



**SYSTEM GARDEN
LANDSCAPE MASTERPLAN
STAGE 4 - MASTERPLAN**

FINAL REPORT 8th MARCH 2018

GLAS landscape architecture and
urban design

CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 3

HISTORY OF THE SYSTEM GARDEN 4

THE GARDEN TODAY 5

KEY ISSUES FACING THE SYSTEM GARDEN 6

MASTERPLAN VISION 7

KEY VALUES 8

THE SYSTEM GARDEN AND OC21 9

VISION: A BOTANIC GARDEN FOR THE CAMPUS 10

MASTERPLAN PRINCIPLES 11

THE SYSTEM GARDEN MASTERPLAN 13

STRATEGIC INITIATIVES 15

BOTANICAL DIVERSITY - SUB-CLASS PLANTING GUIDELINES 16

INTERPRETATION STRATEGY 17

UNIVERSITY HISTORY 18

INDIGENOUS CONNECTION 19

SUSTAINABILITY 20

MATERIALS PALETTE 21

MATERIALS PALETTE - LIGHTING AND POWER 22

MATERIALS PALETTE - CONSOLIDATING SERVICES 23

FURNITURE 24

ACCESS 25

ART AND EVENTS IN THE GARDEN 26

MASTERPLAN ELEMENTS 27

MASTER PLAN ELEMENTS 28

PERIMETER PATH AND EDGE SPACES 29

SYSTEM GARDEN GATES 30

ENTRY AVENUES - BIZARRE SENTRIES 31

THE FORMAL GARDEN 32

WETLAND CANAL 37

THE INFORMAL GARDEN 38

COURTYARD GARDENS 43

RAINFOREST GARDEN 44

FERN AND LICHEN COURTYARD 45

APOTHECARY GARDEN 47

RESEARCH GARDENS 48

IMPLEMENTATION STAGING 50

APPENDIX 1: COSTING 55

APPENDIX 2: CONSULTANT REPORTS 57

INTRODUCTION

The System Garden is a special space. Originally laid out in 1856 by Professor Frederick McCoy and Edward LaTrobe Bateman, it is a botanic garden configured specifically for learning. It provides a living display the different plant groups (sub-classes) that make up the plant Kingdom and is one of only a few 'System' Gardens around the world. The garden remembers a golden age of scientific enquiry reflecting the cultural and knowledge ambitions of the original founders of the University. Today the garden is one of the few large open green spaces within the Parkville campus and with the highest diversity of plants it provides a green oasis for relaxation and study that is crucial to the learning experience. A lack of strategic direction coupled with recent University developments around and within the garden have reduced the size and character of the space, creating a backlash from students and the public and undermining the quality of the garden.

PURPOSE

This document provides a 10 year masterplan to help re-establish the System Garden as a cherished and valuable space within the Parkville campus aligned with the objectives of the University. The aims of the masterplan were to:

- understand and promote the value of the System Garden for the University and its students;
- prevent future development damaging the garden; and
- provide guidelines for the refurbishment of the garden to enhance the value of the space for the University.

UNDERSTANDING THE VALUE OF THE SYSTEM GARDEN

The masterplanning process included engagement with both staff and students to build a picture of the current values of the place. These values were described and prioritised into core values and additional values.

THE HISTORIC SYSTEM GARDEN



THE SYSTEM GARDEN C. 1873, NETTLETON PHOTOGRAPHER, MCLAREN COLLECTION

The Core values, are key to the current and future operation of the Parkville campus, they have a direct link to the University's OC21 strategy (Our Campus in the 21st Century) and will drive the focus for the refurbishment of the System Garden. The core values include:

- **Social space:** the garden is an essential and unique component of the Parkville open space. The System Garden provides a quiet, contemplative green space that is crucial for the quality of experience of the campus. With the increasing population of the Parkville campus putting increased pressure on the open space areas, the System Garden will be refurbished to increase its capacity and enhance the quality of the experience to provide a critical contribution to student interaction and wellbeing within the campus; and
- **Teaching and learning:** the garden is laid out as a 'System' Garden providing a living diagram of the plant world. Engaging with staff and students uncovered a diversity of uses by the University and public by a wide range of groups who use the garden for learning about plants including kindergardens, primary and secondary schools, undergraduate and graduates. Enhancing the diversity, legibility and interpretation within the garden will enhance and extend the learning opportunities within the garden.

The Additional values, are an important component of the System Garden and compliment the core values. The additional values have been used to help inform the masterplan and include:

- **University heritage:** the System Garden is designated to be of 'local' heritage value. It is of specific value to the University as it provides a tangible 'living' link to the foundation of the University in the 1850s and describes the education principles of the place based learning espoused by the founding professors which still resonates with the University today. The garden also provides a reminder of the importance of the University in establishing the cultural and learning facilities within what was the emerging state of Victoria that has been crucial in shaping the State we live in today. At present the historic value of the System Garden is hidden but will be revealed through the refurbishment of the garden;

THE SYSTEM GARDEN TODAY



THE SYSTEM GARDEN, 2017, LOOKING NORTH FROM THE CACTI (CARYOPHYLLIDAE)

EXECUTIVE SUMMARY

- **Indigenous connection:** the System Garden provides indigenous interpretation through the Billibellary's walk and stop within the System Garden. The large diversity of indigenous plants within the garden is poorly linked to the existing interpretation but provides great potential to expand the opportunities for explaining the Indigenous history of the site and plant use. Interpretation integrated into the garden refurbishment will help promote a greater indigenous connection for the site;
- **Sustainable resource:** the System Garden improves the sustainability of the Parkville campus by providing a number of services including shading, recycling, water storage, carbon sequestration and biodiversity. The refurbishment of the garden will include modifications to improve the sustainability performance across all operations and in addition it will make the sustainability contributions more apparent providing opportunities for testing, research and learning; and
- **Scientific resource:** engagement with staff and students revealed a myriad of ways in which the System Garden is currently used within the everyday undergraduate and post graduate studies of the University. Often the garden provides a source of plant material for studies such as DNA research, plant identification or botanical illustration. Also the garden provides sources of associated material for studies such as pathogen research or biodiversity studies. In addition the garden provides space for testing and research in areas such as plant cultivation, bee keeping, composting and recycling. Whilst the space within the garden is limited the refurbishment of the garden provides an opportunity to provide more space for Scientific research as well as promoting these uses to widen the opportunities for learning.



THE SYSTEM GARDEN, 2017, LOOKING NORTH WEST FROM THE OSAGE ORANGE

THE SYSTEM GARDEN DESCRIBES THE ENTIRE PLANT KINGDOM, BASED ON THE SUB-CLASSES OF THE CRONQUIST SYSTEM. THE REFURBISHED SYSTEM GARDEN WILL REPLACE THE LOST SUB-CLASSES AND IMPROVE THE LEGIBILITY.



LICHENS > 485 M YRS AGO



FUNGI 450 M YRS AGO



FERNS, MOSSES 410M YRS AGO



CYCADIDAE 300 M YRS AGO



PINIDAE 250 M YRS AGO



GINKGOIDAE 200 M YRS AGO



GNETIDAE 200 M YRS AGO



MAGNOLIIDAE 150 M YRS AGO



HAMAMELIDAE



CARYOPHYLLIDAE



DILLENIDAE



ROSIIDAE



ASTERIDAE - 80 M YRS AGO



ALISMATIDAE



ARECIDAE - 60 M YRS AGO



COMMELINIDAE 23 M YRS AGO

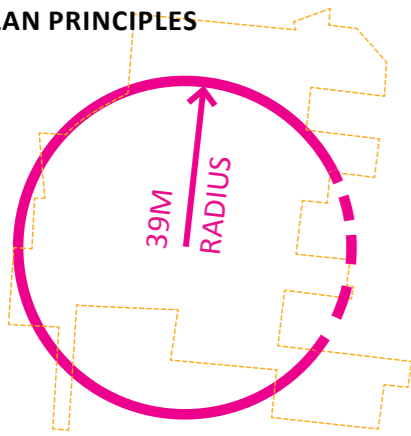


ZINGBERIDAE



LILIDAE - 20 M YRS AGO

MASTERPLAN PRINCIPLES



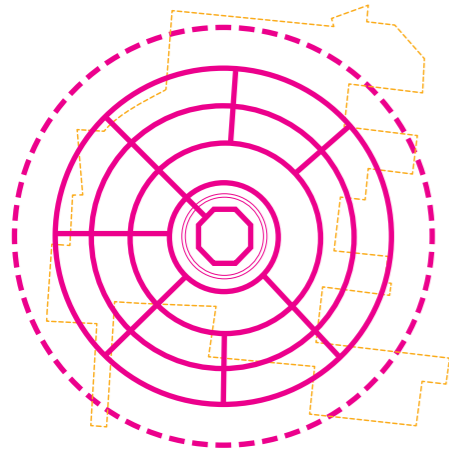
Restore and protect System Garden



NURTURE AND DISPLAY BOTANICAL DIVERSITY



ENHANCE SOCIAL SPACE



REVEAL LANDSCAPE MEMORY

SYSTEM GARDEN MASTERPLAN



THE SYSTEM GARDEN MASTERPLAN, SCALE 1:500

VISION FOR THE SYSTEM GARDEN

The System Garden provides a crucial component of the open space of the Parkville campus. The greatest contribution that the garden can make will stem from the quality and uniqueness of the open space and its history as a place based learning garden. It is recommended that the University invest in protecting and enhancing the System Garden as a special open space and a key component of the experience, tradition and health and wellbeing of the campus. The System Garden will become a quiet contemplative green space where learning about the plant kingdom, sustainability and the history of the site and the University can be absorbed.

The System Garden is a key component of the Parkville Open spaces. The second largest Parkville open space, it will provide a quiet, contemplative, botanic garden. A social space, where the diversity and beauty of the plant kingdom is described. The garden will provide tangible links to indigenous learning and the history of the University, it will provide opportunities for research and learning around plants, ecosystems and sustainability.

MASTERPLAN

The principles for the masterplan of the System Garden are:

- restore and Protect the System Garden. The garden will be expanded to the south to establish a protected circular space defined as a 39m radius from the centre of the tower. This includes the core of the historic 1865 garden layout to the third concentric path and allows sufficient space for the garden to incorporate the key planting groups of the plant kingdom;
- nurture and display botanical diversity. The garden will be refurbished to display the entire plant kingdom. In 1865, Professor McCoy's original vision was to display 'the entire plant kingdom' for the benefit of students learning. Today the garden is laid out according to the Cronquist System of classification, displaying each of the sub-classes of the plant kingdom in separate garden beds. The garden will be refurbished to implement a clearly defined structure based on the historic garden layout to increase the clarity of the sub-class planting and provide more space to display significant trees and endemic species within their place in the plant kingdom;
- enhanced Social Space. The quiet, contemplative, green space of the provided by the System Garden is a key component of the Parkville open space and crucial for the health and wellbeing of the students. The garden will be refurbished to increase the capacity of the spaces to offer a greater diversity of quiet green space whilst increasing the quality of the botanical character; and
- landscape memory. The System Garden provides a number of tangible reminders of the deep history of the Indigenous people and the early days of the establishment of the University. The refurbishment of the garden will integrate and enhance the perception of these times providing interpretation to further explain key plants, people and events.

MASTERPLAN STAGING

The masterplan will be staged to allow the garden to be developed progressively to reflect surrounding development/demolition and the availability of funding:

Stage 1: WEBS Access.

As part of the 2018 WEBS development, works to the System Garden will include a perimeter access path to WEBS and a fence and hedge to establish the 39m radius 'protected' central garden zone.

Stage 2: Garden Enhancements.

In response to the implementation of the perimeter hedge, Stage 2 will start to implement the reconfigured sub-class garden bed system to enhance the legibility of the classification gardens and increase the number of social spaces;

Stage 3: Garden Expansion.

The demolition of the southern glasshouses will allow expansion of the garden to the south. Capital works will complete the reconfiguration of the sub-class garden beds providing a network of paths and new facilities including a new greenhouse, recycling and composting, student research plots and a water feature for aquatic planting.

The appendix provides an outline of the costs associated with each stage and includes a summary of items for potential donations.



