

Under delegation from the Chief Executive, Department of Environment and Science, and under the provisions of s.44 of the Queensland Heritage Act 1992, I, Delegated Authority, Catherine Chambers:

Recommend to Enter this place in the Queensland Heritage Register as a State Heritage Place



Recommendation Date: 29-May-2024

Delegate Name/Position: Delegated Authority, Catherine Chambers - Director, Heritage



Figure 1: Atherton Arboretum, from Maunds Road (from southeast) (Rebel Warren, provided in Heritage Application, 2023).



Figure 2: Heritage register boundary map (Queensland Government, 2024) (see attached map)

Place name	Atherton Arboretum
Address	47-67 Maunds Road, ATHERTON, 4883
LGA	TABLELANDS REGIONAL COUNCIL
RPD	1 RP723695

Queensland Theme(s)

02.06 Exploiting, utilising and transforming the land: Managing flora and fauna

02.07 Exploiting, utilising and transforming the land: Experimenting, developing technologies and innovation

Statement of Significance

<p>Criterion A</p> <p>The place is important in demonstrating the evolution or pattern of Queensland's history</p>	<p>Atherton Arboretum (initial planting in 1971), located on the site of the former Atherton Tropical Forest Research Centre, is important in demonstrating the evolution of the scientific study of Queensland's natural environment. Using samples collected by scientists from northern Queensland, that were propagated and planted at the research centre, the arboretum is a living collection of rainforest trees, and includes specimens that are threatened in their natural habitat.</p> <p>An initiative of both Australian and Queensland Government forestry departments (from 1971), and then as part of a CSIRO research centre (from 1975), the Atherton Arboretum represents the intensive scientific study of specimens planted in the arboretum, which greatly advanced knowledge of Queensland's tropical rainforest flora.</p>
<p>Criterion B</p> <p>The place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage</p>	<p><i>Atherton Arboretum does not demonstrate rare, uncommon, or endangered aspects of Queensland's cultural heritage. While some individual specimens at the place are recognised as being critically endangered, endangered, vulnerable, and near vulnerable in state and federal legislation, Queensland arboretums of Australian flora are not rare, with numerous examples surviving across Queensland.</i></p> <p><i>The place does not satisfy this criterion.</i></p>
<p>Criterion C</p> <p>The place has potential to yield information that will contribute to an understanding of Queensland's history</p>	<p><i>The history of Atherton Arboretum is well documented, CSIRO's research that was being conducted on plants at the site has concluded, and the Herbarium collection has been relocated to James Cook University in Cairns. The place has insufficient potential to contribute new knowledge about Queensland's history; knowledge that will lead to a greater understanding of particular aspects of Queensland's history; or knowledge that will aid in comparative analysis of similar places.</i></p> <p><i>The place does not satisfy this criterion.</i></p>
<p>Criterion D</p> <p>The place is important in demonstrating the principal characteristics of a particular class of cultural places</p>	<p>Atherton Arboretum is important in demonstrating the principal characteristics of its class of cultural place – an arboretum – through its being a living collection of cultivated plants specifically established for the purpose of scientific research; its ordered plant layout (in this case a 10m by 10m grid, originally set out by point marker posts); and its labelled botanical specimens (numbered tags that reference an accompanying database). Retaining a high degree of integrity, the arboretum comprises a comprehensive and large collection of tropical plant species, some of which are listed threatened species in national and state legislation.</p>
<p>Criterion E</p> <p>The place is important because of its aesthetic</p>	<p><i>The Atherton Arboretum is not important because of its aesthetic significance at a State level, as it does not display beautiful or</i></p>

<p>significance</p>	<p><i>picturesque attributes, evocative qualities or symbolic meaning, and is not a landmark.</i></p> <p><i>The place does not satisfy this criterion.</i></p>
<p>Criterion F</p> <p>The place is important in demonstrating a high degree of creative or technical achievement at a particular period</p>	<p><i>There is no evidence that the Atherton Arboretum meets the threshold for State level significance for this criterion, as its fabric is not important in demonstrating a high degree of creative or technical achievement at a particular period.</i></p> <p><i>The place does not satisfy this criterion.</i></p>
<p>Criterion G</p> <p>The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons</p>	<p><i>Atherton Arboretum does not have a strong or special association with a particular community or cultural group for social, cultural, or spiritual reasons.</i></p> <p><i>The place does not satisfy this criterion.</i></p>
<p>Criterion H</p> <p>The place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history</p>	<p><i>While CSIRO is considered an organisation of importance in Queensland's history and notable work was undertaken by CSIRO research scientists at the place, there is insufficient evidence the place has a special association with this organisation.</i></p> <p><i>The place does not satisfy this criterion.</i></p>

History

The Atherton Arboretum was first planted in 1971 as part of the Tropical Forest Research Station, a joint Federal and State government initiative for the scientific research of North Queensland's tropical rainforests. The planting of the Arboretum at Atherton was initiated by the station's botanists to provide a 'living library' of tropical rainforest flora to assist scientists, both staff at the station and visiting researchers. Important discoveries of species unknown through non-indigenous knowledge, or their first systematic description and documentation, were made by the scientists on expeditions to often very remote rainforest locations, with seed and plant samples brought back to the station to be included in the herbarium. Plants in the Arboretum were derived from these samples and planted within an organised grid layout across the site and recorded in a database.

In 1975 the station became the Commonwealth Scientific and Industrial Research Institute Organisation (CSIRO) Tropical Forest Research Centre and continued its research into tropical forest flora, among other scientific endeavours. Throughout this time the Arboretum was added to and carefully maintained. The centre became important in the scientific community for advancing tropical rainforest knowledge with many new, rare and endangered species identified and researched by the scientists at the station. The Tropical Forest Research Centre closed in 2022.

European Settlement and Tropical Rainforests

Prior to European colonial settlement, its associated dispossession of the land that was central to life and spiritual beliefs, and destruction of traditional ways of life, the area now known as the Atherton Tablelands was the traditional land of the Wadjanbarra Yidi People.[1] In North Queensland, tropical rainforests were found on the coastline, fringing the Great Barrier Reef, and stretching inland approximately 70km.[2] From the 1860s rainforests were visited by European exploration parties, followed by timber getters attracted to the area by the density and size of the trees, in particular the prized Red Cedar (*Toona Ciliata*) and the Kauri Pine (*Agathis Robusta*).[3] By the 1870s the rainforests of the area were being exploited in the race for highly sought-after and profitable timbers. It was also the time when land began to be opened for closer settlement, resulting in further rainforest destruction to make way for pastoral and agricultural settlement on the Tablelands.[4]

Of Queensland's natural resources, timber was the most obvious and abundant to the first Europeans, and the timber industry played a vital role in the economic development of the state, while also providing its most important building material.[5] Significant wastage of precious timbers occurred through both timber felling and land clearing in the late 19th century in North Queensland. Initially, transporting felled timber to the coast was very difficult as there were only primitive roads. Instances of great waste occurred when timber getters began floating logs down the river systems to the coast during the wet season, resulting in the destruction and loss of much of the timber.[6] In the lower coastal areas, large-scale clearing of rainforest occurred when sugar plantations were established in the late 19th century; while on the higher ranges of the Tablelands, piles of cleared timber were simply burnt to make way for dairy and agricultural farms.[7]

Atherton, which takes its name from pastoralist John Atherton, was originally known as Prior's Pocket after Thomas Prior, a timber getter who was the first European to camp there permanently. The settlement grew to accommodate men engaged in lumbering operations.[8] From the mid-1890s Atherton's settlement increased and it became firmly established as the main centre on the Tablelands. Atherton provided the surrounding mining population with the bulk of its produce and its importance as a regional centre was cemented by the arrival of the railway from Cairns in 1903.[9]

Rainforest botany and research

The rainforests of North Queensland were recognised as botanically rich. Botanists accompanied exploration parties to North Queensland as early as the late 18th century, with plant samples collected and sent to European botanical collections.[10] The first Queensland Colonial Botanist, Walter Hill (appointed in 1859), accompanied George Elphinstone Dalrymple's North-East Coast Expedition to North Queensland in 1873, collecting extensively from the rainforest.[11]

Government Botanist of Victoria, Ferdinand von Mueller, organised several early North Queensland settlers to collect specimens from the rainforest to send to him in Melbourne for study. In 1864 Mueller sent collector, John Dallachy, to North Queensland where he set up his base in the fledgling town of Cardwell. From there Dallachy spent the next seven years exploring the rainforest and extensively collecting specimens for Mueller. Unfortunately, in 1871, Dallachy contracted a fever and died while exploring the Herbert Vale area.[12]

In 1881, Frederick Bailey was appointed to the role of Queensland's Colonial Botanist and in 1889 accompanied Archibald Meston on his Bellenden Kerr exploration party to North Queensland where he collected and observed the flora of the region.[13] In the same year, the newly formed Department of Agriculture established the Kamerunga State Nursery in Cairns to experiment and trial tropical crops that may have commercial potential. Ebenezer Cowley was appointed the nursery's first overseer in 1899 and became a prolific specimen collector in the rainforests of the Barron River, Cooktown, Daintree River, Port Douglas, and the Torres Strait. The specimens were subsequently sent to Bailey in Brisbane where they were added to the Queensland Herbarium.[14]

Herbariums had long been established in Europe, with famous ones, such as Kew Gardens in London, storing specimens from all over the world. In Australia, the Melbourne Herbarium (1853), under von Mueller, was the largest collection in Australia by the late 19th century. Plant samples were collected in the field, sent back to the herbarium, where they would be preserved, mostly by drying, mounted on sheets of paper, studied, categorised, and stored. Each specimen, known as a voucher specimen, included information about the plant's identification, and where and when it was found. The Queensland Herbarium was first established by Walter Hill in 1859.[15]

The North Queensland Naturalists' Club (established in 1932), founded the North Queensland Herbarium in 1933, following encouragement by the then Queensland Government Botanist, CT White, to 'form a local herbarium, and to collect plants assiduously ... In this way, working in the rich flora of North Queensland, you cannot fail to make quite extensive additions to the knowledge of our flora, because the flora of North Queensland is far from being completely known'.[16] The collection was housed in the Cairns Botanic Gardens (QHR 602541). The club's collection grew from around 1,600 specimens in 1937 to about 5,000 in 1950, with an estimated final collection size of around 10,680 specimens.[17]

In the 1890s there was increased concern from the colonial Government that revenue was being lost to unregulated timber exploitation. The creation of the Forestry Branch in 1900 within the Lands Department represented a shift in approach.[18] Subsequently, during the early 20th century, State Government concern grew in relation to the depletion of native timber supplies. Under Norman Jolly and then Edward Harold Fulcher Swain as Director of Forests (1911-18, and 1918-32 respectively), the Queensland Government established native softwood (hoop pine, *Araucaria cunninghamii*) plantations and attempted to regenerate native forest areas. Offices were established in six forestry regions: Atherton, Brisbane, Bundaberg-Rockhampton, Gympie, Maryborough, and Dalby.[19] Additionally, arboretums were established for experimentation of commercial timber species at Atherton, Dalby, Imbil, Warwick, Benarkin, Mackay and Rockhampton.[20]

