



AUSTRALIAN NATIONAL
BOTANIC GARDENS

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CANBERRA, AUSTRALIAN CAPITAL TERRITORY

MASTER PLAN

2015 - 2035



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EXECUTIVE SUMMARY

This Master Plan, in response to the Australian National Botanic Gardens (ANBG) brief of July 16 2014, sets out guiding principles for the site over the next period, with a prioritised sequence of works to improve visitation and the visitor experience, increase revenue and facilitate the conservation and expansion of the Gardens' collection – its living plants and seed bank.

The planning in all its aspects has been guided by the Australian National Botanic Gardens' Vision and Mission statements, which set a clear framework for the future:

Vision

Australians value, conserve and appreciate our rich plant heritage

Mission

To inspire, inform and connect people to the Australian flora

The Australian National Botanic Gardens hold an inspiring collection of Australian plants for scientific, educative, conservation and aesthetic purposes, helping scientists and the public understand the history, present day uses and what the future may hold for plants in natural environments. At the same time, the Gardens have to tackle contemporary environmental management issues such as climate change, water management, weed mitigation, protecting against pests and diseases and managing soils. The Gardens have been considered holistically regarding their purpose, content and role in the network of gardens around the world. Defining a strong curatorial mission for plant collections is essential to guide ongoing care and rejuvenation, and the development of support, service and visitor facilities.

The gardens can never be considered capsules in time; living plants grow and community needs and expectations evolve. Similarly, significant tourist destinations, such as the Gardens, have to deliver on contemporary tourism expectations in terms of facilities, interpretation and experiences.

The Plan relates to the infrastructure of the Gardens only – its buildings, roads and paths, site services and access. The collection and landscape management remains under the guidance of the Plan of Management as realised by the expert staff of the Gardens.

A set of key principles are developed in the Master Plan, with strategies for implementation as well as guidance towards required further investigation:

- Display excellence and innovation in the design and alteration of new and existing infrastructures.
- Achieve a distinguished level of sustainability.
- Minimise adverse impacts on fauna.
- Refine visitor circulation and wayfinding throughout the site.
- Minimise ongoing maintenance and funding.
- Clarify staff workflow efficiencies.
- Resolve key occupational health and safety areas.
- Improve user access and facilities.
- Apply a high level of sustainability to visitor and staff amenities.
- Maintain water and energy efficiency to a high level of sustainability.

The new Master Plan provides a framework for all future planning of the Garden's infrastructure, enabling the dynamic change of the Garden over time allowing it to prosper, foster and display long term botanical collections. These collections require a purpose, a narrative, a long term vision that places this garden at the forefront of contemporary gardens world-wide. This purpose will set the direction for these Gardens into this century and beyond.

The planning has defined approaches to the four core precincts of the Gardens:

Northern Precinct: to be consolidated into a new integrated Service Zone, including the new Seed Bank. Issues in this zone will include possible impacts on planted areas, security and safety concerns with visitors, screening less visually appealing facilities from main visitor circulation routes, and managing delivery and service traffic. As this is a relatively remote and inaccessible location for visitors, a new coach drop off and small visitor carpark and entry is proposed here.

Entry and Core Precincts: aims for this area focus on issues of visitor welcome, orientation and circulation, with the ability to present the Gardens in an immediately positive way. With the removal of the lower depot, areas will be released for future development, whilst the removal of service traffic will allow integration and improvement to pedestrian visitor flows. Issues with the current layout include a confusing route from car to visitor centre through to the various garden circuits, the issues of steep topography and accessible circulation, the lack of a 'heart' for the zone, and the outlying location of the café.

Bushland Precinct: this zone, partly conservation-value bushland and partly degraded areas of landfill, can be developed for important new facilities, focussed on eco-tourism and active recreation, celebrating the relatively pristine bushland setting. Issues here include the separation from the main site due to Black Mountain Drive and its associated embankments, affecting both visitors and servicing and management. To link the two campuses, a graded footbridge with shared cycle path is proposed. The issue of bush fire protection and building siting and design will be allied to the task of identifying areas of high conservation value.

Site-Wide Strategies: Overall, the rationalisation of the pathway system to create more intuitive wayfinding and increase visitation to under-visited core attractions is proposed. This will improve the landscape character of the gardens by reducing the perceived dominance of roadways through the site. The future inclusion of the abandoned John Dedman Parkway to the east of the site will allow a closer integration between CSIRO's planned visitor and education core and the ANBG, as well as reaching eastwards to the ANU and Canberra City. Existing bushfire buffers to the west should be retained, whilst high-value collection areas are retained and enhanced.

1.0 INTRODUCTION - THE MASTER PLAN PROCESS

1.1 ROLE OF THE GARDENS

The Australian National Botanic Gardens Master Plan comes at a time when botanic gardens world-wide are questioning existing research and recreational paradigms and focussing anew on messages of conservation, collection management and a renewed interest in meaningful visitor engagement.

The Master Plan aims for a real and viable future for the Australian National Botanic Gardens. Coordinated with government and stakeholder representatives the Plan guides the delivery of a world class botanic precinct, in one of the world's most beautiful settings. The Master Plan aims to create an environment that is engaging at all levels, from the way in which all architectural and landscape design is 'intrinsically interpretive', down to the way in which stories are told through interesting and absorbing interpretive media. Engagement is also a product of programming of buildings and spaces over time, as well as a desired outcome of the stakeholder and community consultation.

Careful and thoughtful appraisal of how people move through landscapes, how these are connected, utilised and where experiences of arrival and departure are heightened is a subtle but critical objective on this site. This extends to the appraisal and siting of infrastructure, roads, access paths, buildings and facilities and to ensure they are fully integrated with their topographic and botanical context.

Further, safe and operationally effective servicing and management is crucial to the ongoing viability of the Gardens, and needs to be holistically integrated into the planning.

UNDERSTANDING OF THE ROLE AND IMPORTANCE OF BOTANIC GARDENS IN A MODERN SOCIETY

Botanic gardens, particularly nationally significant ones, have a multitude of roles to play, beyond their core objectives in research, conservation, collection, display and horticulture. Their iconic role as a representation of a nation's connection, care and stewardship of the environment is juxtaposed with the utilisation of their settings for a wide variety of recreational and cultural pursuits, informal and organised. The consideration and integration of the experiences of locals, gardeners, children, domestic and international tourists and of course staff, is paramount in the master planning process. Each seek different experiences and will take away different memories.

ROLE OF BOTANIC GARDENS AS SCIENTIFIC AND CULTURAL INSTITUTIONS

Botanic gardens are highly valued cultural institutions with missions related to science, horticulture and education, with the primary role to maintain scientific collections of living plants. Worldwide, these organisations have a long and distinguished history as significant contributors to the understanding of our environment, in particular related to plant species, horticulture, plant sciences and conservation.

Over the past two decades in response to key issues such as climate change, there has been a growing recognition of the importance of biodiversity and an increased understanding of the need to protect species and ecosystems to safeguard the world's biological heritage. Botanic gardens and their associated herbaria have therefore become increasingly understood as important centres for biodiversity conservation with global partnerships and alliances becoming the norm.

ROLE OF BOTANIC GARDENS AS A VISITOR DESTINATION

Botanic gardens are also major visitor destinations. Visitors not only come to explore the plant collections in garden beds, conservatories and galleries but also to enjoy the beauty of the landscapes. Increasingly these landscape assets have also been seen as unique locations for events and products such as cinema, shops, cafes and restaurants. These products are now major considerations in creating sustainable business platforms for the work of the gardens.

CORE VALUES OF THE GARDENS

The ANBG have defined a series of core values, which have guided and informed the Master Plan at many levels:

SCIENTIFIC VALUES

The ANBG conducts research into the taxonomy, horticulture and biology of native plant species utilising the extensive herbarium collection linked to the living collection.

The living collection, with its national focus, provides a valuable resource for research into conservation on the impacts of climate change and adaptation of native plants.

The ANBG plays a critical role in holding and disseminating knowledge on native plants.

NATURAL AND CULTURAL HERITAGE VALUES

The ANBG was the first public garden composed of Australian native plants including a large number of rare and threatened plant species. It ensures the preservation of rare genotypes and provides some protection through cultivation.

The ANBG is recognised on the Commonwealth Heritage List.

The Australian National Herbarium includes a collection of preserved plant specimens closely associated with the living collection and has voucher specimens dating back to Joseph Banks' explorations during Captain Cook's voyage to Australia in 1770. The herbarium houses over 8,000 type specimens i.e. preserved specimens nominated by botanists to describe a new plant as the benchmark or standard for the name given to a plant when it is first described.

The ANBG library is a valued resource and covers taxonomy, botany and the horticulture of Australian plants with a significant collection of international publications on cryptogams and orchids.

CONSERVATION VALUES

The ANBG holds a significant living collection, seed bank and gene bank essential for managing the risk of species loss in the wild.

The ANBG provides an urban biodiversity haven with over 100 native bird species having been recorded on the site.

EDUCATION VALUES

The ANBG provides a valued education role for students from primary to tertiary level from across the nation, including horticultural and taxonomic training. The living collection is particularly important for this function.

The ANBG demonstrates design excellence in construction of certain garden features, in particular the Rainforest Gully representing a geographic transect of Australia's eastern ranges, and the rockery area with its carefully composed combination of rocks, pools and running water.

1.2 MASTER PLAN PROCESS

The ANBG Brief set out the following stages for the Master Plan:

STAKEHOLDER WORKSHOPS AND MEETINGS

In consultation with the ANBG, undertake a series of workshops with key ANBG staff and stakeholders to collate ideas, issues and opportunities for consideration during the Master Planning process.

Regular reporting and meetings with the ANBG Project team as required throughout the process.

REFINE BRIEF

Following input from the ANBG and key stakeholders, a refined Brief and project plan is developed that identifies the key issues to be considered in the development of the Master Plan.

CONCEPT PLAN

Development of draft Concept Plans that will be used during the public consultation period.

PUBLIC CONSULTATION

Provision of advice to the ANBG on the consultation process, including provision of presentation material.

Consultation process will be implemented by the ANBG.

MASTER PLAN

Development of draft Master Plan for review by ANBG.

Presentation of final Master Plan to the ANBG.

IMPLEMENTATION PLAN

Development of an implementation plan with indicative costings for each element.



2.0 HISTORY & SITE OVERVIEW

The Australian National Botanic Gardens (ANBG) is an internationally renowned botanic garden and national institution. The ANBG has been growing, studying and promoting Australian plants and related flora for over 40 years, and has stewardship of the world's most comprehensive collection of living Australian native plants. It has a strong international reputation for scientific and horticultural research, and for its important contribution to the understanding, conservation and sustainable use of Australia's plant biodiversity. As a national scientific and educational institution, the ANBG is recognised for its lead role in disseminating knowledge and information about Australian plants.

The ANBG is a Commonwealth reserve managed by the Director of National Parks in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The ANBG is a listed place on the Commonwealth Heritage List under the EPBC Act for its significant heritage values.

The ANBG receives more than 420,000 visitors per year including tourists, education groups and social groups. The ANBG also hosts concerts, exhibitions and educational and community-orientated programs to involve the Canberra community and tourists.

The ANBG is open every day except Christmas Day from 8.30 am until 5 pm.

The ANBG was officially opened in 1970 and the opportunity exists for the Master Plan to become the blueprint for a major capital funding campaign to focus on the 50th anniversary of the ANBG in 2020.

2.1 SITE OVERVIEW

The ANBG occupies an 85 hectare site on the lower eastern slopes of Black Mountain in Canberra and is a valuable part of the city's landscape. It is an integral part of a group of national research institutions including the Australian National University (ANU) and CSIRO.

The ANBG site has several distinctive features including its comparative steepness and elevation and its vistas towards Canberra. The site's topography is characterised by a series of five broad ridges that fan out to the east and south-east and are separated by four incised gullies. The site's eastern and northern sections are protected from prevailing westerly winds.

In the upper half of the northern extension and in the southern extension the steep gradients, ranging from 25 to 60 per cent, constrain pedestrian and vehicular movement, site access and the building of infrastructure and have implications for the use and development of these areas. The remnant open forest in these areas, dominated by *Eucalyptus rossii* and *E. macrorhyncha*, is retained and managed for conservation, wildlife habitat and education.

The living collection is displayed across 35 hectares of the 85 hectare site. The topography of the site's central part provides a range of opportunities, and favourable microclimates, for displaying and managing the diverse living collection that has been developed to showcase Australia's flora and to educate and raise awareness about its biological diversity. The collection showcasing Australia's flora and focuses on several broad themes including taxonomy, ecology and geography, ornamental, conservation and ethnobotany. The collection displays about one-third of all Australian flowering plant species and is used to interpret iconic plants, such as eucalypts and wattles, and different Australian landscapes.

The ANBG is a haven for native fauna, especially birds. The site is also a haven for the local community and tourists seeking a place for passive recreation, peaceful reflection or to socialise, as well as a place to learn about Australian plants. It serves as a cultural recreation, entertainment and exhibition venue. An annual program of events attracts a diverse audience and provides opportunities to inspire interest in Australia's unique flora and fauna in an accessible nature based setting.

The ANBG is rated as a bush fire prone area, and a regime of hazard reduction burns together with a boundary sprinkler system are used to minimise the impacts of bush fires.



AUSTRALIAN NATIONAL BOTANIC GARDEN CONTEXT



FIGURE 1

2.2 PLANNING AND GOVERNANCE

ANBG MANAGEMENT PLAN 2012 - 2022

The ANBG Management Plan describes how the ANBG will be managed for the next ten years, both as a Commonwealth reserve under the EPBC Act and as an institution, playing a national role through the science and research activities associated with the knowledge and assets within the ANBG.

The management is structured around nine goals. The goals are:

- Manage the national botanic garden to showcase Australia's plants.
- Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management.
- Create an inspirational place for enjoyment and learning.
- Engage communities in valuing and conserving Australia's natural and cultural heritage.
- Increase knowledge of Australian flora through outstanding research activities.
- Be the gateway for knowledge about Australian plants.
- Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations.
- Grow as a national institution.
- Demonstrate environmental best practice and sustainable management.

The Management Plan highlighted a range of potential projects for consideration during the Master Planning process that includes:

- development of an integrated works centre/depot
- co-location of the visitor centre and shop and rationalisation of associated precinct facilities in and around the existing café
- development of an interactive education garden for children with the aim of developing an enduring appreciation and interest in plants and gardens
- construction of a conservatory and support glasshouses
- development of loop paths from the main path
- development of an alpine garden

HERITAGE STATUS

The developed gardens of the ANBG are listed in the Register of the National Estate. The National Estate is defined in the *Australian Heritage Commission Act, 1975*, as:

"those places, being components of the national environment of Australia, or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations, as well as for the present community."

The Register of the National Estate is the national list of all those parts of Australia's natural, historic or cultural heritage which should be conserved.

The Heritage Commission in its Statement of Significance for the site lists the principal attributes of the gardens. These are:

- the cultivation of rare and endangered native plant species;
- the research and teaching functions based on extensive, integrated herbarium and living plant collections which is rare on such a scale in Australia;
- the high quality landscape setting, and
- the degree of technical achievement exhibited in the establishment and construction of the gardens.

