, (as required by the Council).
- Members of the current WBGAC.
- The Landscape Designer and/or the Master Plan author.

9.3. DEVELOPMENT ASSISTANCE

Naturally a development of this scale cannot be funded by the Council alone. The Cook Shire Council has a large jurisdiction with a relatively small ratepayer base and could not support the full costs over the short initial development period leading up to 2020. Therefore, other funding assistance will be needed. The following are suggested sources:

Government Assistance

As discussed above, there will be funding available from the State and Federal Governments in support for the 2020 celebrations.

In addition to these there are many other Grants available for developments that focus on environmental and historical subjects, as is the case with the CBG.

Corporate Sponsorship

The high profile associated with the 2020 celebrations will be attractive to businesses and corporate sponsors.

Other Sources

Other sources that may be able to assist and should be investigated include:

The National Trust
Historical Societies
Horticultural Societies
BGANZ

9.4. MASTERPLAN IMPLEMENTATION ESTIMATE

COOKTOWN BOTANIC GARDENS - MASTER PLAN IMPLEMENTATION ESTIMATE

PRELIMINARY COST ESTIMATE REVISION G - 9/05/2018

ITEM	FEATURE	MASTER PLAN REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	SUB TOTAL	STAGE 1 (2018/2019)	STAGE 2 (2019/2020)	STAGE 3 (2020-2024)	STAGE 4 (2024-2028)
ENTRANCE PRECINCT												
1.00	Entry Gate & Feature Wall	7.1.1	Earthworks	LM	287	\$ 25	\$ 7,175	\$ 188,175	\$ 188,175			
1.01			Block wall & columns with stone cladding	m ²	290	\$ 450	\$ 130,500					
1.02			Fence panels	PC	13	\$ 200	\$ 2,600					
1.03			Feature Gate	PC	1	\$ 10,000	\$ 10,000					
1.04			Fixtures and Fillings	PC	1	\$ 5,000	\$ 5,000					
1.05			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 13,975	\$ 13,975					
1.06			Contingency & Variations	%	10	\$ 16,925	\$ 16,925					
1.07												
2.00	Entry Road & Parking	7.1.2	Carpark - (1,620m²)					\$ 359,661				
2.01			Earthworks	m ²	1,620	\$ 15	\$ 24,300					
2.02			Driveway installation	m ²	1,620	\$ 55	\$ 89,100					
2.03			Drainage	PC	1	\$ 10,000	\$ 10,000					
2.04			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 11,106	\$ 11,106					
2.05			Contingency & Variations	%	10	\$ 13,451	\$ 13,451					
2.06												
2.07			Sub Total				\$ 147,957					
2.08			Entry Driveway - (1,630 m²)									
2.09			Earthworks	m ²	1,630	\$ 15	\$ 24,450					
2.10			Driveway installation	m ²	1,630	\$ 55	\$ 89,650					
2.11			Bollard & Chain Barrier	LM	245	\$ 65	\$ 15,925					
2.12			Parking bay & road marking	PC	1	\$ 2,500	\$ 2,500					
2.13			Drainage	PC	1	\$ 10,000	\$ 10,000					
2.14			Gutters	LM	245	\$ 17	\$ 4,165					
2.15			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 13,191	\$ 13,191					
2.16			Contingency & Variations	%	10	\$ 15,976	\$ 15,976					
2.17			Sub Total				\$ 173,734					
2.18			Footpaths - (160 m²)									
2.19			Concrete paths to link to bus set down and picnic area	m ²	160	\$ 187.5	\$ 30,000					
2.20			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 2,700.00	\$ 2,700.00					
2.21			Contingency & Variations	%	10	\$ 3,270.00	\$ 3,270.00					
2.22												
2.23			Sub Total				\$ 35,970					
3.00	First Peoples Grove	7.1.3	General Landscaping					\$ 15,638				
3.01			Signage (interpretive)	m ²	850	\$ 15	\$ 12,750					
3.02			Features & serviced (sealing, bubbler etc)	PC	1	\$ 2,500	\$ 2,500					
3.03			Consultants (Landscape designer 5% of construction costs)	%	5	\$ 887.50	\$ 887.50					
3.04												
4.00	All Access Walkway	7.1.4	Earthworks					\$ 280,464				
4.01			Walkway	m ²	80	\$ 96	\$ 7,680					
4.02			Disabled fillings	m ²	176	\$ 1,200	\$ 211,200					
4.03			Entry Forecourt - paving and landscaping	PC	1	\$ 1,500	\$ 1,500					
4.04			Access Stairs	m ²	93	\$ 55	\$ 5,115					
4.05			Signage - interpretive & directive	PC	1	\$ 3,500	\$ 3,500					
4.06			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 5,000	\$ 5,000					
4.07			Contingency & Variations	%	10	\$ 25,497	\$ 25,497					
4.08												
5.00	Picnic Shelters	7.1.5	Picnic Shelters 4m x 4m (pre fab)					\$ 66,825				
5.01			BEO's	PC	2	\$ 15,500	\$ 31,000					
5.02			Landscaping - turf, gardens, edging	PC	2	\$ 1,500	\$ 3,000					
5.03			Contingency & Variations	m ²	1,070	\$ 25	\$ 26,750					
5.04				%	10	\$ 6,075	\$ 6,075					
5.05												
6.00	Orientation Centre & Orchard H	7.1.6	Feature building to house Orchids and Intery (m² size is nominal)					\$ 359,700				
6.01			Consultants (engineers &/or designer 9% of construction costs)	m ²	120	\$ 2,500	\$ 300,000					
6.02			Contingency & Variations	%	9	\$ 27,000	\$ 27,000					
6.03				%	10	\$ 32,700	\$ 32,700					

ITEM	FEATURE	MASTER PLAN REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	SUB TOTAL	STAGE 1 (2018/2019)	STAGE 2 (2019/2020)	STAGE 3 (2020-2024)	STAGE 4 (2024-2028)
MAIN BOTANIC GARDEN PRECINCT												
7.00	Fountain Pergola	7.2.1	Pergola Feature	PC	1	\$ 15,000	\$ 15,000					\$ 20,891
7.01			Landscape paving etc	PC	1	\$ 1,500	\$ 1,500					
7.02			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 1,485	\$ 1,485					
7.03			Heritage Consultant	%	5	\$ 825	\$ 825					
7.04			Contingency & Variations	%	10	\$ 1,881	\$ 1,881					
7.05												
8.00	Performance Stage & Shelter	7.2.2	Pergola Feature	PC	1	\$ 30,000	\$ 30,000	\$ 45,771				
8.01			Services	PC	1	\$ 5,000	\$ 5,000					
8.02			Landscape surrounding area	PC	1	\$ 1,500	\$ 1,500					
8.03			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 3,285	\$ 3,285					
8.04			Heritage Consultant	%	5	\$ 1,825	\$ 1,825					
8.05			Contingency & Variations	%	10	\$ 4,161	\$ 4,161					
8.06												
9.00	Time Line Gardens	7.2.3	Landscape Feature including facades etc	m ²	1,046	\$ 50	\$ 52,300	\$ 85,259				
9.01			Plants	m ²	1,046	\$ 15	\$ 15,690					
9.02			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 6,119	\$ 6,119					
9.03			Heritage Consultant	%	5	\$ 3,400	\$ 3,400					
9.04			Contingency & Variations	%	10	\$ 7,751	\$ 7,751					
9.05												
OTHER PRECINCTS, AREAS & FEATURES FROM SECTION 7												
10.00	Old Quarry Walk	7.3.1	Cut and prepare track	LM	422	\$ 10	\$ 4,220	\$ 8,195				
10.01			Surface material & steps etc	m ²	42	\$ 65	\$ 2,730					
10.02			Signage and interp	PC	1	\$ 500	\$ 500					
10.03			Contingency & Variations	%	10	\$ 745	\$ 745					
10.04												
11.00	GBR Bush Track Upgrade	7.3.2	Clean up track, remove obstacles etc (4 men x 2 weeks (80hrs))	HR	320	\$ 45	\$ 14,400	\$ 22,000				
11.01			Make good steps etc	PC	1	\$ 5,000	\$ 5,000					
11.02			Directional Signage and interp	PC	1	\$ 600	\$ 600					
11.03			Contingency & Variations	%	10	\$ 2,000	\$ 2,000					
11.04												
11.05			Note: no allowance made for ongoing maintenance									
12.00	GBR Weed Eradication Program	7.3.3	Initial spray program (2 men x 2 weeks (80hrs))	HR	160	\$ 35	\$ 5,600	\$ 8,250				
12.01			Follow up program 1 man x 1 week (40hrs)	HR	40	\$ 35	\$ 1,400					
12.02			Materials and equipment	PC	1	\$ 500	\$ 500					
12.03			Contingency & Variations	%	10	\$ 750	\$ 750					
12.04												
13.00	Oval Perimeter Protection	7.3.4	Repairs Panels	EA	138	\$ 331	\$ 45,678	\$ 76,473				
13.01			Posts	EA	140	\$ 57	\$ 7,980					
13.02			Concrete	PC	1	\$ 2,760	\$ 2,760					
13.03			Labour	HR	200	\$ 65	\$ 13,000					
13.04			Freight	PC	1	\$ 7,055	\$ 7,055					
13.05			Option 2: Bollards & Chain (supply and install)	EA	100	\$ 57	\$ 5,700					
13.06			100 Bollards	PC	1	\$ 2,760	\$ 2,760					
13.07			Concrete	PC	1	\$ 2,760	\$ 2,760					
13.08			Labour	HR	150	\$ 65	\$ 9,750					
13.09			200m chain	EA	200	\$ 5.5	\$ 1,100					
13.10			Option 2 total (note, price not included the sub total column)				\$ 19,310					
13.11												
14.00	Primary Path Upgrade	7.3.5	Primary Path - (1780m ²)	m ²	1,780	\$ 25	\$ 44,500	\$ 227,043				
14.01			Earthworks - prep and remove existing materials	m ²	1,780	\$ 75	\$ 133,500					
14.02			Option 1: Install new paths with Diamond Grid & Deco surface	m ²	1,780	\$ 75	\$ 133,500					
14.03			Option 2: Install new paths with Asphalt finish (same cost rate as above)	m ²	1,780	\$ 75	\$ 133,500					
14.04			Drainage - assume concrete spoon rain to 50% of path edges	LM	569	\$ 20	\$ 11,360					
14.05			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 17,043	\$ 17,043					
14.06			Contingency & Variations	%	10	\$ 20,640	\$ 20,640					
15.00	Shelters	7.3.6	Additional shelters at locations C, F & G	PC	3	\$ 15,000	\$ 45,000	\$ 53,955				
15.01			Consultants (engineers &/or designer 9% of construction costs)	%	9	\$ 4,050	\$ 4,050					
15.02			Contingency & Variations	%	10	\$ 4,905	\$ 4,905					

ITEM	FEATURE	MASTER PLAN REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	SUB TOTAL	STAGE 1 (2018/2019)	STAGE 2 (2019/2020)	STAGE 3 (2020-2024)	STAGE 4 (2024-2028)
THE BOTANICAL COLLECTION												
16.00	Total Station	8.3	Recommendation 13	PC	1	\$ 2,500	\$ 2,500	\$ 2,500			\$ 2,500	
17.00	Landscape Designer	8.4	Recommendation 21 - Based on 240hrs consultancy over 2 yrs.	HR	120	\$ 150	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000		
17.01			Year 2 consultancy	HR	120	\$ 150	\$ 18,000	\$ 18,000	\$ 18,000			
18.00	Collection Acquisitions*	8.2	Plant stock procurements over 10 years - Year 1	PC	1	\$ 5,000	\$ 5,000	\$ 5,000		\$ 5,000		
18.01			Year 2	PC	1	\$ 5,000	\$ 5,000	\$ 5,000		\$ 5,000		
18.02			Period 3	PC	1	\$ 5,000	\$ 5,000	\$ 5,000		\$ 5,000		
19.03			Period 4	PC	1	\$ 5,000	\$ 5,000	\$ 5,000		\$ 5,000		
19.00	Landscaping**	6.2.6	Works associated with gardens upgrades eg edging, soil etc	PC	1	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000			\$ 5,000
19.01			Year 2	PC	1	\$ 10,000	\$ 10,000	\$ 10,000		\$ 10,000		
OTHER ASSOCIATED COSTS												
20.00	Heritage Consultant	3.5	Recommendation 2 - review proposals	PC	1	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000			
21.00	Site survey***	6.2.4	Recommendation 13 - Site survey	PC	1	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000			
22.00	Irrigation****	6.2.4	Recommendation 13 - Detailed irrigation plans	PC	1	\$ 5,000	\$ 5,000	\$ 5,000			\$ 5,000	
22.01			Irrigation Upgrade	PC	1	\$ 20,000	\$ 20,000	\$ 20,000			\$ 20,000	
23.00	Signage	6.2.11	Recommendation 18 - signage strategy	PC	1	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500			
23.01			Install new signage	PC	1	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000			
23.02			Branding - develop new CBG motif and associated stationary	PC	1	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500			
24.00	Secondary Paths	6.2.7	Consolidate and re-surface	m ²	363	\$ 25	\$ 9,075	\$ 9,075	\$ 9,075			
24.01			Replace bridges with 3m x 1.5m wide composite pre-fab bridge units	PC	5	\$ 7,500	\$ 37,500	\$ 37,500	\$ 37,500			
25.00	Extend Protection Fencing	6.1.2.9	Extend Protection fencing to Entry Precinct to match existing in MBGP	LM	310	\$ 95	\$ 29,450	\$ 29,450	\$ 29,450			
26.00			SUB TOTAL				\$ 2,191,624	\$ 2,191,624	\$ 992,934	\$ 369,405	\$ 803,695	\$ 25,691
27.00			GST	%	10		\$ 219,162.44	\$ 219,162.44	\$ 99,293	\$ 36,940	\$ 80,369	\$ 2,569
28.00			TOTAL inc GST				\$ 2,410,787	\$ 2,410,787	\$ 1,092,118	\$ 406,345	\$ 884,064	\$ 28,260

SPECIFIC NOTES

- * Expansion of the Botanical Collection is a key part of the MP. Collection acquisitions allow for the procurement of stock for the collection and assumes that some may need to be specially grown through a contractor
- ** It's assumed that during the primary path upgrades, edging and other gardens associated with those works will be done at the same time by a contractor. Other ongoing works will be done by the garden staff
- *** A full and detailed site survey is essential. All other works will require the details from it.
- **** Assumes partial use of existing system with extensions to reach other areas includes Auto Controller etc. Assumes continued use of existing supply. No water costs are included