In Atherton, the Queensland Forestry Branch was established ca. 1914, with their offices located in Main Street.[21] Its responsibility was to manage indiscriminate logging throughout the tropical north. By 1914 reforestation was also carried out in an effort to regenerate the fine rainforest timber trees lost over the years. Silvicultural experiments saw the establishment of several timber plantations by the Forestry Branch in North Queensland. Additionally, scientific research programs were undertaken at the Atherton office to study rainforest trees and broaden the list of possible logging species, forest management planning, yield planning, forest hydrology and fire management practices.[22]

In 1960, Forestry was made its own department.[23] By this time there were comparatively more careful controls placed on logging operations. Appointed foresters were trained in 'tree marking', and worked with the logging operations to identify tree species that were permitted to be felled, of which there was approximately 160 types. The forester 'recorded the species, the size of the tree, gave it a number and indicated the direction in which it should be felled'.[24] Work undertaken at the Atherton forestry office assisted the foresters in the identification of rainforest trees.[25]

Development of Ecological Research and Environmental Awareness

Although some of North Queensland's rainforest flora had been collected and studied over the years, by the 1960s scientists realised that there were many unidentified and potentially undiscovered species of both flora and fauna. This was also the time when ecological science, that 'pointed to the interrelated character of the natural world and conceptualised the environment in terms of ecological systems',[26] was given more focus by scientific bodies and governments and drew greater awareness from the public.[27]

From the mid to late 1940s, the CSIRO appointed scientists to research rainforests in North Queensland, in particular tree and plant species that may have pharmaceutical benefits for humans, under the Australian Phytochemical Research Program. Leading this was ecologist, Dr Len Webb, who had begun carrying out surveys of the rainforests in 1944. By the early 1950s Webb and assistant ecologist, Geoff Tracey, were collecting specimens from the rainforests surrounding the Atherton Tablelands and sending them for study to the CSIRO laboratories, to universities, and to international herbariums, with the Courier-Mail reporting in 1953, 'Since Mr Webb and forestry workers began their collections in the rainforests, 110 alkaloids alone, 60 new ones, have been discovered there (morphine, cocaine and strychnine are alkaloids)'.[28] Webb and Tracey were pioneers in rainforest ecology in Australia.[29]

The CSIRO, initially the Commonwealth Institute of Science and Industry in 1920, and renamed the CSIRO in 1949, was established primarily to undertake scientific research relating to Australia's primary and secondary industries. Its headquarters were initially in Melbourne; however, by 1927, there were 53 staff working throughout Australia. Fields of research included: animal and plant pests and diseases; fuel issues; food preservation; forest products; building materials; wool textiles; coal; assessment of land resources; atmospheric pressures; and metallurgy.[30]

Additionally, within the Federal Government's Forestry and Timber Bureau was the Forest Research Institute, with the head office located in Canberra. Research carried out by the institute was in silviculture and forest management and protection. By 1970 six regional research stations had been established in: Hobart (Tasmania), Mount Gambier (South Australia), Kelmscott (Western Australia), Traralgon (Victoria), Darwin (Northern Territory), and Atherton (Queensland). The Forestry and Timber Bureau's Annual Report states that 'at each of these stations the research programme is concentrated on problems which are of particular concern in, though not necessarily limited to, the region in which the station is situated'.[31] In Atherton, this was the study of North Queensland's tropical rainforest timbers.

Environmental awareness in Australia grew in the 1960s and into the 1970s. In Queensland the fight to save the Great Barrier Reef from mining, oil drilling and over-fishing saw a national campaign for its protection led by increasingly influential environmental groups including the Australian Conservation Foundation, Queensland Wildlife Preservation Society, and the Queensland Littoral Society (renamed the Australian Marine Conservation Society). Public support grew and the 'Save the Reef' campaign attracted broad political support. The campaign's success saw the establishment of the *Great Barrier Reef Marine Park Act 1975* by the Whitlam Federal Government, resulting in the formation of the world's largest marine protected area jointly administered by the State and Federal Governments.[32]

Public concern over the depletion of Australia's rainforests was also increasing. In Queensland, the State Government was resource and development driven, and considered the protection of the north's rainforests from clearing for sugarcane, cattle, logging, and property development, anti-progressive. Environmental groups, including the Committee for the Preservation of Tropical Rainforest, founded by Queensland artist and environmental activist, John Büsser, and the Wildlife Preservation Society, established in 1963, by ecologist, Dr Webb and renowned Australian writer, Judith Wright, began pressuring the Federal Government for greater protection of the rainforests.[33]

In 1965, following lobbying by the Committee for the Preservation of Tropical Rainforest, environmental groups convinced the Federal Government to engage Webb and Tracey to undertake the first systematic vegetation survey of North Queensland's rainforests. Joined by University of Queensland zoologists, Dr Jiro Kikkawa and Ian Straughan, the team spent two weeks in the northern lowland rainforests.[34] The survey resulted in the first ever scientific reference to the international significance of Queensland's lowland rainforests; the first proposal for protection of the full range of North Queensland forests; and the first actual protection of lowland tropical Queensland rainforest, albeit far less than that nominated for protection by Webb and Tracey.[35]

Establishment of Tropical Forest Research Station, Atherton

In the late 1960s an agreement was reached between the Queensland Department of Forestry and the Commonwealth's Forestry and Timber Bureau to establish a research facility to study Queensland's tropical forests.[36] In 1969, the Commonwealth Government's Civil Works Program's 'proposed new works' allocated \$225,000 for the 'erection of forestry research station' in Atherton.[37] A 3.64 ha site in Atherton was purchased in 1970 by the Commonwealth on which the Tropical Forest Research Station was to be established. The site was formerly part of open farmland and building work began in 1970.[38] Prior to this, in January 1969, the Department of National Development sent the proposal for the station's establishment to the Department of Works, and outlined the specific research activity that the station would be undertaking:

1. *Recognition of rainforest types and bordering Eucalypt forest types on a structural and/or floristic basis.*
2. *The association of these types with environmental factors with special emphasis on geology and soils.*
3. *The correlation between the effectiveness of natural regeneration of desired species and site type.*
4. *Growth rates and maximum economic tree size in relation to site type.*[39]

In February 1970 Minister for National Development, the Hon. Reginald William Swartz, announced the establishment of the research station to the press:

A \$225,000 Federal-state forest research station will be in operation at Atherton, in North Queensland, by the end of the year... It would cover the ecology of rain forests,

the physical and chemical properties of rain forest soils, and the fertility levels of plant nutrients.[40]

Building work on the station began in early 1970 and on 21 October 1971 the Tropical Forest Research Station was officially opened by the Minister for National Development, with a plaque unveiled commemorating the event. The newly built research facility fronted Maunds Road and was a u-shaped timber building surrounded by covered walkways and an eastern courtyard. The design of the building is attributed to the Commonwealth of Australia Department of Works, Queensland Branch.[41] Included within the building was an herbarium.

The first Officer in Charge of the Tropical Forest Research Station was scientist, Dr Geoff Stocker (1971-1985), and the first senior Botanist, Dr Bernard Hyland (1971-2002). Technical Officers with varying scientific backgrounds also made up the station's research staff, and 'the very structure of the research station was from its inception, built around three formal forest research groups, notably Botany, Ecology, and Soils Groups, each headed by professional appointments and supported by technical teams'.[42]

Development of the Arboretum and herbarium

An integral part of the research station was the establishment of a Tropical Rainforest Arboretum:

The establishment of the Arboretum was from the outset of the research station in 1971, a definite and formal research project, with the considered objective of creating an accessible, living reference to the tropical forest flora of Australia's northeastern rainforests and associated forest types.[43]

Former scientists working at the station have stated that the purpose of planting the Arboretum at the station was:

To support the development of systematic methods of rainforest tree identification and to create an easily accessible living resource to study the tropical moist forest flora of north Queensland. At that time, much of north Queensland was unexplored by western botanical science and field locations were remote, with limited access, particularly in the monsoon season. The establishment of an Arboretum at QRS would allow the continued study of newly discovered plants without needing to revisit remote and restricted locations in difficult, adverse conditions.[44]

The first plantings were carried out in 1971 in the northeast corner of the site and followed a planned grid layout of 10m-by-10m plots that eventually covered much of the site not occupied by buildings, auxiliary structures, and driveways.[45]

An arboretum is a collection of cultivated trees and plants propagated for scientific research, conservation and/or educational purposes.[46] The term 'arboretum' was first used in England in the mid 19th century when important arboretums were established including at Kew Gardens and Derby. In the United States of America arboretums were also established, including the world-renowned Harvard University's Arnold Arboretum, established in 1872.[47] In Australia, several arboretums were established in the late 19th and early 20th centuries in Victoria, New South Wales, South Australia and Tasmania, to research the success of various cultivated softwood pine-tree species for commercial plantations.[48] Characteristics shared by many arboretums include an ordered arrangement of plantings (often with an accompanying grid/site map), botanical labels placed on plants (which may reference an accompanying inventory), and associated voucher specimens retained in an herbarium.

The Queensland Acclimatisation Society established several gardens that contributed to the development of the fledgling agricultural industry. It imported plants that had commercial

potential and conducted experiments to determine if they could be adapted to Queensland's tropical and sub-tropical climate. The first garden was planted in early 1860s in Bowen Hills (QHR 601523), moving to a site in the outer Brisbane suburb of Lawnton in 1915 (QHR 602703). In 1921, the Sherwood Arboretum (QHR 602456) was established in Brisbane for the scientific study of forest timbers and public recreation, and in 1927 the Pechey Forestry Arboretum (QHR 601882) was established by the Forestry division of the Queensland Government to study viable commercial trees for logging.[49]

An important component of the Atherton research station was its herbarium, which occupied the southwest corner of the main building. It was a long, rectangular room with a line of benches built along the south wall with an extensive set of windows for the provision of natural light. A series of movable shelving units stood in the middle of the room and stored the herbarium specimens.[50] The herbarium was a pivotal part of the research facility. As in other herbariums, the Atherton Research Station's herbarium housed an extensive collection of voucher specimens studied by the scientists at the station, and informed the identification of new and rare species in Queensland forests.[51]

Essential to the scientific research being carried out at the station, field expeditions to often very remote rainforests were undertaken to gather plant material and other data. Contributing to this, between 1971 and 1980 twenty research plots measuring 0.5ha each were established in a range of forest areas from Mackay to Cape York Peninsular, for the collection of ecological and growth data. The plots were 'specifically planned, long-term research plots designed to examine natural processes in rainforests rather than responses to, or suitability for, timber extraction'.[52] The strategy used for the research at the forest plots was:

- a. *To establish a series of 0.5ha reference plots where the growth, recruitment and mortality of component species could be monitored for long periods. Where possible, these plots have been located in generally representative, unlogged forest.*
- b. *To study the reproductive biology and early growth characteristics of the major (ecologically and numerically) species found in the permanent plot series.*
- c. *To use data from (a) and (b) to develop models which will predict floristic and structural change in different forest types subjected to disturbances varying in nature, frequency and degree.*[53]

Specimens and plant material was brought back from field expeditions to the Atherton station for further scientific research, where they 'were confirmed and processed by the botanist and staff, for the inclusion in the station's herbarium, often including species with rare or remote distributions'.[54] Each voucher specimen would be allocated a universal herbarium number (internationally unique) 'which presents a permanent and verifiable record of the associated living specimen'.[55]