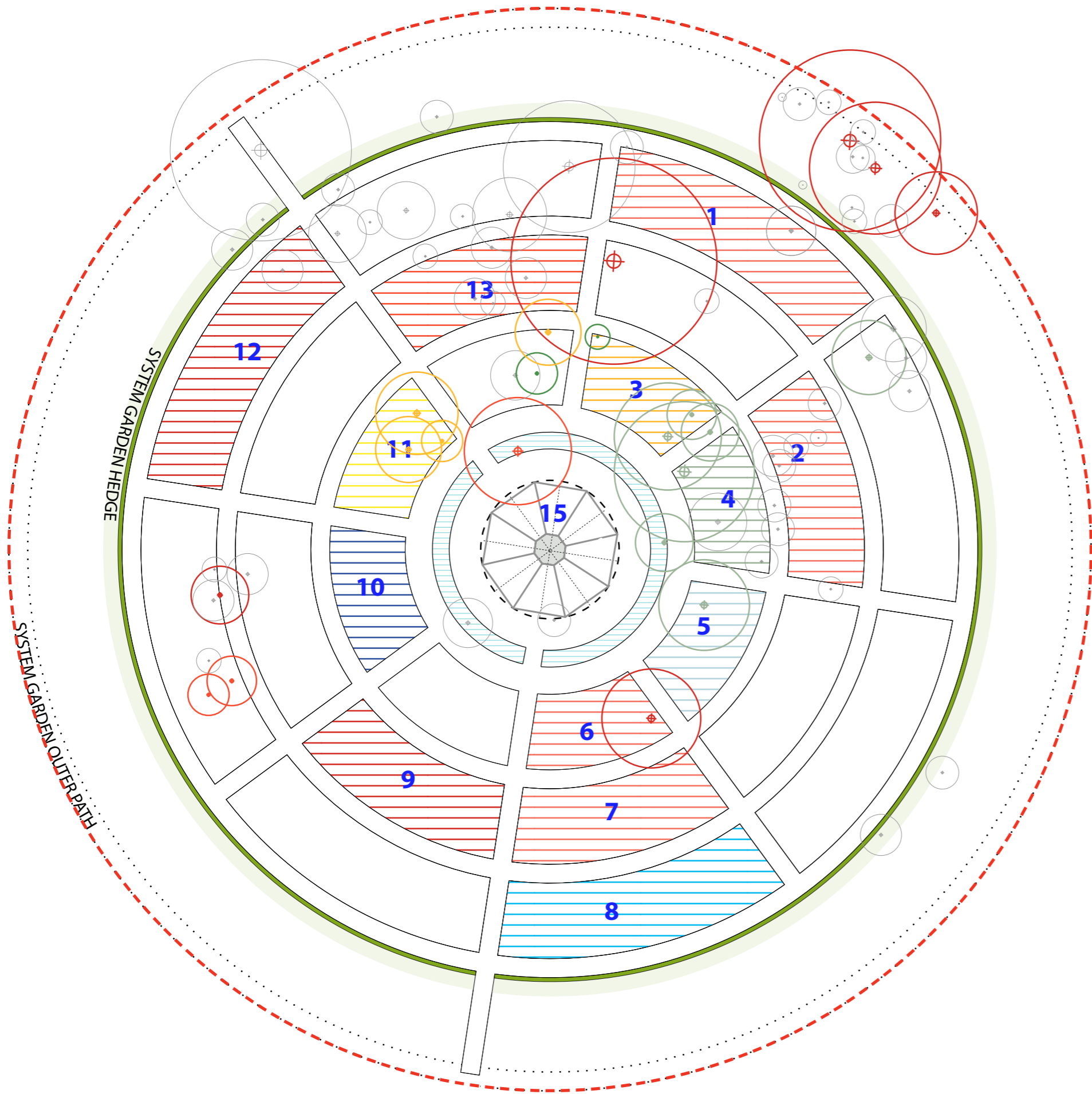
INTRODUCTION

PURPOSE

The purpose of this project is to deliver a ten-year masterplan that will enhance and protect the System Garden, contributing to the overall experience and landscape character of the University of Melbourne. The garden is a unique social space and learning environment that contributes to the UoM objective to create a campus that is a “Living Laboratory.”

This garden is a special place, it is of scientific and historical interest harking back to the early stages of the development of the University and a golden time of scientific discovery and enquiry. It is a social space for the students and a place that features strongly in the memory of the alumni as a secret, calm space and a place of barbeques and celebrations.

It is clear that the garden is not sufficiently protected or understood by the wider University and is at risk from further piecemeal built incursions. The role of this master plan is to provide a strategy to awaken the community to the value of the System Garden, it should provide a narrative that builds an understanding of the uniqueness of the place and the value to the University. This master plan will provide an understanding of the System Garden and develop a strategy to communicate the value of the System Garden to the University community to safeguard and enhance the garden into the future.



HISTORY OF THE SYSTEM GARDEN
 A Botanic Garden for the University

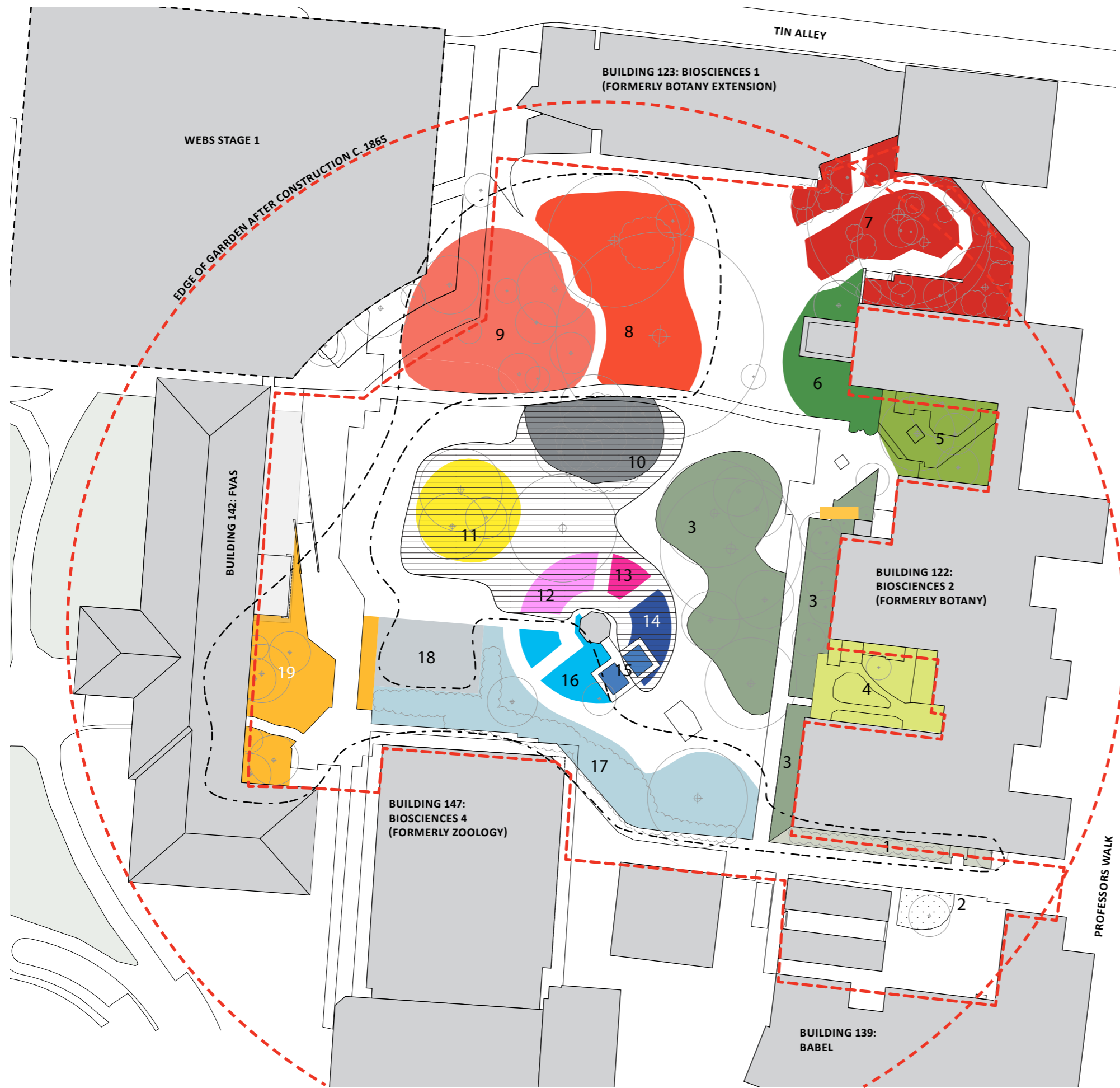
The Botanic garden (System Garden) was originally laid out by the University of Melbourne's Professor of Natural History Frederick McCoy between 1856 to 1859 as a physical resource for teaching students. It was arranged according to the natural orders classification developed by John Hutton Balfour and based on the garden at the University of Cambridge. The System Garden was established at a fascinating time in the development of understanding in natural history with the Theory of Evolution emerging through Darwin and Wallace's joint paper "On the Tendency of Species to form Varieties; and the Perpetuation of Varieties and Species by Natural Means of Selection" to the Linnaean Society on 1st July 1858 and the Origin of the Species being published in November 1959 just as the garden was finished. Frederick McCoy was a creationist and so the layout of the University of Melbourne's System Garden was not altered but it must have been an exciting time of fierce debate in the department of Natural History. As scientific knowledge has evolved so too plant classification and System Gardens have changed. The University of Melbourne's System Garden layout was changed (in the 1980s) to reflect the Cronquist classification. With further advances in plant classification, the Angiosperm Phylogeny Group has now superseded this system however the System Garden remains laid out according to Cronquist classification. One hundred and sixty years since it was first created the garden is still used for the same purposes albeit it has a much greater audience.



1865 PHOTOGRAPH OF THE SYSTEM GARDEN BEFORE THE INSTALLATION OF THE GLASSHOUSE, PHOTOGRAPH BY D MCDONALD. SOURCE: G PASCOE/UOM ARCHIVES

- BALFOUR System Garden ORGANISATION**
- 1. SAPINDACEAE
 - 2. UMBELLIFERAE (APIACEAE)
 - 3. LILIACEAE
 - 4. CONIFERAE
 - 5. CASUARINACEAE
 - 6. ARTOCARPACEA
 - 7. MYRTACEAE
 - 8. RANUNCULACEAE
 - 9. PROTEACEAE
 - 10. GRAMINEAE (POACEAE)
 - 11. PALMAE (ARECACEAE)
 - 12. LEGUMINOSAE (FABACEAE)
 - 13. COMPOSITAE
 - 14. HEDGE
 - 15. CONSERVATORY

THE SYSTEM GARDEN PLAN C. 1896, SCALE 1:500. LINES TRACED FROM MMBW 1896 PLAN, SUB-CLASS LAYOUT SOURCE G. PASCOE, THE SYSTEM GARDEN - AN HISTORICAL ANALYSIS 1998