GENERAL NOTES

- 1 These estimates are a guideline only. Many assumptions have had to be made as there are no specific detailed plans. Detailed costing require detailed plans and specification.
- 2 Estimates are based on the authors experience and knowledge and do not make any provision for location, which may increase costs for many items, especially with respects to construction. The estimates are based on m² rates and therefore don't account for site specific variation. Therefore the author does not warrant or guarantee that the rates used are accurate.
- 3 Voluntary and educational institution input through work experience schemes etc could lead to considerable savings in many areas. For example heritage consultancy costs could be mitigated with the involvement of Universities archaeology and History departments.
- 4 No allowance has been made for ongoing maintenance as this was excluded from the brief. This included staff requirements, materials, machinery, tools etc. However it is recommended that a detailed assessment of the maintenance requirements for the period covered by this MP should be conducted.
- 5 Contingency and Variations - these amounts are included as a buffer for the estimates. It allows for variations that will inevitably occur during the detailed planning and construction phases. Contingency amounts are not included for the Botanical Collection and Other Associated Costs sections
- 6 The Staging Program indicated in the last 4 columns is preliminary. The intention is get the bulk of the upgrades completed by the beginning of June 2020, in time for Cooks anniversary celebrations. From then onwards the stages are presented in 4 year intervals
- 7 Consultancy fees for design, engineering, certification etc are included in the estimated costs for each features and asset upgrade outlined in Section 6, rather than presented as a lump sum figure. The total amount for all consultations is indicated below

Ancillary Costs

Consistency	\$ 236,943	(Includes all consultancy costs in this document)
Contingency	\$ 169,726	(Contingency amounts are not included for the Botanical Collection and Other Associated Costs)

10. REFERENCES

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- Landsberg, J., & Clarkson, J. (2004). *Threatened plants of Cape York Peninsula*. Queensland Parks & Wildlife.
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- Lucas, K. (1962). *The Geology of Cooktown 1:250,000 Sheet Area, North Queensland*. Department of National Development, Bureau of Mineral Resources Geology and Geophysics .
- Reynolds, B., & Cutler, B. L. (1987). *Report on the Cooktown Botanical Reserve - A historical Study*. Townsville, QLD: James Cook University.
- Scarth-Johnson, V. (2000). *National Treasures: Flowering plants of Cooktown and Northern Australia*. Cooktown: Vera Scarth-Johnson Gallery Association.
- Smith, L. (2010). *Mackay Regional Botanical Gardens Masterplan*. Brisbane: Landplan Studio.
- Wayburr Botanic Gardens Advisory Committee. (2016). *Wayburr Botanic Gardens and Natures Powerhouse Workshop Report*. Cooktown: Wayburr Botanic Gardens Advisory Committee.

BOTANIC RESERVE AND GARDEN AREAS:

The Gallop Botanic Reserve is an extensive area of 62.32ha, which includes large areas of natural bushland on various terrain types, mangrove areas and approximately 1.2km of coast line. The Cooktown Botanic Gardens is located in the south western part of the Gallop Botanic Reserve and is approximately 4.58ha in area.

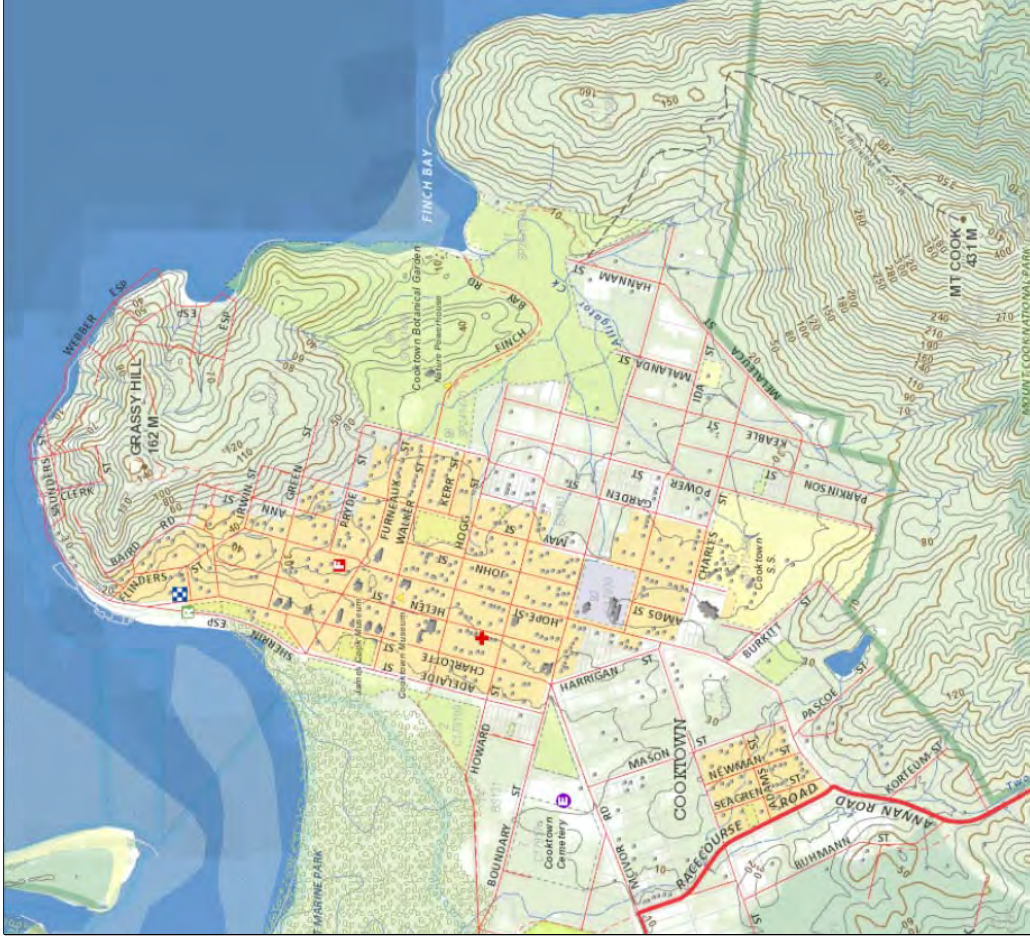


GALLOP BOTANIC RESERVE - 62.32 ha (1:20,000)



BOTANIC GARDEN AREA - 4.58 ha (1:5,000)





COOKTOWN AREA - 1:30,000



BOTANIC GARDENS AREA - 1:5,000

NOTE:
Area calculations are approximates only,
derived from image mapping

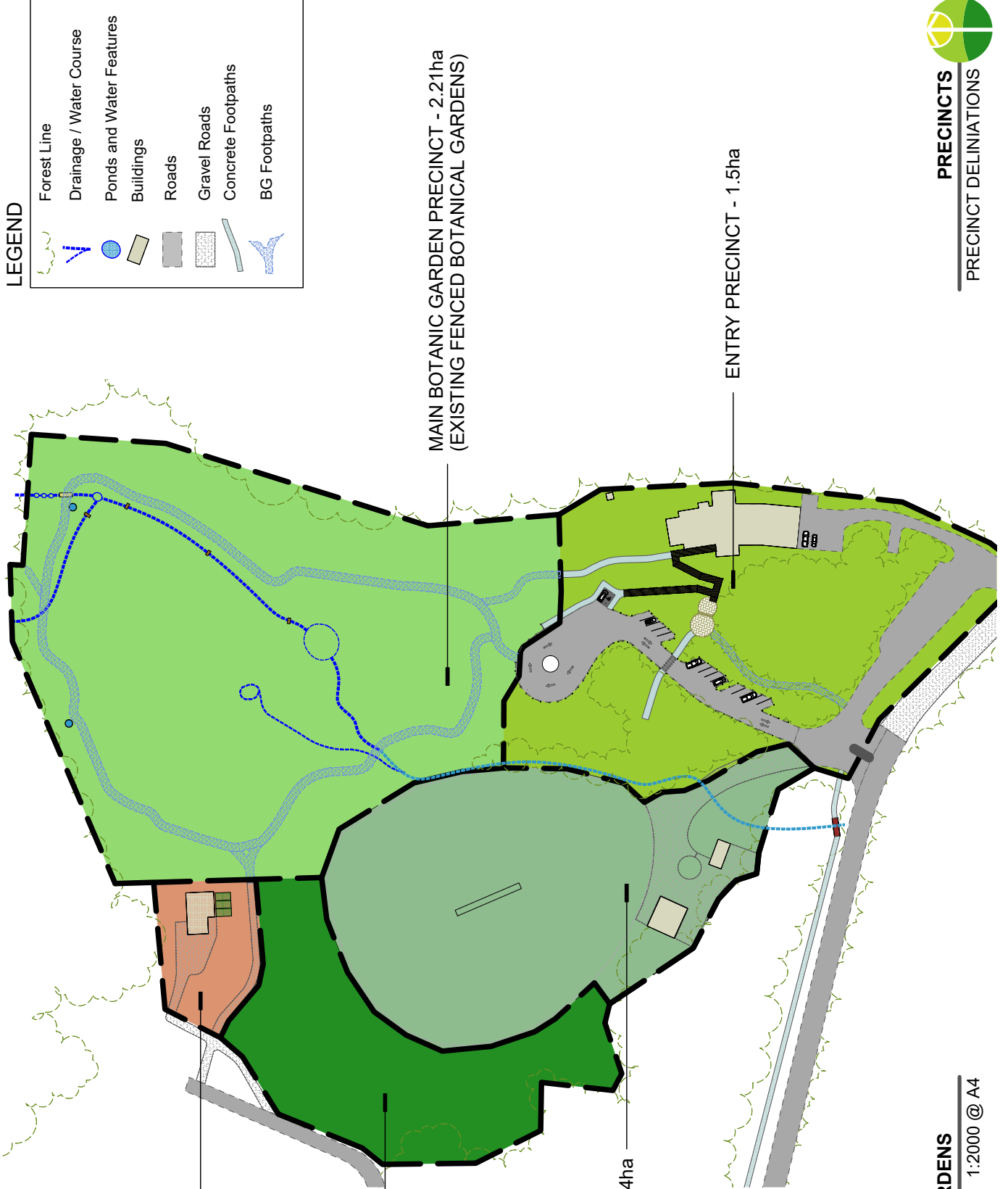
MAINTENANCE PRECINCT - 1819m²

ARBORETUM
PRECINCT - 6870m²

CRICKET OVAL PRECINCT - 1.24ha

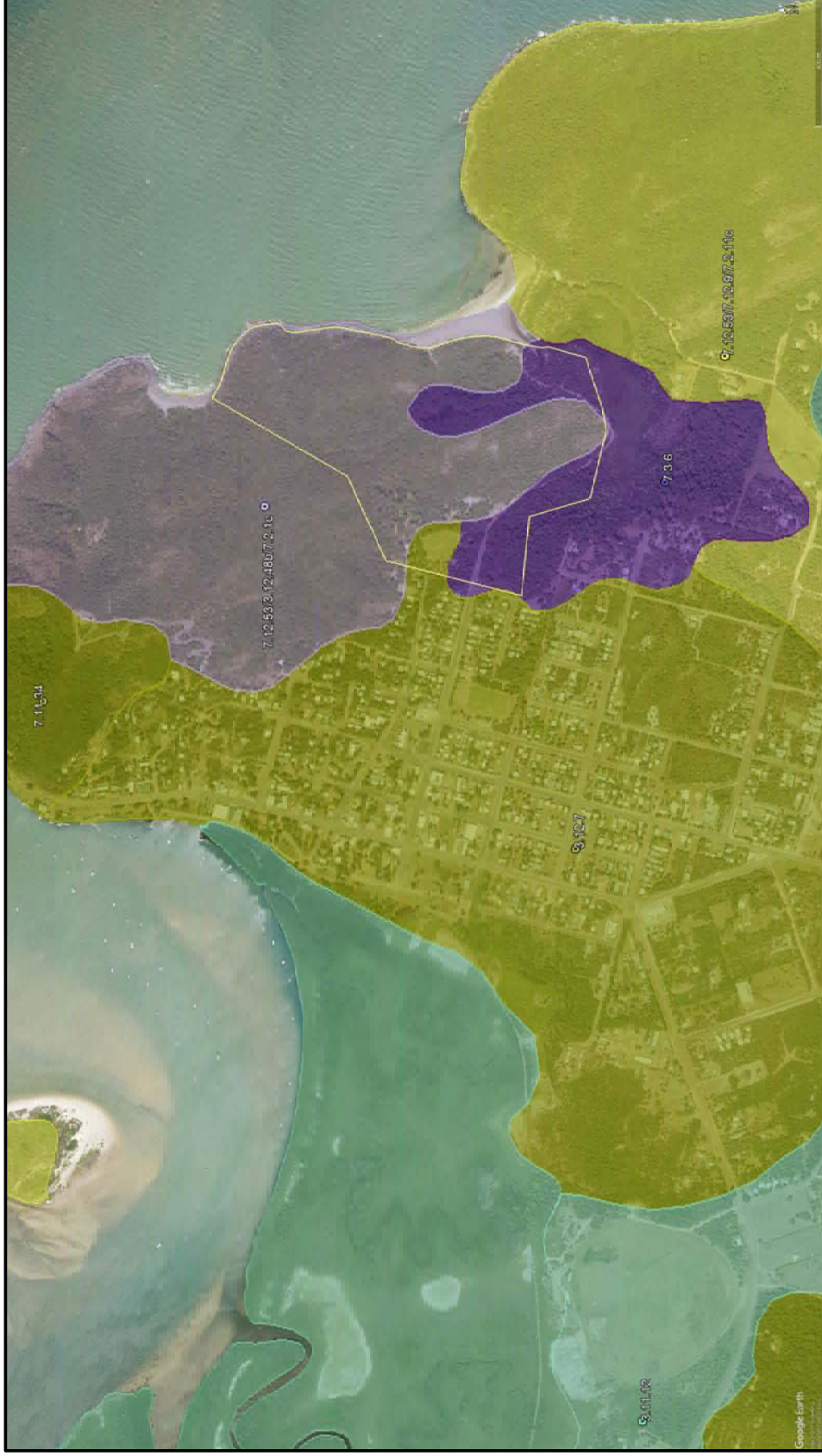
MAIN BOTANIC GARDEN PRECINCT - 2.21ha
(EXISTING FENCED BOTANICAL GARDENS)