In terms of Commonwealth Heritage listed places, the EPBC Act heritage protection provisions (ss.341A to 341ZH) relevantly provide:

- For the establishment and maintenance of a Commonwealth Heritage List, criteria and values for inclusion of places in the list and management principles for places that are included in the list.
- That Commonwealth agencies must not take an action that is likely to have an adverse impact on the heritage values of a place included in the Commonwealth Heritage List unless there is no feasible and prudent alternative to taking the action, and all measures that can reasonably be taken to mitigate the impact of the action on those values are taken.
- That Commonwealth agencies that own or control places must:
 - i. Make a written plan to protect and manage the Commonwealth Heritage values of each of its Commonwealth Heritage places.
 - ii. Prepare a written heritage strategy for managing those places to protect and conserve their Commonwealth Heritage values. The strategy must address any matters required by the EPBC Regulations, and not be inconsistent with the Commonwealth Heritage management principles.
 - iii. Identify Commonwealth Heritage values for each place, and produce a register that sets out the Commonwealth Heritage values (if any) for each place (and do so within the time frame set out in their heritage statements).

PLANNING

The National Capital Authority (NCA) requires, that in the absence of an approved Master Plan for the gardens, separate and specific approval is required for any development works including the modification, demolition or construction of buildings, roads, services and landscaping.

With completion and adoption of the Gardens' Master Plan the statutory process will be streamlined facilitating efficient approval or development initiatives. Under the current legislative framework once the master plan is adopted new developments are conditional only upon receipt of Works Approved documentation from the NCA.

DEPARTMENT OF THE ENVIRONMENT - APPROVALS

The Department of the Environment designs and implements the Australian Government's policies and programs to protect and conserve the environment, water and heritage and promote climate action. The environmental framework is being delivered under four pillars:

- Clean water
- National heritage
- Clean air
- Clean land

It administers the *Environment Protection and Biodiversity Conservation Act 1999*, and the *Australian Heritage Council Act 2003*.

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of national environmental significance.

CENTRE FOR AUSTRALIAN NATIONAL BIODIVERSITY RESEARCH (CANBR)

The CANBR is a collaborative venture between the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Director of National Parks, the ANBG, with close links to the Department of the Environment. A key facility of CANBR is the Australian National Herbarium, located adjacent to the Gardens on the CSIRO campus. It is jointly managed by CSIRO and the Australian National Botanic Gardens. The Herbarium is responsible for the scientific integrity of the Gardens' plant labeling and manages the national plant name lists for Australia's botanical community.

The Herbarium's Vision is "Expanding knowledge of Australian plant biodiversity, scientific excellence, leadership and innovation in plant systematics, and conservation and evolutionary biology". The Australian National Herbarium arose from the amalgamation over the years of several herbaria managed by the Commonwealth Government. These included several CSIRO herbaria, the Forest Research Institute Eucalypt Collection and the Australian National Botanic Gardens Herbarium. The CSIRO's core collection, previously known as 'Herbarium Australiense', was renamed 'Australian National Herbarium' in 1984. The collection of the Herbarium, comprises almost 1.2 million specimens, including about 8215 type specimens.

2.3 VISITATION

The following graphs set out the total annual visitation of the ANBG, and shows a relatively consistent pattern, with no upward trend despite the growing tourist and education visitation to the Capital. 2011 data showed that visitation levels for tourists (55%) and local residents (45%) were relatively close, and this pattern is maintained today. In addition to this point, it was noted that family groups were the most popular visitors, with one third of groups visiting the gardens including children.

Over the last five years the gardens have seen a large decline in visitor numbers, losing 10,000 visitors a year. The Winter months see substantially lower visitor numbers than the months of Spring, Summer and Autumn.

More detailed statistics related to the various parts of the Garden are illustrated in Figure 7. The drawing highlights that the key areas undervisited are the Sydney Basin and Rainforest Collection. Areas of high visitation are the Cafe and the recently completed Red Centre Garden. The drawing also highlights trail usage with the southern parts of the Primary Trail attract the greatest percentage of visitors in comparison to the secondary trails.

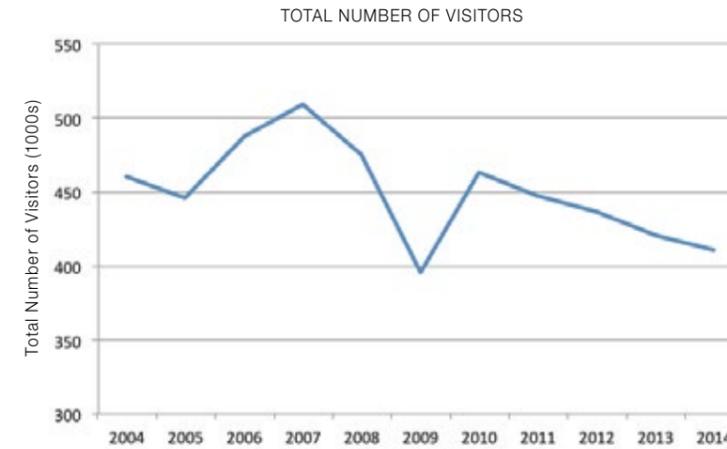


FIGURE 2A

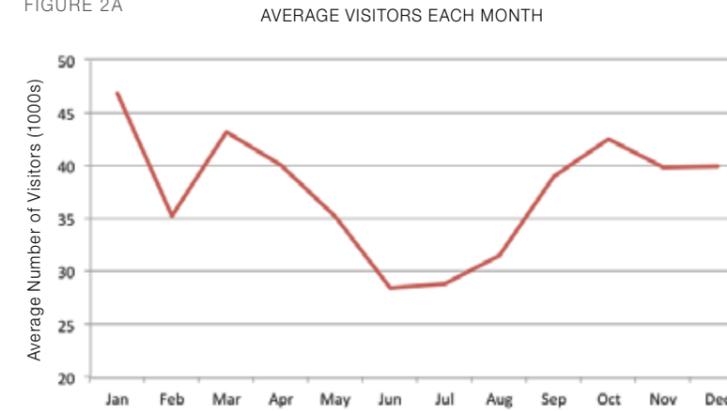


FIGURE 2B

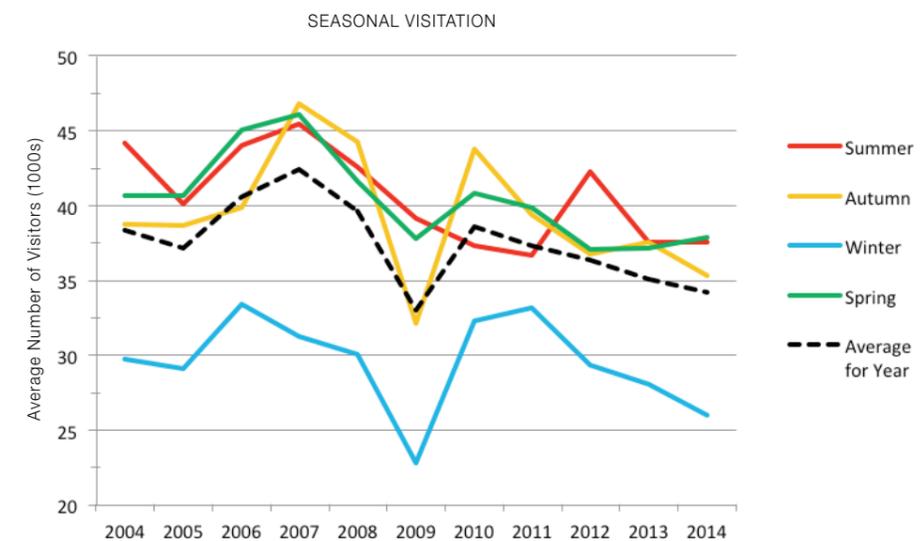


FIGURE 2C

3.0 LANDFORM, CLIMATE & ECOLOGY

This section is to be read in conjunction with the plans that form the remainder of Chapter 3.

CLIMATE

A relatively dry, continental climate, Canberra experiences warm to hot summers with winters becoming cool to cold. The hottest conditions are experienced in January with a mean daily temperature maximum of 27.7°C, 10 days averaging 30°C or more with 2 days of 35°C or more. Surrounding mountain ranges and warm to hot summer temperatures combine to create higher incidences of thunderstorms, with 19 thunderstorm events reported on average between October and March compared to an overall annual average of 23 days. Winters experience a high incidence of fog and frost, the coldest month July, averaging a daily maximum temperature of 11.2 °C with a min of -0.2 °C. An average of 95 frosts occurs between April to October (58 of those within the winter months) with an annual average of 99 frost events. The Gardens' more protected gullies are relatively frost free and provide the setting for the gardens warmer and more humid living collections, such as the Rainforest and Sydney Region Flora.

Despite the cool winters and high occurrence of fogs, Canberra receives a high level of sunshine with winter often contrasting fog and frost with days of clear sunshine and light winds. Winter days averaging 5-6 hours mean sunlight against an annual average of 7.6 hours per day (summer on the other hand receiving 9 hours sunshine per day). Rainfall averages 629 mm per annum, with 108 rain days on average relatively distributed throughout the year. The wettest month is typically October receiving 65.3 mm, with winter typically experiencing a dry start, June on average the driest month with 39.6 mm. Winds are not considered an issue, with 25 days of strong wind per year, predominantly experienced in the late winter / spring months with 13 of these occurring between August and November.¹

It is expected that the Gardens will not escape likely impacts of climate change, with such events as prolonged drought and increased intensity and frequency of storm activity being monitored through, and in the maintenance and study of, the gardens collections and infrastructure.

LANDFORM

Set amongst the lower slopes of Black Mountain, the Gardens extends across 85 hectare of hill ridge and protected gully. The site falls into three broad categories; 1. curated garden collection, 2. remnant and peripherally vegetated areas, and 3. botanic gardens and associated institution infrastructure.

In establishing the 35 hectare of formalised gardens that constitute the central core, garden spaces for recreation and occupation were situated on the relatively flat grades, with garden beds arranged along the slopes to maximise the usable space, and reduce run off and loss of rainfall from the site. The ANBG central core situates amongst the flattest terrain of its location. This hosts the majority of the built infrastructure. The range of microclimates provided by the central core land morphology provides host to the wide range of curated plant collections from Australia's varied climatic regions, and sub-regions, and as such is the most manipulated and manufactured. The Eucalypt lawn offers an instance of the remnant open forest canopy, set on a gently sloping plane of open grassed parkland well connected by the site's trails, which run parallel to site contours promoting a sound walking experience for all abilities.

Steep enclosed gully landscapes extend out from this central core, forming linear drainage corridors that offer environments of vegetation lush in form and texture and dense closed canopies that create an immersive and inviting experience of greenery. The micro-climate in these gullies is generally moister, and more constant, providing a markedly cooler environment in summer. Elevations experienced atop site ridgelines provides vantage points across the Canberra landscape, with sightlines provided over lower canopies and offered through selectively removed vegetation of the lower to middle stratum. The northernmost terraces of the central core feature many such possible vistas. The combination of ridgetop and gully floor acts to alternately create constricted and expansive view corridors throughout the site.

The Bushland Precinct is composed of stoney upper slopes south of Black Mountain Drive, characterised by harsh loose stones and rocky outcrops that constrain the woodland vegetation.²

ECOLOGY

Situated at the Eastern most extent of a range of parks, conservation and nature reserves extending north west to the National Arboretum, the ANBG (comprising the Northern Precinct, Central Core and Bushland Precincts) covers a vast and significant ecological landscape. The Australian National Botanic Gardens collection contains the world's most comprehensive collection of Australian native plants.³ This collection alone hosts one-third of the known flowering Australian native plant species, and approximately half the known eucalypt species. Additionally, the site provides host to the Australian National Herbarium and Centre for Australian National Biodiversity Research.

The predominant vegetation typology on site is of a dry sclerophyll open forest, that continues out into the surrounding Canberra Nature Park and reserves. Plant collections within the garden are largely curated according to ecological groupings and region of natural occurrence with most species largely not endemic to the site.

The vegetation on the Bushland Precinct's stony upper slopes results in smaller more densely populated woodland contrasting with the mid to lower slopes remnant stands of open forest. Lower grassy slopes provide views across Lake Burley Griffin and Parliamentary Triangle, with a grass understorey and introduced trees and shrubs that transition to the exotic plantings of orchard and pines in the lowland. Weeds feature heavily throughout, especially thickets of *Acacia baileyana* that often provide the only sense of enclosure. The south facing slopes feature relatively steep slopes that support a natural open forest community of *Eucalyptus macrorhyncha* over an understorey of grassland and shrubs. North facing slopes are relatively drier and dominated by an open *Eucalyptus rossii* community largely determined according to topographical profile, with lightly shaded grass and shrub understorey.

A bush buffer zone runs along the sites peripheral western boundary amongst steep often inaccessible terrain, and contains remnant open forest community with instances of minimal disturbance.

WATER CONSERVATION

The role of water, its retention and its distribution is of crucial importance in the ongoing planning and maintenance of the Australian National Botanic Gardens. Annual rainfall at present averages 629mm per annum with an average annual evaporation rate of 1677mm, with the effects of a changing climate forecast to see an increased occurrence in prolonged drought conditions and intense rainfall downpour and storm events. Such scenarios pose a significant challenge in dealing with the efficient retention, and just as importantly, distribution of water resources.

A forecast increase in the incidence of days greater than 35°C and a warming of average temperatures poses a risk to the plant collection through potential heat stress and unavailability of water through increased evaporation. The threat of collection damage due to an increase in drought and grazing pressures is real and posed by both native and feral animal species alike. An increase in intense downpours poses the challenge of adequately retaining water, and avoiding the added ramifications of damage through erosion and direct impact.⁴

1. Bureau of Meteorology. <http://www.bom.gov.au/nsw/canberra/climate.shtml>

2. Hassell Group, 1992. Australian National Botanic Gardens Development Planning Guide. Prepared for the Australian National Botanic Gardens, Canberra

3. Director of National Parks, 2010. Australian National Botanic Gardens Climate Change Strategy 2010 – 2010

4. Hyder Consulting Pty Ltd 2008. The Impacts and Management Implications of Climate Change for the Australian Government's Protected Areas. A report to the Department of the Environment, Water, Heritage and the Arts and the Department of Climate Change. Department of Climate Change, Canberra, Australia.