Following best practice principles, triplicate voucher specimens of a particular plant included in the herbarium would be sent to other herbariums throughout the world, for example to the Herbarium Australiense (established in the early 1930s and renamed the Australian National Herbarium in 1984) in Canberra, to Kew in the UK, and to Leiden in Holland. Additionally, the Atherton Herbarium was included within the Australian National Herbarium as the country's tropical plant herbarium. By 2007 (prior to the herbarium collection being integrated into the Australian Tropical Herbarium, and relocated to James Cook University, in Cairns) the herbarium held more than 120,000 voucher specimens housed at the research station.[56]

The herbarium had a direct relationship with the Arboretum as many of the plants brought back from field expeditions were initially cultivated from seeds and cuttings (propagules) to a sapling stage in the station's nursery and glasshouse, and then planted in the Arboretum for

further study, to eventually 'see them flower and fruit themselves over time, a living experiment if you like'.[57]

The methodology used to plant the Arboretum was based on both ecological and practical factors. Within a grid, trees were planted so there would be space between to avoid growth competition, as well as for the crown and canopy development when the trees matured, as 'you might plant a huge tree, then a medium tree, then a small tree around that particular grid so it didn't cause problems in the future'.[58] Consideration of maintenance, such as irrigation and mowing, was also taken into account when planting.[59] According to scientists who worked at the station, the rationale behind the plantings:

were subject at the time to thorough project planning and proper consideration of both scientific objectives and practical limitations. Practical, geographic constraints conferred by the nature and accessibility of the forest locations and the functional and biological diversity of the forest biota represented, ultimately determined the methods used to establish this living library on a scientifically sound and taxonomically reliable basis.[60]

Where possible, up to three individuals of each species were established, subject to availability, each in different parts of the grid, in a bid to address potential effects of micro-site variability and to help counter any localised losses.[61]

The plantings throughout the Arboretum were systematically recorded on a grid map with accompanying database, which recorded the taxon name, plot location, date planted, where it had been collected from, tag number, and the Plant Identification number in the Tropical Rainforest Key.[62]

The Tropical Rainforest Key, first published in 1971, had been compiled by Dr Hyland, the senior Botanist at the Atherton Research Centre (1971-2002). Initially called 'A Card Key to the Rain Forest Trees of North Queensland', its original intention was to provide foresters with an accurate and extensive means of identifying trees in North Queensland's rainforests. Over the years, through extensive botanic research, Dr Hyland added to the key, and it became the most comprehensive information system on North Queensland's rainforest flora. Many of the specimens grown in the Arboretum provided botanic information used to develop this tool.[63]

CSIRO Tropical Forest Research Centre 1975-2022

In 1975 the ownership of the research station was transferred to the CSIRO and its name changed to the CSIRO Tropical Forest Research Centre, under the Division of Forest Research.[64] Intensive scientific research continued at the centre and the Arboretum was continuously added to over the years, expanding across the site and following the grid layout. Most specimens in the Arboretum are endemic to the rainforests of North Queensland and the savannahs of Cape York Peninsular. Due to the very restricted distributions in the forests, some plants in the Arboretum are likely to be the only known existing cultivated specimens.[65]

The Arboretum was an invaluable resource to the scientists working at the centre. The field expeditions to the remote rainforests could only be undertaken at certain times of the year due to the monsoon season and were not frequent.[66] The Arboretum allowed researchers to study living rainforest species throughout the year and closely observe plants flowering and fruiting, which often proved difficult to do in the wild.[67] In 1984, The Bulletin included a feature on the important work being carried out by the CSIRO at the Atherton centre:

The team of six scientists, plus support staff is regarded as the only effective rainforest research group in Australia and probably the best in the world...simply because there is nowhere else with wet tropical rainforest, decent laboratory facilities and a stable political situation which allows continuous work by experienced staff. As rainforests are

becoming a major international concern, the CSIRO has encouraged a flow of overseas visitors to admire the Atherton project.[68]

The research centre and Arboretum became internationally renowned in the rainforest science community, with many researchers and students visiting it to study various aspects of tropical rainforest flora:

The CSIRO research centre was acclaimed, for everyone around the world came and based their research, as it was the only place in the world where you could do that, so we had up to fifty people there at some stages just running around doing research.

A lot of really important scientists from around the world came and did short stints... a lot of them did use the arboretum just to help identify plants, as each specimen in the arboretum has a tag and an associated name, herbarium lodgement number, so you could look up the herbarium and see that 'Atherton' has a specimen of xyz and they could go out and see what it looked like in the real world.

All the researchers used the arboretum as a library, if you like, a museum, to help with their research.[69]

Fears for the destruction of Australia's natural environment gained impetus in the early 1980s as conservation movements became better organised, increasingly vocal, and more influential; in Tasmania the proposed damming of the Franklin River triggered a large opposing protest movement that was successful when the Federal Government intervened and stopped the project in 1983.[70] In Queensland, the construction of the 34km Bloomfield to Cape Tribulation Road between 1983-84, through the Daintree Rainforest, triggered protests from environmental activists who were ultimately unsuccessful in stopping it.[71]

Although the protests failed to stop the road being built, requests for the nomination of the rainforests of North Queensland to UNESCO (United Nations Educational, Scientific and Cultural Organization) for entry on the World Heritage List were made to the Federal Government. After considerable pressure from these groups, in 1984 the Australian Heritage Commission engaged the Rainforest Conservation Society of Queensland, led by Dr Aila Keto, to detail the significance of North Queensland's rainforests. A detailed report was produced, *Tropical Rainforests of North Queensland: Their Conservation Significance, A Report to the Australian Heritage Commission by the Rainforest Conservation Society of Queensland*, which would ultimately form part of the nomination for World Heritage listing.[72] On 23 December 1987 the Commonwealth Government presented the nomination to the Bureau of the World Heritage Committee; and in December 1988, the Wet Tropics of Queensland were officially inscribed on the World Heritage List.[73]

At the time, the Atherton CSIRO centre was at the forefront of rainforest research in the country. The ongoing studies in fields such as ecosystems, botany, soils, and fauna carried out over the years, as well as the extensive knowledge and experience held by the scientists at the centre, attested to this. According to scientists who worked at the facility, core data from research carried out there was provided for both the report and the nomination with contributors including Bernard Hyland, Geoff Stocker, Tony Irvine, Geoff Tracey, Graham Harrington.[74]

Over the years many journal articles and publications were written by the scientists working at the centre to share scientific data with the international science community, including publications in *Biotropica*, *Commonwealth Forestry Review*, and *Journal of the Arnold Arboretum*:

The extensive list of scientific research publications and other outputs of the research station...clearly attests to a total research focus on the scientific understanding of the region's forests, their taxonomic diversity and ecological functioning. This understanding

over time, has proven almost exclusively of benefit to both forestry and to conservation management, including for enhanced, scientifically based protection of the region's tropical rainforests, their diversity and functional relationships with the environment.[75]

Several editions of the Tropical Rainforest Key with the inclusion of additional information were also published.[76] The Atherton Arboretum was referred to in the Royal Australian Institute of Parks and Recreation's 1985 publication *A Report on the Collection of Native Plants in Australian Botanic Gardens and Arboreta*, that states that the collection is an important one and does not function as a public garden, but as part of the research facility.[77] In 1991 the *CSIRO Tropical Forest Research Centre Arboretum Guide* was compiled at the centre.[78]

In 2007 the herbarium collection held at the centre was integrated into the Australian Tropical Herbarium and relocated to James Cook University, in Cairns. At that time the Atherton herbarium held more than 120,000 voucher specimens.[79]

In 2009, the CSIRO website described the Atherton Arboretum as having '1300 trees, shrubs and vines representing approximately 550 species ... documented in a database and readily available booklet'. It was 'set up to showcase the diversity of plants in tropical Australia and allow easy access to these plants. Researchers, students, schools, naturalists and all members of the community are encouraged to use the facility'.[80]

The Atherton Arboretum, planted continuously by the scientists at the centre from 1971, retains approximately 1190 plant specimens, including 539 species from 91 family groups. It is a living library of tropical rainforest flora that has assisted scientists, both staff at the station and visiting researchers, with important research on Tropical Forest plants. Important discoveries of unknown species were made by the scientists on expeditions to often very remote rainforest locations, with seed and plant samples brought back to the station, cultivated, and planted in the Arboretum. A number of plant species within the Arboretum are recognised in state and national legislation as being near threatened, vulnerable, endangered or critically endangered, and some of the plantings are likely to be the only known existing cultivated specimens in the world. In 2022 the CSIRO Tropical Forest Research Centre was closed, and the site sold to a private owner.

Description

[Note, as the Department of Environment, Science and Innovation (the Department) has been unable to access the place, the following description is based on information provided to the Department and publicly available sources].

The Atherton Arboretum (established 1971) is a large, living arboretum, primarily containing a collection of tropical forest plants, in Atherton, northern Queensland. The arboretum stands on a part of a 3.64ha corner allotment, bounded by Maunds Road (east), Grove Street (north) and residential properties (west and south). The arboretum is generally concentrated in the north and northeast ends of the site, with smaller areas of plantings along the southeastern, southwestern and western sides, and centrally at the southern end of the site (between buildings).[81]

The arboretum contains a variety of plants (primarily trees), most of which are typically endemic to Australian rainforests and sclerophyll forests. The plants are arranged within a 10m by 10m grid, which references a database in which specimen information is recorded. The arboretum retains approximately 1190 plant specimens, including 546 species from 91 family groups.[82] The most highly represented family groups in the arboretum include: *Myrtaceae* (myrtles, 329 specimens), *Lauraceae* (laurels, 100 specimens), *Arecaceae* (palms, 82 specimens), *Sapindaceae* (soapberries, 64 specimens) and *Proteaceae* (such as

proteas, waratahs, banksias, grevilleas and silky oaks, 50 specimens).[83] The specimens are tagged with a number that correlates to an accompanying database listing their taxon names, planting dates, locations of original collection, plant identification numbers in relation to the Tropical Rainforest Key, and plot numbers that correlate to the specimen locations within the grid map. Of the 360 grid plots across the site, approximately 241 contain a documented arboretum planting.