ENTRY PRECINCT - 1.5ha



REGIONAL ECOSYSTEMS ASSOCIATED WITH THE SITE:

- RE: 7.12.53 / 3.12.48b / 7.2.1c
80% - 7.12.53 - *Corymbia clarksoniana*....open forest to woodland, of moist to dry lowlands, foothills and uplands on granite and rhyolite.
15% - 3.12.48b - Tussock grassland of *Themeda triandra* +/- *Heteropogon* spp. +/- *Cassytha filiformis* +/- *Zornia muriculata* on rocky igneous coastal headlands and islands.
5% - 7.2.1c - Closed forest with *Calophyllum inophyllum*, *Terminalia arenicola* on beach ridge deposits adjacent to the foredune, in the very wet rainfall zone (Endangered)
- RE: 3.12.7 - *Eucalyptus brassiana* and *Corymbia clarksoniana* open forest on granite ranges (Endangered)
- RE: 7.3.6 - *Melaleuca dealbata* +/- *Melaleuca leucadendra* open forest, on poorly drained alluvial plains (Endangered)

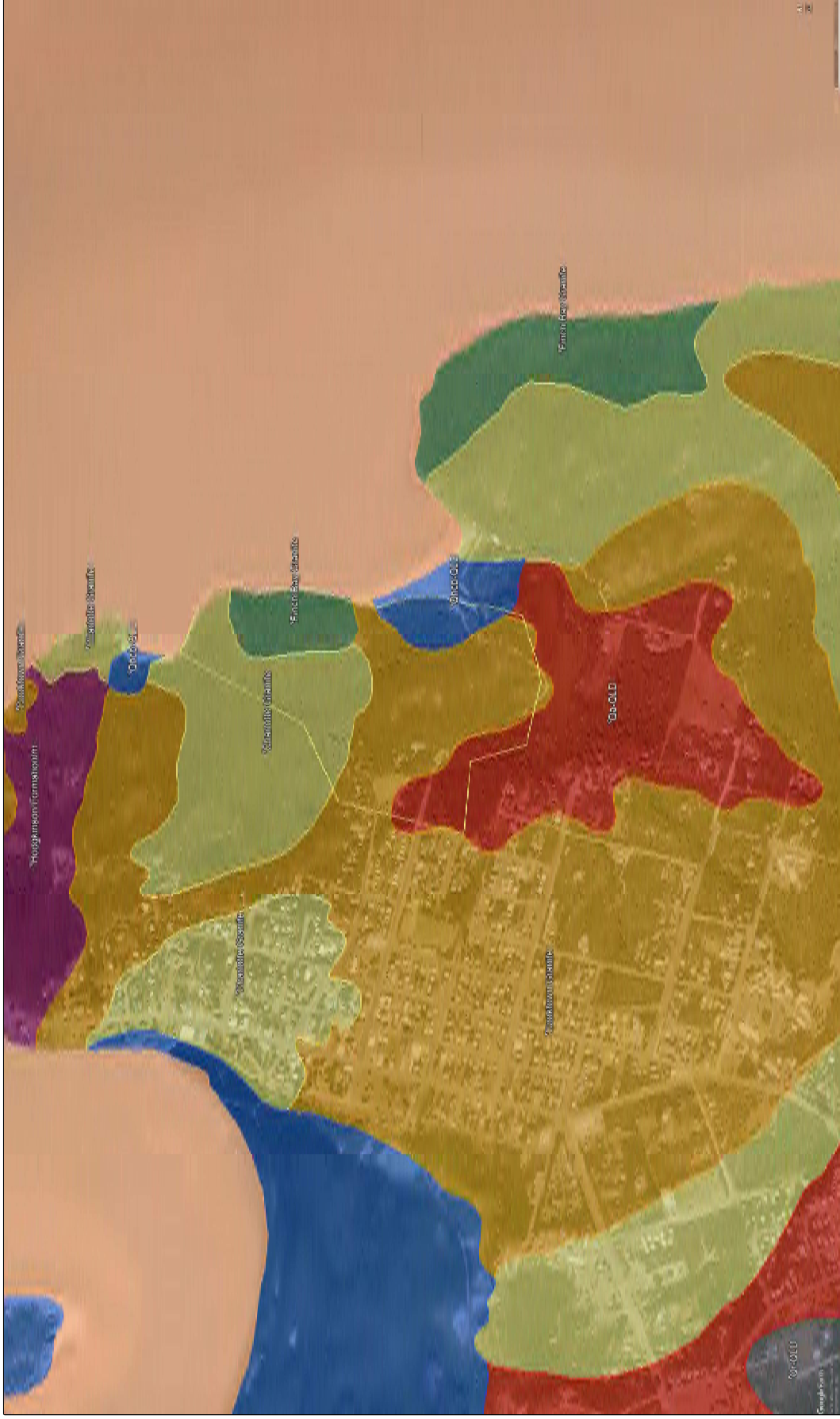


GEOLOGY ASSOCIATED WITH THE SITE:

COOKTOWN GRANITE : White to pale grey, sparsely porphyritic to equigranular (cordierite-) (tourmaline-) muscovite-biotite granite.

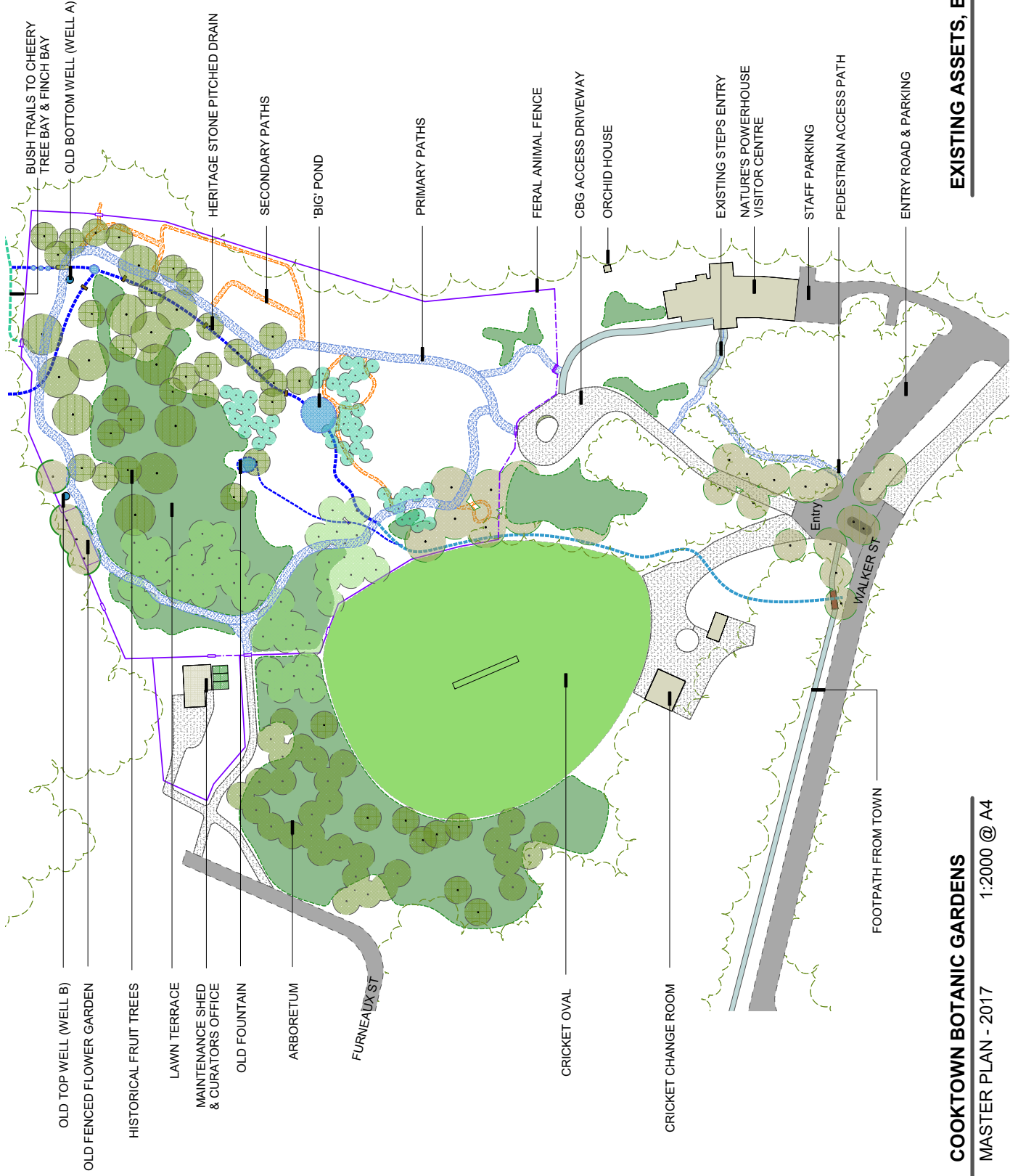
CHARLOTTE GRANITE : Pale grey to white, moderately to slightly porphyritic, fine- to medium grained (garnet-)cordierite (altered)- tourmaline-muscovite-biotite granite; scattered enclaves and miarolitic cavities.

Qa-QLD : Clay, silt, sand and gravel; flood-plain alluvium



LEGEND

	Forest Line
	Heritage Stone Pitched Drains
	Creek / Water Course
	Ponds and Water Features
	Buildings
	Bitumen Roads
	Gravel Roads
	Concrete Footpaths
	CBG Footpaths
	Existing Fences
	Grass / Lawn Areas
	Existing Feature Trees
	Eucalypt Woodland Trees
	Melaleucas / Paper Barks
	Palms
	Bridges



EXISTING ASSETS, BUILDING & FEATURES

LEGEND



FULL SHADE: These areas are under permanent full canopies. Shade on average 60-80%

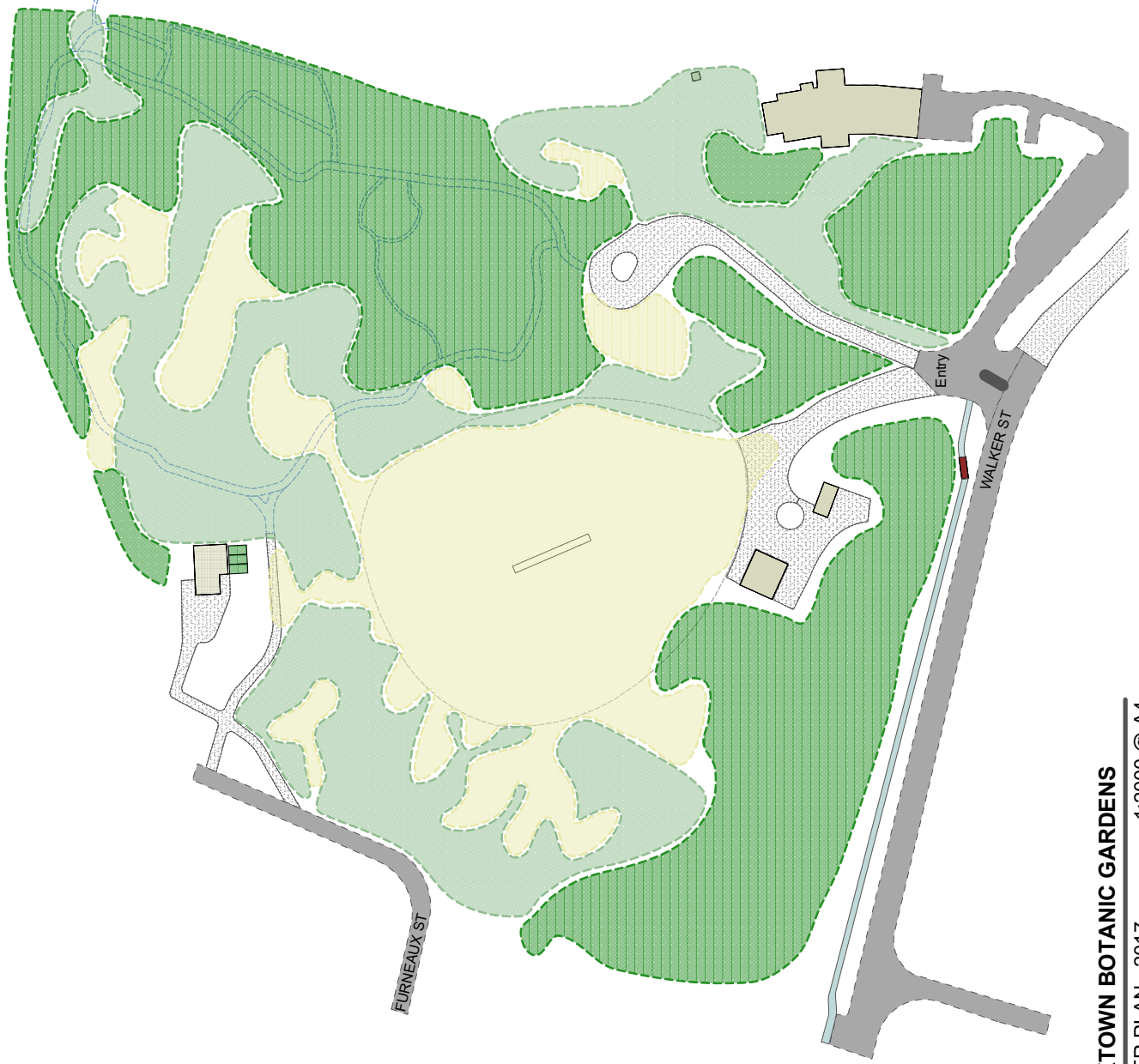


PART SHADE: These areas are partly shaded and get sun either in the morning or afternoon. Shade 30-60%