EXISTING GARDEN PLAN, SCALE 1:500

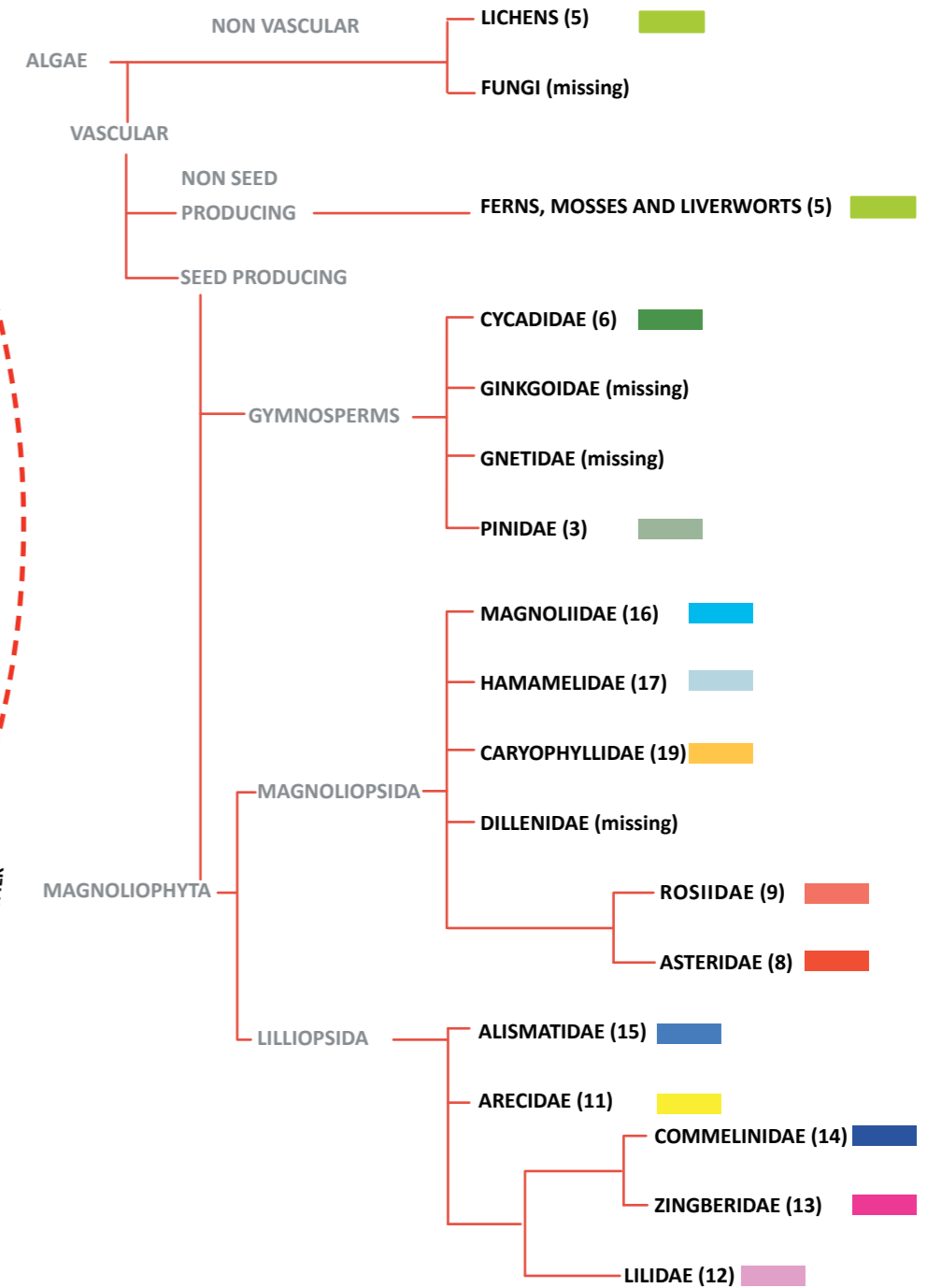
THE GARDEN TODAY

Eleven sub-classes following the Cronquist system

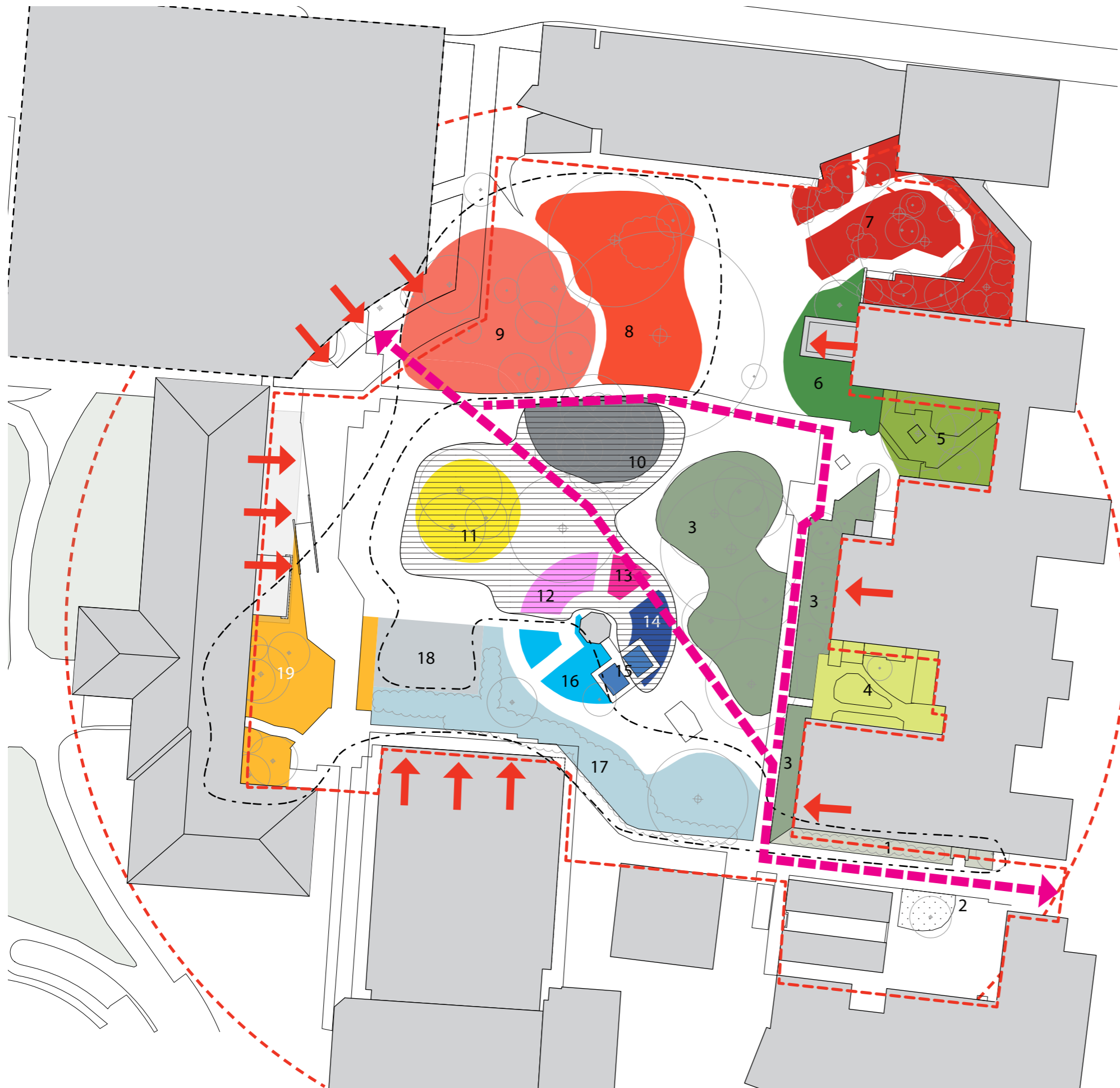
After 160 years, the System Garden is still laid out in order to classify plants according to their sub-classes with the aim of providing living plants with which people can study and observe the differences and similarities across the plant kingdom.

In the 1980s the garden layout was adjusted to follow the classification of the Cronquist system to fall in line with botanical institutions across Australia. The Cronquist System was first described by Arthur Cronquist in 1968 but is restricted to flowering plants. In the spirit of McCoy's original ambitions, the System Garden has a number of additional 'classes' to include the Gymnosperms, ferns and mosses as well as other non-sub class gardens including the arborescent forms, kitchen garden and student plots.

The diagram below combines the Cronquist System for the flowering plants (Magnoliophyta) and adds the Gymnosperms, Ferns, Mosses and Lichens to illustrate the relationships between these sub-classes to represent the plant kingdom. This diagram shows the breadth and relationships of the of sub-classes present in the University of Melbourne System Garden.



PLANT SUB - CLASS LINAGE DIAGRAM



KEY ISSUES FACING THE SYSTEM GARDEN

Loss of Garden

Recent development has resulted in the loss of a large section of the garden which included some of the sub-class planting including the entire Dilleniidae (240m²) and half of the Rosiidae sub class (122m²). The loss of these plantings significantly compromises the teaching value of the garden.

Increased circulation

WEBS stage 1 introduces an extra 1,500 bookable student seats accommodated within the building. This has the potential to add up to 600 students per hour accessing the WEBS Stage 1 and will have a major impact on the garden.

Fragmented planning

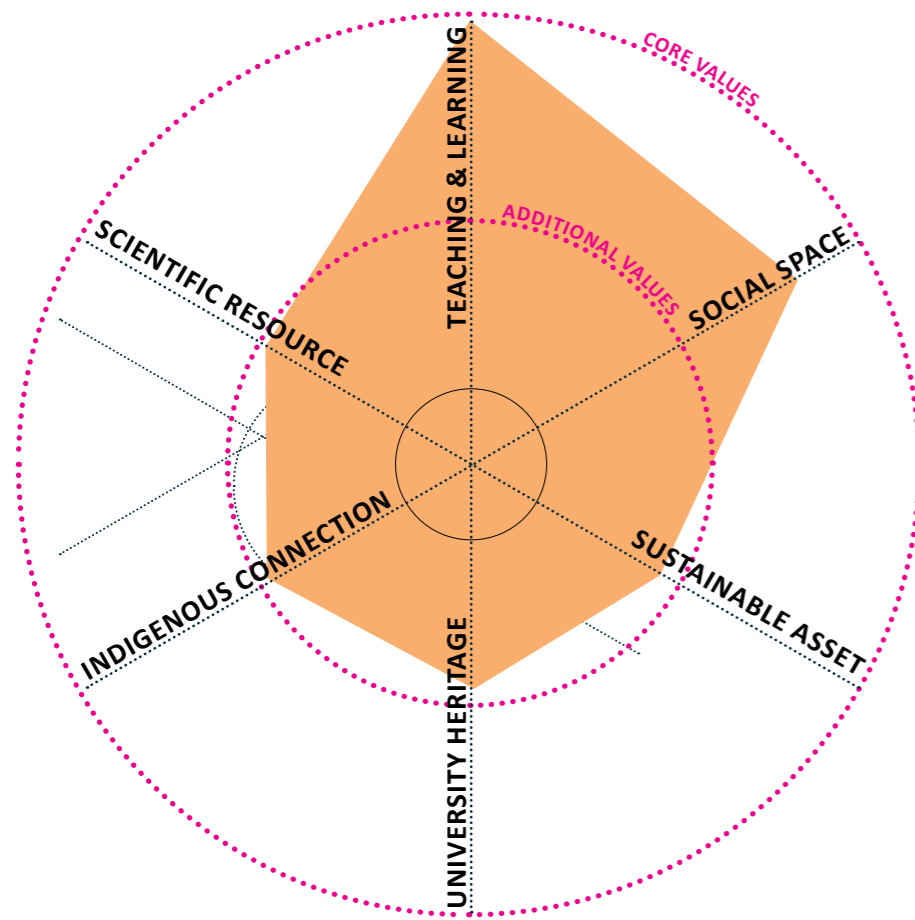
The garden has been modified from the original layout to try to reconcile the multiple built intrusions whilst maximizing the garden bed areas and utilizing the existing and historic plants. As a result the layout is fractured and illegible and constrains the ease with which the system can be interpreted.

Lack of interpretation

The current garden lacks a coordinated interpretation strategy and as a result appears unstructured and difficult to understand to the observer unless accompanied by a guide.

MASTERPLAN VISION





SYSTEM GARDEN VALUES: DIAGRAM ILLUSTRATING THE RELATIVE SIGNIFICANCE OF THE KEY VALUES OF THE SYSTEM GARDEN

KEY VALUES

The values of the System Garden were determined through a series of stakeholder workshops carried out in July and August 2017. The uses of the garden were recorded and analysed for significance in terms of the current needs and ambitions of the University. The values were given relative significance and separated into 'Core values' and 'Additional values'.

CORE VALUES:

The core values are crucial to the operation and experience of the University. The masterplan for the System Garden should be developed to specifically enhance the following core values:

- **Social Space:** the garden should be an essential and unique component of the Parkville open space. It should offer sheltered, diverse green space, re-establishing its position as the botanic garden for the campus;
- **Teaching and learning:** the garden should provide a wide variety of opportunities to learn about the plant world.

ADDITIONAL VALUES:

The additional values provided by the garden enhance the experience of the campus. The masterplan should enhance the following additional values:

- **a scientific resource:** encourage the use of the garden for experimentation and sampling for scientific study;
- **a sustainable resource:** develop the garden as a key component of the campus sustainability strategy;
- **university heritage:** provide opportunities within the garden to observe the layers that reveal the history of the University and the history of natural sciences; and
- **indigenous connection:** the garden and its plant collection should be developed to provide opportunities for increasing indigenous connection and understanding.