The arboretum accommodates a number of plant species recognised as threatened (including being classified as ‘critically endangered’, ‘endangered’, ‘vulnerable’ and ‘near threatened’ in their natural habitats) in Queensland and Australian legislation, and a number of plants have restricted distributions outside of a cultivated setting.[84] Specimens recorded in the arboretum’s plant schedule (last updated 2014), and classified as such in 2024 include[85]:

- Endangered:
 - *Costus potierae* (syn. *Cheilocostus potierae*) (Plot 225),
 - *Dinosperma longifolium* (Plot 131),
 - *Rhodomyrtus pervagata* (Plot 241), and
 - *Toechima pterocarpum* (Plot 78).
- Vulnerable:
 - *Acacia hylonoma* (Plot 203),
 - *Acacia pennata* subsp. *kerrii* (syn. *Senegalia pennata* subsp. *kerrii*) (Plots 96 and 97),
 - *Arenga australasica* (Plots 268 and 276),
 - *Baeckea tozerensis* (syn. *Sannantha tozerensis*) (Plot 243),
 - *Cryptocarya glaucocarpa* (Plots 25, 59, 87 and 233),
 - *Cycas silvestris* (Plot 243),
 - *Eidothea zoexylocarya* (Plot 276),
 - *Endiandra grayi* (Plot 133),
 - *Endiandra phaeocarpa* (Plots 82 and 83),
 - *Eucalyptus raveretiana* (Plot 141),
 - *Firmiana papuana* (Plots 76 and 106),
 - *Flindersia oppositifolia* (Plot 205),
 - *Gardenia psidioides* (Plots 242 and 243),
 - *Lasjia claudiensis* (Plot 35),
 - *Livistona drudei* (Plots 205 and 340),
 - *Livistona fulva* (Plots 307, 308, 341 and 342),
 - *Peripentadenia phelpsii* (Plots 29, 103 and 272),
 - *Ristantia gouldii* (Plot 70),
 - *Sphaerantia chartacea* (Plots 225, 226, 236 and 237),
 - *Sphaerantia discolor* (Plots 44, 101, 128 and 305),
 - *Stenocarpus davallioides* (Plots 50 and 169),
 - *Stockwellia quadrifida* (Plot 269),
 - *Syzygium aqueum* (Plots 52, 62, 82, and 85),
 - *Syzygium macilwraithianum* (Plots 82 and 85),
 - *Syzygium mulgraveanum* (syn. *Waterhousea mulgraveana*) (Plots 117 and 136),

- *Syzygium pringlei* (syn. *Acmenosperma pringlei*) (Plots 129, 335 and 350),
- *Syzygium paniculatum* (Plots 40, 337, 344 and 345)
- *Syzygium velarum* (Plot 272),
- *Wodyetia bifurcate* (Plots 140, 148, 191, 308, 342 and 343), and
- *Xylosma* sp. (Mt Lewis G.Sankowsky+ 1108) (syn. *X. craynii*) (Plot 164).
- Critically Endangered:
 - *Melaleuca lophocoracorum* (Plot 144),
 - *Rhodamnia angustifolia* (Plot 215), and
 - *Rhodamnia longisepala* (Plot 62).
- Near Threatened:
 - *Aceratium ferrugineum* (Plot 226)
 - *Agathis microstachya* (Plots 120 and 121),
 - *Alpinia hylandii* (Plot 197),
 - *Bubbia queenslandiana* subsp. *Queenslandiana* (Plot 276),
 - *Chrysophyllum roxburghii* (syn. *Donella lanceolata*) (Plot 57),
 - *Cyathea celebica* (syn. *Sphaeropteris celebica*) (Plot 277),
 - *Diploglottis harpullioides* (Plot 135),
 - *Endiandra microneural* (Plots 40 and 67),
 - *Glochidion pungens* (Plots 22 and 58),
 - *Graptophyllum excelsum* (Plots 242 and 243),
 - *Livistona nitida* (Plots 307, 341, 342 and 343),
 - *Margaritaria indica* (Plot 84),
 - *Megahertzia amplexicaulis* (Plot 136),
 - *Meiogyne hirsute* (Plots 191, 226 and 227),
 - *Prumnopitys ladei* (syn. *Pectinopitys ladei*) (Plot 239),
 - *Schefflera bractescens* (Plots 17 and 89)
 - *Stenocarpus cryptocarpus* (Plot 124),
 - *Sterculia shillinglawii* (Plot 56), and
 - *Syzygium mackinnoniana* (syn. *Acmena mackinnoniana*) (Plots 11 and 48).

Features of the Atherton Arboretum of State-level cultural heritage significance include:

- its living collection of cultivated arboretum plantings (recorded in an arboretum plant schedule and including approximately 1190 plant specimens of 546 species from 91 plant families);
- the locations and ordered arrangement of its plant specimens, relative to a 10m by 10m grid layout;
- metal identification number tags identifying plant specimens (which relate to a recorded planting list); and
- point marker posts that identify the 10m by 10m grid layout, such as numbered posts.

Features Not of State-level Cultural Heritage Significance

Features of the Atherton Arboretum not of State-level cultural heritage significance are:

- landscape plants on site prior to the arboretum's establishment (those plants established on site prior to 1970), plants added after 2014, and self-seeded plants not

associated with arboretum plantings;

- lawns and grasses between arboretum plantings;
- lawns and plantings not associated with the Arboretum plantings;
- metal chain-wire fences to Maunds Road, Grove Street, and the neighbouring properties;
- bitumen driveway surfaces; and
- all other buildings and structures.

Associated built features outside of heritage boundary include:

- Tropical Forest Research Centre building (former) (U-Shaped building, 1971, extended 1977-78 and 1995 extension);
- potting shed (1971);
- concrete slabs of former glasshouse and shade house structures (1971) adjacent to the potting shed;
- garage / workshop (1971, extended c1986-89)
- fuel store (1975)
- former wildlife laboratory (1981);
- former office/laboratory/conference room timber building (1987) to the north of the Tropical Forest Research Centre building;
- two-storey, combined laboratory / office / library brick building (1994-95), linked to the western end of the Tropical Forest Research Centre building; and
- student accommodation building (1994-95) at the northwest corner of the site, fronting Grove Street.

Illustrations



Figure 3: Entrance to the Atherton Arboretum site, from Maunds Road (from east) (Rebel Warren, provided in Heritage Application, 2023)



Figure 4: Atherton Arboretum from Maunds Road (from southeast) (Rebel Warren, provided in Heritage Application, 2023)

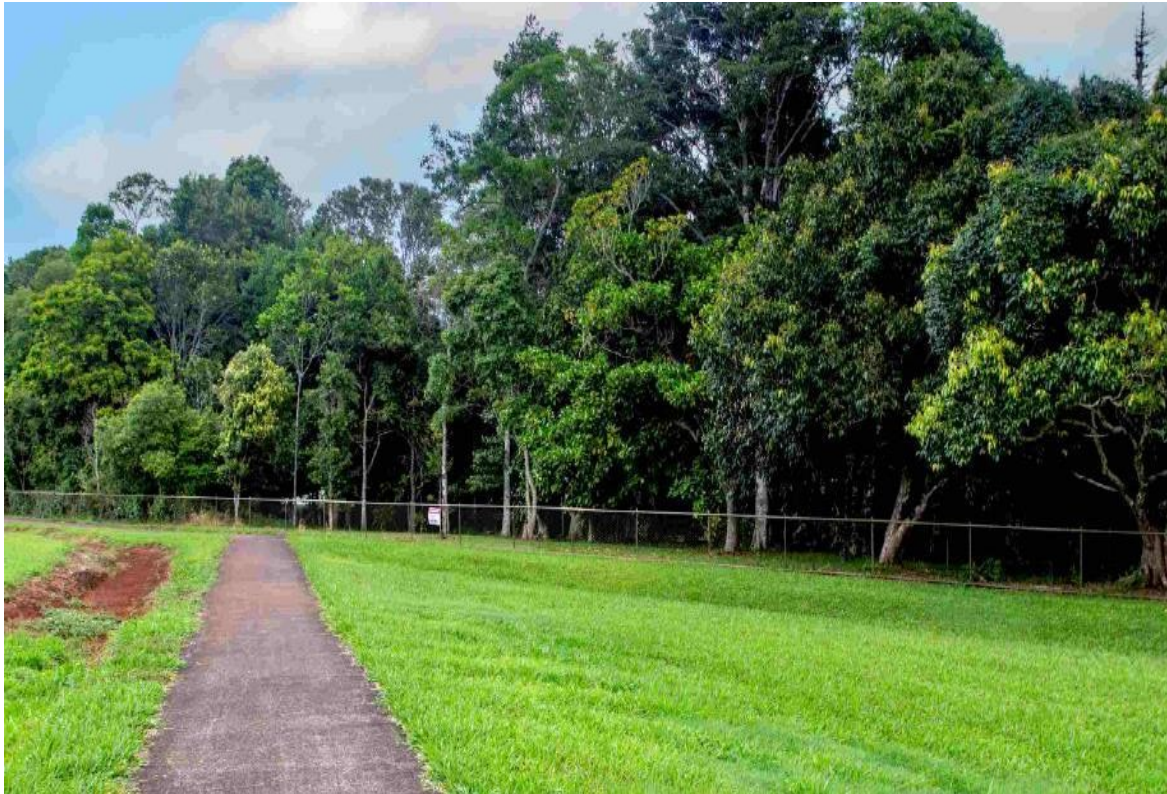


Figure 5: Atherton Arboretum from Maunds Road (from northeast) (Rebel Warren, provided in Heritage Application, 2023)

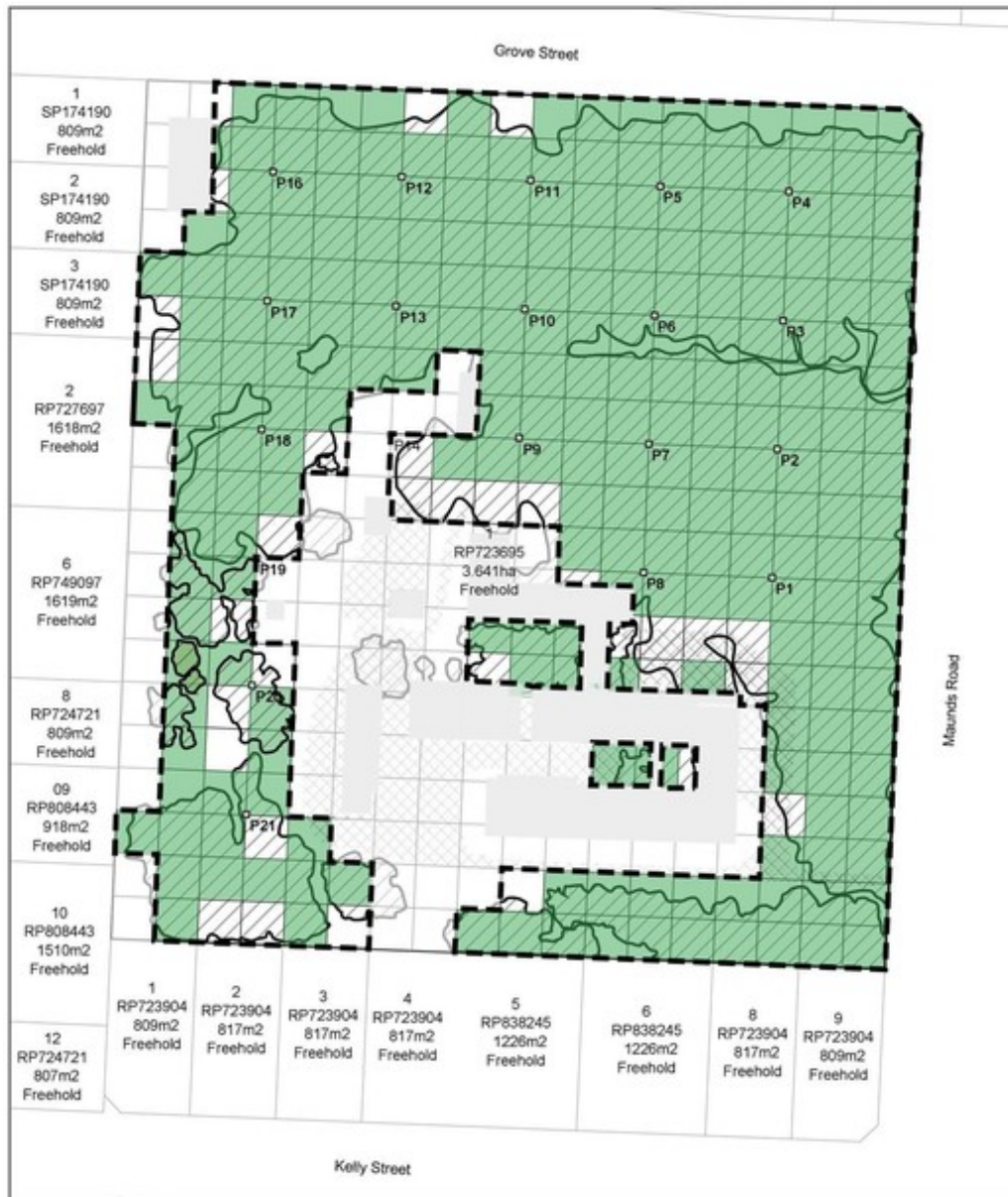


Figure 6: Atherton Arboretum, from Grove Street (from northeast) (Rebel Warren, provided in Heritage Application, 2023)