CURRENT SITE OVERVIEW



FIGURE 3

01 Event Space - Eucalyptus Lawn



05 Grassy Woodland Entry Trail



02 Red Centre Garden



06 Entry To Pathways



03 Rainforest Walk



07 Bushland Precinct



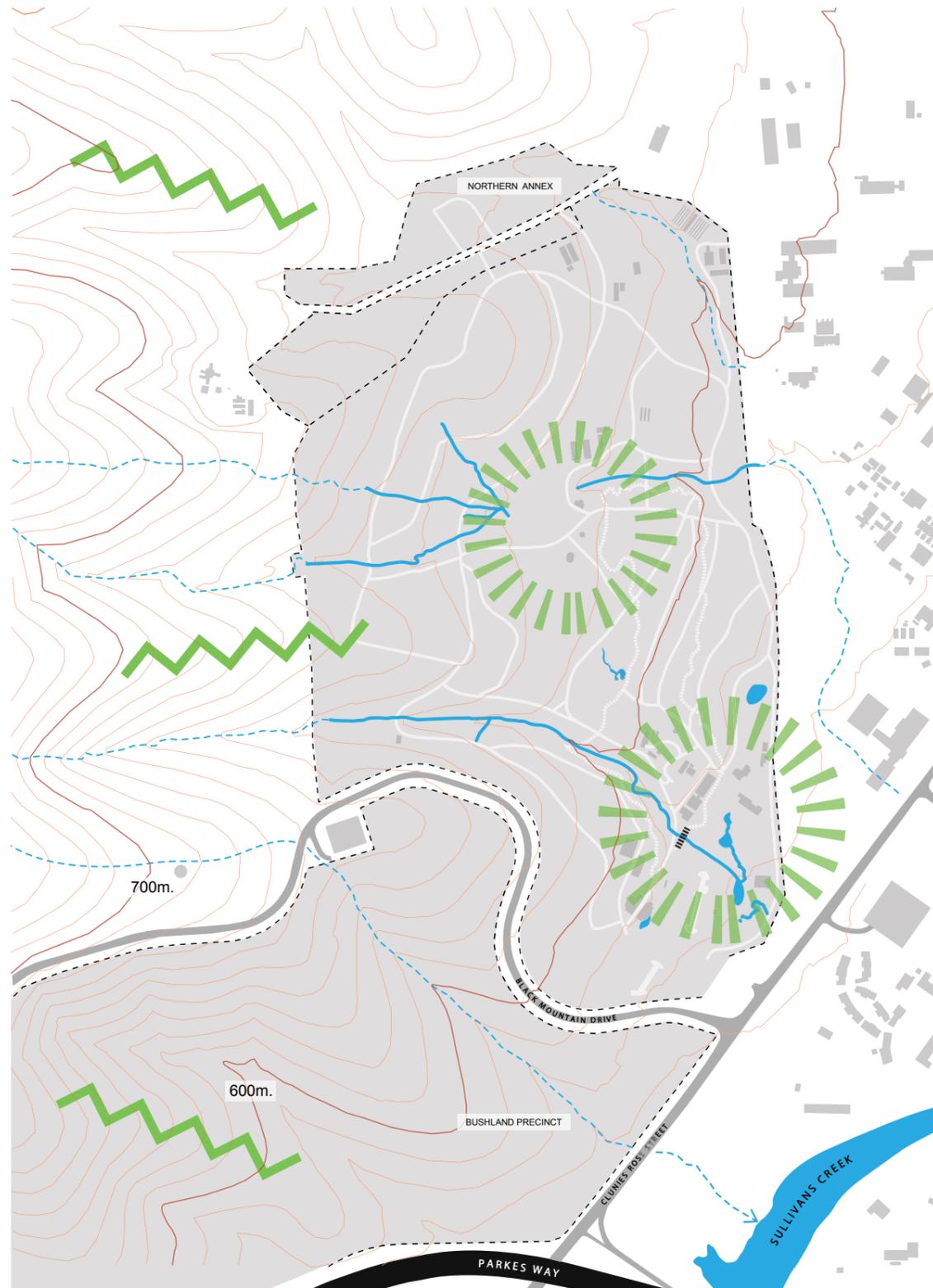
04 Main Entrance



08 Amphitheatre



TOPOGRAPHY



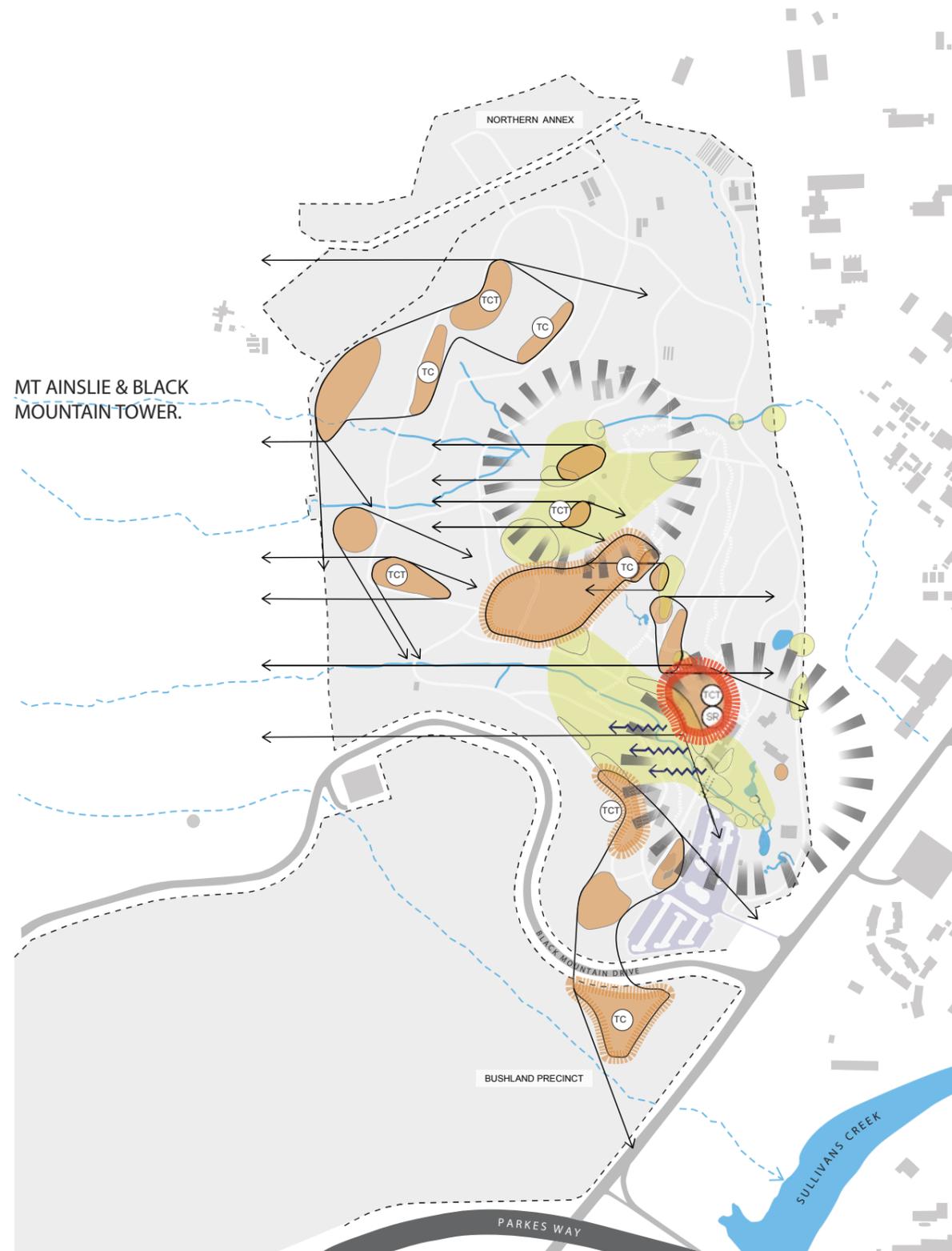
- Contours at 100m Intervals.
- Contours at 10m Intervals.
- Watercourse
- - - - - Empties to Sullivans creek
- Waterbodies
- ⊙ Expanses of flattened terrain.
- ~ Ridgelines.
- ▬▬▬▬▬ Bridge
- ⋯ ANBG Boundary

COMMENT:

- ANBG Central Core sits amongst the flattest terrain on the site
- Ridgelines provide vantage points however they have constricted view corridors
- Most trails are parallel to contours which promotes a good walking experience for all abilities.

FIGURE 4

VIEWS



- Views beyond the ANBG.
- Direction of Viewshed.
- Internal viewsheds.
- Internal viewpoints.
- Key internal Points lacking strategic orientation & wayfinding.
- Provide the best vantage point over Canberra city with views to Parliamentary Zone and Lake Burley Griffin.
- Potentially stunning views to Mt Ainslie and Canberra city.
- Limited visual and physical connection into highly valued Rainforest Walk.
- Tree canopy thinning needed to realise full view potential.
- Tree canopy removal needed to realise full view potential.
- Site redevelopment needed to realise full view potential.

COMMENT:

- Despite an elevated location, views to Lake Burley Griffin and beyond are limited.
- Views to Black Mountain Tower provide an opportunity for distant landscape views.
- Open landscape views within event lawns at Eucalypt Lawn and Cafe Lawns are highly valued.
- There are limited views of highly valued Rainforest Walk.
- There is the opportunity of views to Lake Burley Griffin from Bushland Precinct ridgelines.

FIGURE 5

BUILT INFRASTRUCTURE - EXISTING

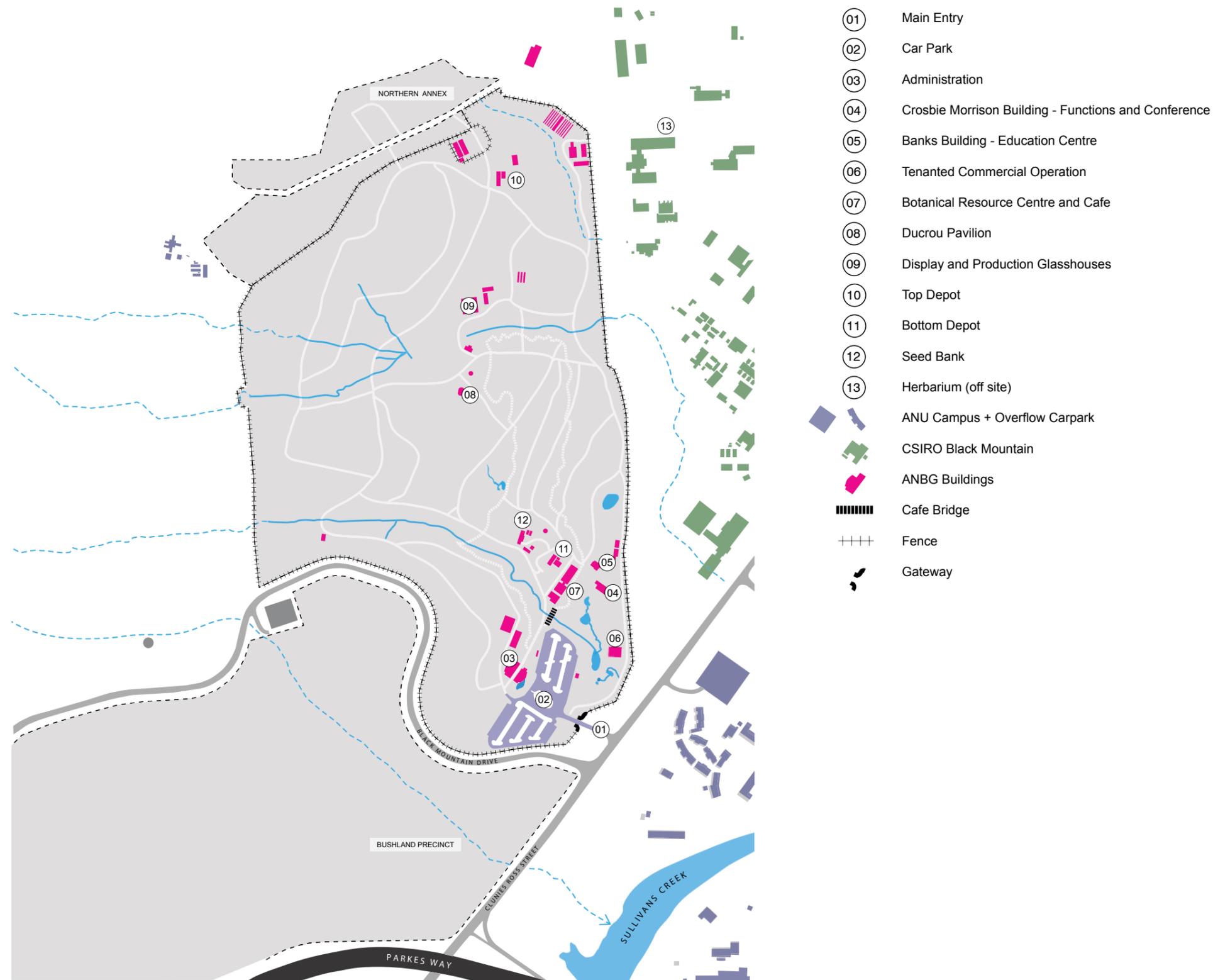


FIGURE 6

COLLECTION VISITATION

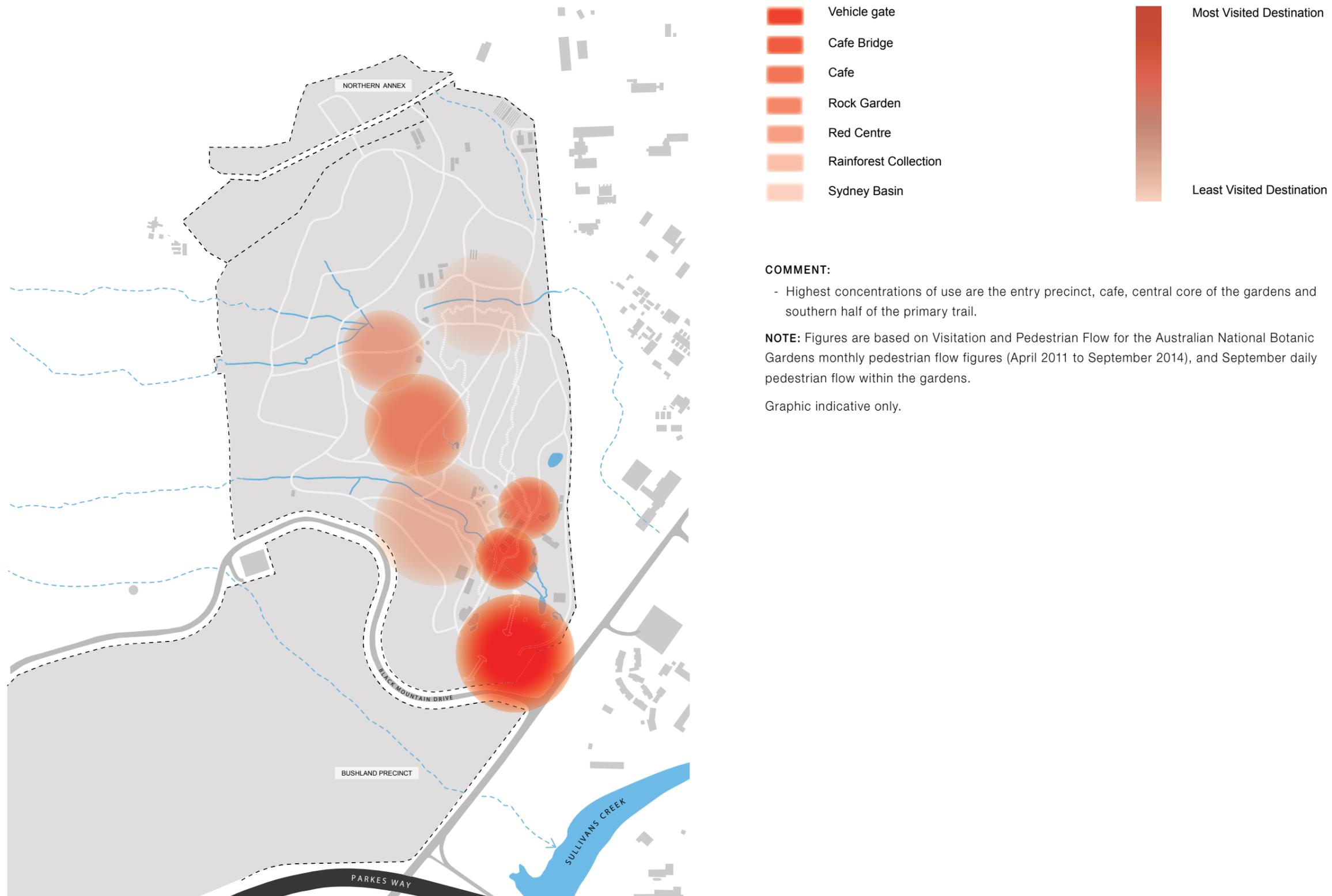


FIGURE 7

4.0 MAJOR CONSTRAINTS & ISSUES

KEY ISSUES

There are many key objectives of the ANBG Master Plan that can be summarised into the following key items:

- Consolidation of facilities including maintenance areas and staff accommodation.
- Providing spaces capable of holding events.
- Providing a trail network for a wide range of age groups and capabilities.
- Providing a gateway entry experience offering a sense of arrival.
- Developing guidelines for a consistent design approach.
- Renewing the Garden's ESD focus.
- Providing learning and recreation experiences for all age groups.
- Developing strategies to integrate public art.
- Developing accessible high profile attractions.
- Increasing sitewide flexibility for all programs, events and programs, including safe night-time operation.
- Meeting standards for accessibility.
- Improving facilities for school and tour groups.
- Improving wayfinding and visitor orientation.
- Integrating the long term development of landscape, access and built facilities.
- Strategising the expansion of the seed bank and research and collection facilities.
- Improving public transport connectivity and infrastructure
- Developing tenanted commercial operations
- Developing a precinct which partnerships with the National Arboretum Canberra, ANU and CSIRO

The combination of these elements as a whole offers a great opportunity to develop ANBG's national role as well as its capacity as a regional attraction; one that complements Canberra's dynamic and vibrant community.

In more detail, the ANBG brief has identified a number of issues and aspirations to meet them. The Master Plan process has developed strategic responses to these issues, as set out in the the follow tables.

PRECINCT ISSUES

ISSUE AS IDENTIFIED BY ANBG AND THE MASTER PLAN PROCESS	ANBG ASPIRATION	MASTER PLAN STRATEGY	NOTES
Clunies Ross Street	The ANBG Master Plan provides the opportunity to update Clunies Ross Street into a connecting boulevard through the ANBG, CSIRO, and ANU campuses.	The Master Plan develops a new road way within the ANBG that facilitates new public transport infrastructure, safe vehicle turning lanes, updated footpaths and pedestrian crossings.	With an undeniable increase in visitors to the area in coming years, traffic conditions will change dramatically especially during weekends and holiday periods. The new road must be designed to cope with expected vehicle congestion associated with carparks and tour groups.
CSIRO Campus Redevelopment	Increased collaboration with CSIRO for scientific research and shared facilities.	The updated CSIRO campus may be visible from the New Core Precinct of the ANBG. It will be beneficial to the ANBG to grow species in selected areas in order to avoid interrupted views of the gardens.	
Links to National Arboretum, ANU and the City	Increased linkages via walking and cycle path networks.	To develop new walking trails between the NAC and the ANBG, new cross-campus connections with ANU and an updated public transport plan connecting the City with the ANBG.	
TAMS Road Reserve between ANBG and CSIRO	Integrate this land to form part of the ANBG enhancing its amenity and use towards expanding the living collection.	To redesign this land in a way that forms a clear boundary the ANBG and the TAMS reserve whilst providing greater expanse for the living collection.	Any future development will require resolution of transport needs and land ownership.
Public Transport	The new developments aim to instate a permanent and effective transport solution that caters to all demographics.	This is developed in the ANBG Master Plan, now in the early stages of implementation.	

SITE-WIDE ISSUES

ISSUE AS IDENTIFIED BY ANBG	ANBG ASPIRATION	MASTER PLAN STRATEGY	NOTES
The ANBG's built assets have been mostly developed in an adhoc way over the last 40 years without a consistent design approach.	All new developments demonstrate excellence in design and use a consistent design approach that reflects the values of the ANBG.	All new developments demonstrate excellence in design and use a consistent design approach that reflects the values of the ANBG.	The Master Plan shows a layout and indicative character for the new Core Facilities - cafe, function centre and visitors' centre. These should be tested against more detailed functional briefing and benchmarking.
There is limited scope for the expansion of existing and new onsite licensees due to the existing infrastructure design, location and capacity.	The Master Plan provides a range of new opportunities for the ANBG to deliver better services to visitors, attract and engage commercial partnerships and generate sustainable revenue sources.	Sites are identified where integrated and compatible facilities can be developed in partnership with the ANBG.	Commercial licenses and leases could be targeted to particular sectors to improve visitation, especially for younger age groups.
The need to minimise energy use and improve water recycling/efficiency measures in all new developments.	New developments integrate innovative whole-of-life sustainable energy efficiency principles as part of their design with a focus on the reuse of water.	ESD strategies for the site-wide conservation of water are developed, but require detailed analysis by suitably-qualified consultants. ESD strategies for buildings are defined, dependent on a case-by-case feasibility.	
The majority of ANBG visitors are 50+ and there are limited attractions to encourage visitation by children and young adults.	New developments attract a younger demographic and provide learning experiences for children and recreational/social experiences for young adults.	The Master Plan develops improved facilities for children including a Nature Play Terrace, consolidated Education precinct and opportunities for adventure experiences in the Bushland Precinct. Young adults are catered for by improved Event Space and a curated event program catering towards young adults and teenagers.	As shown by many comparable cultural institutions, programming will be critical to the engagement of Young Adults and Teenagers. The addition of sunset and evening events during weekends in summer can help to increase young adult numbers.
The need to integrate opportunities identified in the ANBG Public Art Master Plan into future developments.	New developments are enhanced by site specific public art to add layers of meaning and content to the ANBG.	This is developed in the ANBG Public Art Master Plan, now in the early stages of implementation.	The Public Art Master Plan can be integrated with the briefs for new buildings and facilities.
Staff are accommodated in various precincts and buildings throughout the site that creates work flow and communication issues.	Staff accommodation is consolidated together in functional groups providing for an efficient workforce and effective use of space and resources.	A new consolidated Administration Zone is provided in the former Visitors Centre and the adjacent Administration and Botany Buildings, now functionally linked. Service staff are consolidated in the new Northern Depot and existing Nursery.	
Several of the lawn areas have an inadequate design or facilities to meet the growing demand for outdoor functions and events.	Open space areas are enhanced to meet the requirements for a diverse range of functions and events.	A new 2000 person capacity Amphitheatre is proposed with good service and catering access, and excellent proximity to the Core Area with its accessible pathways and car park.	The Amphitheatre can include shade structures and a permanent service connection to the stage. In large event mode weather proof stage and toilet facilities will be required.
There are limited accessible pathways linking the ANBG with the adjacent precinct.	The Master Plan promotes opportunities for increased pedestrian/cycle linkages with CSIRO, Australian National University, Lake Burley Griffin, Civic, National Arboretum etc.	The integration of the redundant TAMS Road Reserve between ANBG and CSIRO will facilitate not only cross-campus connections to CSIRO and ANU, and provide a buffer to the ANBG to reduce the impact of the more intensive development proposed by the unification of CSIRO's facilities on its adjoining site. The compatible development of visitor facilities in the Bushland Precinct will include improved walking trails to link Black Mountain and the National Arboretum, as well as the Lake Burley Griffin walking and cycle path system.	

ISSUE AS IDENTIFIED BY MASTER PLAN	MASTER PLAN ASPIRATIONS	MASTER PLAN STRATEGY	NOTES
Circulation patterns are not easily understood by visitors, and key attractions consequently have low visitation.	The Gardens should encourage easily-understood trails to suit a variety of visitors that encompass major attractions.	The visitor sequence is orchestrated from an enhanced Orientation Plaza, a clear address for the Visitors Centre, and a series of long, medium and short trails linking key attractions.	A new visitor map must be designed to assist in the guidance of visitors around the Gardens.
The Visitors Centre is not easily reached, and is remote from the Cafe.	The Visitors Centre should be the first point of call and located close to the start of the visitation trail. It should function in an integrated way with the Cafe.	A new grouped Core Area includes co-located Visitors Centre and Cafe, easily reached from the new Orientation Plaza and offering views into key Garden areas,	
Many areas seem dominated by roadways.	A functional system of service access routes should be provided, with separated pedestrian pathways that link key areas.	The Plan provides for the closure and/or reconstruction of duplicated and unnecessary roads that will maximise space for the living collection, and the development of new circuit routes.	
Many visitors spend little time in the Gardens, or visit areas beyond the immediate core.	Major garden attractions and viewpoints should be easily reached on comprehensible pathway systems, catering for short, medium and long visits.	The relocation of the Visitors Centre and Cafe will improve access to many ANBG attractions, whilst the reconfiguration of the pathway system will encourage increased visitation. The new northern carpark and walking trail in the Bushland Precinct will provide opportunities for increased exploration of the ANBG.	

CORE PRECINCT

The Core Precinct (Figures 15-26) contains the majority of visitor amenities within the Gardens and includes a variety of buildings that have been added since the opening of the Gardens in 1970. This precinct currently contains the main entrance, public car park, visitor centre, cafe, Ellis Rowan building (offices), Banks Building (education centre), Crosbie Morrison building (conference space), Franklin building (licensee business) and administration building, southern horticulture depot and various lawns used for small events and recreation.

ISSUE AS IDENTIFIED BY ANBG	ANBG ASPIRATION	MASTER PLAN STRATEGY	NOTES
Current facilities do not meet standards or capacity for functions such as weddings and corporate events.	A new facility is developed that provides enhanced Cafe services and increased function capacity that adds to the visitor experience and also provides a sustainable revenue stream.	The proposed new Cafe would contain café seating, a 120 seat function room, and open to the new Amphitheatre to provide high quality visitor services as well as catering for a wide range of functions and events.	The function room will be situated adjacent to the Cafe. Operable walls separating the two spaces will allow both programs to increase floor space to a maximum if required.
The Visitor Centre is not located as a gateway to the site and has limited space for interactive displays showcasing the ANBG's features.	A new facility is developed that is located as a gateway to the visitor experience providing a range of functions such as information on the ANBG, retail, exhibition and other uses.	The proposed location for the Visitors Centre will fulfil its gateway role, and unite with the Heritage Pavilion and the new Cafe to form a cohesive visitor core.	
The entrance to the ANBG and car park does not provide a high quality sense of arrival appropriate for a nationally significant botanic garden.	The entrance to the ANBG provides a high quality sense of arrival and orientates the visitor to commence the journey through the Gardens. Parking areas have minimal visual impact on the surrounding environment.	With a new adjusted layout, the entry road will provide a garden immersion prior to the arrival at the focal Orientation Plaza, and then lead drivers to the parking areas. The hardscape can be softened with intensified planting.	
The current display glasshouse and orchid collection is located to the north of site and is difficult to access for many visitors.	The development of a high profile attraction such as a conservatory is integrated within the Core precinct.	A site for a new 400 sqm Conservatory is provided close to the other Core Area facilities and able to be serviced for plant rotation and functions.	This will rely on appropriate funding, but is likely to be a significant revenue generator and attraction for visitors.
There is increasing demand and opportunities for increasing afterhours activities.	New developments provide a safe and functional environment for regular afterhours and nighttime public programs, events and functions.	The Core Area is compact enough for a new installation of lighting to allow a wide range of event and garden areas to be accessed after hours.	
Public amenities do not cater for large groups such as tour and school groups.	New facilities incorporate amenities to cater for tour and school groups.	The Core Area toilets located inside the Visitor Centre will be sized to accommodate coach-sized groups.	Additional toilets will be required for events, and there may be benefit in constructing some new permanent facilities.
There is inadequate wayfinding from the public car park to key ANBG attractions.	The Master plan addresses key wayfinding issues in the Core Precinct and encourages exploration of the living collection.	By developing the access routes and removing unnecessary paths and roads, the entry sequence will be clarified and simplified, with an intuitive route from carpark to entry plaza to Visitors Centre and onwards to the key Garden attractions.	
There is a lack of integration from some key landscapes that interface with visitor amenity areas e.g. rainforest is bordered by bitumen internal roads.	Future developments provide for an integration between landscape features, pathways and facilities.	By analysing service demands, the most intrusive roads can be removed or narrowed and softened to serve as pedestrian access with occasional use by service vehicles.	

ISSUE AS IDENTIFIED BY MASTER PLAN	MASTER PLAN ASPIRATIONS	MASTER PLAN STRATEGY	NOTES
The Rainforest Gully is poorly visited, and there is limited connection from north to south.	An integrated Rainforest Gully with generous access and clear visibility will be a major drawcard for the Gardens especially in summer.	By removing the infilled road at the present café, the Rainforest Gully can be reconnected, with new lookouts and access paths, and a vista from the new Visitors Centre.	

NORTHERN PRECINCT

The Northern Precinct (Figure 27) currently comprises the Production Nursery, Northern horticulture depot, Trades depot and related office space. In 2012 concept plans were developed for a new seed bank that would be located near the nursery and an outcome of this project is the consolidation of all maintenance depots into the Northern Precinct (including Southern horticulture depot in Core Precinct).

ISSUE AS IDENTIFIED BY ANBG	ANBG ASPIRATION	MASTER PLAN STRATEGY	NOTES
Several maintenance depots are located throughout the site including one located next to the Cafe.	A consolidated maintenance depot is developed in the Northern Precinct providing operational efficiencies and making high profile areas available for other uses.	Sites have been identified for the relocation and optimisation of the Depot facilities, with excellent truck access not interrupting visitor activities.	
The current seed bank facility is nearing capacity for seed storage and research capabilities.	The development of the New National Seed Bank will enhance the ANBG's capacity and capability in seed research and seed collections.	The proposed site will allow close linkages with the Nursery and the Centre for Australian National Biodiversity Research located nearby at CSIRO.	

ISSUE AS IDENTIFIED BY MASTER PLAN	MASTER PLAN ASPIRATIONS	MASTER PLAN STRATEGY	NOTES
There is poor visitation and access to the Northern Precinct.	A new Northern Entry, coach drop off and car park will increase the accessibility of this area.	A location for the new Northern Entry, coach drop off and car park is accessible off Frith Road.	
The glasshouses are in poor condition and the Display Glasshouse has reached the end of its economic life.	In the medium term working glasshouses are required that improve energy use and operational costs.	By constructing a new energy-efficient Conservatory the production glasshouses can be more effectively integrated within the nursery.	