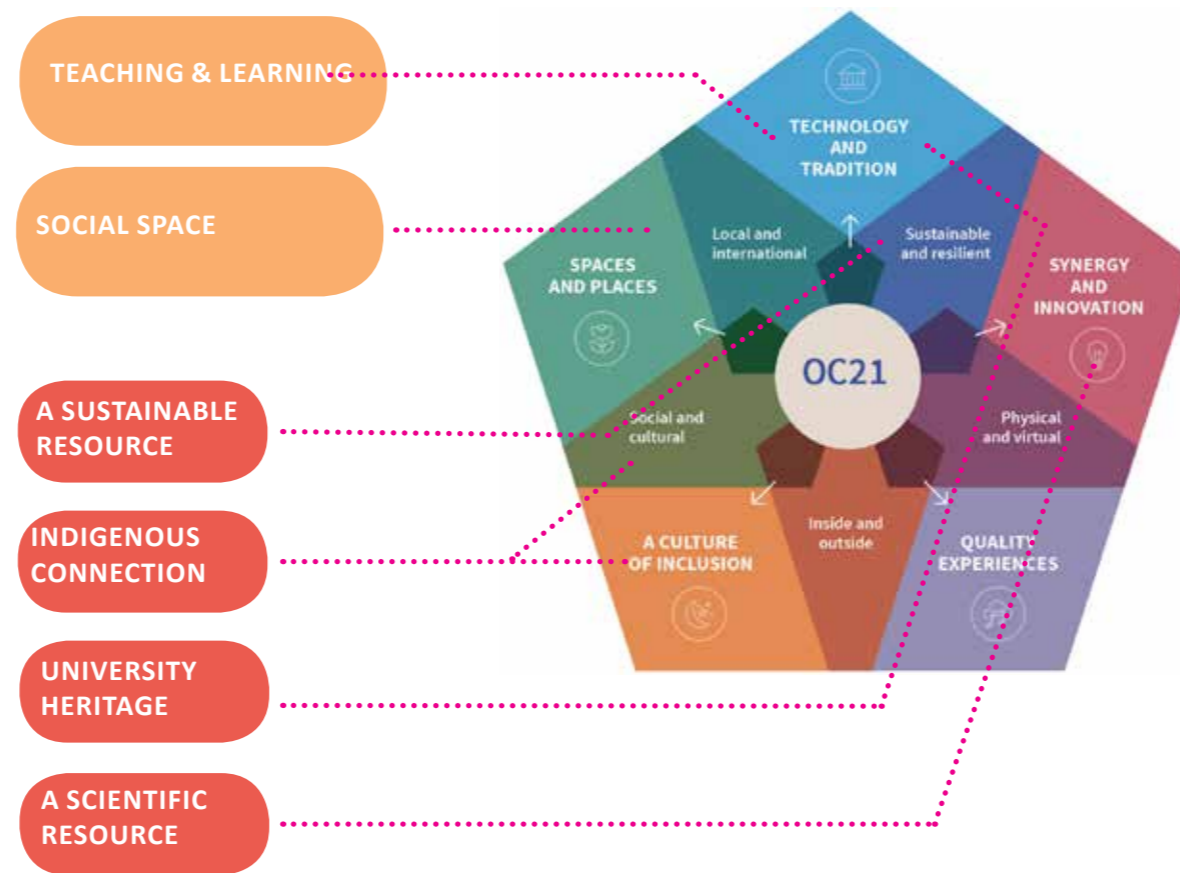
A QUIET, CONTEMPLATIVE, GREEN SPACE
PROVIDING PLACES FOR QUIET, CONTEMPLATIVE SPACE WITHIN NATURE - AN ESCAPE FROM THE HUSTLE AND BUSTLE OF THE CAMPUS



A RELAXING SOCIAL SPACE
SMALL SPACES FOR QUIET SOCIAL AND TEACHING GATHERINGS, IN A SECLUDED, GREEN, SHELTERED SPACE



LEARNING AND TEACHING:
CONTINUING AND ENHANCING THE GARDEN'S ROLE AS THE BOTANIC GARDEN FOR THE UNIVERSITY, CATEGORISING AND DESCRIBING THE RICHES OF THE PLANT WORLD



KEY VALUES OF THE SYSTEM GARDEN
BASED ON STAKEHOLDER CONSULTATION

THE SYSTEM GARDEN VALUES CAN BE COMPLIMENTARY TO THE
UNIVERSITY'S OC21 STRATEGY

THE SYSTEM GARDEN AND OC21

Our Campus in the 21st century (OC21) was developed by the University community in a series of workshops that explored the qualities wanted across all campuses and precincts. It is the formal response to the University of Melbourne's strategic plan Growing Esteem and is integral to how the University will plan for the future, and to developing high-quality campus-based experiences for diverse communities.

The System Garden will be a key component of the Parkville campus open space offering and will support our campus in the 21st century through the following:

TECHNOLOGY AND TRADITION

The System Garden was founded with the grand aspiration of being the most expansive and diverse System Gardens in the world. It was designed in 1856 by the University of Melbourne's first Professor of Natural History, Frederick McCoy and architect Edward La Trobe Bateman. Plants were planted according to a system of classification that sought to explain the entire plant kingdom, and the Garden was used for teaching.

Technology and Tradition have been intrinsically part of the System Garden since its establishment 160 years ago and is recognised in its contemporary use for research and teaching. The masterplan for the System Garden will ensure that the garden continues and enhances its role in the research and teaching of the University.

QUALITY EXPERIENCES

Quality experiences for students, staff and visitors are often dictated by the amenity of the space around them. The experience of walking through the campus can be varied from one place to the next. The System Garden offers a vibrant, green relief to some of the more urban characteristics in the local vicinity. It adds value to the experience physical spaces on campus and offers a space of respite from the bustle of the wider university.

SPACES AND PLACES

The Parkville Campus is made up of a suite of distinctive 'courts' that are framed by the built form and circulation network. The System Garden has a special place and character in this collection of spaces. The System Garden adds unique value to the campus through its botanic diversity and mature vegetation. The diversity of this space is unlike any other in the campus and akin to the Royal Botanic Gardens.



TECHNOLOGY AND TRADITION
THE SYSTEM GARDEN C. 1865, PHOTOGRAPHER D MCDONALD, SOURCE UNIVERSITY OF MELBOURNE ARCHIVES



QUALITY EXPERIENCES
THE SYSTEM GARDEN WILL PROVIDE A HIGHLY BIODIVERSITY, PLANTED SPACE - A UNIQUE BOTANIC GARDEN WITHIN THE PARKVILLE CAMPUS



PLACES AND SPACES
THE SYSTEM GARDEN PROVIDES PLACES FOR RELAXED SOCIAL GATHERINGS WITHIN LEAFY, GREEN SURROUNDINGS.

“A garden that showcases plant diversity and promotes social interaction and learning.”

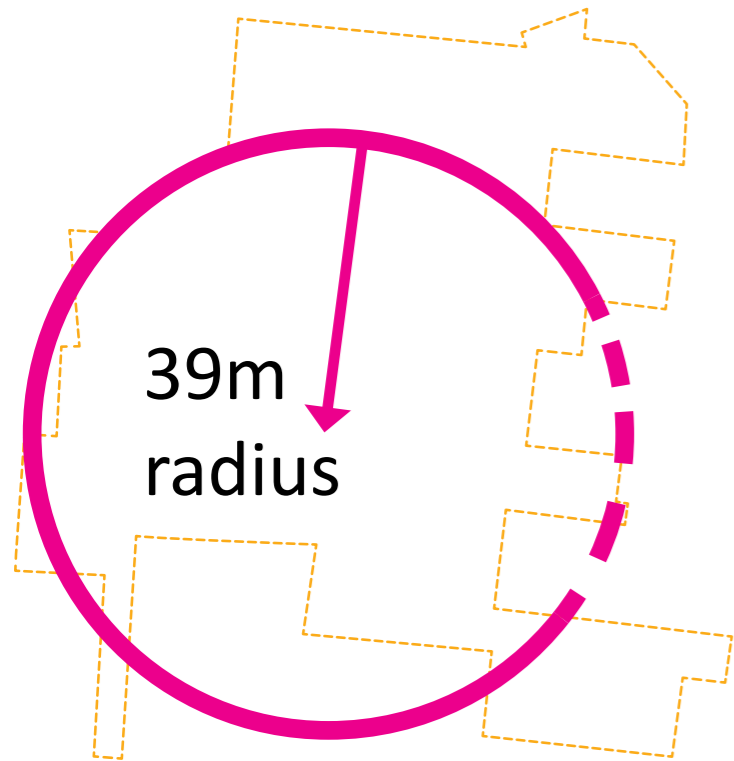
VISION: A BOTANIC GARDEN FOR THE CAMPUS

The garden has a special place in the suite of campus open spaces or ‘courts’. It is the second largest open space on the Parkville campus and provides treasured, secluded, diverse greenspace for academics and students. The diversity of this space is unlike any other in the campus and akin to the Royal Botanic Gardens. This diversity is key to the value of the space and strongly aligned to the overall objectives of the University. The future development of the garden will manage the multiple values of the space with a focus on the following:

- the diversity of the garden will be increased;
- the sub-class beds that were recently lost to the WEBS development will be re-instated;
- scientific links with other allied gardens and institutions will be strengthened;
- The pleasure ground function of the garden will be improved, providing better connected social space;
- interpretation will be improved; and
- the legibility of the space will be improved.



AERIAL VIEW OF THE SYSTEM GARDEN FROM THE SOUTH WEST



39m
radius

RESTORE AND PROTECT SYSTEM GARDEN

In accordance with the WEBS masterplan (2016), the System Garden masterplan proposes a new boundary to protect the garden and the heritage of the tower. The boundary is SET ASa 39m radius from the centre of the tower. This is aligned with the third parallel circular path that originally existed in the 1865 garden layout and although smaller than the original garden, this space will allow sufficient space to incorporate all the sub-class beds, restoring the 'System' function of the garden.



NURTURE A DISPLAY OF BOTANICAL DIVERSITY

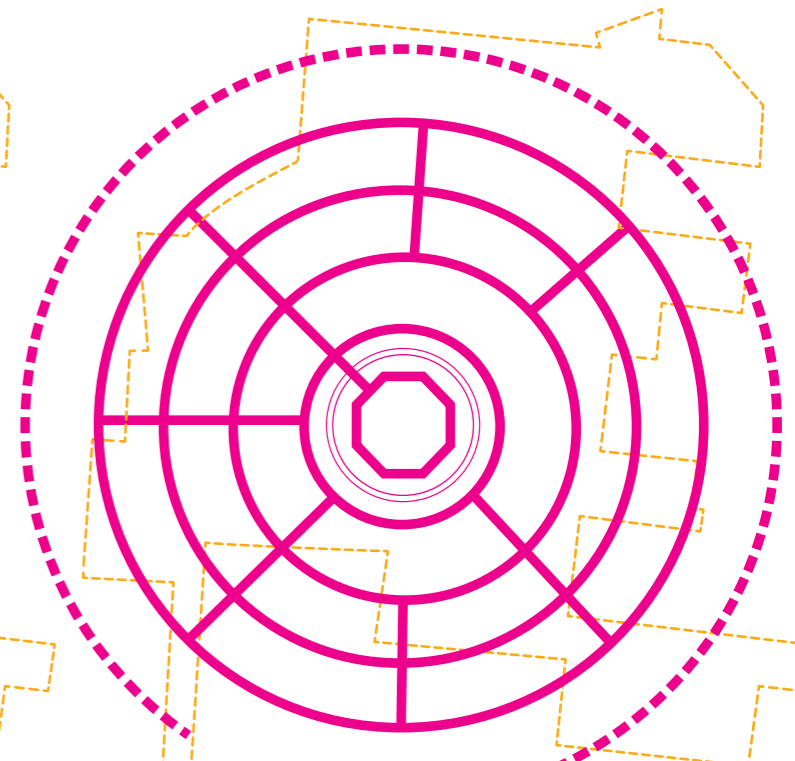
The garden should be celebrated as the University Botanic garden. The 'System Garden' strategy of grouping plants in subclasses/families should be continued and supported. This will provide the opportunity to see similarities and differences in flower form and structure and will provide a display of botanical diversity.

MASTERPLAN PRINCIPLES



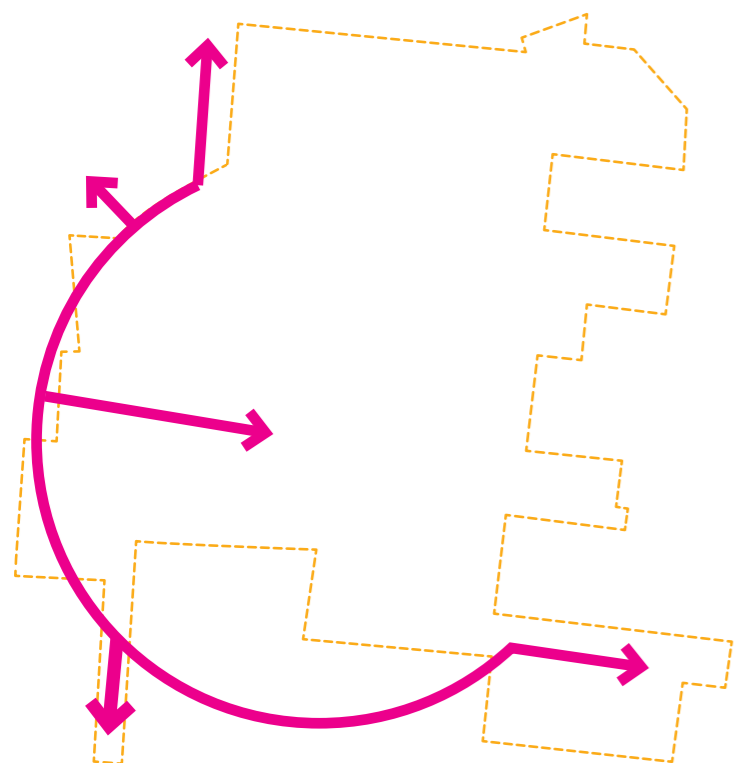
ENHANCE SOCIAL SPACE

The layout of the garden will be developed to provide a wide variety and scale of lawn and garden spaces. Each will have a separate character, enclosed by the sub-class garden beds to provide quiet, social space for small groups of students where they can be immersed in the botanical planting.