Figure 7: Atherton Arboretum, internal planting layout (Rebel Warren, provided in Heritage Application, 2023)

Plans



Atherton Arboretum 650282 Indicative Site Plan

Date created: 28/05/2024
© The State of Queensland, 2024

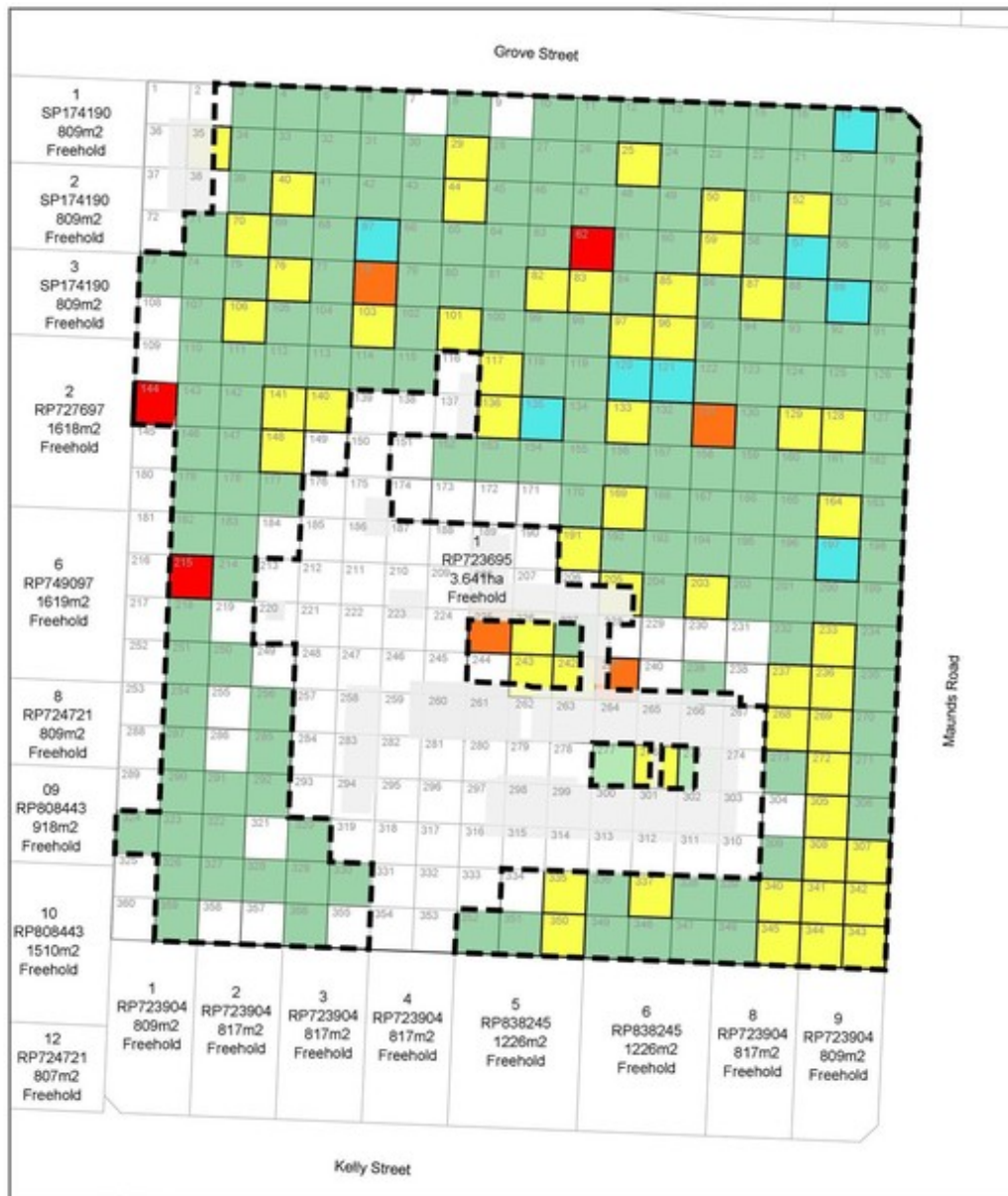
Information based on Atherton Arboretum Species Schedule (last updated 2014), provided by CSIRO; and NearMap Aerial, June 2023. Grid shown is approximately 10m x 10m (posts at approximately 30m intervals).

Legend

- Heritage register boundary
- Vegetation visible on 2024 aerial [significant within boundary]
- Arboretum Plot with recorded extant planting in Species Schedule (last updated 2014) [significant]
- Point Marker Post [significant within boundary]
- Built features [not included in Queensland Heritage Register (QHR)]
- Driveway / bitumen surface [not included in QHR]



Figure 8: Atherton Arboretum - Indicative Site Plan (Queensland Government, 2024)



Atherton Arboretum

650282

Indicative arboretum plots including Critically Endangered, Endangered, Vulnerable and Near Threatened Plant Species

Date created: 28/05/2024
© The State of Queensland, 2024

Legend

[Excludes plants listed as 'dead', 'probably dead' or 'not found' in Species Schedule (last updated 2014)]

Heritage register boundary

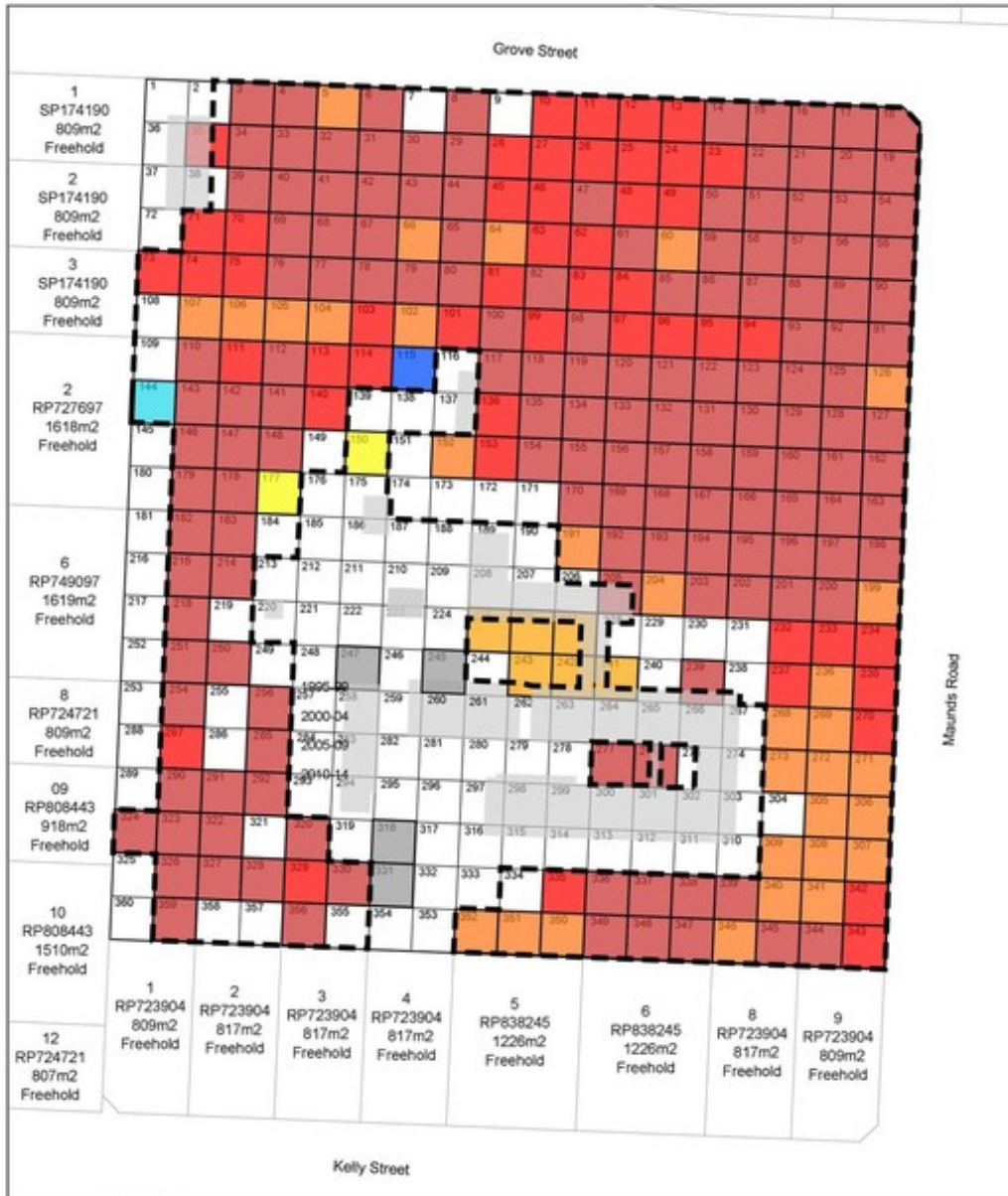
Arboretum plots listed in Species Schedule (last updated 2014) that include species that are:

- Critically endangered
- Endangered
- Vulnerable
- Near threatened



Information based on Atherton Arboretum Species Schedule (last updated 2014), provided by CSIRO, and classifications in the Queensland Nature Conservation (Plants) Regulation 2020 and in the Environment Protection and Biodiversity Act 1999 (EPBC Act) in 2024. Where multiple classifications were applicable to one plot, the highest ranking classification is shown.