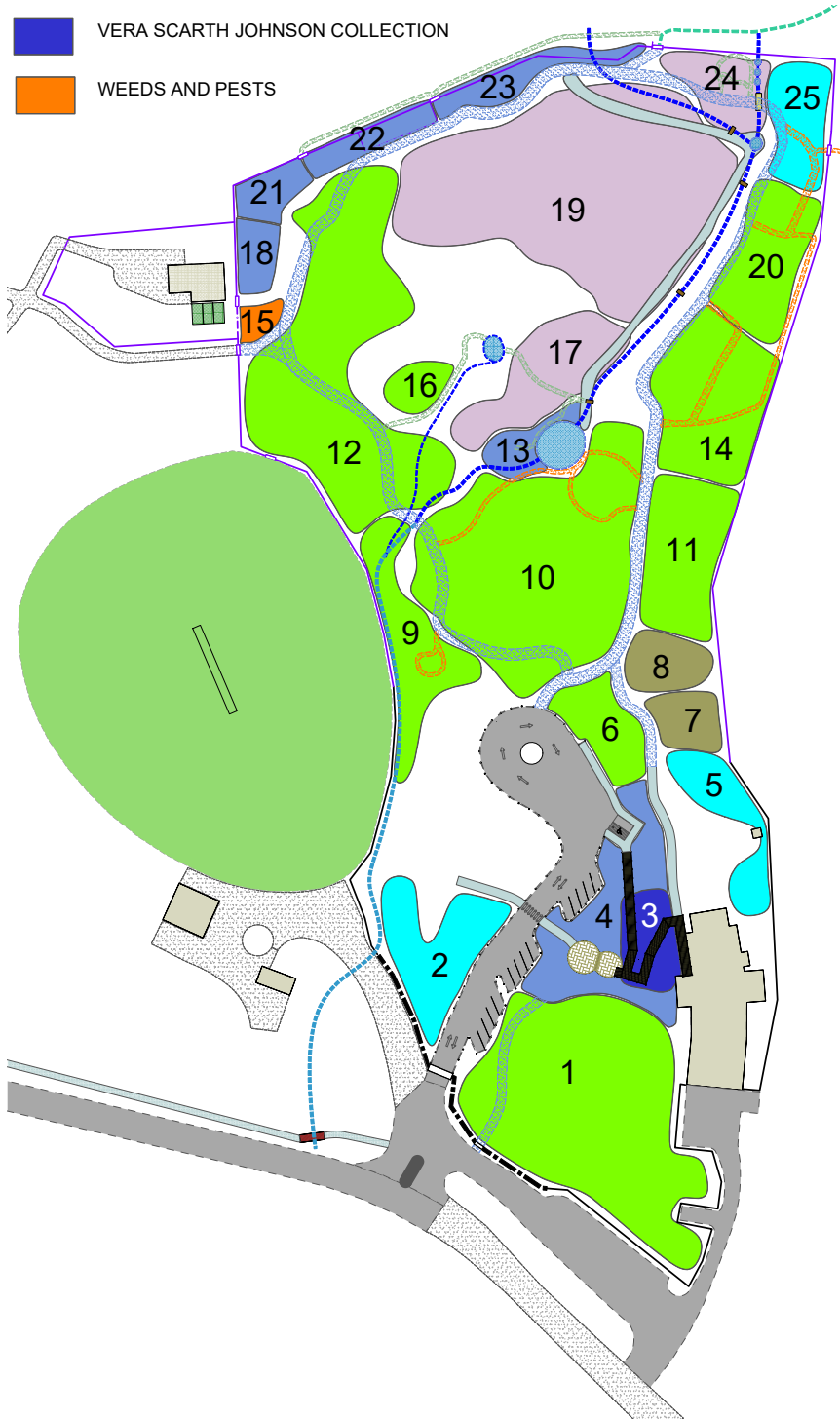
FULL SUN: These areas are under full sun with little if any shade other than early mornings or late afternoons. Shade 0-30%

NOTE: This graphic is based on canopy distribution from the latest satellite imagery available from the QLD Globe database. It does not factor in topography or seasonal canopy variations.



BOTANICAL COLLECTION KEY

- AMENITY HORTICULTURE
- BANKS & SOLANDER COLLECTION
- ECONOMIC HORTICULTURE
- HISTORICAL COLLECTION
- INDIGENOUS & AUSTRALIAN NATIVE PLANTS
- VERA SCARTH JOHNSON COLLECTION
- WEEDS AND PESTS



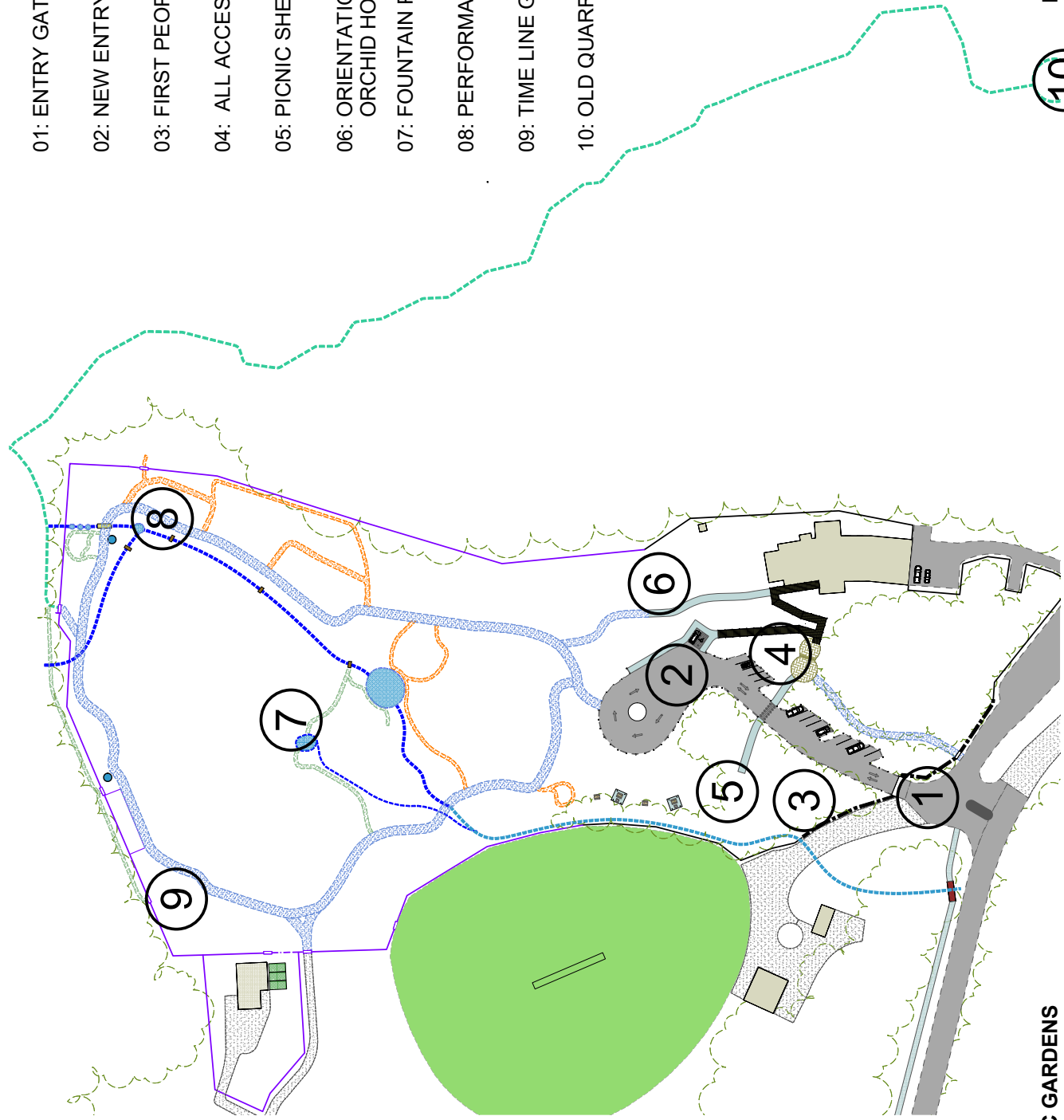
GARDENS KEY

- 1 Regional Ecosystem Display:
Remnant RE 7.12.53 - Eucalypt Woodland
- 2 First Peoples Grove:
Displays of Bush Tucker plants under a Melaleuca canopy
- 3 Vera Scarth-Johnson Garden:
Showcases many examples of plants that VSJ painted many of which can be seen in the Powerhouse Gallery
- 4 Orientation Garden:
Displays the very best of the local bioregions flora
- 5 Bush Tucker Garden:
Bush foods found in the local area
- 6 SGAP Garden;
Showcases species grown and planted by the Society for Growing Australian Plants
- 7 The 1770 Collection - Solander Garden:
Displays examples of local species collected by Solander
- 8 The 1770 Collection - Banks & Solander Garden:
Displays examples of local species collected by Banks & Solander
- 9 Melaleuca Wetland:
Species associated with Melaleuca wetland areas
- 10 Palmetum - Native and Exotics:
Stand of mainly native palms with native understorey
- 11 Rainforest:
Displays of regional Rainforest trees and understorey
- 12 Myrtacea Open Forest:
Displays Eucalypt open forest, typical of the area
- 13 Comparative Garden:
Explores species from different areas of the world that were collected by B and S and have local equivalents
- 14 Rainforest 2:
Extends Rainforest display from G11 with different understorey
- 15 Weed Species Display Garden:
Displays weed species found in the region.
- 16 Heathland Garden:
Showcases Heathland species found in the region.
- 17 Palmetum - Exotics:
Exotic palms displayed in a Gardenesque planting style
- 18 Timeline Gardens - 21st Century Garden:
Garden style and plants typical of the 21st century
- 19 Heritage Fruit Trees:
Displays tropical fruit trees from the original garden
- 20 Closed Forest:
Existing dense canopy with indigenous understorey species
- 21 Timeline Gardens - 20th Century Garden:
Garden style and plants typical of the 20th century
- 22 Timeline Gardens - 19th Century Garden:
Garden style and plants typical of the 19th century
- 23 Timeline Gardens - Gondwana Garden:
Displays species with ancestral connections to Gondwana
- 24 The Rockpools:
Historic feature with displays of native and selected exotic plants. Also provides an area for childrens Nature Play
- 25 Timber Trees:
Displays a variety of indigenous and exotic timber trees



LEGEND

	Forest Line
	Drainage / Water Course
	Ponds and Water Features
	Buildings
	Roads
	Gravel Roads
	Concrete Footpaths
	BG Footpaths
	Existing Fences
	New Fences
	Feature Entry Wall
	Gates and Entrances



- 01: ENTRY GATE AND FEATURE WALL
- 02: NEW ENTRY ROAD AND PARKING
- 03: FIRST PEOPLE'S GROVE
- 04: ALL ACCESS WALKWAY
- 05: PICNIC SHELTERS AND BBQ'S
- 06: ORIENTATION CENTRE & ORCHID HOUSE
- 07: FOUNTAIN PERGOLA
- 08: PERFORMANCE STAGE / SHELTER
- 09: TIME LINE GARDENS
- 10: OLD QUARRY WALK

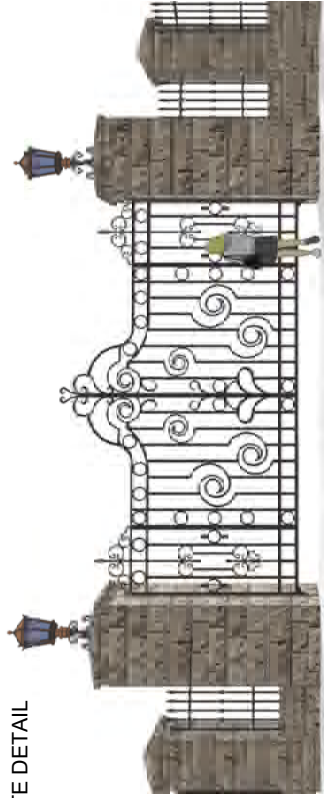
01: ENTRY GATE AND FEATURE WALL

This feature would be representative and reminiscent of the grand entrances to historical gardens, typical of the period of when the gardens were established. Typically, a fence of this sort would be constructed with wrought iron vertical rod panels and stone columns between, with the gate itself made of wrought iron. The wrought iron gate could be fashioned to represent a motif or emblem of the gardens or some other historical or natural shape.

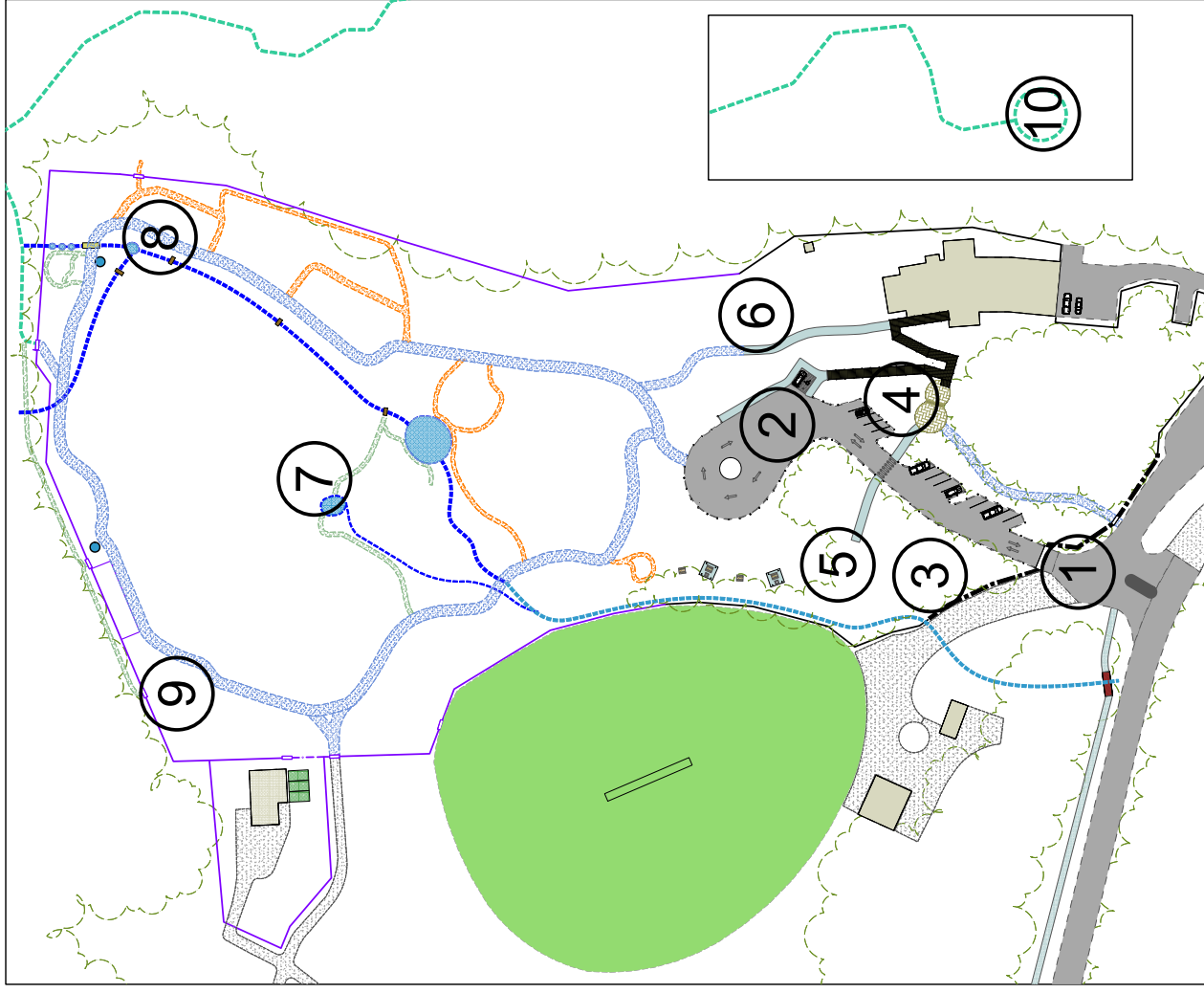
VISUALISATION SHOWING PROPOSED LOCATION AND STYLE
(upgraded road and signage etc not shown)