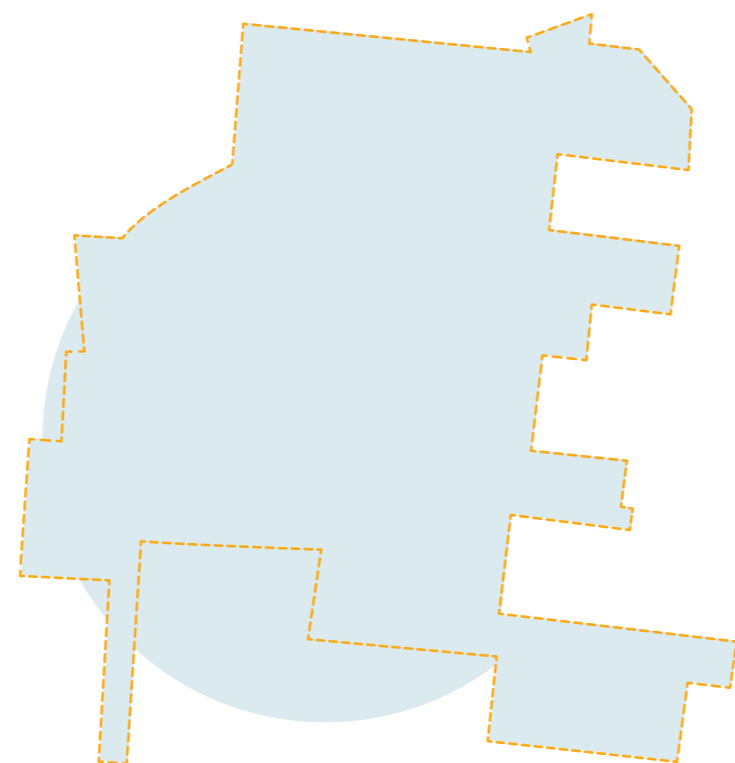
REVEAL LANDSCAPE MEMORY

The garden has a rich history revealing the aspirations of the founding professors of the University. The diverse plant collection also provides many opportunities to display endemic plants that were used by the Wurundjeri people. The layout and interpretation of the garden will help to reveal these layers of history.



DEFINE NEW PEDESTRIAN CIRCULATION

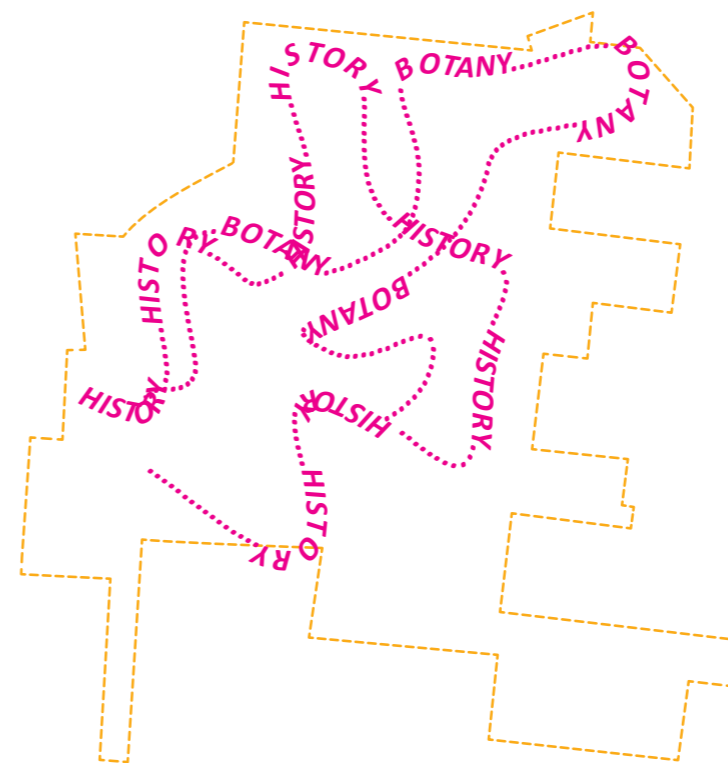
A new perimeter path will provide a high quality access route around the outer edge of the garden and prevent damage from pedestrian traffic to the more fragile garden beds within the core System Garden.



DEFINE A STANDARD MATERIALS PALETTE

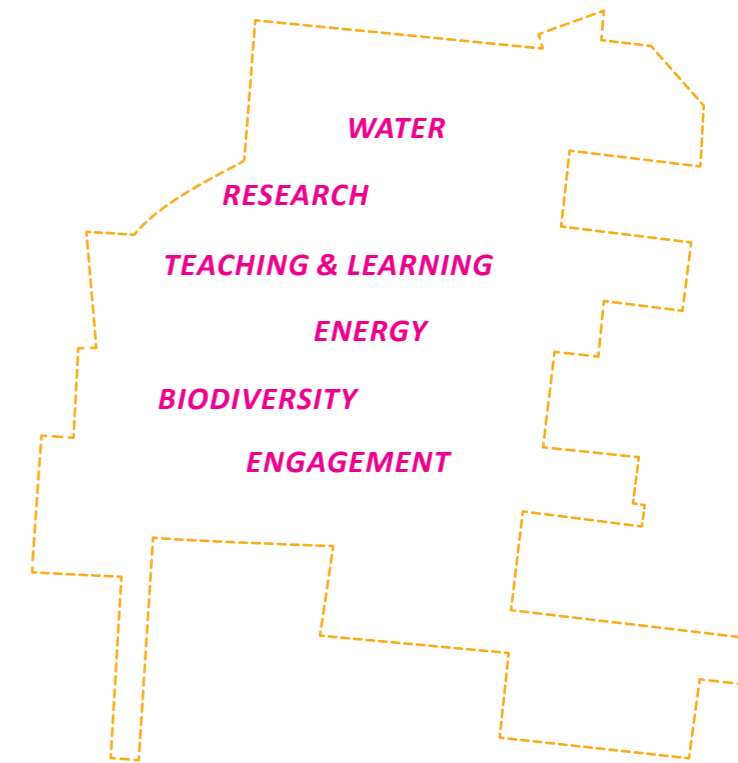
A standard materials palette will ensure consistency and identity within the garden, defining the garden as a special place and botanic garden.

KEY MASTERPLAN INITIATIVES:



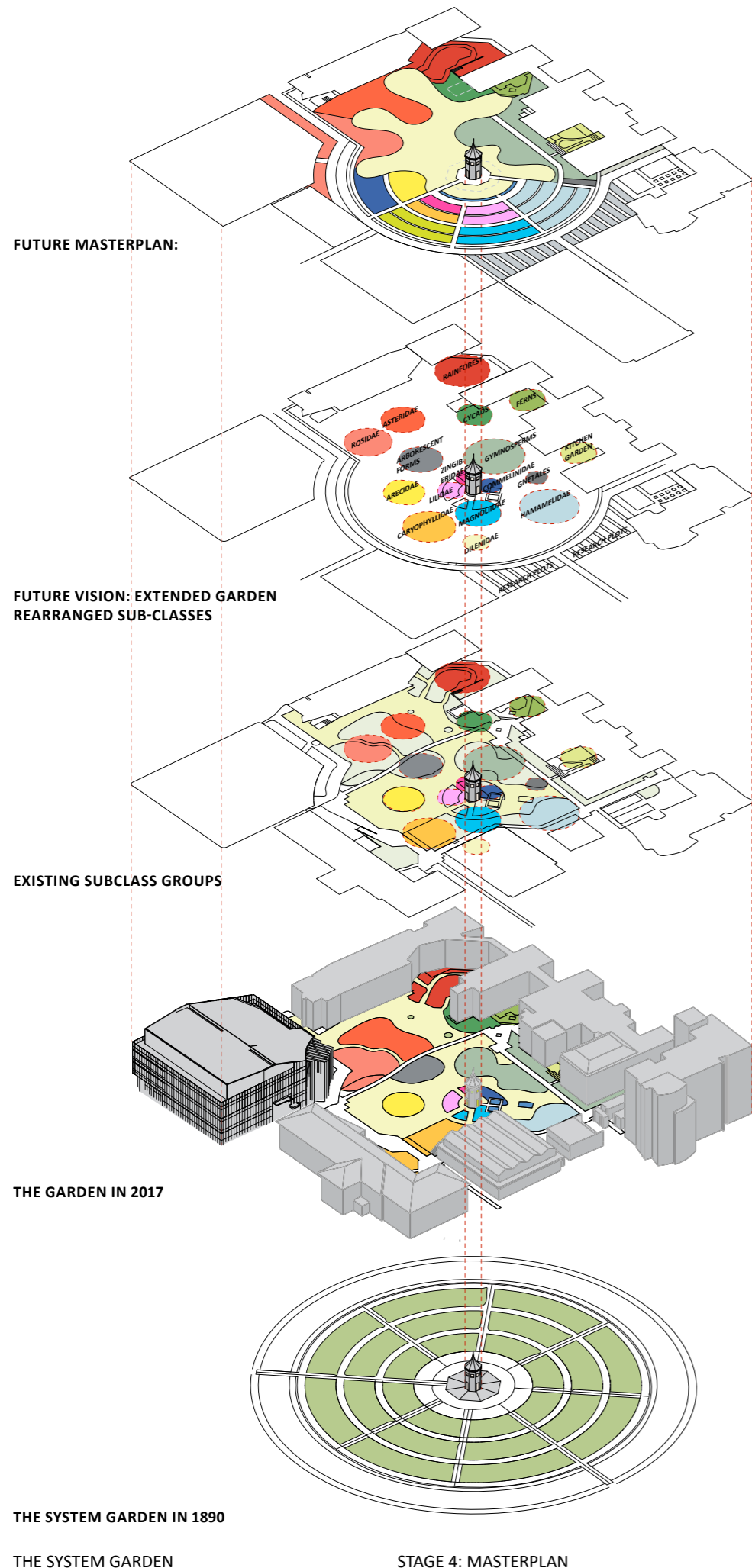
PROVIDE ENGAGING INTERPRETATION

The garden will include different interpretation themes to provide a diversity of information appropriate to a wide variety of garden visitors.



INTEGRATE SUSTAINABILITY

The System Garden is already providing a number of sustainability benefits to the university. The masterplan will help to enhance the sustainability of the operations and provide space to research and showcase sustainability initiatives within the garden.