Figure 9: Indicative arboretum plots including Critically Endangered, Endangered, Vulnerable and Near Threatened plant species (Queensland Government, 2024)



Atherton Arboretum
650282
Indicative plot planting dates
[earliest planting within plot]

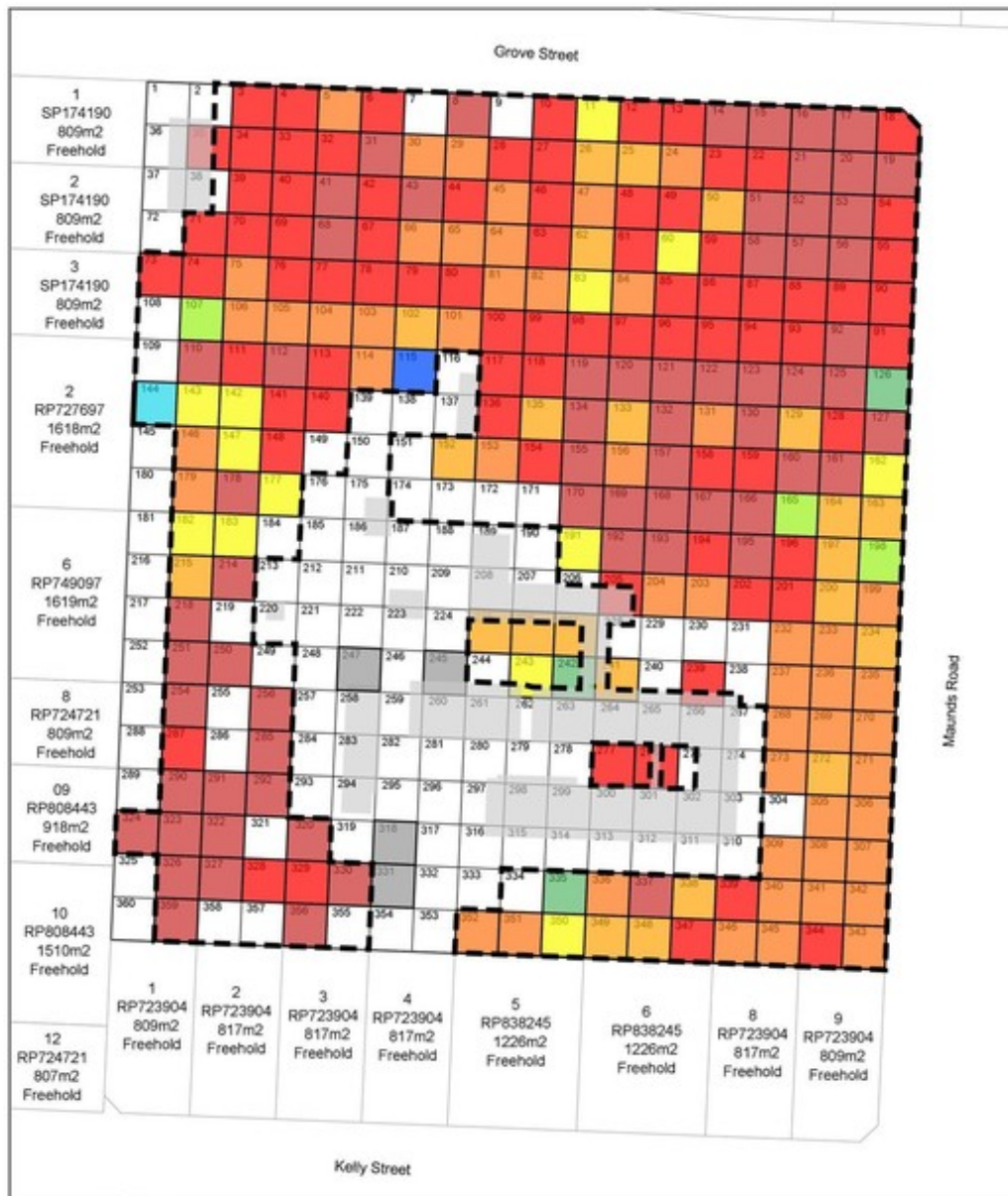
Date created: 28/05/2024
© The State of Queensland, 2024
Information based on Atherton Arboretum Species Schedule (last updated 2014), provided by CSIRO.

Legend - Indicative earliest planting to arboretum plots
[Excludes plants listed as 'dead', 'probably dead' or 'not found' in Species Schedule (last updated 2014)]

- 1970-74
- 1975-79
- 1980-84
- 1985-89
- 1990-94
- 1995-99
- 2000-04
- 2005-09
- 2010-14
- Planting established prior to 1971 [where no arboretum plantings exist in plot]



Figure 10: Indicative site plan showing earliest planting date of plants within each plot (Queensland Government, 2024)



Atherton Arboretum

650282

Indicative plot planting dates [average planting date]

Date created: 28/05/2024
© The State of Queensland, 2024

Information based on Atherton Arboretum Species Schedule
(last updated 2014), provided by CSIRO.

Legend - Indicative average planting date to arboretum plots

[Excludes plants listed as 'dead', 'probably dead' or 'not found' in Species Schedule (last updated 2014)]

- 1970-74
- 1975-79
- 1980-84
- 1985-89
- 1990-94
- Planting established prior to 1971 [where no arboretum plantings exist in plot]
- 1995-99
- 2000-04
- 2005-09
- 2010-14



Figure 11: Indicative site plan showing average planting date of plants within each plot (Queensland Government, 2024)

Proposed heritage register boundary

The heritage boundary encompasses part of Lot 1 RP723695. The heritage boundary follows the lot boundary for most of its northern, eastern and southern extents; and follows the outline of plots containing arboretum plantings in the 10m by 10m grid for its western and central extents, and excluding built features.

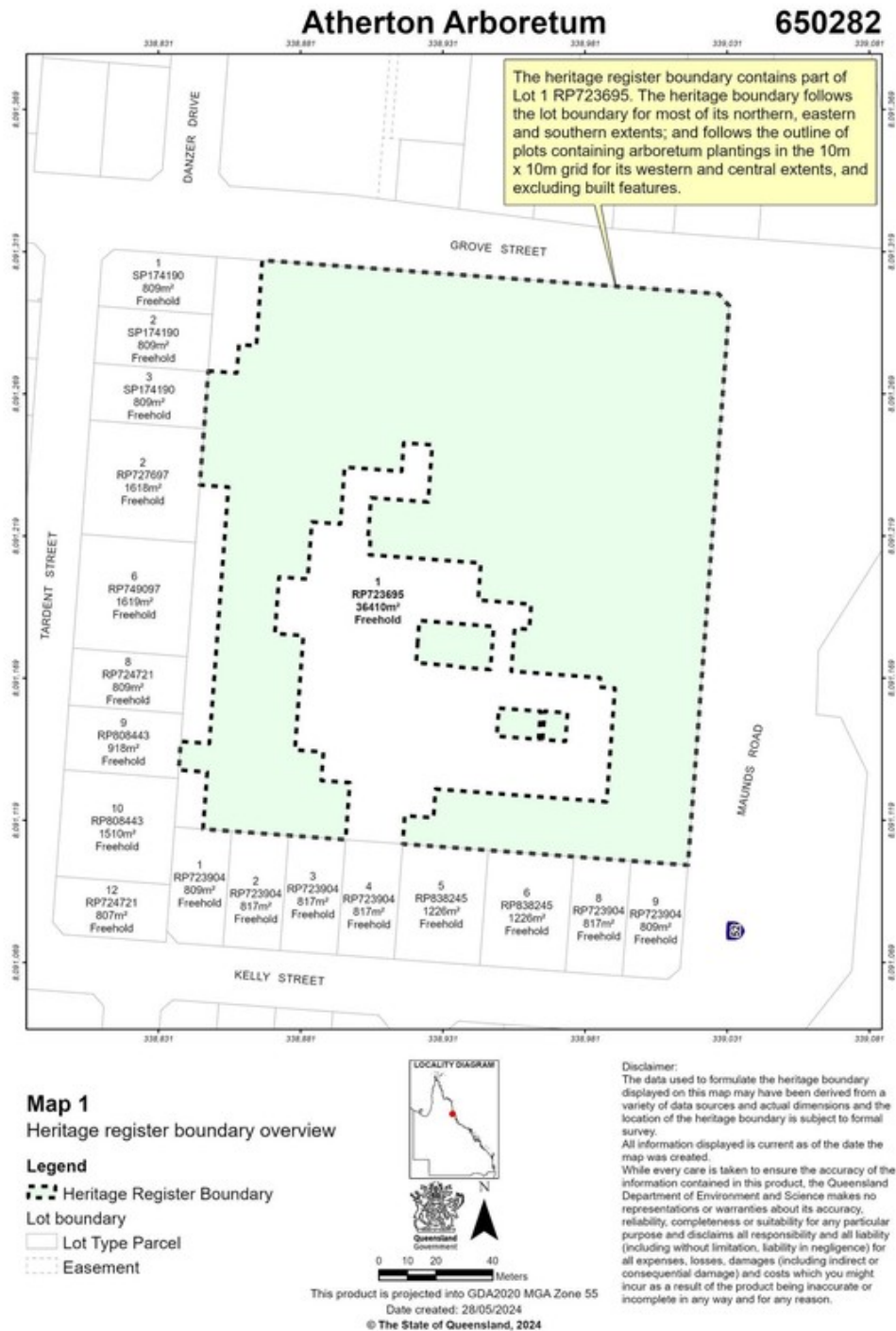


Figure 12: Heritage register boundary map 1 (Queensland Government, 2024)

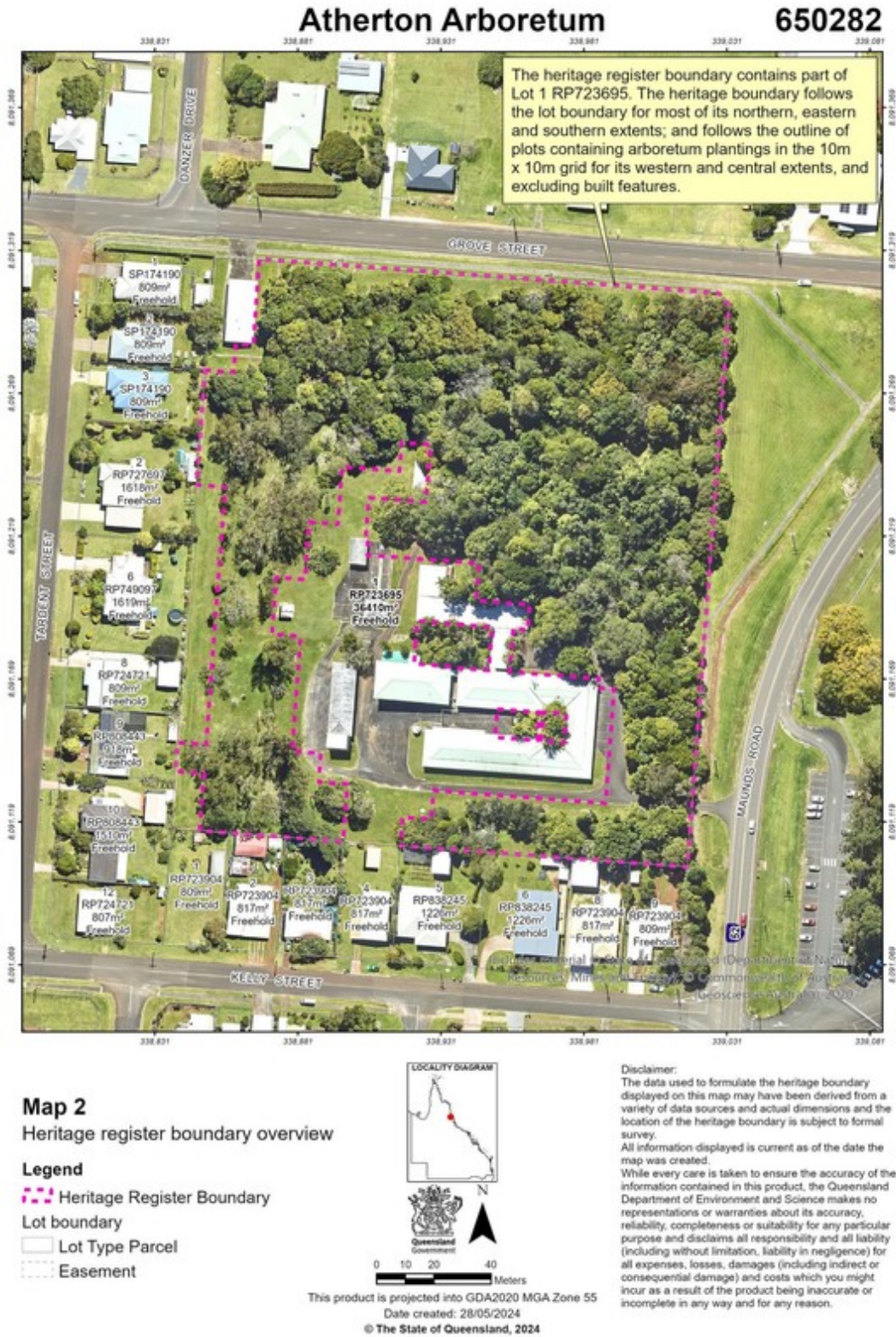


Figure 13: Heritage register boundary map 2 - with aerial (Queensland Government, 2024)