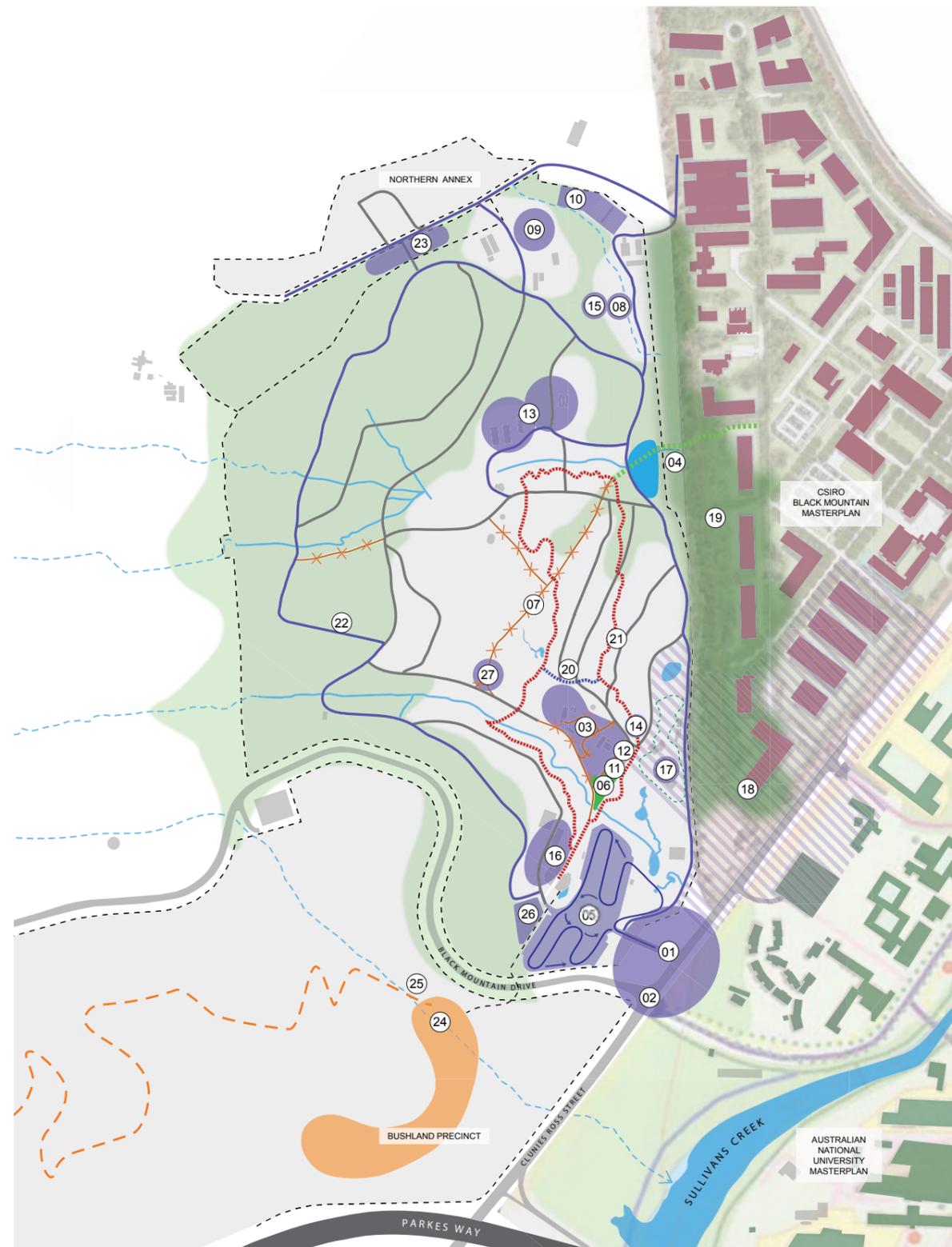
BUSHLAND PRECINCT

The Bushland Precinct (Figure 29) includes 40 hectares of bushland to the south of Black Mountain Drive. This area is undeveloped and part of the project is to develop a range of new concepts for developments that would enhance the recreational experience for visitors.

ISSUE AS IDENTIFIED BY ANBG	ANBG ASPIRATION	MASTER PLAN STRATEGY	NOTES
Limited routes exist for pedestrian access from the Core Precinct to the Bushland Precinct.	An underpass or overpass is developed to facilitate safe pedestrian access from the Core Precinct to the Bushland Precinct.	An overpass over Black Mountain Drive offers the most cost-effective connection.	
The Bushland Precinct provides a limited range of visitor experiences.	The Master Plan proposes a range of opportunities in the Bushland Precinct for new recreational/educational experiences.	An environmentally-sensitive range of visitor facilities and attractions is proposed for the Bushland Precinct, including a High Ropes Course and an Eco-Tourism facility.	

ISSUE AS IDENTIFIED BY MASTER PLAN	MASTER PLAN ASPIRATIONS	MASTER PLAN STRATEGY	NOTES
Links are required from the ANBG to the Arboretum, the Lake and Black Mountain.	By developing trails in the Bushland Precinct, access can be improved to sites beyond the ANBG, and strategic partnerships achieved.	A range of walking trails have been identified for the Bushland Precinct, connecting the new access point off Black Mountain Drive, the Overpass and the trails to the National Arboretum and up Black Mountain.	
The ANBG does not have enough attractions for families and young adults.	Active environmentally-aware recreation and fitness activities attract young adults and teenagers, and with suitably-graded elements can be suitable for families as well.	A High Ropes Course provides these attractions with modest operational and establishment costs.	
Overall, there is a need in the ACT for affordable, quality accommodation for education and activity groups.	An Eco-Lodge accommodating from 60 to 120 would accommodate a school year group or several adult groups. If suitably designed it would also be a prime choice for families.	A site has been identified for a development fulfilling these criteria.	This would be a private public partnership under lease with a profit share to the ANBG.

OPPORTUNITIES



- 01 Landscaped Precinct Entry
- 02 Improved Traffic conditions at intersection.
- 03 New Event Space and Natural Ampitheatre
- 04 New Detention Basin / Dam. Infrastructure for water security and boardwalk.
- 05 Reconfigure existing Carpark
- 06 New Public Entry and Visitor Hub
- ✕ 07 Remove Surplus Roads
- 08 New Seed Bank Building (relocated)
- 09 Expanded Top Works Depot
- 10 Future Nursery Expansion
- ◇ 11 Heritage Canopy Retained
- 12 Relocated Cafe and Function Centre
- 13 Site created by Relocation of Glasshouses.
- 14 NEW Display Conservatory
- 15 Relocated Production Glasshouse
- 16 Consolidated Administration
- 17 Consolidated Education and Childrens Trail
- ▨ 18 New Linkage between ANBG / CSIRO / ANU
- 19 Removal of Road Reservation and handover site to ANBG
- ⋮ 20 New Short Trail Option
- ⋮ 21 Existing Long Trail Option
- ▬ 22 Existing Roads
- 23 New Upper Entry and Coach Parking
- 24 New Eco - Lodge and Adventure Experience
- - 25 New Walking trail in Bushland Precinct
- 26 Tenanted Commercial Operation
- 27 New Alpine House
- Possible Vegetation Buffer Zone
- Present Fire Buffer Zone

COMMENT:

- Refer to Figure 19 for additional opportunities to rationalise pathways.

FIGURE 8

5.0 KEY PRINCIPLES FOR DEVELOPMENT

1. Maintain and Reinforce Major Entries

Maintain and improve the entry experience reinforcing the natural site qualities and simplifying entry sequence.

Actions

- Provide entries and pathways that are intuitive and logical .
- Simplify the existing carpark entry and navigation by providing a single direction of travel.
- Soften northern edge of carpark by relocating edge road further South.
- Position a new visitor centre, café and function centre at the key entry to the Botanic Gardens that links with the best natural assets and short trail .

2. Increase Horticulture and Research Capabilities through new Infrastructure

Co-ordinate and rationalise building access and functions, separating back of house facilities from visitor focused attractions.

Actions

- Relocate the Seed Bank and lower maintenance depot to sites towards the Northern Precinct.
- Relocate production glasshouses to nursery.
- Develop new display conservatory.

3. Create a Dynamic and Active Heart

Provide a central core that will concentrate key assets with high visitor attractions.

Actions

- Create a short loop track adjoining the central core.
- Centralise the core group of activities ie: café, event lawn adjacent high value collections
- Prioritise artworks adjacent to central core and short loop trail.
- Create a new amphitheatre with close proximity to catering and parking facilities.

4. Create a Memorable Experience and Destination

Provide a visitor destination with a range of flexible day/ night spaces for different recreational activities and age groups with opportunities for external development investment.

Actions

- Create a Function Centre with catering that can cater for a range of daily and large organised events.
- Provide opportunities for investment into the Bushland Precinct centred on recreation nature based activities.
- Create a short loop track that takes visitors to key activity centres, art, and high value collections.
- Provide a memorable bridged entry to the garden over the rainforest gully and into the visitor centre.

5. Maximise the use of Natural Assets

Emphasise the existing natural assets of the site and ensure that these experiences are in reach for a short visit customer.

Actions

- Capture water through the Sydney Region Garden and create a lake water feature adjacent the CSIRO boundary.
- Maximise the visitor experience of the rainforest gully with new entry road alignment, entry pathway and visitor centre.
- Maximise views from the central core by thinning vegetation and obtaining views back to the city.

6. Connect the Site

Improve visitor access to key attractions and unify the garden.

Actions

- Rationalise existing trails network.
- Provide a short trail loop.
- Consider sharing functions with adjacent landuses.
- Consider a merged precinct Masterplan with ANU and CSIRO.
- Provide visitors with free public Wi-Fi throughout the site.

7. Maintain and Enhance Immersive Character

New garden plantings to continue the relaxed and informal nature of the broader garden.

Actions

- New paths and destination areas to connect collections and reinforce immersive character.
- Non - linear winding paths and event areas set within surrounding vegetation collections.
- New building works to be integrated sensitively within and in relation to collections.

5.1 COLLECTION CONSERVATION & MANAGEMENT

The plan shown in Figure 9 shows the Gardens zoned according to the curatorial value of the collection. This assessment is based on the overall landscape quality, and the rarity or importance of individual specimens. The three zones are explained on the Diagram, and the Master Plan has strictly contained proposed works to the zones of little or no collection value.

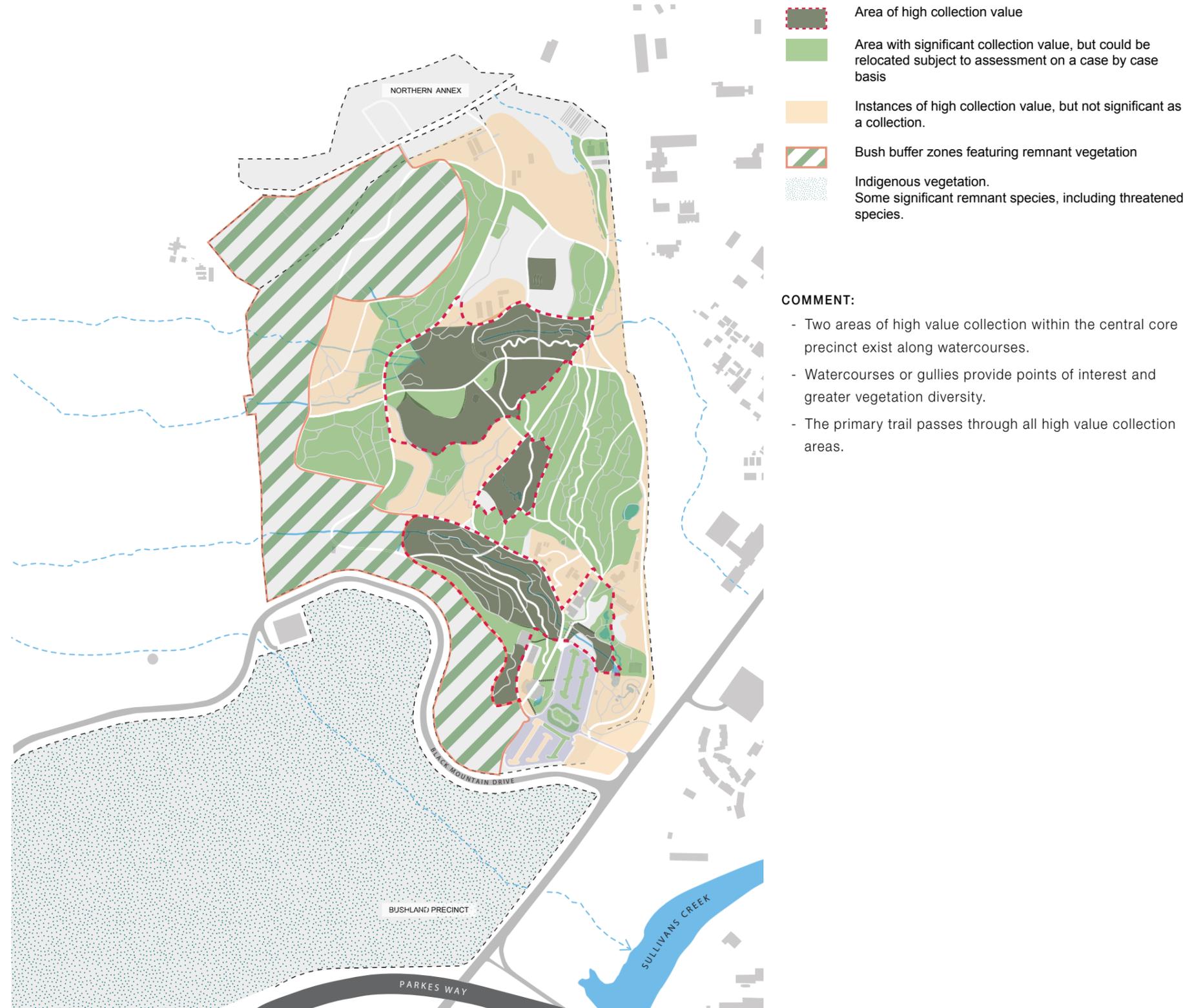


FIGURE 9

5.2 BUSHFIRE MANAGEMENT

It is noteworthy that a significant portion of the site, of little collection value has been sequestered as Bushfire Control, and is a mix of old collection plantings and retained original bushland vegetation. This area is not developed with an extensive system of trails, nor are those parts that are accessible by the public highly visited.

The Gardens have an on-going fire management strategy (Figure 10) related to this area and to the adjoining parts of the Black Mountain Reserve, including the area east of the fire trail which runs along the contour to the immediate west of the Gardens boundary.

The Master Plan has not addressed this zone in detail, and the current management strategy is proposed to remain in place.