2018: FUTURE VISION FOR A DIVERSE BOTANIC GARDEN



1873 PHOTOGRAPH OF THE SYSTEM GARDEN AFTER THE INSTALLATION OF THE GLASSHOUSE, PHOTOGRAPH BY G NETTLETON. SOURCE: G PASCOE/UOM ARCHIVES



1865 PHOTOGRAPH OF THE SYSTEM GARDEN BEFORE THE INSTALLATION OF THE GLASSHOUSE, PHOTOGRAPH BY D MCDONALD. SOURCE: G PASCOE/UOM ARCHIVES

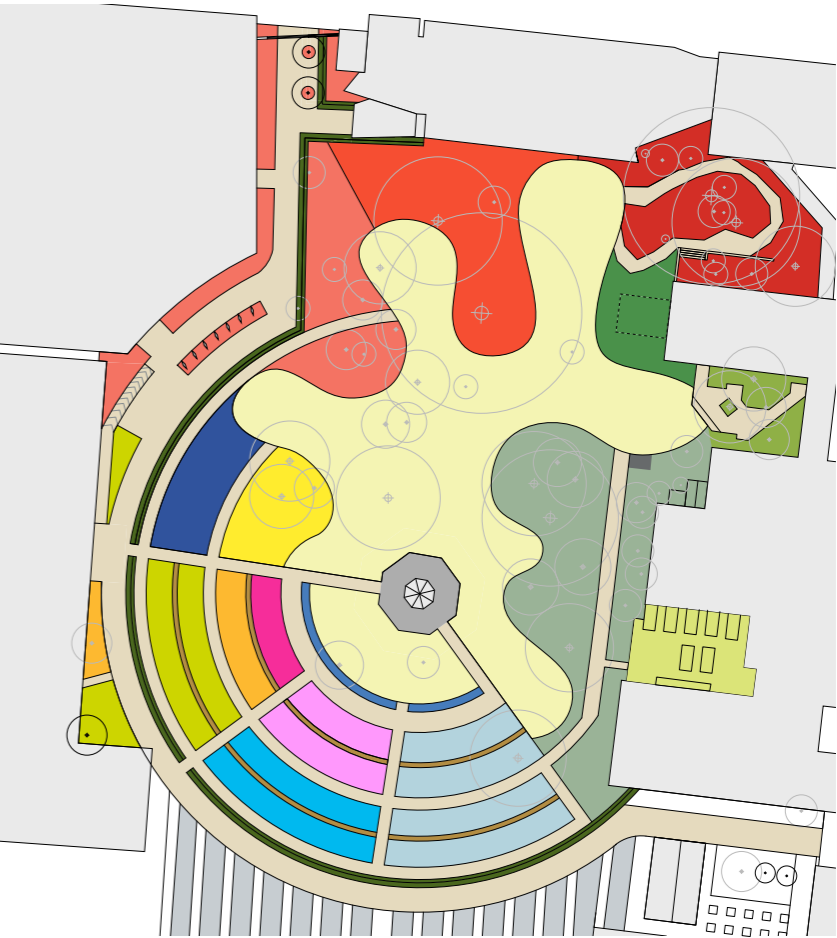
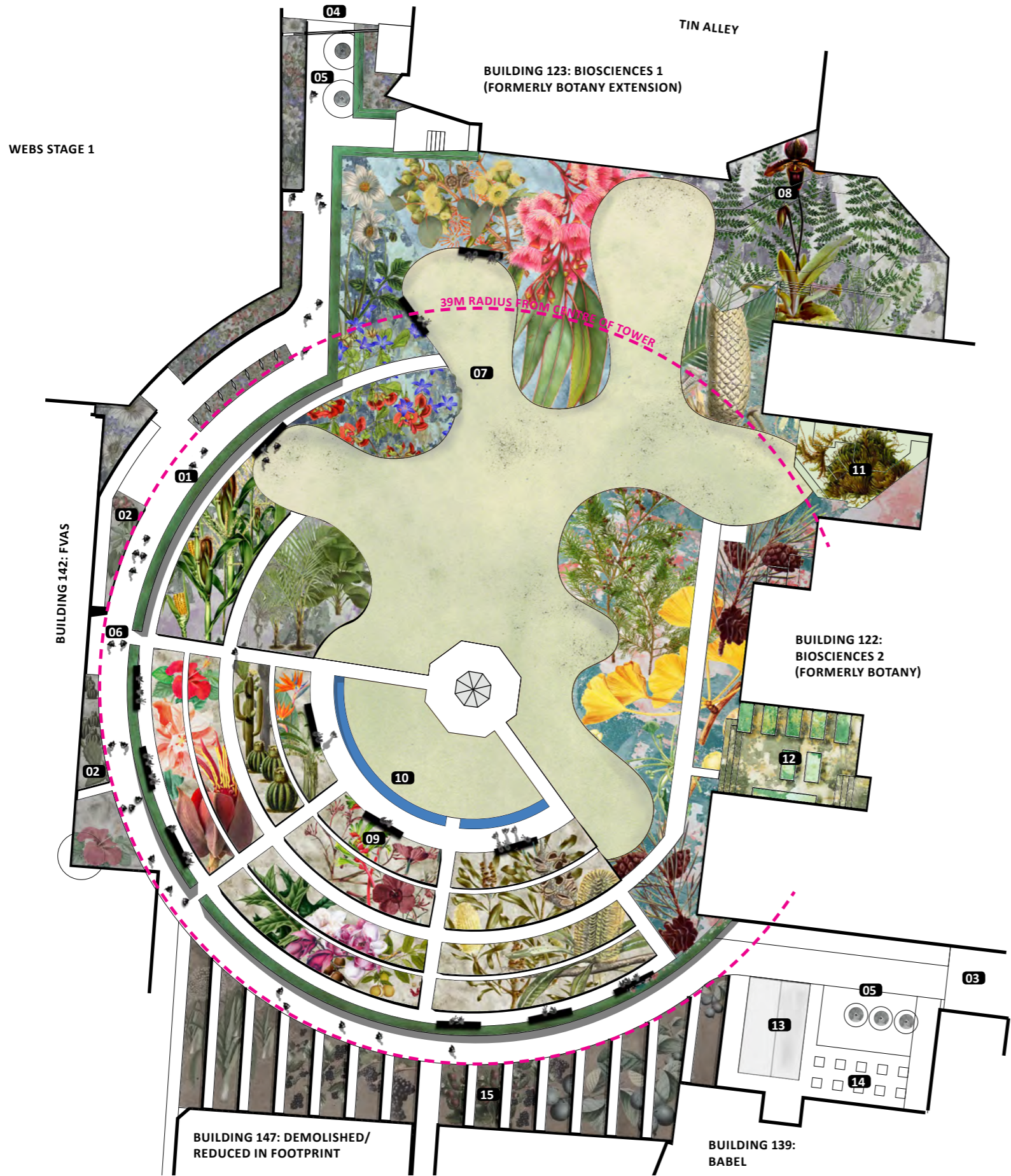
A MASTERPLAN DEVELOPED FROM LAYERS OF HISTORY

The masterplan has been drawn from the layers of history of the site. It combines the recent history of the garden laid out according to the Cronquist system, with the older history of the 19th Century System Garden. Where possible, working around the established trees and shrubs the design will re-interpret the lines of the older garden bringing it back to life and in doing so re-establishing the importance and learning potential of the ordered System Garden. In addition the design overlays a contemporary layer of social interaction with the ancient layer of indigenous engagement to create a rich multi-layered space.

THE SYSTEM GARDEN MASTERPLAN

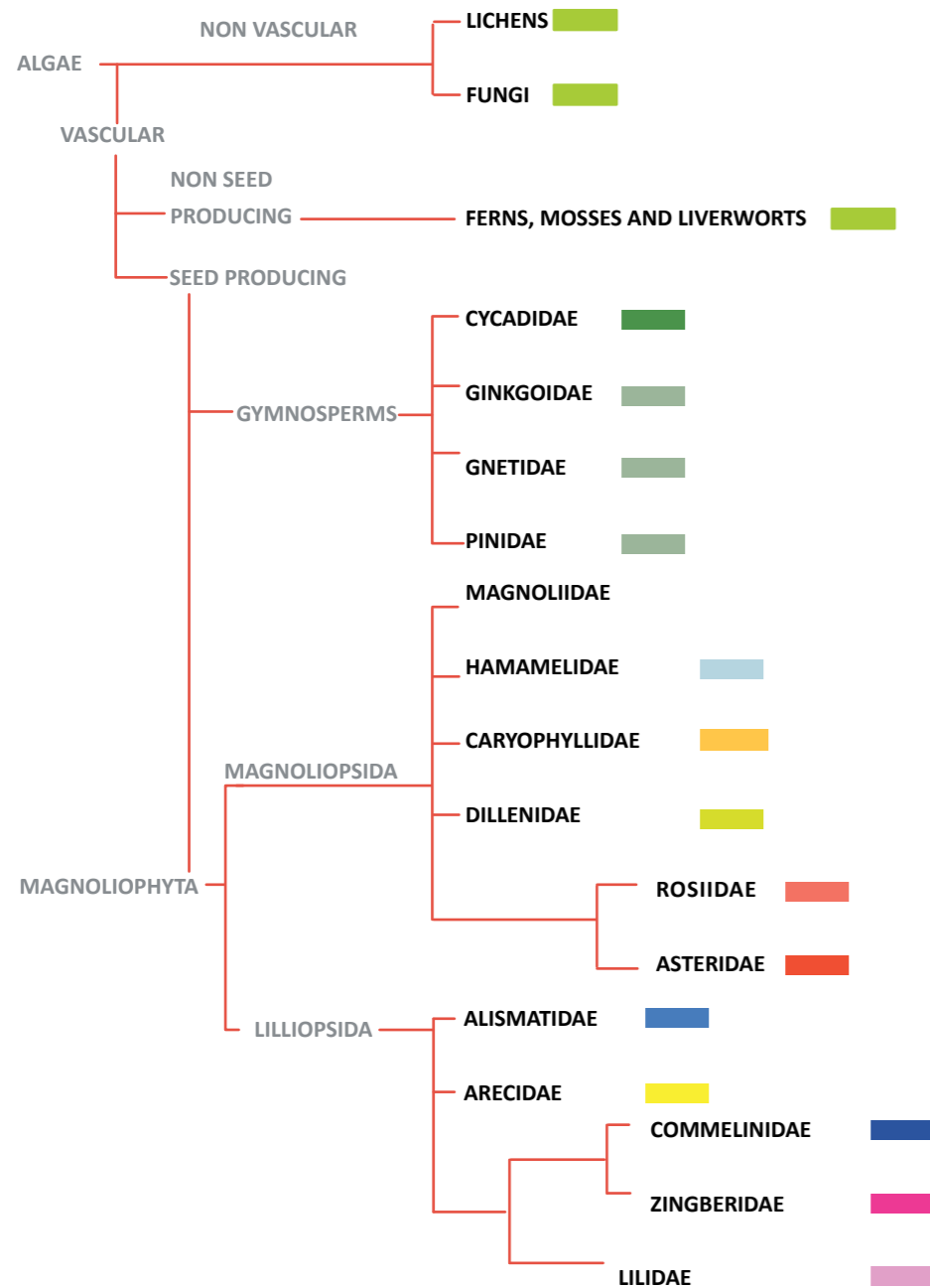
MASTERPLAN ELEMENTS:

- 01 Perimeter path fence and hedge, defining the perimeter circulation zone
- 02 Edge planting - planting species should relate to adjacent sub-class gardens
- 03 Existing gate (can be locked)
- 04 New System Garden gate (can be locked when required)
- 05 Entry avenues
- 06 New System Garden gate (locked at night)
- 07 'Naturalistic garden' enhanced System Garden planting with extended lawn
- 08 Rainforest with relocated Billibellary's walk stop
- 09 'Formal garden' new sub-class beds with new path network
- 10 Wetland canal
- 11 Fern garden
- 12 Herb garden
- 13 New glass house
- 14 Sustainability zone: recycling and bees
- 15 Research gardens



KEY TO SUB-CLASSES LOCATIONS:

- | | |
|--|--------------|
| LICHENS, FUNGI, FERNS, MOSSES AND LIVERWORTS | ROSIIDAE |
| CYCADIDAE | ASTERIDAE |
| GINKGOIDAE, GNETIDAE, PINIDAE | ALISMATIDAE |
| MAGNOLIIDAE | ARECIDAE |
| HAMAMELIDAE | COMMELINIDAE |
| CARYOPHYLLIDAE | ZINGIBERIDAE |
| DILLENIDAE | LILIDAE |



PLANT SUBCLASS LINEAGE DIAGRAM, BASED ON THE CRONQUIST SYSTEM AND EXTENDED TO INCLUDE LICHENS, FUNGI, FERNS, MOSSES AND GYMNOSPERMS