References

- [1] Cairns Regional Council, *First People's History and Languages, First People's history & languages* | Cairns Regional Council Accessed May 2024.
- [2] Peter Griggs, 'Deforestation and Sugar Cane Growing in Eastern Australia, 1860-1995', *Environment and History*, Vol.13, August 2007, p.261.
- [3] Lamb, Keenan and Gould, 'Historical Background to Plantation Development: A North Queensland Case Study', *Sustainable Farm Forestry in the Tropics: Social and Economic Analysis and Policy*, Harrison and Herbohn, Edward Elga Publishing, Northampton, 2001, p.10.
- [4] Lamb, Keenan and Gould, 'Historical Background to Plantation Development: A North Queensland Case Study', p.10; L.T. Carron, *A History of Forestry in Australia*, Australian National University Press, 1985, p.96; Rachel Sanderson, 'Many Beautiful Things: Colonial Botanist' Accounts of the North Queensland Rainforests', *Historical Records of Australian Science*, CSIRO Publishing, Vol.18, 2007, p.5.
- [5] Entry in the Queensland Heritage Register, Waaje Fire Tower No.4 (QHR 650070)
- [6] L.T. Carron, *A History of Forestry in Australia*, p.97.
- [7] John Vader, *Red Cedar: the Tree of Australia's History*, Frenchs Forest, 1987, p.126-129; L.T. Carron, *A History of Forestry in Australia*, p.96; Peter Griggs, 'Deforestation and Sugar Cane Growing in Eastern Australia, 1860-1995', p.26; L.T. Carron, *A History of Forestry in Australia*, p.112.
- [8] Entry in the Queensland Heritage Register, Barron Valley Hotel (QHR 602587)
- [9] Entry in the Queensland Heritage Register, Barron Valley Hotel (QHR 602587)
- [10] Selwyn Everist, 'History of the Queensland Herbarium and Botanical Library, 1855-1976', *Austrobaileya*, Vol. 1, 1983, pp.431-432.
- [11] Rachel Sanderson, 'Many Beautiful Things: Colonial Botanist' Accounts of the North Queensland Rainforests', pp.6-9.
- [12] Rachel Sanderson, 'Many Beautiful Things: Colonial Botanist' Accounts of the North Queensland Rainforests', pp.1-3.
- [13] Rachel Sanderson, 'Many Beautiful Things: Colonial Botanist' Accounts of the North Queensland Rainforests', pp.6-9.
- [14] John Leslie Dowe, 'The Botanical Collections of Ebenezer Cowley', *Austrobaileya*, Vol. 8, 2014, pp. 264-265.
- [15] CSIRO, Plant Industry, *Atherton Arboretum Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024; As part of the role of Colonial Botanist, an inventory of the State's plants was kept. As the collection grew it was housed in several places in Brisbane: from 1879 it was kept at the former Queensland Museum on William Street (State Library (former) (QHR 600177)); from 1889 at the Department of Agriculture's building on William Street (Department of Primary Industries Building (former) (QHR 601093)); 1912 at the Brisbane Botanic Gardens (Brisbane Botanic Gardens (QHR 600067)) in a newly constructed building; Selwyn Everist, 'History of the Queensland Herbarium and Botanical Library, 1855-1976', p.443; The building in the Brisbane Botanic Gardens is no longer extant.
- [16] *Cairns Post*, 'Current Nature Topics, Beginning of Herbarium', 10 February 1939, p.12.
- [17] Entry in the Queensland Heritage Register, Flecker Botanical Gardens (QHR 602541)

[18] Entry in the Queensland Heritage Register, Waaje Fire Tower No.4 (QHR 650070); Efforts began in the late nineteenth century to save the timber resource from being totally exhausted. *The Crown Lands Act 1876* prohibited cutting of certain species on vacant Crown Land or pastoral leases, and placed girth limits on cutting pine and cedar, while the Crown Lands Act 1884 enabled the Queensland Government to reserve State Forests on Crown Land and seek royalties from licensed timber getters on Crown Lands. However, these laws could not compete with the dominant philosophy of the time, which was to promote settlement and development. While the responsibility for leasing timber reserves and reservation of Crown Lands for forestry initially stayed with the Lands Department, the Forestry Branch became responsible for reforestation, research, land acquisition, the control and prohibition of fires, surveys, timber harvesting and marketing, sawmill licenses, and (eventually) national park management.

[19] Entry in the Queensland Heritage Register, Waaje Fire Tower No.4 (QHR 650070); The Forestry Branch applied silvicultural (forest cultivation) improvement regimes, including ringbarking old and unproductive trees, regeneration burns, and slashing new growth competing with seedlings.

[20] Judith Powell, *People and Trees: A Thematic History of Southeast Queensland with Particular Reference to Forested Areas, 1823-1997*, Queensland CRA/RFA Steering Committee, 1998, p.59.

[21] Atherton Centenary Committee, *Tall Timber and Golden Grain, Atherton, 1885-1985*, Atherton, 1985, p. 37.

[22] Powell, *People and Trees: A Thematic History of Southeast Queensland with Particular Reference to Forested Areas, 1823-1997*, p.58; Lamb, Keenan and Gould, 'Historical Background to Plantation Development: A North Queensland Case Study', p.16; Dr Greg Unwin and Rebel Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.7.

[23] L.T. Carron, *A History of Forestry in Australia*, p.109.

[24] Bernard Hyland, 'Rain Forest Key', p.1, *Information provided by Applicant*.

[25] *Ibid*, p.1.

[26] Dr Liz Young, 'The Rise of Environmentalism in Australia', *Flinders Journal of History and Politics*, Volume 18, 1996, p.74.

[27] *Courier Mail*, 'An untapped reservoir of health-giving drugs', 2 September 1953, p.2; Ed. Jan Wegner, *Defending Diversity: Strategies by Conservationists, John Büssst, Dr Len Webb and Geoff Tracey in the Conservation of North Queensland Habitats During the 1960s*, James Cook University, 2007, p.7.

[28] *Courier Mail*, 'From Queensland's Rain Forests: An Untapped Reservoir of Health-giving Drugs', 2 September 1953, p.2.

[29] CSIRO website, 'Rainforests – Australia's green cathedrals', <https://csiropedia.csiro.au/rainforests-australias-green-cathedrals/>, Accessed May 2024.

[30] CSIRO website, 'History', Our history - CSIRO Accessed February 2024.

[31] Department of National Development, *Report for Year 1970-71*, 'Forestry and Timber Bureau', Commonwealth Government Printing Office, Canberra, 1972, pp.34-35; Ed. Jan Wegner, *Defending Diversity: Strategies by Conservationists, John Büssst, Dr Len Webb and Geoff Tracey in the Conservation of North Queensland Habitats During the 1960s*, p.6.

- [32] Entry in the Queensland Heritage Register, Ninney Rise and John Büssst Memorial (QHR 602499); Dr Liz Young, 'The Rise of Environmentalism in Australia', *Flinders Journal of History and Politics*, Volume 18, 1996, pp.74-75.
- [33] Ed. Jan Wegner, *Defending Diversity: Strategies by Conservationists, John Büssst, Dr Len Webb and Geoff Tracey in the Conservation of North Queensland Habitats During the 1960s*, p.7.
- [34] *Cairns Post*, 'Hope for Mankind in North's Rain Forests', 16 November 1965.
- [35] Entry in the Queensland Heritage Register, Ninney Rise and John Büssst Memorial (QHR 602499); *The Bulletin*, 'Cutting Down the North', 30 October 1971; Peter Griggs, 'Deforestation and Sugar Cane Growing in Eastern Australia, 1860-1995', *Environment and History*, Vol. 13, August 2007, p. 275.
- [36] Rebel Elick, *Tropical Forest Research Centre, Maunds Road, Atherton*, CSIRO, 2005, p.1; Initially, work was undertaken by the federal officers at the already established state Forestry Department's offices in Atherton.
- [37] Commonwealth Department of National Development, *Civil Works Programme, 1969/70*.
- [38] Department of Resources, *Certificate of Title, No. 20513109*.
- [39] National Archives of Australia, *Atherton – National Development – Forestry and Timber Branch – Research Station, 1930-1982*, Item No. BP881/1, Part 1,2,3, 'Letter from Department of National Development to the Director of Works, Department of Works, 'Forestry and Timber Bureau, Regional Research Station, Atherton', 31 January 1969.
- [40] National Archives of Australia, *Atherton – National Development – Forestry and Timber Branch – Research Station, 1930-1982*, Item No. BP881/1, Part 1,2,3, 'Release: Immediate, Rain Forest Research, Canberra', 27 February 1970.
- [41] National Archives of Australia, Commonwealth of Australia, Department of Works, Queensland Branch, *Atherton: North Queensland. Forestry and Timber Research Station, for the Department of National Development, Floor Plan*, Series No. J344, Item ID 5051302, November 1969.
- [42] Greg Unwin and Rebel Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.3.
- [43] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.3.
- [44] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.3.
- [45] *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.1.
- [46] Entry in the Queensland Heritage Register, Pechey Forestry Arboretum (QHR 601882); National Arboretum Canberra, *About: What is an arboretum?*, 2024, www.nationalarboretum.act.gov.au/about Accessed January 2024; Macquarie Dictionary [online], *Arboretum*, 2024 https://app.macquariedictionary.com.au/?search_word_type=dictionary&word=arboretum Accessed May 2024.
- [47] Max Bourne, 'Trees on Trial: Economic Arboreta in Australia', *Garden History*, Vol.35,

2007, p.217; Arnold Arboretum Webpage: *Our History - Arnold Arboretum* | Arnold Arboretum (harvard.edu) Accessed March 2024.

[48] Max Bourne, 'Trees on Trial: Economic Arboreta in Australia', p.222.