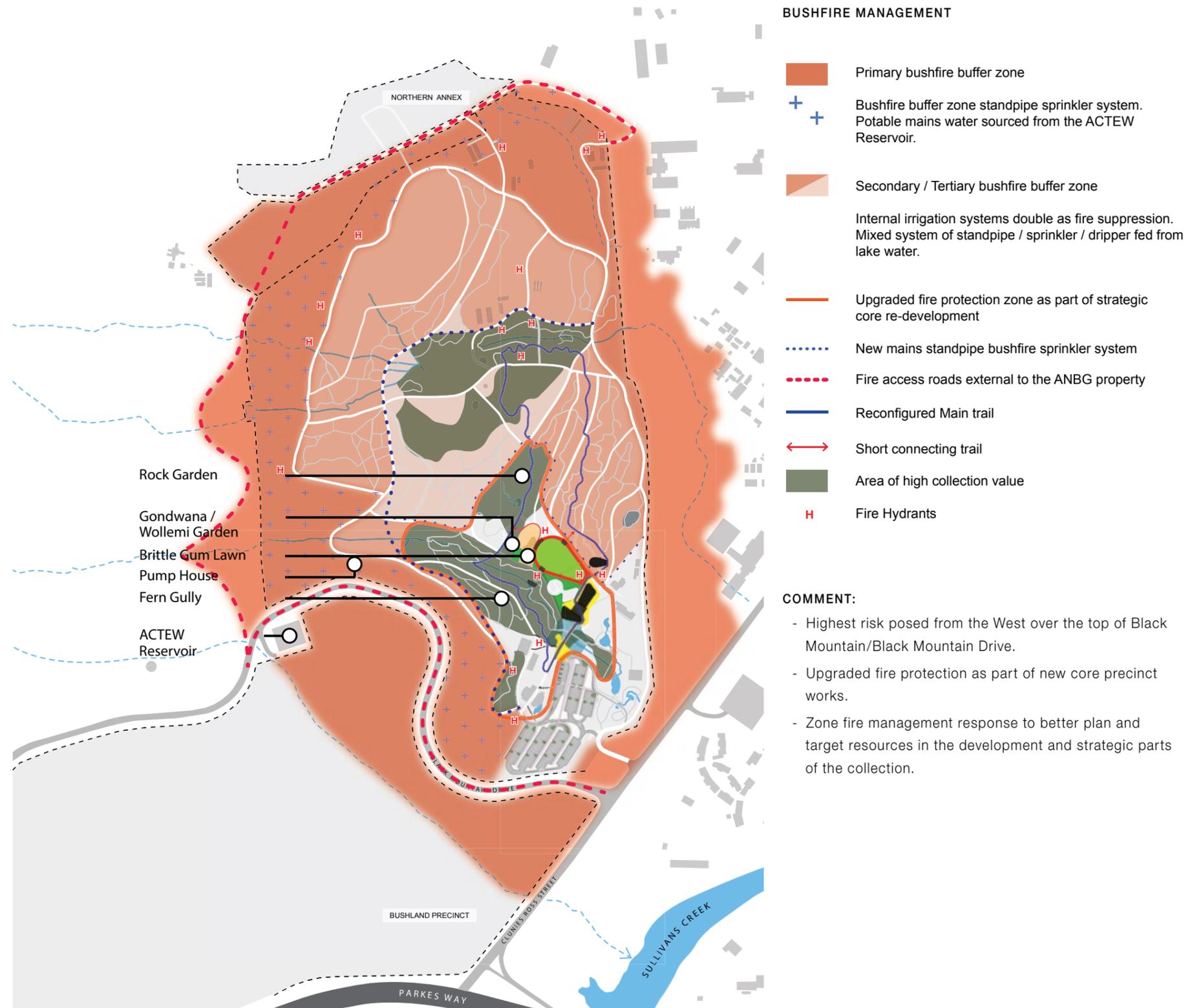


FIGURE 10

5.3 WATER CONSERVATION

Many of the areas of the Gardens are irrigated, and the Rainforest Gully has a misting system. Overall the gardens uses a significant amount of water annually, most of which is rainwater collected via Lake Burley Griffin. This is essentially a 'closed system', with limited catchment and very limited capacity, especially in times of drought when demand for irrigation is at its highest.

It is therefore strategically important to develop a sustainable water policy for the Gardens, which is outside the scope of this Master Plan.

Several new conservation elements are shown, including the site for a new catchment pond for the northern gully creek. The middle and southern creeks all currently have detention basins, allowing water to be recycled to holding tanks.



FIGURE 11

5.4 SITE-WIDE VISITOR CIRCULATION

The Plan proposes the clarification and simplification of the Visitor circulation, with the aim of opening up more of the site to higher levels of visitation.

ORIENTATION PLAZA

An arrival point is located at the apex of the car park, a clearly defined large space for visitors, in large and small groups, to gather, find the way to their destination, and regroup. As the start of the Main Loop Trail, it can enjoy views into key landscapes such as the Rainforest Gully and Café Lawn. It directly faces the front door of the Visitor Centre across the bridge.

The Orientation Plaza needs seating in the shade, perhaps a shelter that can accommodate 20 people waiting for a bus, wayfinding signs and maps, and commemorative elements and significant permanent and temporary artworks.

MAIN TRAIL

The current Main Loop Trail, identified by a special paving type, completes a circuit which is fully accessible and joins many of the key Gardens attractions. This will be adjusted in some places to reflect the new Visitors Centre, and its 'start point' at the Orientation Plaza made more prominent and open. The Trail, 1.4km long, with gentle gradients and a compliant surface, takes roughly 45 minutes for a full circuit, although there are short cuts available, they are not clear.

SHORT LOOP

A new Short Loop is proposed which complements the Main Trail. This Trail is 0.6km long, with gentle gradients and a compliant surface, and would take around 20 minutes for a full circuit. It joins the Main Trail at key points to enable a shortening of the visitors walking circuit if desired.

GARDEN TRAILS

A clear hierarchy of trails leads from a defined armature of main trails and minor trails to all of the key attractions of the Gardens. The major trails need to be clear and relatively direct, off them the minor trails need to be identifiable as such, and can be experiential, winding to take in important plant specimens or key views.

SHARED TRAILS

Many of the major pathways will remain as shared paths, used by service and access vehicles as well as by pedestrians. These can in many cases be narrowed to 4m, and made less road-like in their alignment and treatment, by introducing gentle curves and playing down elements such as kerbs.

BUSHLAND TRAILS

A system of soft paved bushland trails winds its way among the planting beds from paved trail to paved trail. These are one of the most characteristic elements of the Gardens, and should be maintained. The surface is currently decomposed granitic paving or mulch, which emphasises the link with the adjoining landscaped beds, and maintains the continuity of the landscape. Whilst this surface is not compliant with accessibility requirements, it should be maintained. Selected pathways in key destinations could be hard-paved to provide wheelchair access.

GARDENS TRAIN

The electric powered tourist vehicle service provides an important visitor experience and assists the less able to access higher parts of the Gardens. Trails should be designed to maintain its route and access to the required stops.

5.5 SERVICE & MANAGEMENT ACCESS

A hierarchy of service access roads and paths is required for maintaining the Gardens' plantings, for cleaning, to set up and take down event infrastructure, and make deliveries to the café, depot and other facilities. The main service-only route can be 4.2m wide, and road-like in its character to deter pedestrians. Other trails and shared trails (see SHARED TRAILS) should be narrower.

5.6 COMMERCIAL OPPORTUNITIES

Redundant gardens buildings are currently leased to compatible tenants as office and retail facilities. This provides revenue, activates parts of the site that would otherwise be underutilised, and ensures the on-going use and maintenance of the buildings. Some of the uses, such as the Jindii Eco Spa recently opened in the Franklin Building, add significantly to the visitor experience on offer in the Gardens.

Sites have been identified for development in a low scale for leased premises, supporting the co-location of private research, environmental or other business and retail services like the Day Spa.

Refer to Figure 8, *Opportunities*, on page 19 of the Master Plan.

5.7 EVENT SPACES

Events are an important part of the ANBG's public role. Not only are events a valued aspect of the ACT's community for residents and visitors alike, but they are a source of revenue to support all of the Gardens' operations.

Events currently held include outdoor cinema, music performances, plant markets and many other large and small events. Some are free, but most are ticketed or make some return to the Gardens.

Requirements for Events

- Fencing to secure ticketed areas if the event is during visiting hours and normal visitation to the Gardens is preserved.
- Ticket collection and sale facilities.
- Power, data and AV set up equipment.
- Access for trucks and vans.
- Temporary parking for service and catering vehicles.
- Level areas durable enough for marquees and other weather protection and special tents and shelters.
- Protection for valuable plantings if large crowds are involved.
- Water and possibly sewer connections for toilet and other service facilities.

FUNCTIONS AND HIRING

Large and small weddings, business events and ceremonies are held in the Gardens, and are valued by the community as well as providing revenue.

The requirements for outdoor Functions are similar to those for Events, although they are usually smaller, but do require separation from other Gardens users.

PUBLIC ART

Refer to the Australian National Botanic Gardens Public Art Policy and Master Plan 2013 - 2022.

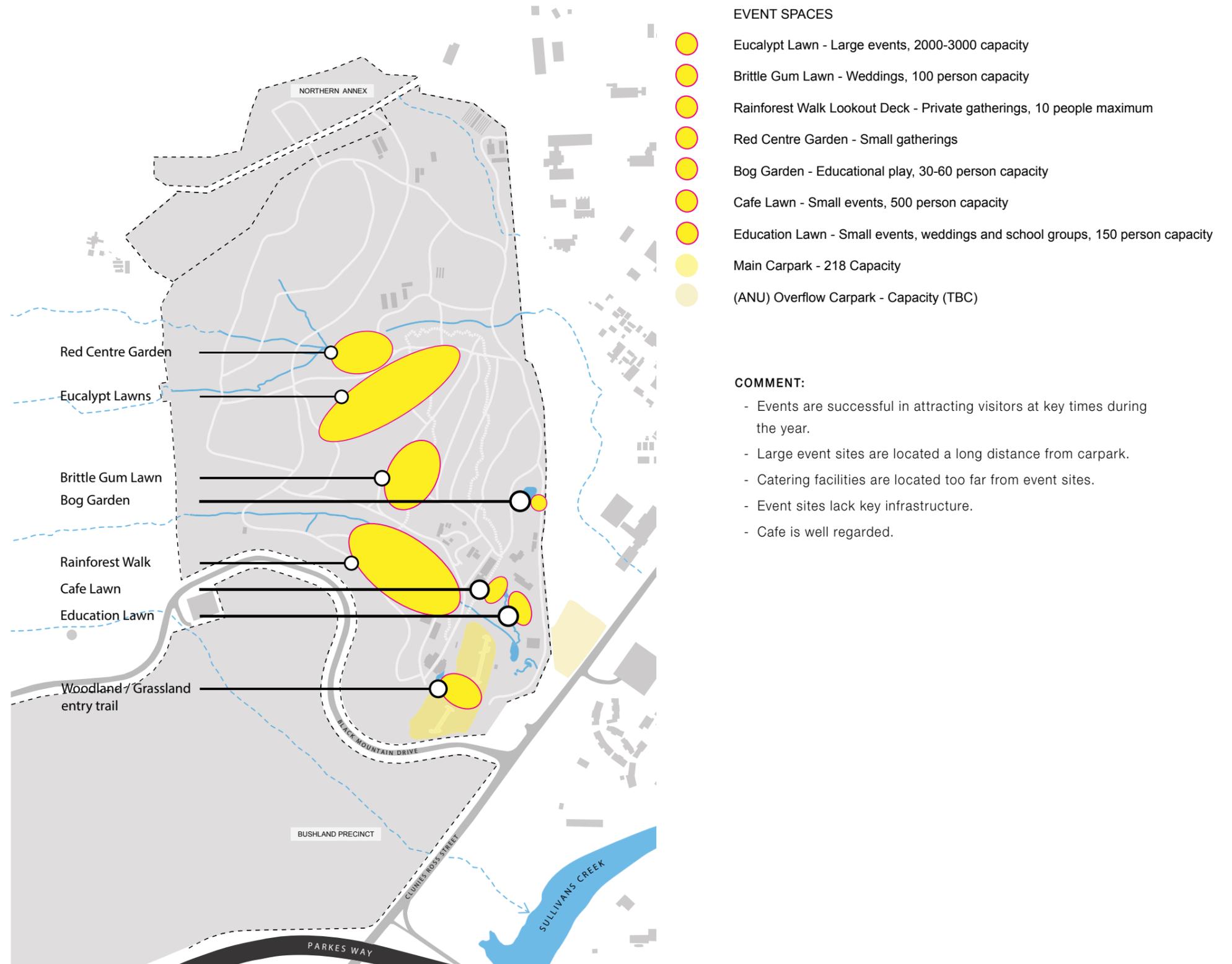
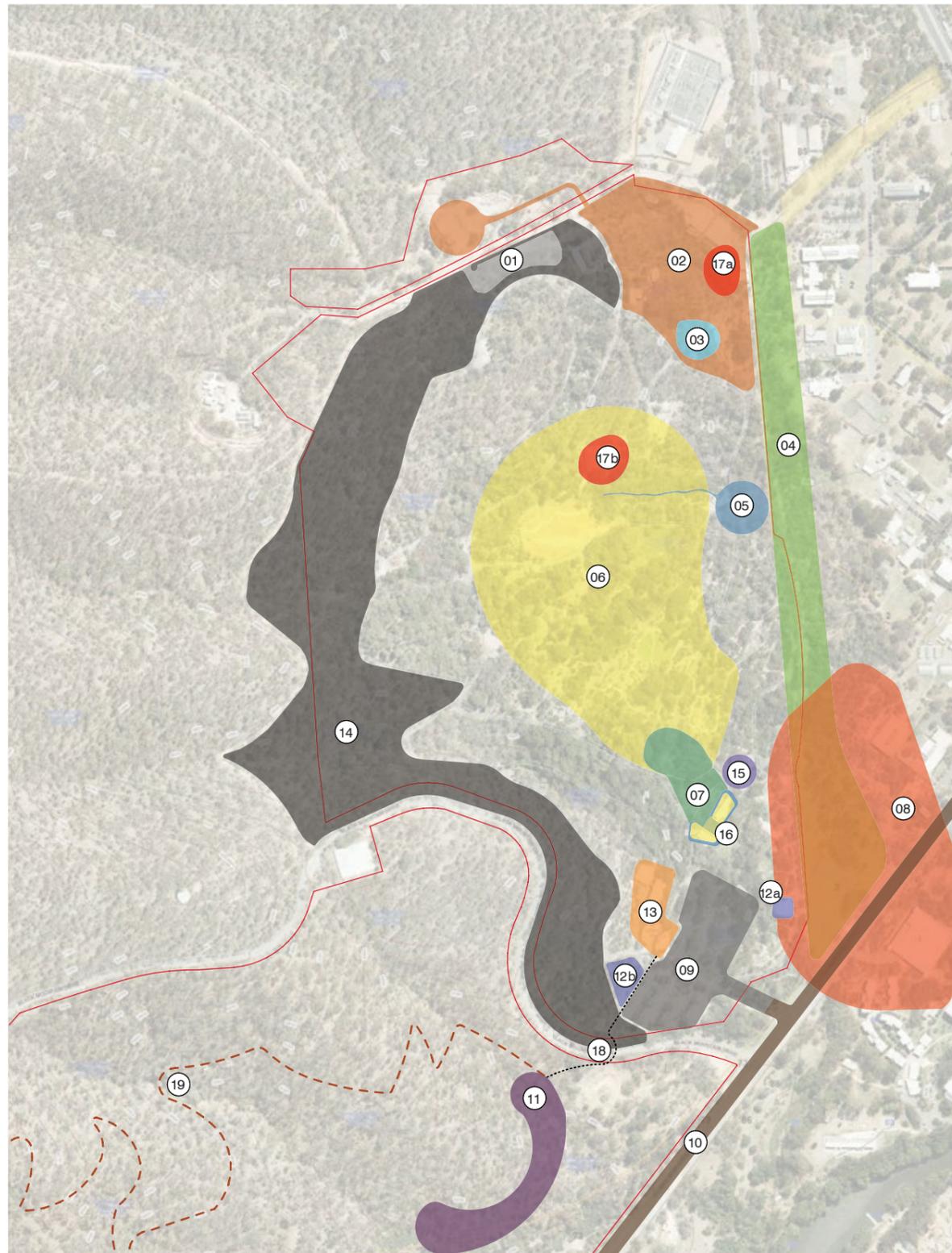