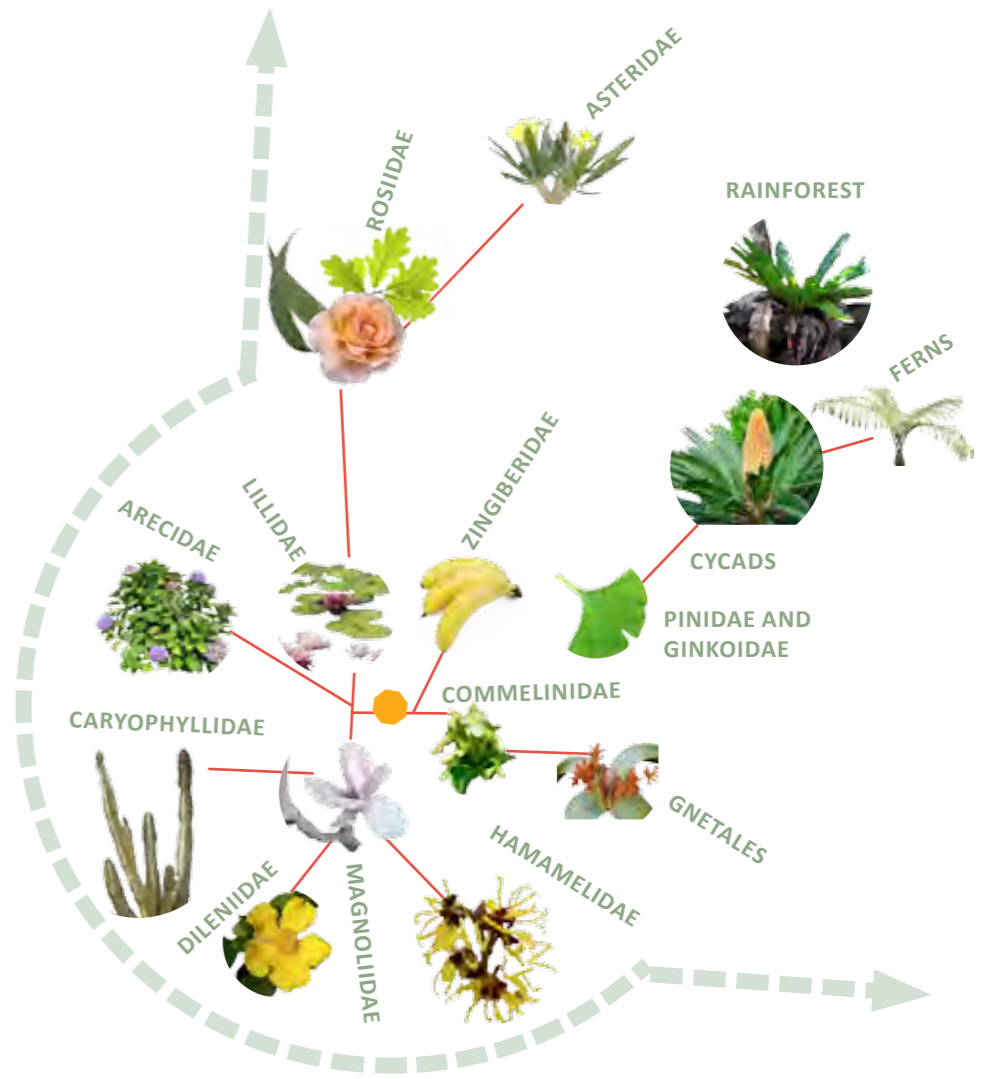
PLANT SUBCLASSES TO BE REPRESENTED IN THE SYSTEM GARDEN

SUB-CLASS LAYOUT

The System Garden describes the entire plant kingdom. To achieve this, the System Garden was organised and laid out in 1865 by Professor McCoy as a physical diagram where plants were arranged into groups of related species for the purposes of comparative identification. This principle is continued today. The diagram used by the garden is based on the Cronquist system which was developed in 1968 by Arthur Cronquist and was widely adopted by Australian botanical institutions in the 1980s. The System Garden uses as an adapted version of the Cronquist classification, extending the diagram to include monocots as well as flowering plants.

As part of the masterplan refurbishment of the garden, the sub-class display will be expanded and re-organised to improve the legibility of the physical diagram represented by the System Garden.

The diagrams below represent the relationship between the different sub-classes which will be shown within the System Garden. This has been used to guide the adjustment and extension of the existing sub-class planting so that it can be complete and easily interpreted. This is adapted subclass layout is integrated into the masterplan.



CONCEPTUAL DIAGRAM ILLUSTRATING THE LOCATION AND RELATIONSHIP OF SUBCLASSES WITHIN THE SYSTEM GARDEN

STRATEGIC INITIATIVES



“the eye of the visitor will familiarize him insensibly with the natural alliances and affinities of the various groups of plants, and suggest the relations which the scientific botanists have detected and used for their classification” Frederick McCoy

BOTANICAL DIVERSITY - SUB-CLASS PLANTING GUIDELINES

The System Garden was originally established by Professor McCoy with the aim of displaying the diversity of the entire plant kingdom, this aspiration is one of the key characteristics of the garden and will be a focus for the continued maintenance of the garden. In the 1990s the garden was refurbished and laid out according to the sub-classes of the Cronquist System. The 2010 planting guidelines produced by GBLA and Jill Kellow provided recommendations for the contents of each of the sub-class beds. The planting scheme aims to represent the classification system of Cronquist (1988), reflecting the traditional use of the garden as a teaching garden for students of Botany, while at the same retaining the amenity of the garden as a recreational space for other members of the University.

These System Garden planting guidelines should be adhered to as the garden is renovated to ensure that the diversity of the System Garden is maintained and developed so that the garden secures its status as a botanical treasure.

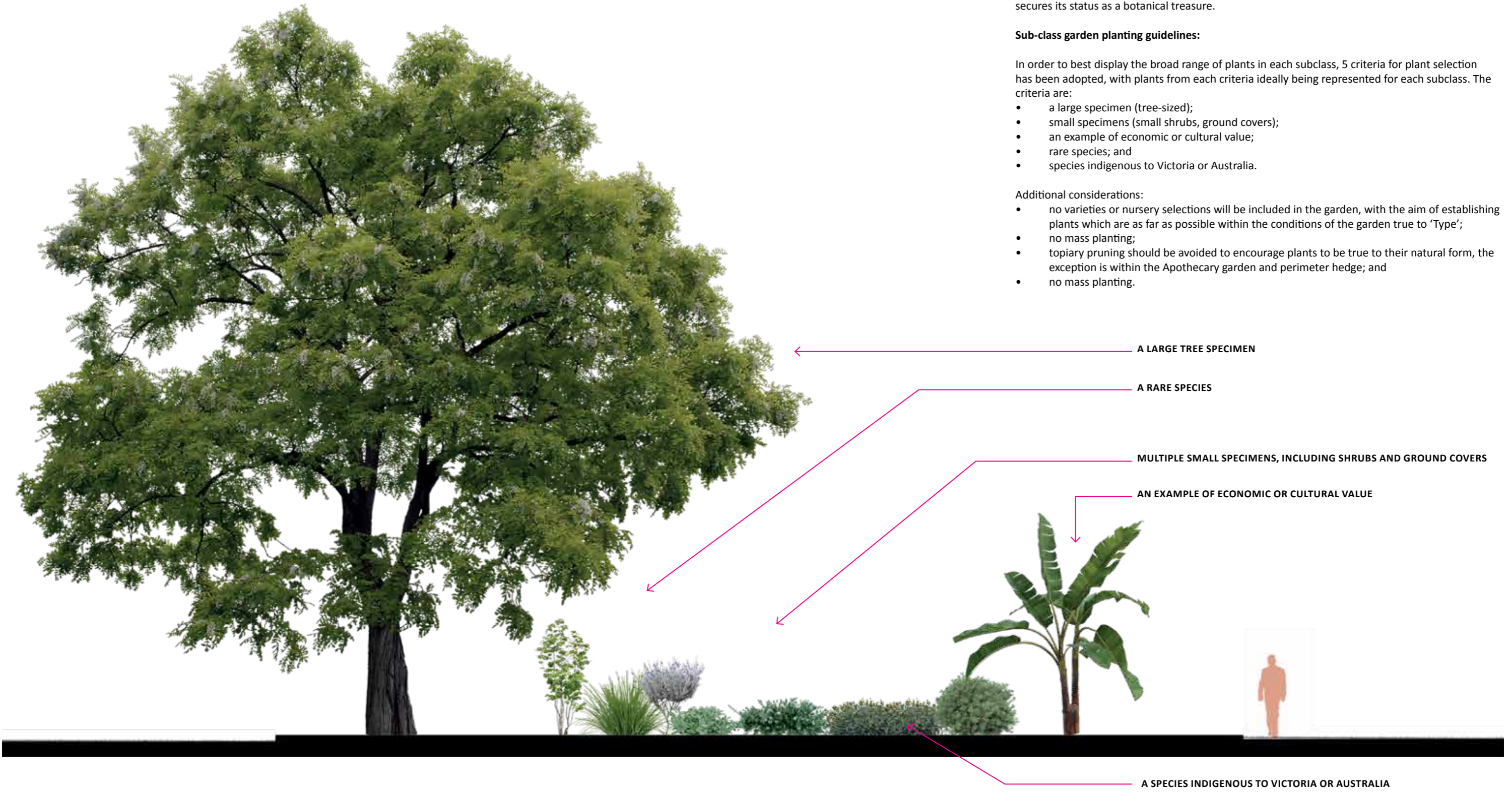
Sub-class garden planting guidelines:

In order to best display the broad range of plants in each subclass, 5 criteria for plant selection has been adopted, with plants from each criteria ideally being represented for each subclass. The criteria are:

- a large specimen (tree-sized);
- small specimens (small shrubs, ground covers);
- an example of economic or cultural value;
- rare species; and
- species indigenous to Victoria or Australia.

Additional considerations:

- no varieties or nursery selections will be included in the garden, with the aim of establishing plants which are as far as possible within the conditions of the garden true to 'Type';
- no mass planting;
- topiary pruning should be avoided to encourage plants to be true to their natural form, the exception is within the Apothecary garden and perimeter hedge; and
- no mass planting.



A SECTIONAL DIAGRAM DESCRIBING THE PRINCIPLES FOR PLANT SELECTIONS WITHIN EACH SUB-CLASS

INTERPRETATION STRATEGY

A subtle and embedded approach to interpretation is designed to highlight narrative and encourage connection and interaction, using various layers of content. History, curiosity and research drive the context of the System Garden - both spatially and thematically. Throughout the garden, text and images are applied to material surfaces creating textural details, and sensitive botanic signage accompany differing species, utilises a more formal and fact driven approach to narrative.

This varied approach to interpretation offers multiple levels of engagement, creating a space that is welcoming and stimulating for all. The sense of unfolding discovery is enhanced by these treatments as the visitor engages with the garden.

A primary school student follows a trail of textural botanic imprints, making rubbings as they absorb content. University students, taking a break lounging on the lawn, encounter extracts from McCoy's research etched into the garden edging. For the visiting amateur botanists and university students doing research, the botanical signage denotes the species and delivers scientific information, emphasising the links between plant subclasses.

The stories are told through subtle visual way finding links and textural artistic details. This approach activates the narratives playing out within the garden, encouraging agency within its visitors, and the sense of discovery that is evoked inspires return visitation.

There will be a combination of interpretation formats suitable to the different thread of interpretation and is likely to include the following:

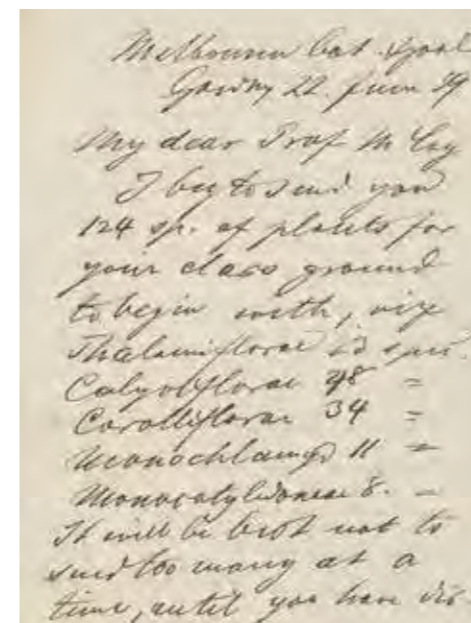
- Introduction signage: located at the major entry points, this signage will introduce the System Garden, provide the plan and describe the idea of a System Garden as well as providing pointing to the types of information available within the garden;
- Garden branding: new gates will be laser cut corten panels, offering an opportunity to develop a pattern to signify entry into the System Garden;
- Sub-class garden information: specific signage to describe the individual sub-classes, the characteristics and the contents of the garden bed and how it describes that part of the plant kingdom;
- Historic interpretation: signage providing snippets of information or photographs such as paragraphs from McCoy's speeches or photographs of plant slides from the herbarium will provide a historical context of the garden, these will be small and scattered around the garden, available to be sought out by those who are interested in this subject;
- Botanical labelling: continue the existing practice of labelling individual plants and extend to every plant, consider changing the format to speed up the process of creating new labels;
- Indigenous plants and Billbellary's walk: Indigenous use plants will be labelled with; specifically coloured labels to highlight them, providing additional information on the local language name and plant use. The Billbellary's walk sign will be moved to the rainforest, to provide an immersive, natural experience; and
- Digital interpretation: a digital resource will be developed providing access to more detailed information which can be specifically targeted to the different interest groups such as Primary schools, secondary schools and Tertiary education.