[49] Entry in the Queensland Heritage Register, Bowen Park (QHR 600523): Plants researched included sugar cane, bananas, cotton, apples, pineapples, pasture grasses, maize, olives, mangoes, pecan nuts and macadamia nuts. Many of these became important agricultural crops in Queensland; Entry in the Queensland Heritage Register, Remnants of former Acclimatisation Society Gardens at Lawnton (QHR 602703); Entry in the Queensland Heritage Register, Sherwood Arboretum (QHR 602456); Entry in the Queensland Heritage Register, Pechey Forestry Arboretum; Entry in the Queensland Heritage Register, Brisbane Botanic Gardens (QHR 600067): Botanic Gardens were also established throughout Queensland in the mid-late nineteenth century for experimentation of non-native trees and plants that could possibly be developed into commercial crops. Botanic Gardens were also public recreation spaces. Early botanic gardens in Queensland include the Brisbane Botanic Gardens (QHR 600067) (1855), Toowoomba Queens Park and Botanic Gardens (QHR 601607) (1874), Cooktown Botanic Gardens (QHR 601696) (1878), Rockhampton Botanic Gardens (QHR 601819) (1873), and Cairns Botanical Gardens (602541) (mid-1880s).

[50] National Archives of Australia, *Atherton – National Development – Forestry and Timber Branch – Research Station, 1930-1982*, Item No. BP881/1, Part 1,2,3, 'Letter from Department of National Development to the Director of Works, Department of Works, 'Forestry and Timber Bureau, Regional Research Station, Atherton', 31 January 1969; A special carbon dioxide fire protection system was installed in the room to ensure the collection would not be damaged by water sprinklers in case of a fire.

[51] CSIRO, Plant Industry, *Atherton Herbarium Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024.

[52] Andrew W Graham (ed.), *The CSIRO Rainforest Permanent Plots of North Queensland: Site, Structural, Floristic and Edaphic Descriptions, Research Report, CSIRO and Cooperative Research Centre for Tropical Rainforest Ecology and Management*, Atherton, June 2006, p.1; Rebel Elick, Tropical Forest Research Centre, Maunds Road, Atherton, CSIRO, 2005, p.3.

[53] Ed. Andrew W Graham, *The CSIRO Rainforest Permanent Plots of North Queensland: Site, Structural, Floristic and Edaphic Descriptions, Research Report, CSIRO and Cooperative Research Centre for Tropical Rainforest Ecology and Management*, Atherton, June 2006, p.3.

[54] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.3; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2.

[55] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.5; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.1; CSIRO Plant Industry, *Atherton Herbarium Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024; Ed. Andrew W Graham, *The CSIRO Rainforest Permanent Plots of North Queensland: Site, Structural, Floristic and Edaphic Descriptions, Research Report, CSIRO and Cooperative Research Centre for Tropical Rainforest Ecology and Management*, Atherton, June 2006, p.24.

[56] Unwin and Warren, *Information provided to the Department of Environment, Science*

and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum, 15 April 2024, p.8; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.3; Australian Government, *Australian National Herbarium, History*, 2003, Australian National Herbarium - History (anbg.gov.au) Accessed April 2024; CSIRO Plant Industry, *Atherton Herbarium Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024.

[57] *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2.

[58] *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.1.

[59] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.3; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2.

[60] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.2.

[61] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.1.

[62] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.5; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2.

[63] CSIRO Plant Industry, *Atherton Herbarium Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024; Bernard Hyland and NB Henry, 'The Preparation of a Card Key to the Rain Forest Trees of North Queensland', *Commonwealth Forestry Review*, Vol.53, September 1974, p.214-216; Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.5; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2.

[64] Rebel Elick, *Tropical Forest Research Centre, Maunds Road, Atherton*, p.3; Atherton Centenary Committee, *Tall Timber and Golden Grains, Atherton 1885-1985*, Atherton, 1985, p.57.

[65] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.5.

[66] Ed. Andrew W Graham, *The CSIRO Rainforest Permanent Plots of North Queensland: Site, Structural, Floristic and Edaphic Descriptions, Research Report*, p.9.

[67] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.1.

[68] *The Bulletin*, 'Daintree Under Threat with New CSIRO Budget', 9 October 1984, p.48.

[69] *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.3; Atherton Centenary Committee, *Tall Timber and Golden*

Grains, Atherton 1885-1985, Atherton, 1985, p.57 Other research undertaken in the centre included studies on rainforest fauna, with facilities such as a dark room to observe nocturnal animals, included on the site.

[70] National Museum of Australia, *Defining Moments: Franklin Dam and the Greens*, Franklin Dam and the Greens | National Museum of Australia (nma.gov.au) Accessed May 2025.

[71] *Tribune*, 'Demonstrators dig in at Daintree', 15 August 1984, p.4; *Canberra Times*, 12 August 1984, p.5; S Robert Aitken and Colin H Leigh, 'Queensland's Daintree Rainforest at Risk', *Ambio*, Forestry, Vol.16, 1987, p.137; *Parkwatch*, 'Bulldozers in Cape Tribulation National Park', Autumn 1984; Gaia Films, Directed by Jeni Kendall, *Earth First: The Struggle to Save Australia's Daintree Rainforest – Daintree Blockade 1982*, Australian Film Commission, 1987, YouTube, Earth First: The Struggle to Save Australia's Daintree Rainforest - Daintree Blockade 1982 - YouTube, Accessed April 2024.

[72] *The Canberra Times*, 'Daintree: \$1m offer to Qld', 13 September 1984;p.13; S Robert Aitken and Colin H Leigh, 'Queensland's Daintree Rainforest at Risk', p.138; Rainforest Conservation Society of Australia, *Tropical Rainforests of North Queensland: Their Conservation Significance, A Report to the Australian Heritage Commission by the Rainforest Conservation Society of Queensland*, Australian Government Publishing Service, Canberra, 1986, p.79; The Federal Government announced in late 1987 that the nomination would go ahead. The nomination was prepared by the Department of the Arts, Sport, the Environment, Tourism and Territories, based on the report from the Rainforest Conservation Society.

[73] Wet Tropics Management Authority, *A Chronology of the Protection and Management of the Wet Tropic of Queensland World Heritage Area*, January 2007, <https://www.wettropics.gov.au/site/user-assets/docs/chronology.pdf>, Accessed May 2024.

[74] Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.6; *Interview with Field Ecologist and Experimental Scientist, M.Bradford, CSIRO Tropical Research Centre*, 9 April 2024, p.2; *Canberra Times*, 'Rainforest: Umbilicus to the Past', 14 October 1987, p.17.

[75]Unwin and Warren, *Information provided to the Department of Environment, Science and Innovation, Heritage Branch, by Scientists employed in the Atherton Tropical Research Station and Arboretum*, 15 April 2024, p.8.

[76] Rebel Elick, *Tropical Forest Research Centre, Maunds Road, Atherton*, p.2 and p.23.

[77] Royal Australian Institute of Parks and Recreation, *A Report on the Collection of Native Plants in Australian Botanic Gardens and Arboreta*, Canberra, 1984.

[78] CSIRO Tropical Forest Research Centre, *CSIRO Tropical Forest Research Centre Arboretum Guide*, Atherton, August 1991.

[79] Australian Government, *Australian National Herbarium, History*, 2003, Australian National Herbarium - History (anbg.gov.au) Accessed April 2024; CSIRO Plant Industry, *Atherton Herbarium Information Kit*, Atherton Herbarium Information Kit_CSIRO.pdf Accessed April 2024.

[80] CSIRO, *Technical Services and Facilities*, 'Atherton Rainforest Arboretum and Herbarium Reference Collection', 3 October 2009, 03 Oct 2009 - Atherton rainforest arboretum and herbarium reference collection (Profile - Facility) - Trove (nla.gov.au), Accessed May 2024.

[81] *Plant schedule (last updated 2014)*, provided by the Frank Zich, Collection Manager,

Australian Tropical Herbarium (CNS) and CSIRO National Collections & Marine Infrastructure (NCMI), via email correspondence on 01 March 2024; *Q/magery* aerials: QAP2337069 (1971), QAP35044579 (1978), QAP4549148 (1986), QAP4845210 (1989), QAP4681024 (1990), QAP5079055 (1992), QAP5199108 (1994), and QAP6269200 (2007); *Google Earth* aerials: 5 Mar 2010, 19 Aug 2011, 20 July 2013, 9 Nov 2013, 7 Jul 2014, 1 Dec 2016, 12 Oct 2016, 17 Sept 2018, 14 Jul 2019, 5 Dec 2022 and 19 May 2023; and *NearMap*, aerial EPSG3857, 29 June 2023.

[82] *Plant schedule (last updated 2014)*, provided by the Frank Zich, Collection Manager, Australian Tropical Herbarium (CNS) and CSIRO National Collections & Marine Infrastructure (NCMI), via email correspondence on 01 March 2024. Plant families represented within the Arboretum include: *Acanthaceae*; *Agavaceae*; *Amaryllidaceae*; *Anacardiaceae*; *Annonaceae*; *Apocynaceae*; *Araceae*; *Araliaceae*; *Araucariaceae*; *Arecaceae*; *Asclepiadaceae*; *Aspidiaceae*; *Aspleniaceae*; *Bignoniaceae*; *Blechnaceae*; *Bombacaceae*; *Boraginaceae*; *Burseraceae*; *Caesalpiniaceae*; *Casuarinaceae*; *Celastraceae*; *Clusiaceae*; *Combretaceae*; *Connaraceae*; *Convolvulaceae*; *Corynocarpaceae*; *Costaceae*; *Cunoniaceae*; *Cupressaceae*; *Cupressaceae*; *Cyatheaceae*; *Cycadaceae*; *Datisceae*; *Davidsoniaceae*; *Dilleniaceae*; *Ebenaceae*; *Elaeocarpaceae*; *Euphorbiaceae*; *Fabaceae*; *Flacourtiaceae*; *Hamamelidaceae*; *Hippocrateaceae*; *Idiospermaceae*; *Lauraceae*; *Lecythidaceae*; *Leeaceae*; *Leguminosae*; *Liliaceae*; *Loganiaceae*; *Lythraceae*; *Malvaceae*; *Melastomataceae*; *Meliaceae*; *Menispermaceae*; *Mimosaceae*; *Monimiaceae*; *Moraceae*; *Myristicaceae*; *Myrsinaceae*; *Myrtaceae*; *Naucleaceae*; *Nyctaginaceae*; *Oleaceae*; *Orchidaceae*; *Osmundaceae*; *Pandaceae*; *Pandanaceae*; *Passifloraceae*; *Pittosporaceae*; *Plumbaginaceae*; *Podocarpaceae*; *Proteaceae*; *Rhamnaceae*; *Rhizophoraceae*; *Rosaceae*; *Rubiaceae*; *Rutaceae*; *Sapindaceae*; *Sapotaceae*; *Simaroubaceae*; *Sterculiaceae*; *Sterculiaceae*; *Symplocaceae*; *Theaceae*; *Thymelaeaceae*; *Ulmaceae*; *Urticaceae*; *Verbenaceae*; *Vitidaceae*; *Winteraceae*; *Zamiaceae* and *Zingiberaceae*.

[83] *Plant schedule (last updated 2014)*, provided by the Frank Zich, Collection Manager, Australian Tropical Herbarium (CNS) and CSIRO National Collections & Marine Infrastructure (NCMI), via email correspondence on 01 March 2024.

[84] In 2024, these classifications are identified in the Australian *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, and in Queensland's *Nature Conservation Act 1992* and *Nature Conservation (Plants) Regulation 2020*.

[85] Note, species within these classifications are subject to change based on relevant legislation. In 2024, this legislation does not allow for protection of these species at Atherton Arboretum.