GATE DETAIL

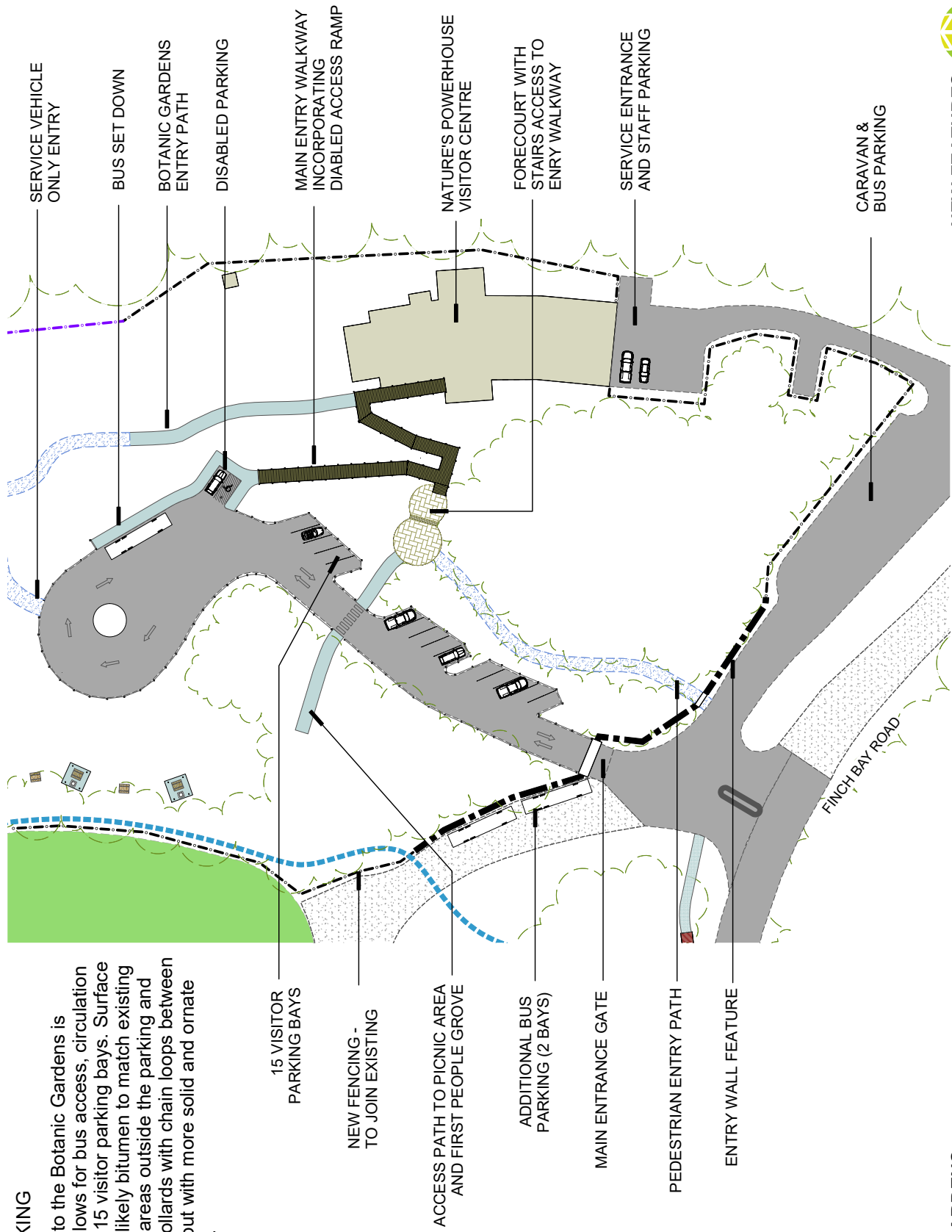


NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



02: NEW ENTRY ROAD AND PARKING

The entry road, parking and access to the Botanic Gardens is reconfigured in this design. It also allows for bus access, circulation and set down, disabled parking and 15 visitor parking bays. Surface material would be all weather, most likely bitumen to match existing road access. Vehicle and access to areas outside the parking and road areas would be controlled by bollards with chain loops between the bollards, similar to the existing, but with more solid and ornate bollards to match the entrance style.

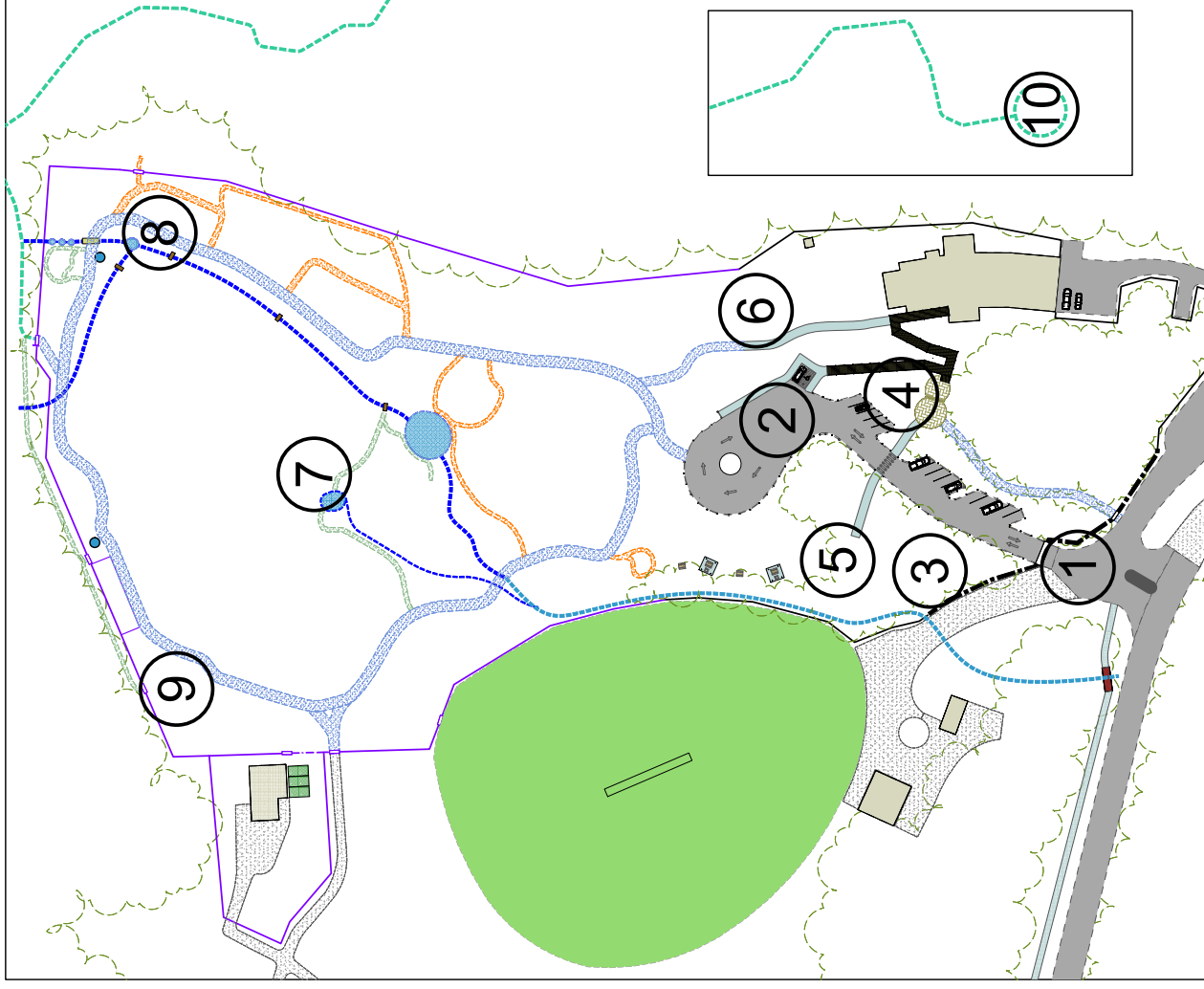
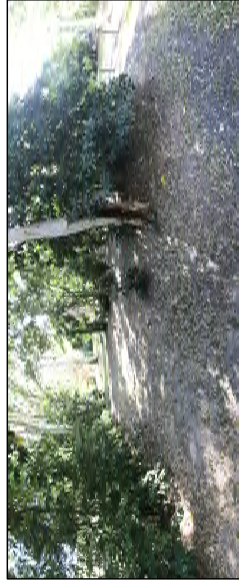
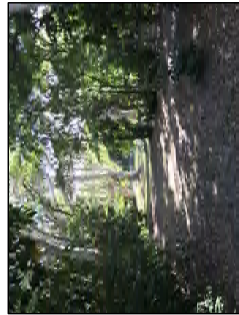


LEGEND

	Forest Line
	Drainage / Water Course
	Ponds and Water Features
	Buildings
	Roads
	Gravel Roads
	Concrete Footpaths
	BG Footpaths
	Existing Fences
	New Fences
	Feature Entry Wall
	Gates and Entrances

03: FIRST PEOPLE'S GROVE

An area dedicated to Aboriginal history and culture is considered an important addition to the CBGs. As the first people to live in Australia, they have millennia of connection with the land and their knowledge and understanding of fauna and flora of the Cooktown area, Cape York and Australia is important and significant. The area indicated is essentially a blank canvas, with unlimited potential. It is also ideally located near the entrance, visitors centre and picnic area. This area is not intended as a replacement for the Bush Tucker collection or any other Aboriginal associations with the gardens. It is hoped that the area would be developed by or with the help of the Aboriginal Community. The term First People's grove is a place holder, with the final naming to be decided during development.

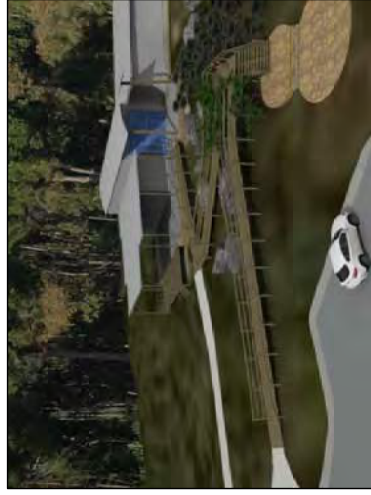


04: ALL ACCESS WALKWAY

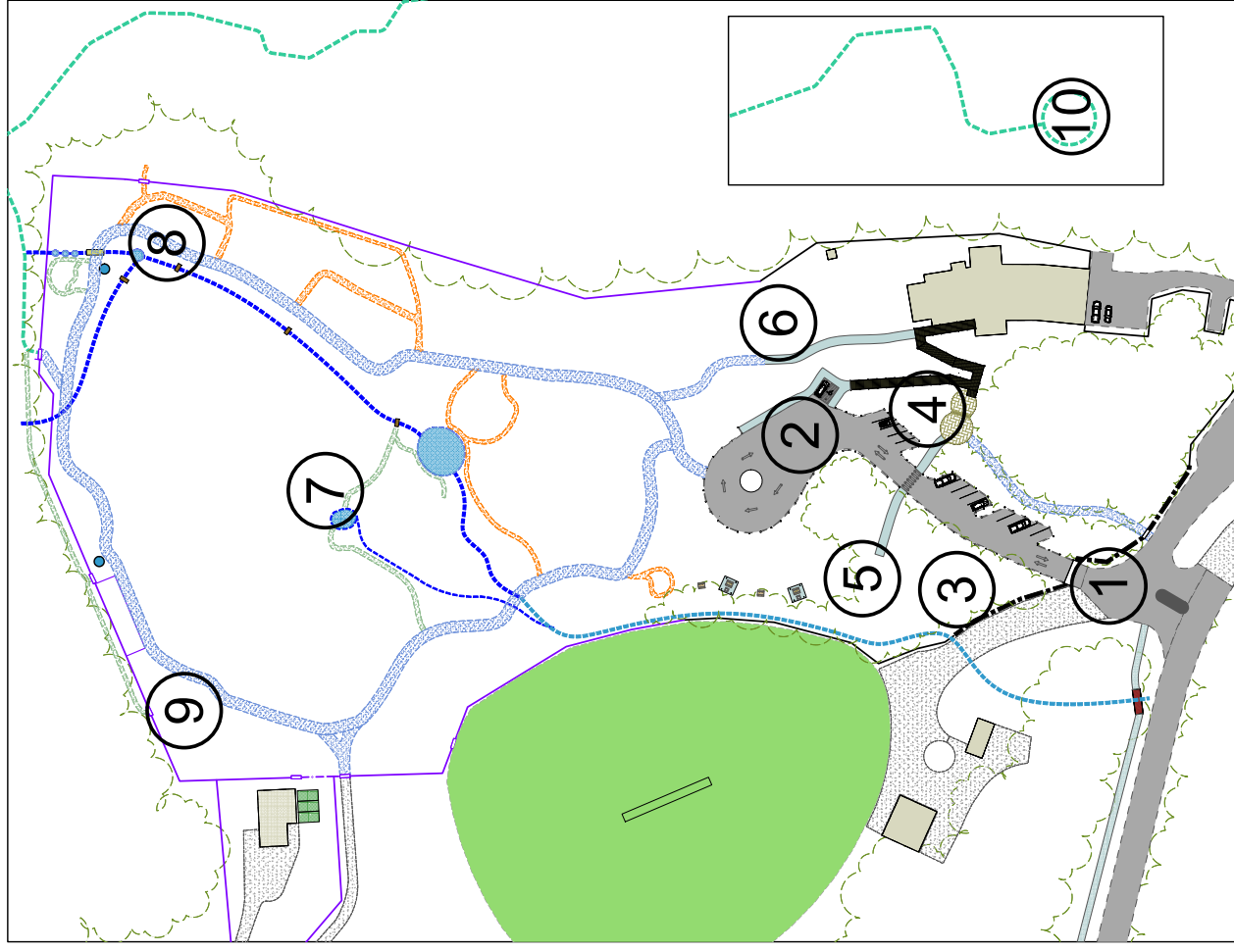
The existing entrance to the visitor's centre requires an upgrade as it is both a mix of materials and styles and has the potential for safety issues with slippery surfaces and varying step heights. This proposed feature reconfigures the access and entry to the visitor's centre allowing for one access ramp for abled and disabled visitors. The bottom of the ramp connects with the disabled parking bay, with the footpath extending around the disabled parking bay to the bus set down area. Additional access in the form of stairs is included off the end of the paved forecourt for visitors entering via the path system or new parking bays. The walkway would also provide opportunities for interpretive signage and for viewing of the surrounding plant collections including the Vera Scarth-Johnson Collection which is featured in this area.