FIGURE 12

KEY STRATEGIES



- 01 New top entry and car park and coach parking
- 02 Consolidated Depot and Service Zone
- 03 Site for New Seed Bank
- 04 Integrate former road easement into garden
- 05 New water catchment lake
- 06 Rationalise and clarify pedestrian circulation
- 07 New Event Space
- 08 New linkages and partnerships between ANBG / CSIRO / ANU
- 09 Rationalise entry and car park sequence
- 10 Enhance Clunies Ross Street as connecting boulevard
- 11 New Eco-Lodge and Adventure Experience
- 12a 12b Tenanted commercial operations
- 13 Consolidated Administration and Services
- 14 Retain fire buffer
- 15 New Display Conservatory
- 16 New Visitor Centre, Heritage Pavilion and Cafe & Function Room
- 17a 17b New Production Glasshouse
- 17b Redevelop existing glasshouse site as New landscape
- 18 New pedestrian link
- 19 New walking trail in the Bushland Precinct
- ANBG Boundary

FIGURE 13

6.0 THE ENTRY PRECINCT



- ① Main Entrance Drive off Clunies Ross Street
- ② Coach Drop-Off
- ③ New Orientation Plaza
- ④ Potential Future Carpark Expansion
- ⑤ Administration Staff Car Park
- ⑥ Main Service Road
- Reconfigured Car Park and Service Roads
- Pedestrian Pathway through Car Park
- Primary Trail
- Secondary Trail
- Pedestrian Bridge over Black Mountain Drive to Bushland Precinct

FIGURE 14

7.0 NEW CORE PRECINCT FACILITIES



- 01 Heritage Pavillion
 - 02 New Visitor Centre
 - 03 New Cafe and Function Centre
 - 04 New Orientation Plaza
 - 05 Widened Bridge
 - 06 New Nature Play Terrace
 - 07 New Minor Event Lawn
 - 08 New Amphitheatre and Stage
 - 09 New Lookout
 - 10 Conservatory
 - 11 New Wedding Garden and Major Event Lawn
-  Service Roads
 -  Main Trail
 -  Secondary Trail
 -  Short Loop Trail

EXAMPLE CONCEPTS

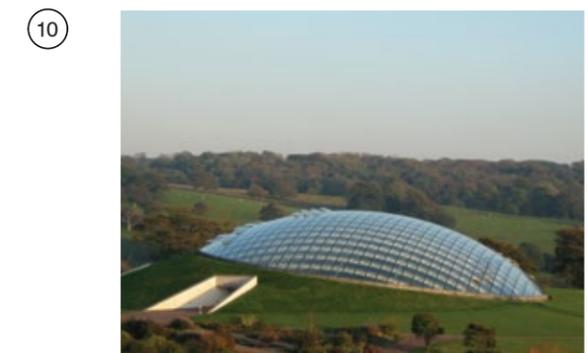
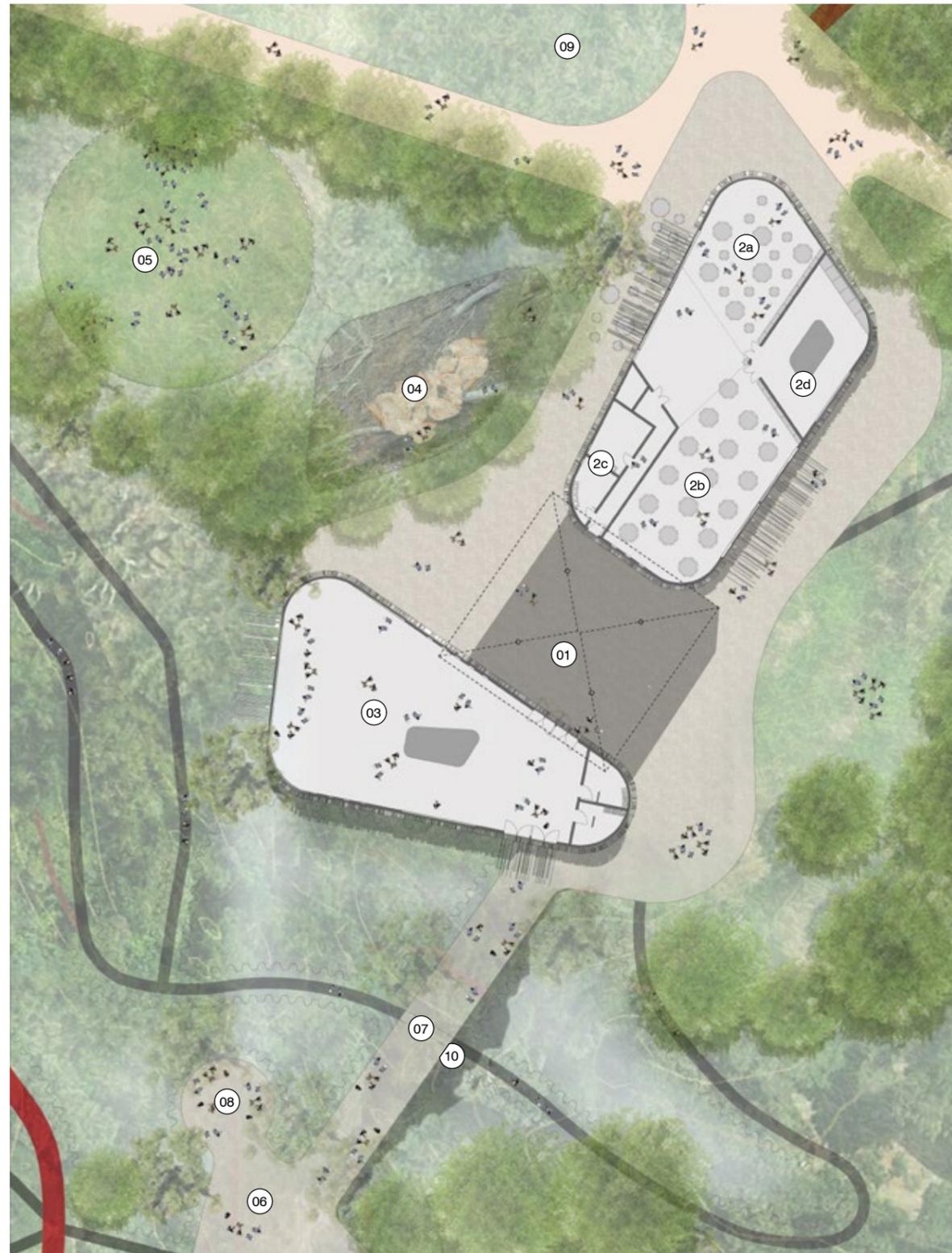


FIGURE 15

INDICATIVE PLAN OF NEW VISITOR CENTRE AND FUNCTION BUILDING



- 01 Heritage Pavillion
- 2a New Cafe
- 2b New Function Centre
- 2c WC
- 2d Kitchen to service Cafe and Function Centre
- 03 New Visitor Centre
- 04 New Nature Play Terrace
- 05 New Minor Events Lawn and Enclosing Landscape
- 06 Orientation Plaza
- 07 Widened Bridge
- 08 New Lookout
- 09 New Amphitheatre
- 10 Rainforest Connectivity
-  Main Trail
-  Secondary Trail

FIGURE 16

NEW DISPLAY CONSERVATORY



Site Plan (left)

- 01 New Display Conservatory
- 02 Entrance to Conservatory off Main Loop Trail
- 03 Service Road
- 04 Amphitheatre Stage
- 05 New Cafe
- 06 Banks Building

Building Plan (below)

- 01 Conservatory meeting point
- 02 Ramp up to central lookout point
- 03 Accessible ramp down to central garden
- 04 Stair down to central garden
- 05 Central garden and feature tree
- 06 Terraced planters around perimeter

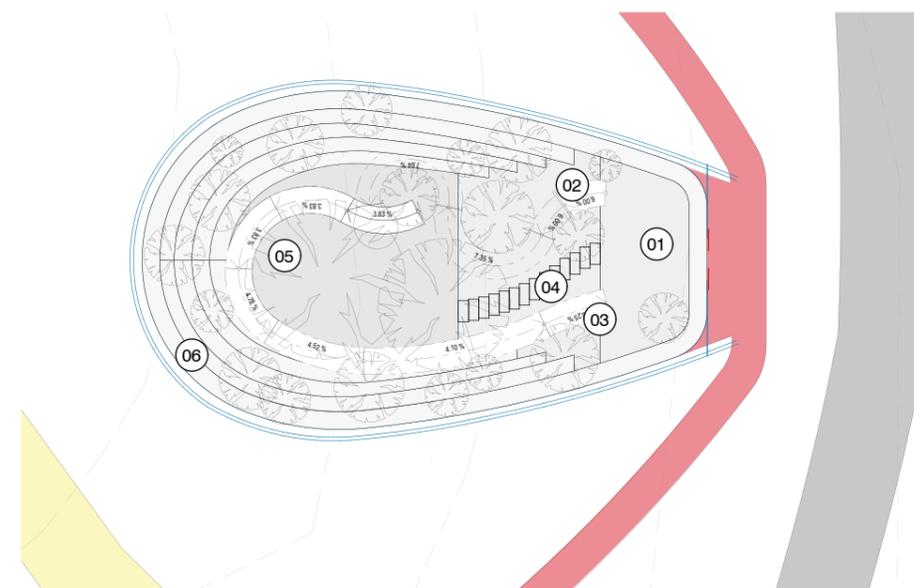


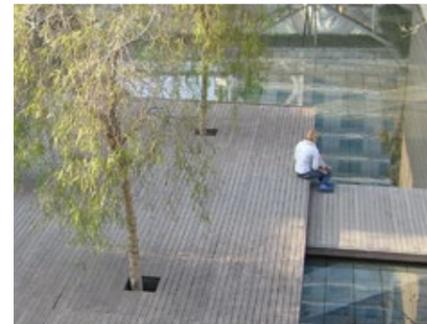
FIGURE 17

NEW WEDDING GARDEN



- 01 Wedding Garden Lawn
- 02 Access Road
- 03 Stage under Arbour
- 04 Minor Event Lawn
- 05 Nature play terrace

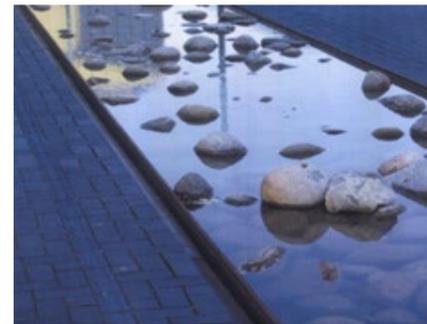
EXAMPLE CONCEPTS



Water feature at interface of deck and events lawn.



Low linear water feature.



Ornamental water treatment.



Water Lily feature water treatment pond.



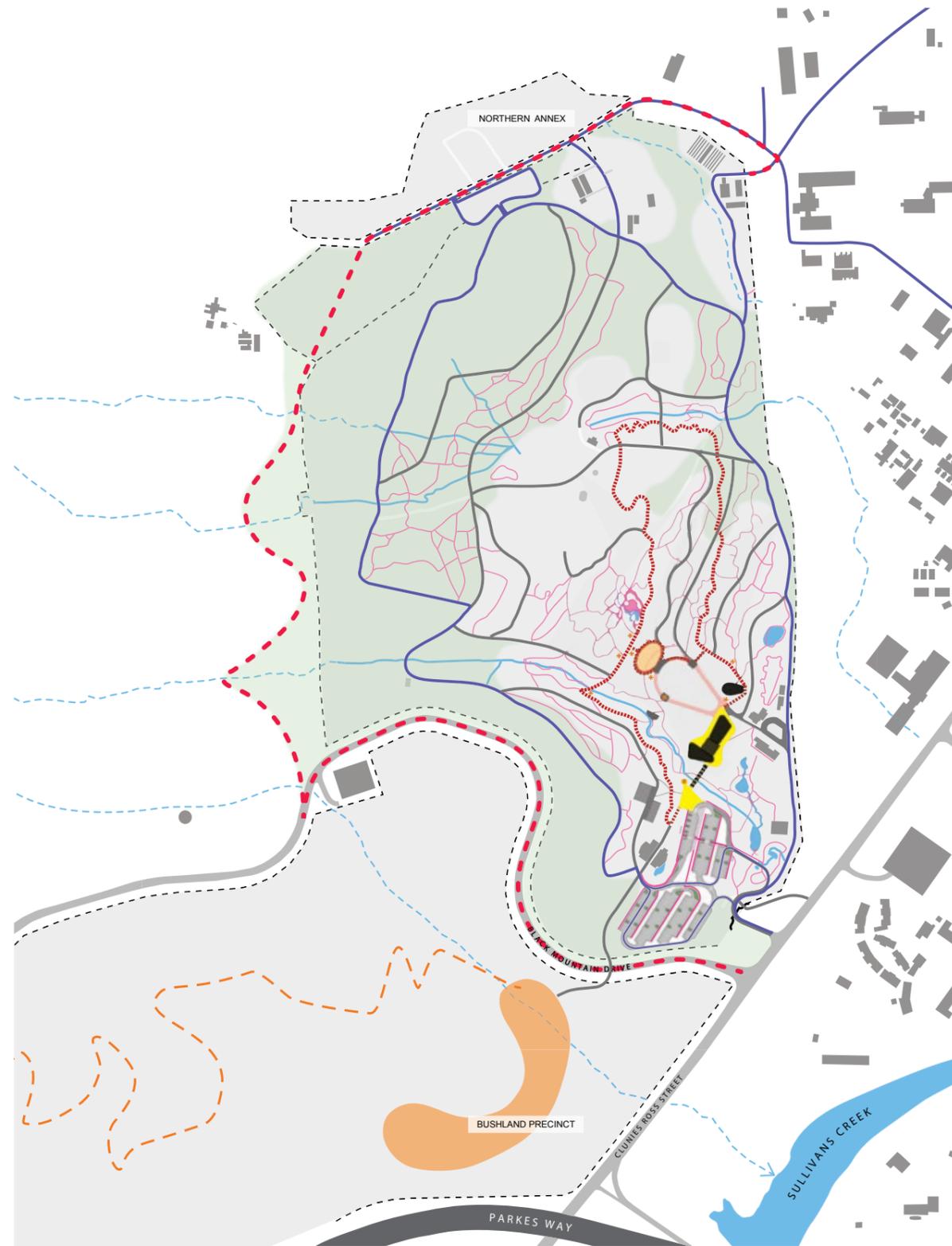
Rusted mild steel bed edging.