VISUALISATIONS SHOWING PROPOSED LOCATION AND STYLE

(Note that surrounding vegetation is not shown so that the structure can be clearly seen)



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



05: PICNIC LAWN WITH SHELTERS

This area is ideally suited for picnics and has been used for this in the past. It is a relatively open grassed area with some excellent shade trees and close to parking, the cricket oval and Nature's Powerhouse - Visitor Centre. The old and tired picnic tables would be replaced with new settings and the area would benefit from the inclusion of one or two shelters. Shelters could be a simple and cost-effective structure such as the skillion roofed shelter a more elaborate style like a Gazebo.

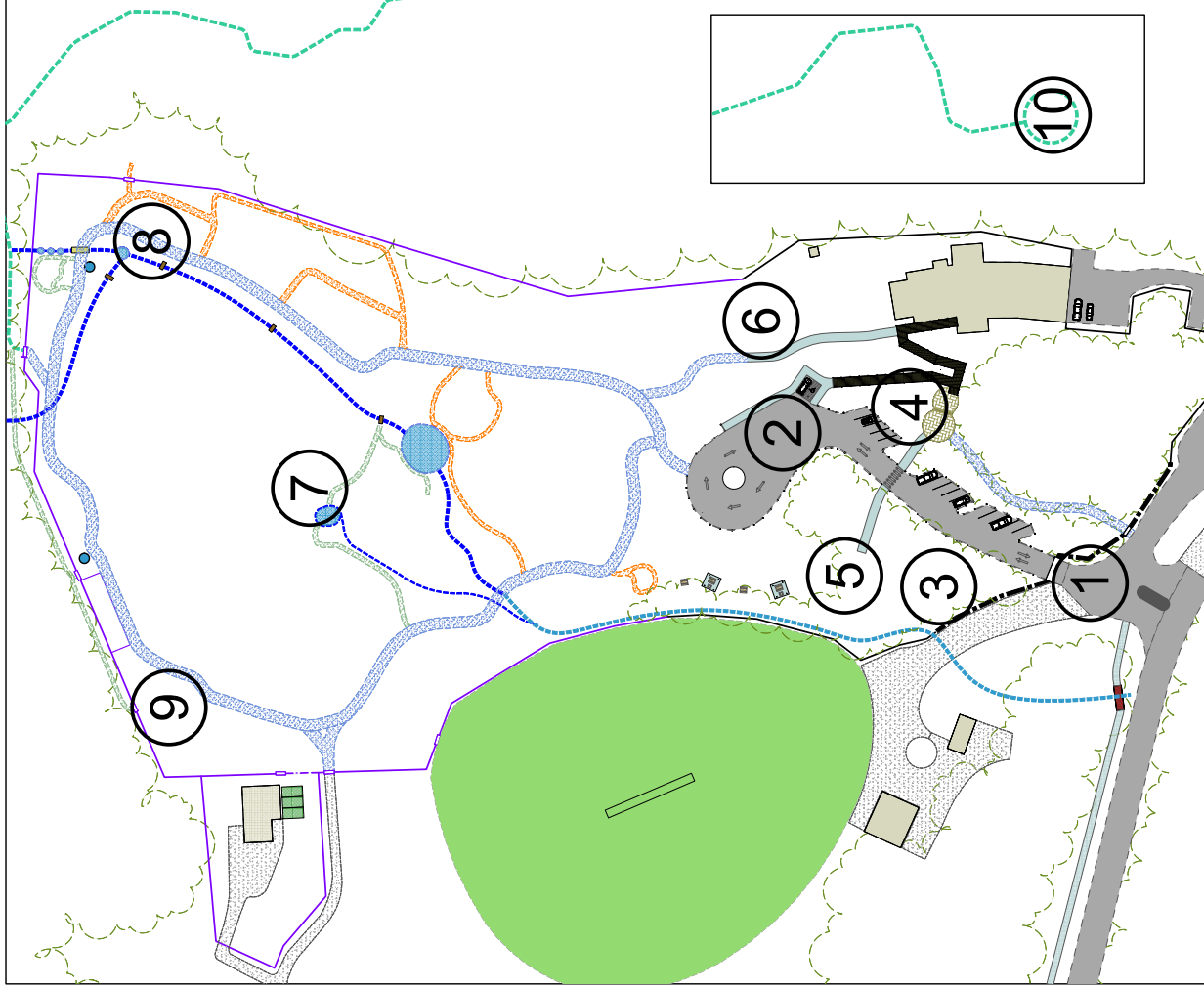
Photo looking North towards the picnic area from near the access path



Skillion Roofed Style Shelter



Gazebo Style Shelter



06: ORIENTATION CENTRE & ORCHID HOUSE

This feature would combine an orientation centre with interpretive and information displays with an orchid display house. It would provide information on the various area and features in the gardens and could include a variety of media and display types, including visual and audio, and interactive.

In addition to the interpretive centre, it could include an orchid house to display and showcase the local Cooktown Orchid and other rare and endangered orchid and suitable plant species. It is envisaged that the structure would be as open as possible with a combination of roof types, like pergolas for climber displays, and some areas weatherproof for shelter and protection of displays. The structure would possibly be organically shaped, for example the roof areas might take the shape of an orchid, leaf or other some other natural feature.



Mackay BG Visitors Centre Roof Design



Examples of organic shaped roofs and buildings

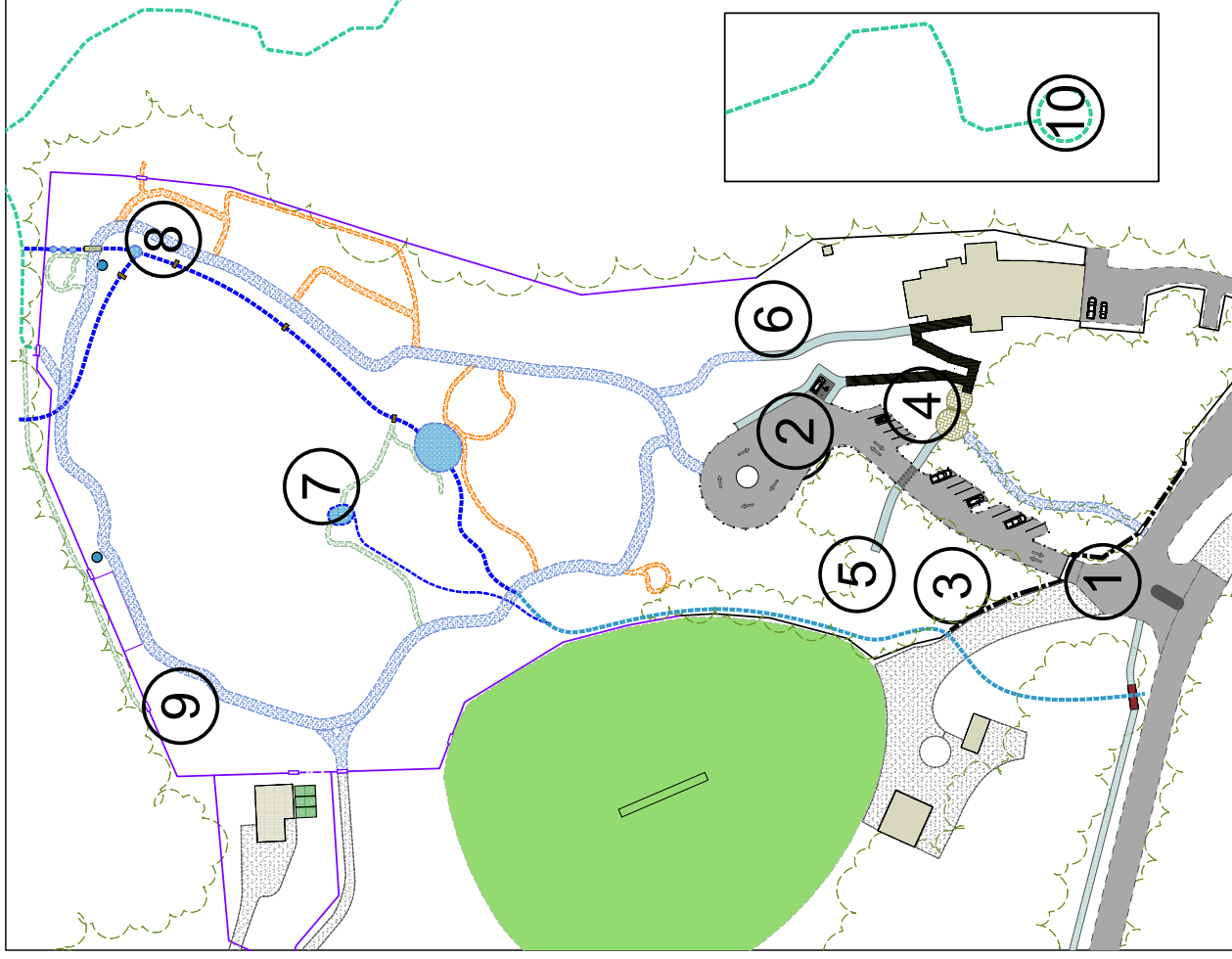


Mackay Orchid House



Singapore Orchid House

Note: these examples are not representative of the scale of the proposed structure. The proposed building will be considerably smaller



07: FOUNTAIN PERGOLA

This feature includes a semicircular paved area using the local stone to match existing stone work with an arbor or pergola over, orientated towards the Old Fountain. It would provide seating and shade and would allow for extended views across the fountain to the heritage tree collection. It could also be used for weddings, or other celebrations and may also include a new path system to access the feature from the primary path system. This area also provides a major visual access point for the central part of the gardens.

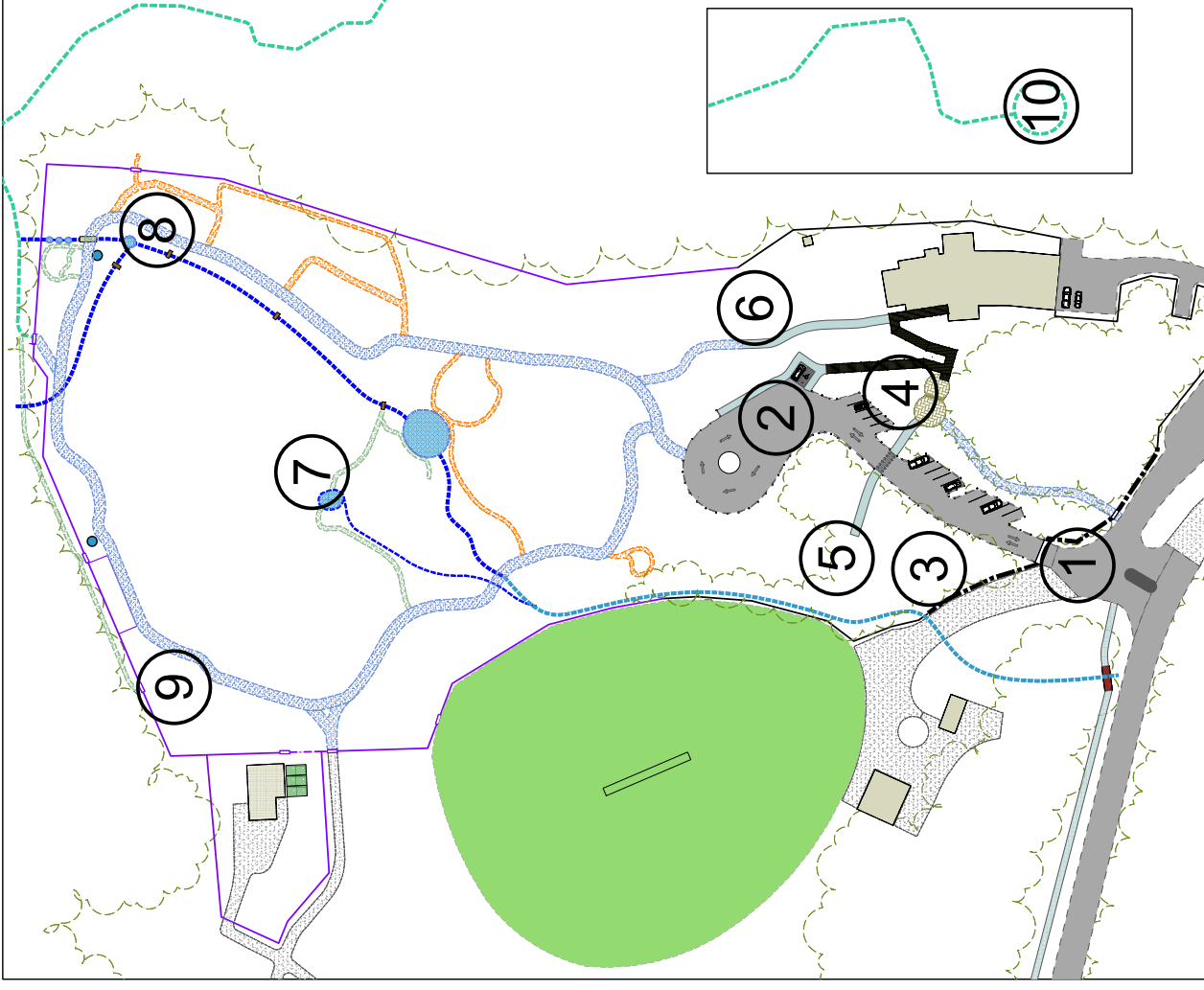
It is important to stress that it is intended that the structure would not damage or detract from the fountain, but would instead frame it and be complementary to it. It must also be noted that as the fountain is part of the heritage listed features of the CBG, any proposal will need to gain Queensland Government approval prior to construction.