Limited Palette Native Understorey - plantings to be curated by ANBG staff.

FIGURE 18

REVISED CIRCULATION PLAN



- Essential large vehicle access; including access for servicing infrastructure, events and waste material, fire truck access and crane / tree maintenance.
- Primary paths.
- Minor paths.
- - - Reconfigured Loop trails
- ▨ Bridge
- * New Collection Interpretation points.
- - - Fire access roads external to the ANBG property.
- - - New Walking trail in Bushland Precinct.
- Amphitheatre ring route and Arbour.
- ▨ Reconfigured Car Park.
- Orientation Plaza and Core Facilities
- ▭ New Visitor Facility and Cafe

COMMENT:

- Refer to Wedding Garden diagram (Figure 18) for event specific local circulation.
- Revised trails connect main attractions and provide new interpretation points.
- Duplicated trails minimised and rationalised to improve wayfinding and reinforce the Gardens' immersive experience.

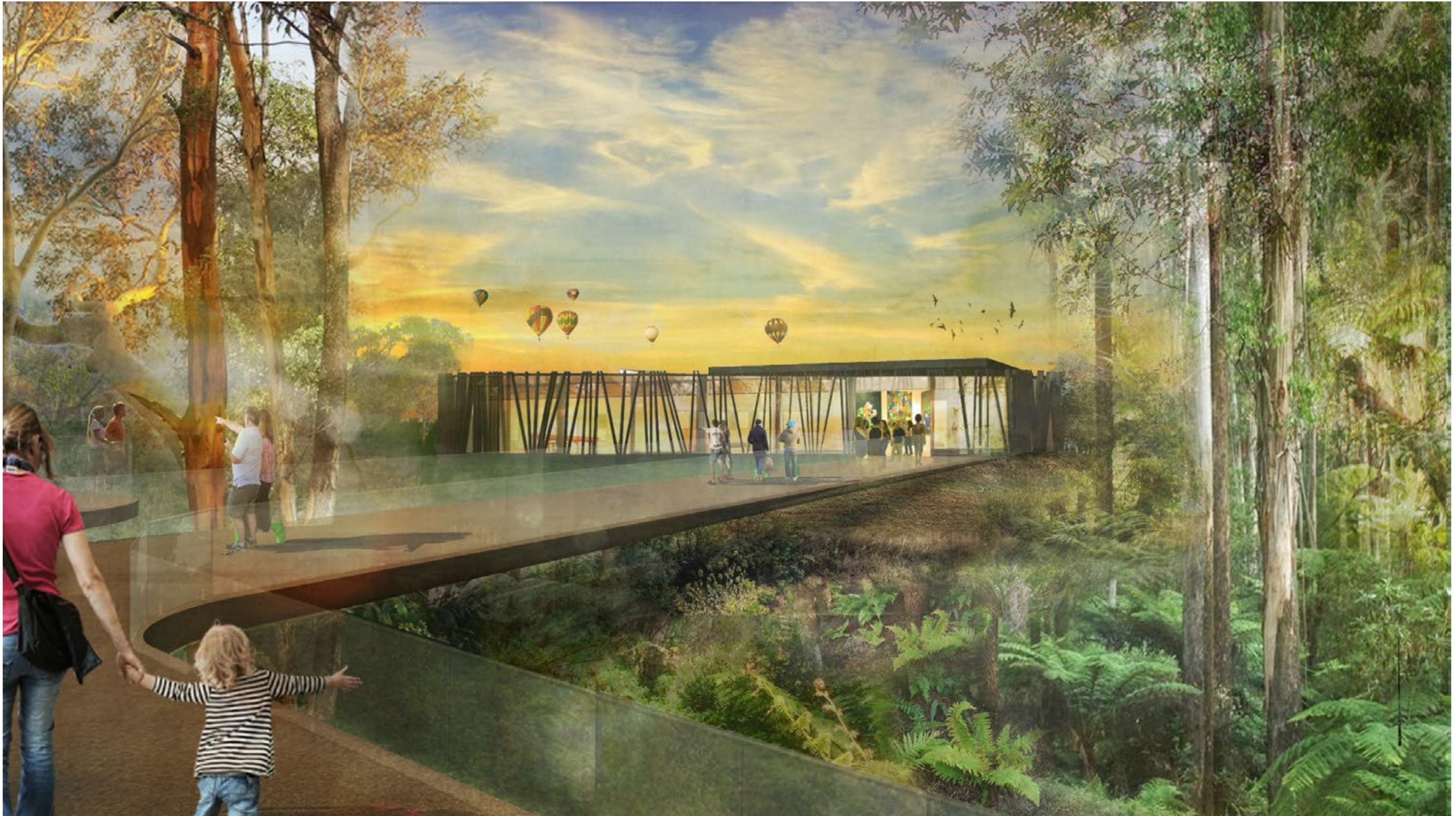
FIGURE 19

PERSPECTIVES



View from Cafe Lawn

FIGURE 20



View from Orientation Plaza at main car park

FIGURE 21



View from inside Visitor Centre towards Rainforest Gully

FIGURE 22



View from Wedding Garden

FIGURE 23



View from inside Display Conservatory

FIGURE 24

ENTRY CAR PARK RECONFIGURATION



EXISTING

FIGURE 25A



PROPOSED

FIGURE 25B

ALTERATIONS TO CAR PARK CONFIGURATION

Actions

- Reconfigure Car Park to an intuitive one way system.
 - Slower and safer.
 - All car parks viewed and accessible.
- Delineate between Main (Northern), On - Site Overflow (Southern) and Off - Site Overflow car parking (Share arrangement with ANU and CSIRO event parking).
- Provide a landscape journey as part of the Gardens entry sequence.
- Integrate car park within the gardens vegetative and existing built footprint.
- Draw visitors to new orientation plaza and visitor centre.
- Introduce row names / identifiers for improved car park wayfinding.

Further Considerations

- Introduce direct road links for main northern car park on northern most extent
- Consider extending northern car park southwards with corresponding reduction in southern car park, If average car park usage exceeds size of northern car park.
- Introduce angle parking; increases flow efficiency however decreases overall parking with a 15% net carpark loss for 60° angle parking.
- Taxi Zones.
- Further study should be undertaken to ensure satisfactory sightlines are achieved due to the topographic nature of the site.

Useful Information Sought

- Conduct parking survey.
 - Assess peak car turnover and average % time
 - Assess numbers and % times for bus / coach layovers
 - Consider extending northern car park southwards with corresponding reduction in southern car park, If average car park usage exceeds size of northern car park.
 - User demographic and user experience

Prepared with advice from **Richard Hanslip, Senior Transport Planner at Tonkin Consulting**



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8.0 CONSOLIDATED ADMINISTRATION



- 01 Existing Cryptogam Herbarium
- 02 Existing Library and ANBG Offices
- 03 Staff Parking
- 04 Existing Theatre, Public Toilets and Conference Room
- 5a New ANBG Offices (Ellis Rowan Relocation)
- 5b New Friends Lounge
- 06 New Entrance and Lift adjoining buildings
- New Built Infrastructure
- Existing Infrastructure
- Service Road
- Main Trail
- Secondary Trail

FIGURE 26

9.0 NORTHERN PRECINCT



- 01 New Northern Carpark and Coach Bay
- 02 New Equipment Storage Shed
- 03 New Storage Shed
- 04 Redeveloped Depot Office and Amenities
- 05 New Seedbank (as proposed by GHD, 2012)
- 06 Existing Nursery Offices and Propagation Houses
- 07 New Production Glasshouses
- 08 Existing Nursery Greenhouse
- 09 Existing Trade Depot
- 10 Redeveloped Glasshouse as New Landscape
- 11 Red Centre Garden
- Northern Car Park Trail
- Primary Trails
- Main Loop Path
- Essential Large Vehicle Access

FIGURE 27

10.0 BUSHLAND PRECINCT



01

Adventure Experience



02

Eco Tourism Accommodation



03

Pedestrian Bridge



New Pedestrian Bridge

New Bushland Trail

High Ropes Facility

Connecting Trail to National Arboretum

FIGURE 28

11.0 DESIGN STRATEGIES FOR BUILDINGS & SITEWORKS

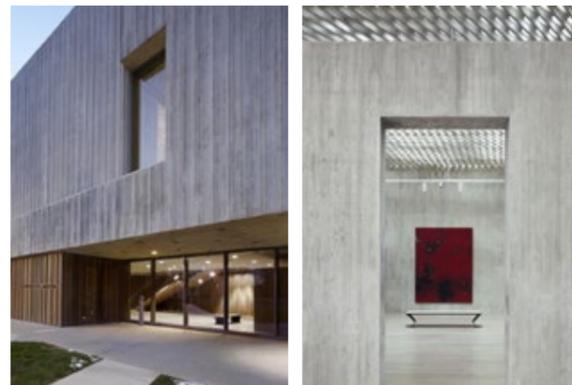
11.1 BUILDING EXEMPLARS



Niyang River Visitor Centre, Tibet



Clifford Still Museum, USA



Office for Solvas, Belgium



11.2 BUILDING MATERIALS PALETTE



Snowy Mountains Blue Stone



Off Form Concrete



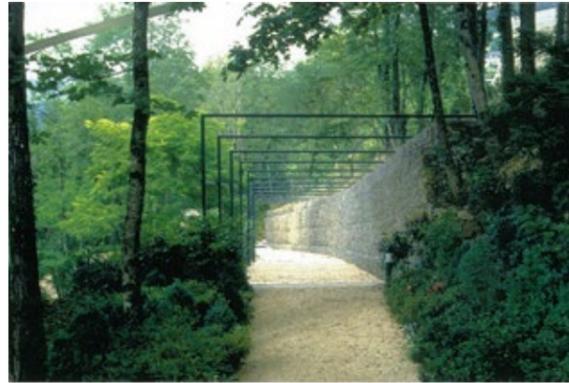
New South Wales Eucalyptus Residue



11.3 SITE INFRASTRUCTURE EXEMPLARS



Arbour



Arbour



Reflective Pool



Reflective Pool



WSUD Planting for Car Park



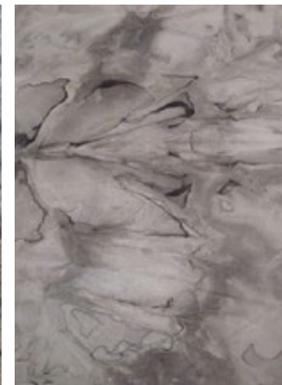
WSUD Planting for Car Park



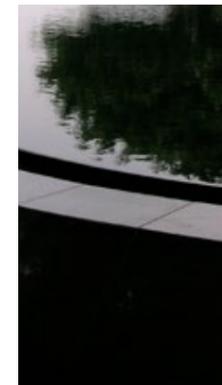
Painted Steel



Polished Stone



Precast Concrete



Shallow Pool

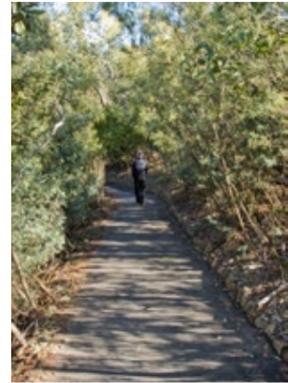


Asphalt



Precast Concrete

SITE INFRASTRUCTURE EXEMPLARS CONTINUED



Primary Trail Precedent



Primary Trail Precedent



Main Service Trail Precedent



Minor Path Precedent



Minor Path Precedent



Interpretation Trail Marking



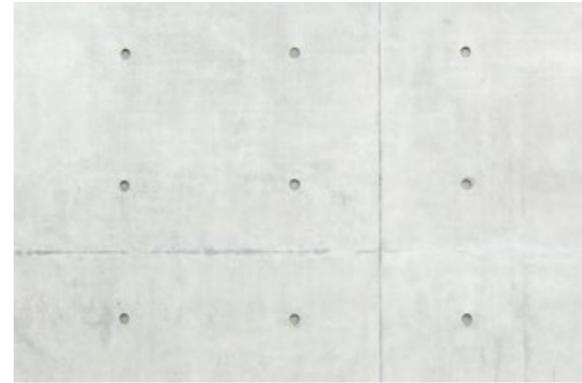
Interpretation Trail Marking



Interpretation Nature Play



Asphalt



Concrete



Reclaimed Timber



Australian Stone



Rusted Mild Steel (Trail Marking)



Sandstone (Nature Play)



Recycled Timber (Nature Play)

SITE INFRASTRUCTURE EXEMPLARS CONTINUED



Landing Pavilion



Arbour Pagoda



Display Conservatory



Display Conservatory



Fern Deck

SITE INFRASTRUCTURE MATERIALS PALETTE CONTINUED



Concrete and Stone



Concrete and Stone



Painted Steel and Glass Structure

SITE INFRASTRUCTURE EXEMPLARS CONTINUED



Rusted Mild Steel Bed Edging



Rusted Mild Steel Bed Edging



Wedding Garden Water Feature Precedent



Wedding Garden Water Feature Precedent



Ornamental Water Feature - Rock Pool



Ornamental Water Feature Detail - Lily Pond

SITE INFRASTRUCTURE MATERIALS PALETTE CONTINUED



Limited Palette Native Understorey - to be curated by ANBG staff



Limited Palette Native Understorey - to be curated by ANBG staff

12.0 IMPLEMENTATION & STAGING



STAGE 1

- Construct Bushland Precinct walking trail (1-2 years)
- Construct new Seed Bank in Services Area. (2 – 3 years)
- Construct Conservatory (2-3 years)
- Construct new Northern Depot in Services Area (3 – 5 years)
- Demolish Southern Depot and former Seed Bank (3 – 5 years)
- Restructure first group of internal roads as pathways (3 – 5 years)

FIGURE 29



FIGURE 30



STAGE 2

- Provide new temporary Office accommodation for staff located in Ellis Rowan building. (5 - 8 years)
- Construct Amphitheatre (5 - 8 years)
- Construct tenanted commercial buildings (5-8 years)
- Demolish Ellis Rowan Building, refurbish Heritage Pavilion and construct new Café/Function Centre (5 - 8 years)
- Construct Alpine House (7-10 years)
- Implement car park and entry modifications (7 – 10 years)
- Construct new Accessible Short Loop path. (8 - 10 years)
- Restructure final series of internal roads as pathways (8 - 10 years)



STAGE 2A

- Construct new Visitor Centre (8 - 10years)
- Widen bridge to Visitor Centre (8 - 10years)
- Remove causeway over Rainforest Gully and reconfigure Entry Plaza



AT ANY STAGE

- Refurbish existing Visitor Centre as Office accommodation. (9 - 11 years)
- Remove temporary Office accommodation. (9 - 11 years)
- Call for Expressions of Interest to develop agreed Partnership sites. (10 – 12 years)
- Develop new Northern Car Park and Entry. (10-15 years)
- Further implement Roadway removal/reconstruction strategy. (10-15 years)
- Implement in stages Public Art Master Plan. (Over 15 years starting with Gazebo concept in 2016)
- Construct new overpass over Black Mountain Drive (15- 20 years)
- Develop Bushland Precinct as a public-private partnership or leasehold. (15- 20 years)

FIGURE 31