During development of this feature it is anticipated that remedial work would be undertaken to return the fountain to its original working condition.

VISUALISATIONS SHOWING PROPOSED LOCATION AND STYLE



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



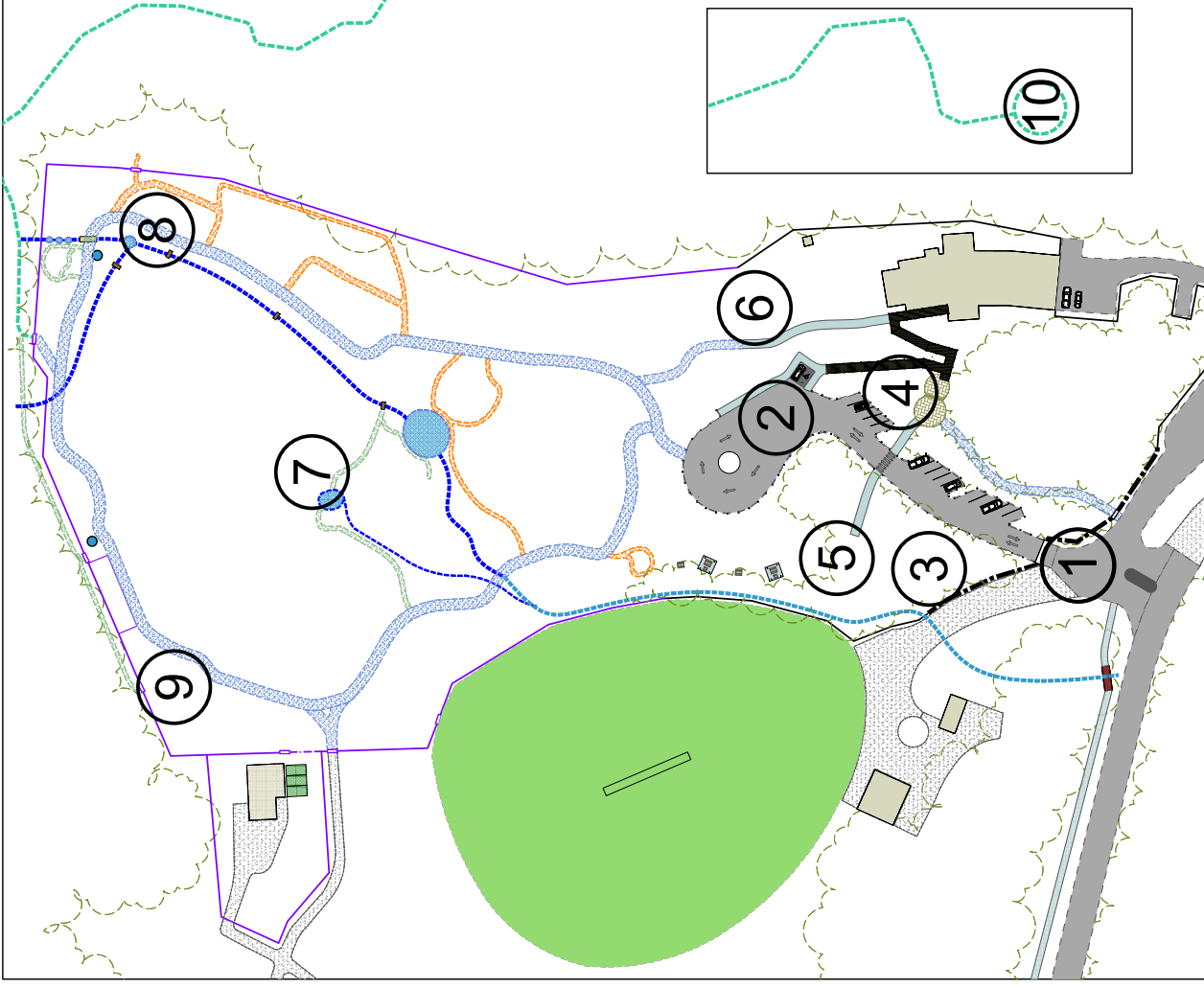
08: PERFORMANCE STAGE / SHELTER

This feature would serve as a shelter for visitors to rest and enjoy the views and could also provide a stage for various musical or artistic performances. It would be orientated towards the lawn opposite, which is slightly sloped and creates a natural amphitheatre. It would include a timber deck performance area (the example below is 5m x 5m) and would have an open sided roof to provide shade and cover from rain. Services, like power and water would also be supplied along with some basic storage and seating. It is envisaged that the primary path would pass through the structure. During performances, access around the stage is already provided with the structure. Interpretive signage displaying aspects of the botanical collection and/or details about the history of the gardens.

VISUALISATION SHOWING PROPOSED LOCATION AND STYLE
(note: upgraded landscaping etc not shown)



NOTE: These visualisations are intended to be examples only, to convey style and scale. Final designs and materials may vary significantly depending on detailed design and Council and community requirements.



09: TIME LINE GARDENS

These gardens would display plants, garden styles and feature typical of the 19th, 20th & 21st centuries and would also include a Gondwana section preceding the other gardens, which would include examples of Cape York plant genera and species with evolutionary connections to Gondwana. The gardens could include facades of buildings with historical context to the period being displayed. They could be styled to show features common to all periods, for example they could represent what typical front yards would look like for each period.



Photo SW at the intended area for the 19th, 20th & 21st gardens



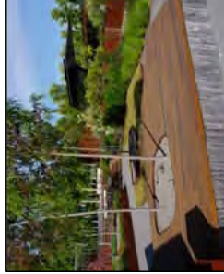
CBGs existing 1800's fenced display garden would be incorporated into the feature



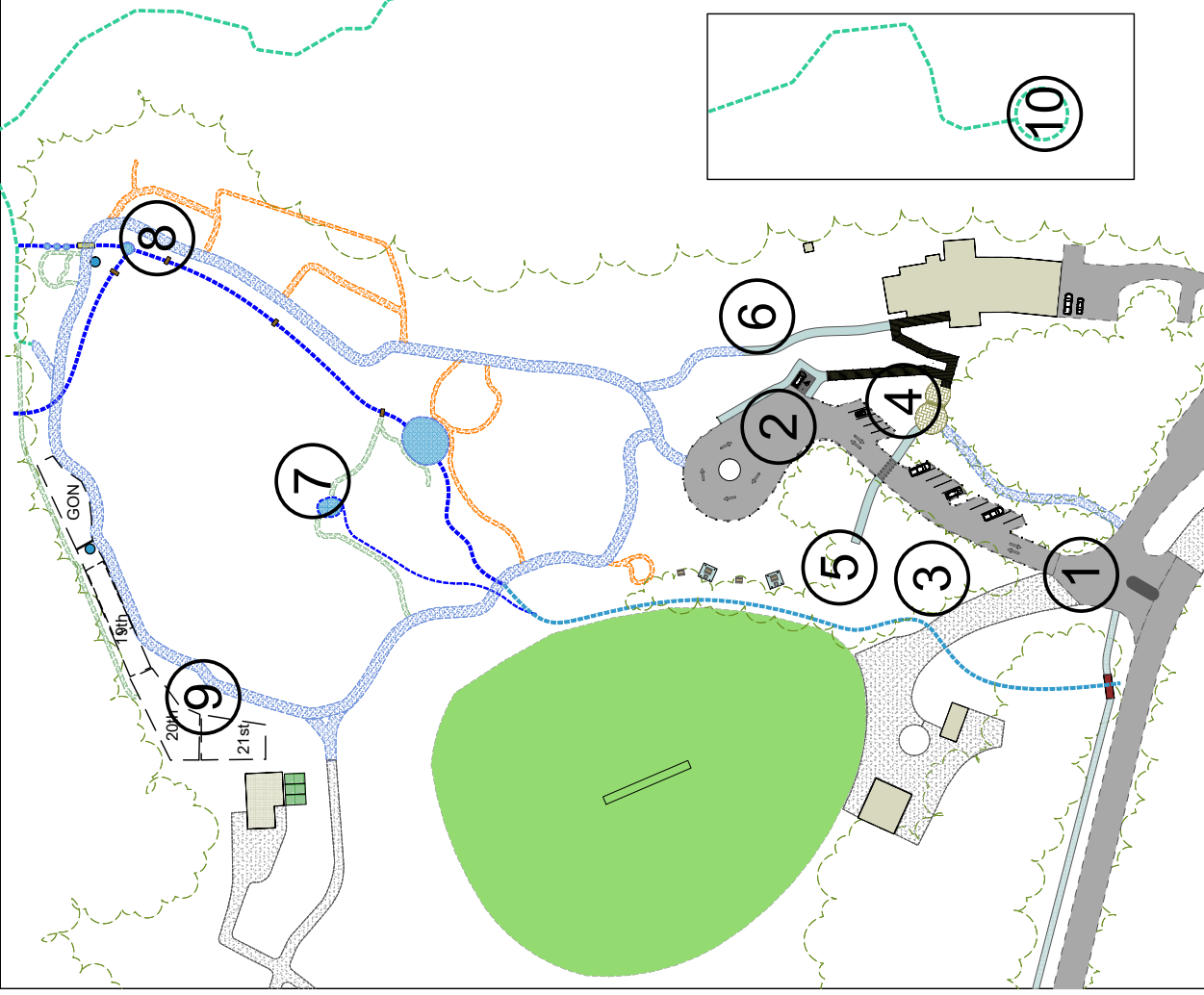
Cranbourne BG Display Garden



Historical Facade Display Garden

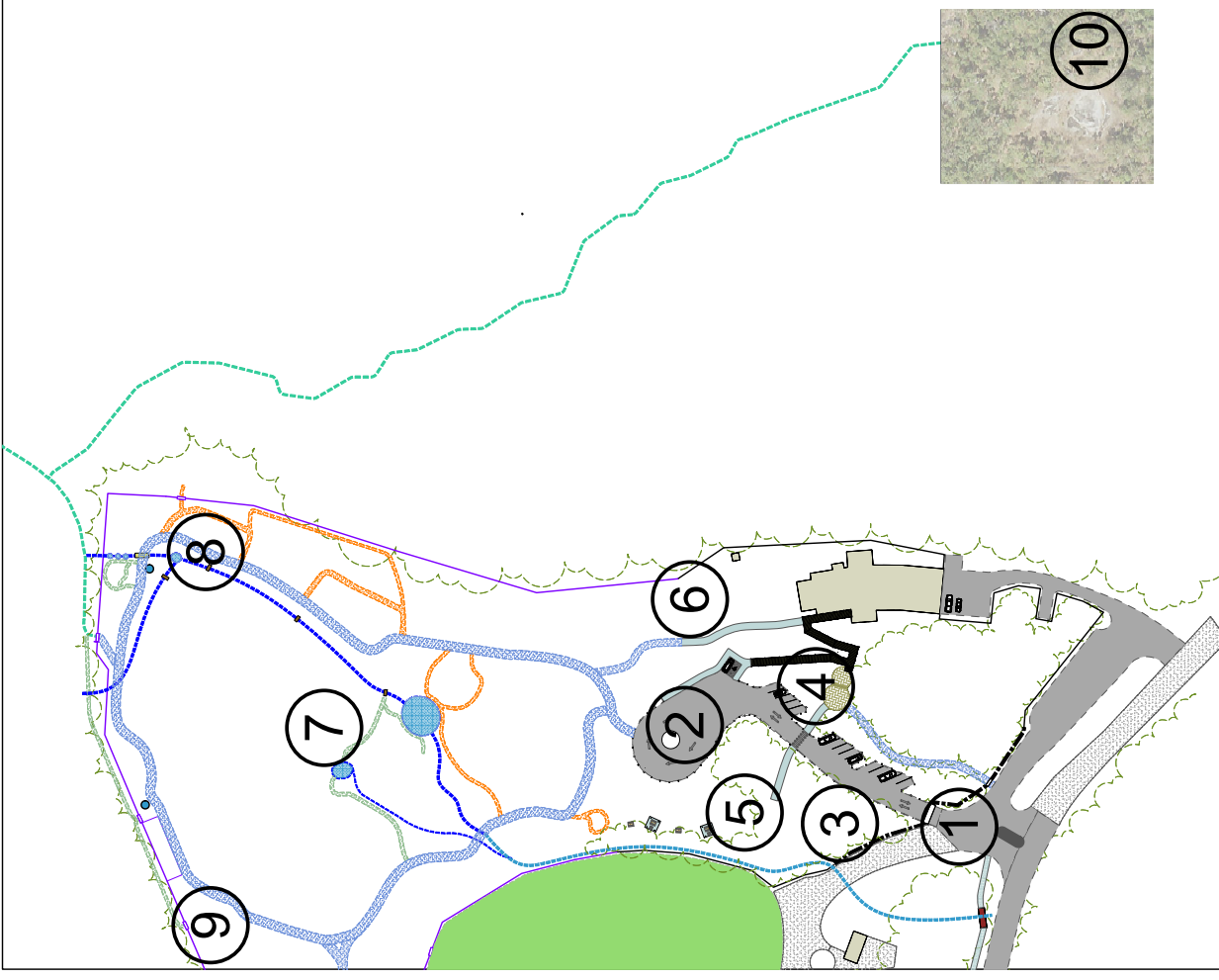


Cranbourne BG Promenade Plaza



10: OLD QUARRY WALK

This recently rediscovered feature was identified by satellite imagery. It is the site of a quarry where stone was excavated for building in Cooktown and possibly in the gardens. It shows examples of the historical techniques used to extract the stone and is of historical and cultural significance. As its age and usage details are unclear, it is recommended that an archaeological survey be undertaken to establish its history. As a feature it could add historical and cultural value to the CBG and provide value to the CBG experience. It is proposed that a new track be built to access it from the existing walking track to Finch Bay.

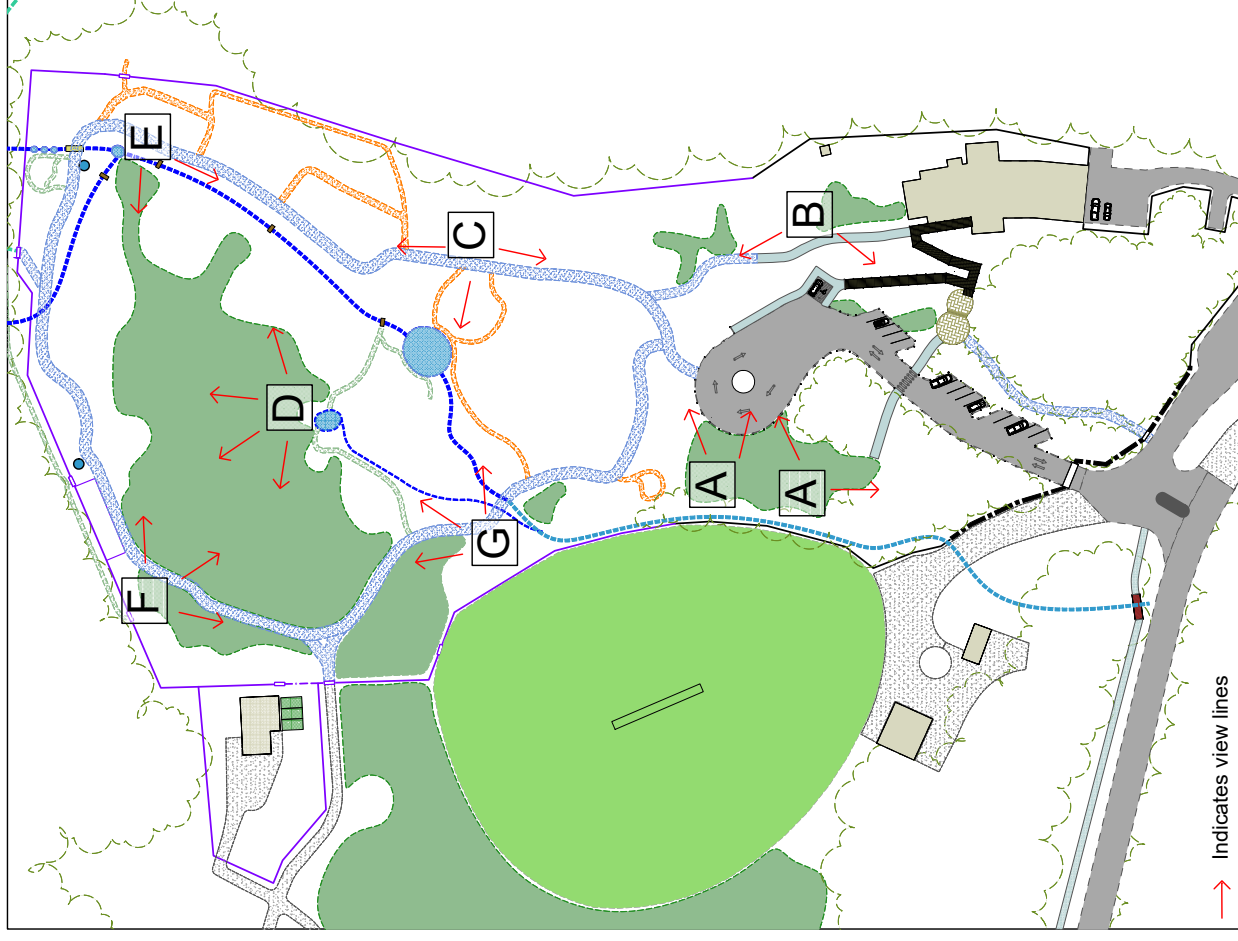


15: SHELTERS

Shelters are important for visitor comfort and provide seats for resting and enjoying views and protection from the sun and rain. Shelter can incorporate signage with information about the surrounding features and details about the botanical collection and they are ideal supporting structures for vines and climbers. Ideally, shelters should be located about 100m apart, so visitors can still enjoy the gardens during showery weather.

The locations shown on the plan opposite are suggestions based on the locations of proposed new features and on the principle of ideal spacing and are as follows:

- A: Picnic Lawn and BBQ shelters proposed with New Feature 05.
- B: The Orientation Centre and Orchid house
- C: A small shelter or arbor over a bench seat. It is located under heavy canopy around the mid point between B & E.
- D: The Fountain Arbor. Currently concept is for a fairly open structure, but once covered with climbers would provide some shelter. Or it could include some covered sections.
- E: The Performance Stage/Shelter
- F: The Timeline Gardens, which may include facades to showcase the period be described. One of these facades could be used as a shelter. Alternatively if a facade are not to be included, then a small shelter of appropriated design to match the surrounding timeline garden could be installed.
- G: Located at the end of the Stone Drain under Melaleucas. Could be a small shelter similar to C.



Skillion Roofed Style Shelter



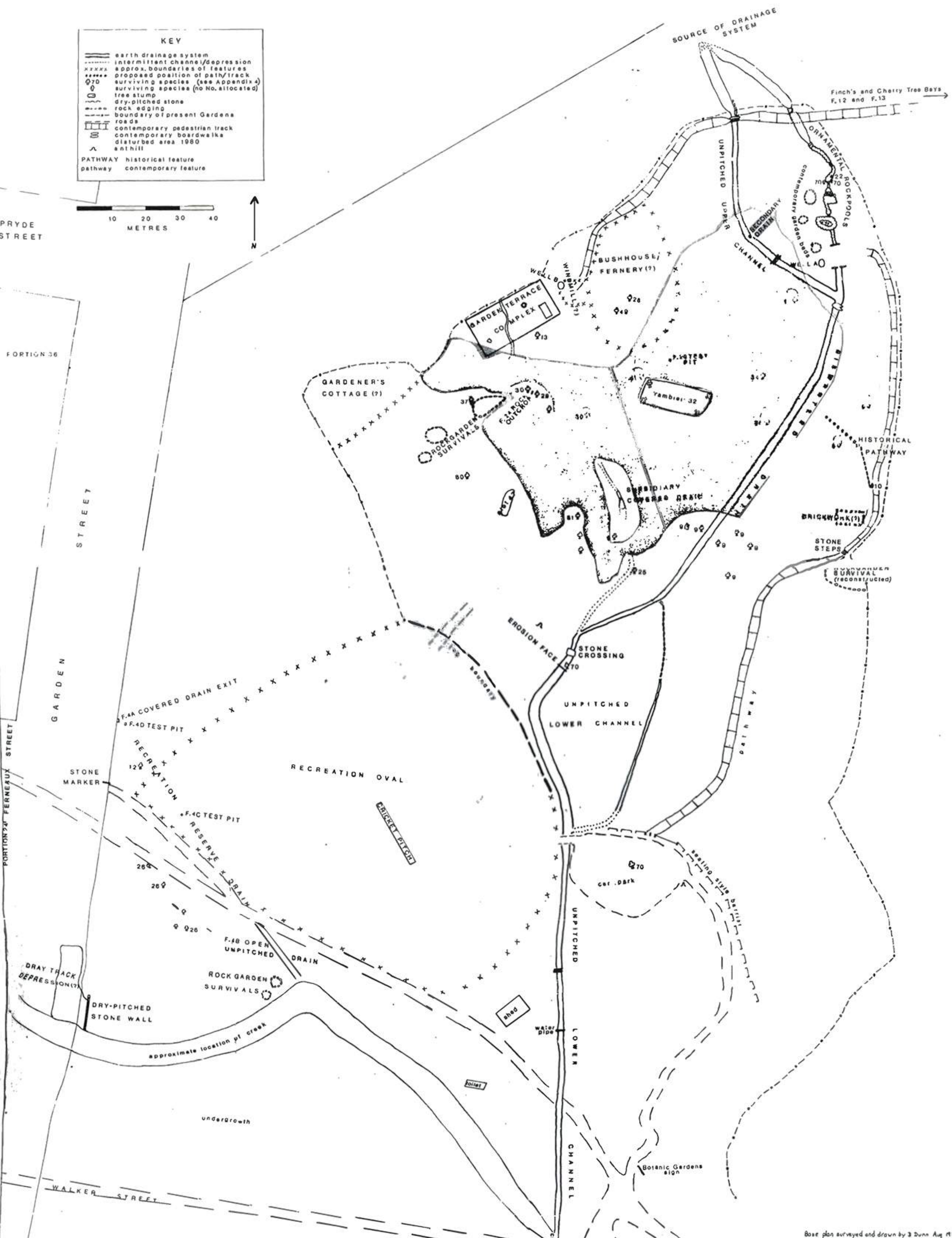
Gazebo Style Shelter



Arbor Style Shelters options for C & G



FIG. 12 COOKTOWN BOTANIC GARDENS SITE PLAN



KEY

- earth drainage system
- - - - - intermittent channel/depression
- xxxxx approx. boundaries of features
- proposed position of path/track
- o surviving species (see Appendix 4)
- o surviving species (no No. allocated)
- o tree stump
- o dry-pitched stone
- o rock edging
- o boundary of present Gardens
- o roads
- o contemporary pedestrian track
- o contemporary boardwalk
- o disturbed area 1980
- o anthill

PATHWAY
 o historical feature
 o contemporary feature



PRYDE STREET

FORTIGN 36

GARDEN STREET

PORTION 24 FERNEUX STREET

GARDEN STREET

WALKER STREET

SOURCE OF DRAINAGE SYSTEM

Finch's and Cherry Tree Bays F.12 and F.13

ORNAMENTAL ROCKGOLDS

UNPITCHED UPPER CHANNEL

SECONDARY DRAIN

BUSHHOUSE FERNERY (?)

GARDEN TERRACE COMPLEX

GARDENER'S COTTAGE (?)

ROCK GARDEN SURVIVALS

Yambier 32

SECONDARY COVERED DRAIN

BRICKWORK (?)

STONE STEPS

WOODMEN SURVIVAL (reconstructed)

EROSION FACE

STONE CROSSING

UNPITCHED LOWER CHANNEL

RECREATION OVAL

BRICK PIER

F.4A COVERED DRAIN EXIT

F.4D TEST PIT

RECREATION

STONE MARKER

F.4C TEST PIT

RESERVE DRAIN

F.1B OPEN UNPITCHED DRAIN

ROCK GARDEN SURVIVALS

DRY TRACK DEPRESSION (?)

DRY-PITCHED STONE WALL

approximate location of creek

undergrowth

shed

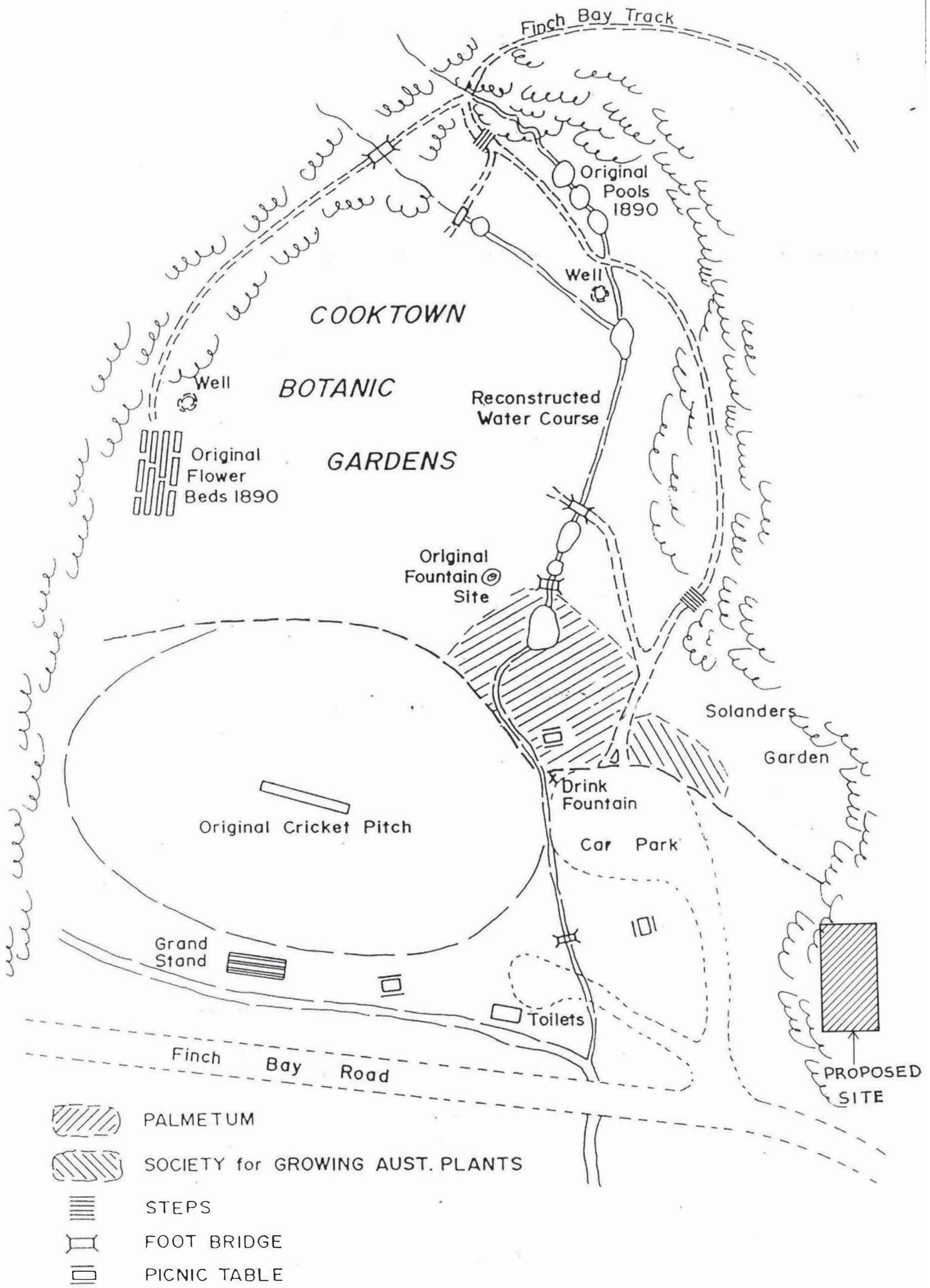
water pipe

soilpit

LOWER CHANNEL

Botanic Gardens sign

Base plan surveyed and drawn by J. Dunn Aug 1974
 Additional survey and plotting by J. Collier 1980



Map showing Cooktown Botanic Gardens 1991.