INTRODUCTION SIGNAGE: EXPLAINING THE BASIC LAYOUT AND THE CONCEPT OF A SYSTEM GARDEN



SYSTEM GARDEN BRANDING



HERITAGE 'SNIPPETS'



SUB-CLASS GARDEN INFORMATION - COULD BE INTEGRATED INTO EDGING



STAGE 4: MASTERPLAN



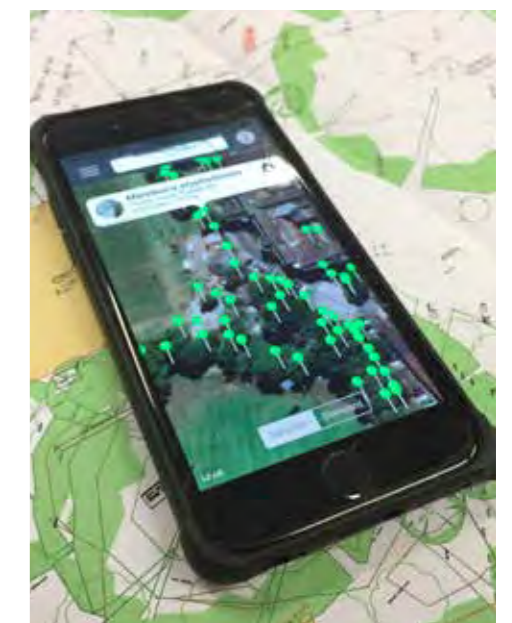
BOTANICAL LABELLING: EXISTING



BOTANICAL LABELLING: NEW LABELLING



INDIGENOUS ENGAGEMENT



DIGITAL INFORMATION: PROVIDING DETAIL

Trees that survive from the 19th century garden:

- 2045 Chilean Wine Palm (*Jubaea chilensis*)
- 2046 Canary Island Date Palm (*Phoenix canariensis*)
- 2047 Date Palm (*Phoenix dactylifera*)
- 2140 Osage Orange (*Maclura pomifera*)

+ Cycades, first planted in the old quad in 1860, relocated to System Garden

□ *Cordylime australis*

Trees that were planted in the early twentieth century include:

- 2017 Sydney Blue Gum (*Eucalyptus saligna*)
- 2019 Rock Fig (*Ficus platypoda*)
- 2020 Silly Oak (*Grevillea robusta*)
- 2021 Queensland Lace Bark (*Brachychiton discolor*)
- 2032 Swamp Cypress (*Taxodium distichum*)
- 2035 x2 Mountain Plum Pines (*Podocarpus elatus*)
- 2037 Montezuma Cypress (*Taxodium mucronatum*)
- 2048 Indian Bean Tree (*Catalpa bignonioides*)
- 2057 White Mulberry (*Morus alba*)
- 2146 Norfolk Island Pine (*Araucaria heterophylla*)
- 2147 Swamp She-oak (*Casuarina glauca*)

UNIVERSITY HISTORY

The historical significance of the System Garden primarily arises from its association with Edward La Trobe Bateman and Professor Frederick McCoy. To a lesser degree it is of historical significance for the association of Joseph Reed with the design of the conservatory, as reflected in the remnant octagonal tower and of Professor Alfred Ewart who was responsible for the early twentieth century plantings. There are two key recommendations of relevance to the masterplan for the System Garden:

- authenticity: Maintain and conserve built fabric and landscape elements that are original (1860s-1880s) or early (c. 1900s-1910s); and
- interpretation: Enhance an understanding of the Garden's historical and scientific (botanical) significance

Authenticity

Tangible elements of cultural heritage significance at the System Garden are listed below. These built and landscape elements should be retained in accordance with the recommendations of the CMP (Lovell Chen, 2011) for the System Garden and the Significant Landscape Review – Parkville Campus (John Patrick, 2009):

- The brick System Garden tower, which originally supported a surrounding greenhouse structure is protected by 11m radius heritage Victoria protection overlay.
- Trees that survive from the nineteenth century garden, including a Chilean Wine Palm (*Jubaea chilensis*), a Canary Island Date Palm (*Phoenix canariensis*), a Date Palm (*Phoenix dactylifera*) and an Osage Orange (*Maclura pomifera*)
- Trees that were planted under the guidance of foundation Professor of Botany, Alfred James Ewart in the early twentieth century including Sugar Gum (*Eucalyptus cladocalyx*), a Sydney Blue Gum (*Eucalyptus saligna*), a Rock Fig (*Ficus platypoda*), a Silky Oak (*Grevillea robusta*), a Queensland Lace Bark (*Brachychiton discolor*), a Swamp Cypress (*Taxodium distichum*), x2 Mountain Plum Pines (*Podocarpus elatus*), a Montezuma Cypress (*Taxodium mucronatum*), an Indian Bean Tree (*Catalpa bignonioides*), a White Mulberry (*Morus alba*), a Norfolk Island Pine (*Araucaria heterophylla*) and a Swamp She-oak (*Casuarina glauca*).
- + Plants that are significant but not protected

Interpretation

The System Garden is not well understood. It is a fragment of a once much larger space (approximately 25 per cent survives). Understanding of the place is not assisted by the current interpretation. Having regard to the significance of the Garden, and the University's objectives to promote its scientific, historic and cultural significance to the University and Melbourne at large, it is recommended that site interpretation should promote an understanding of the principles that underpinned the conception and operation of the System Garden from the 1850s to the 1880s (its heyday). This approach would provide an opportunity to:

- celebrate the System Garden as a living link to the University's origins in the 1850s, expressive of the ambition and vision for the University, and Melbourne, at that time; and
- contextualize the System Garden at a time of significant change in the history of biology (Darwin's, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, was published in 1859, while the design for the Garden was underway).

This approach would also provide an opportunity to reflect on mid-nineteenth century education principles. The System Garden was a teaching resource, and demonstrates a commitment to place-based learning, a principle espoused by the University's current strategies, *Growing Esteem: 2015-2020* and the related *Engagement at Melbourne 2015-2020*.

An option for implementation of this objective is to develop a strategy for interpretation of the System Garden. This may be tied to interpretation strategies for other early remnants of the University – including the Main Drive and the Old Quadrangle (currently undergoing a major redevelopment).



PLAN OF HERITAGE PROTECTED ELEMENTS, SCALE 1:500

INDIGENOUS CONNECTION

The future planning of the System Garden will extend the existing indigenous interpretation and use the botanical collections of the space to provide diverse and comprehensive indigenous interpretation open to all visitors.

The indigenous narrative will include the following:

- all of the sub-class plantings include at least one Victorian or Australian species. Improved interpretation will update the botanical signage to provide additional information, identifying the plant species, its common name, its local language name and indigenous uses for the plants. It is recommended that these labels are printed in a specific identifiable colour so that the indigenous plants can be easily spotted;
- the rainforest garden is a densely planted space with predominantly Victorian native species. It provides a place to be immersed in the local flora, interpretive signage will enhance the visitor experience providing additional information about indigenous practices related to the rainforest; and
- Billibellary's Walk provides a narrative of the campus landscape from an Indigenous perspective, via a downloadable phone app. or map. The System Garden stop on the walk links to the theme of 'Place', reflecting the change of seasons from late summer to early winter and the movement of the Wurundjeri people toward shelter on higher ground. The walk was developed in conjunction with the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc, elders and the Office of the Provost. Billibellary's walk sign is currently located in the south eastern corner of the garden. The masterplan proposes to move it into the Rainforest garden to allow the viewer to be immersed in native planting and provide greater opportunities to discuss the local plants and seasonal changes.



THE RAINFOREST GARDEN PROVIDES OPPORTUNITY TO BE IMMERSSED IN NATIVE PLANTS



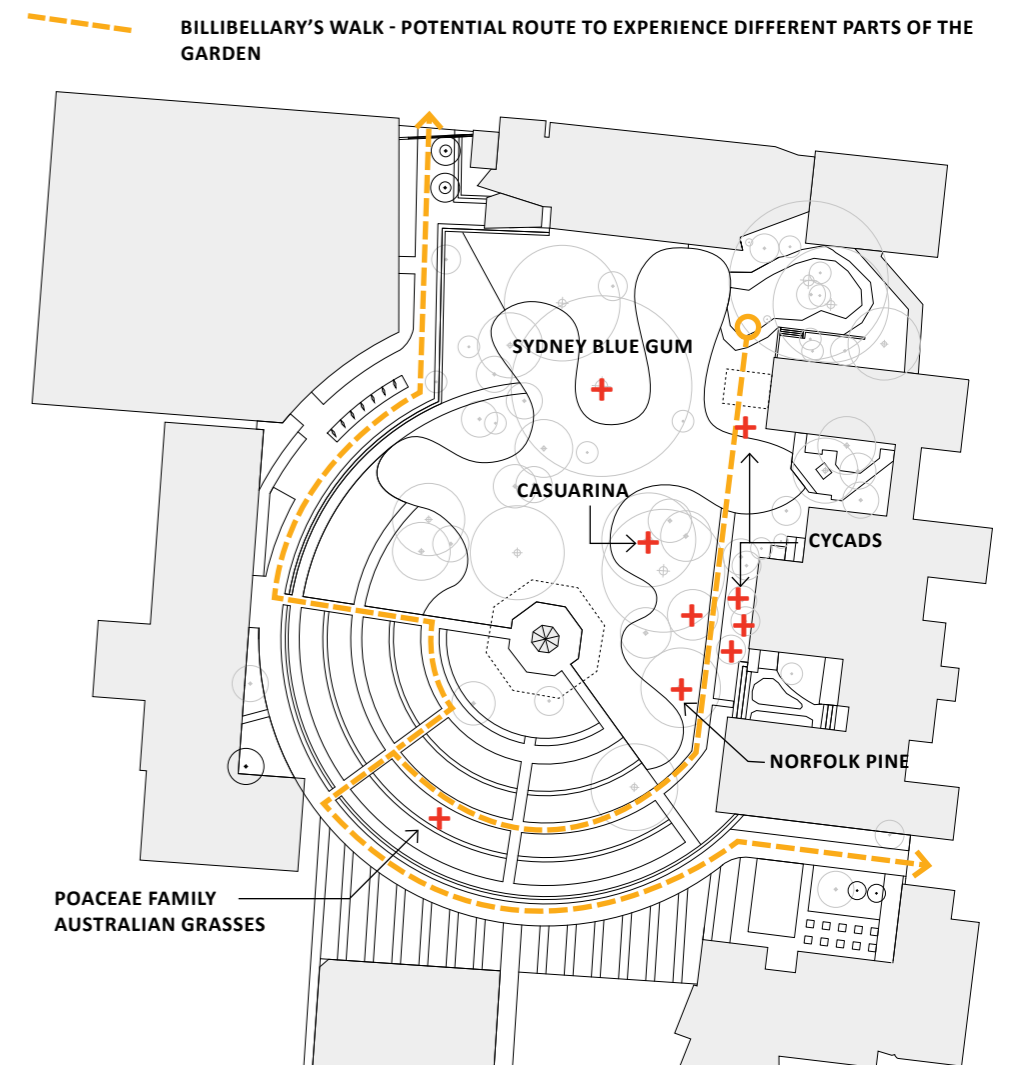
THE RAINFOREST GARDEN - CANOPY AND SKY



EXISTING BILLIBELLARY'S WALK SIGNAGE WILL BE MOVED TO THE RAINFOREST AREA



MILARRI GARDEN, MELBOURNE MUSEUM, PLANT LABELLING SHOWIN INDIGENOUS INFORMATION



PLAN ILLUSTRATING OPPORTUNITIES TO ENHANCE INDIGENOUS CONNECTIONS, SCALE 1:1000

SUSTAINABILITY

The System Garden provides multiple sustainability benefits to the adjacent campus and the masterplan will embrace sustainability in the strategic outlook, the design and management of the space.

Key strategic sustainability considerations are:

Research and Connection

The System Garden should be used as a living laboratory to test landscape sustainability techniques and foster connections with the campus faculties and industry partners.

Teaching and learning

The System Garden should be used as an outdoor classroom. Space and facilities will be provided to enable outdoor learning. A holistic interpretation strategy will allow different levels of students to link in to a variety of streams of information.

Operations: Energy, water & Transport

The System Garden should demonstrate embedded sustainability practices. Minimising reliance on natural resources, reducing electricity and water consumption should be enabled by smart design. The garden should embrace and showcase innovative sustainability practices such as urban agriculture and composting.

Biodiversity

The System Garden is one of the most biodiverse spaces within the Parkville Campus. The masterplan will further enhance the biodiversity potential and showcase the huge variety of flora and fauna present within the garden.

Engagement

The System Garden has the opportunity to engage directly with students to increase the awareness of the Universities commitment to sustainability. The masterplan will provide opportunities to increase the awareness and participation in sustainable practices through creating spaces like the research gardens.



ENGAGEMENT: THE POSTGRADUATE ENVIRONMENT NETWORK, UOM



URBAN AGRICULTURE: BEES



RECYCLING & COMPOSTING



BIODIVERSITY: TAWNY FROGMOUTHS



SHOWCASING SUSTAINABILITY PRACTICES



MAIN PATHWAYS: UNIVERSITY GREY BRICK



MINOR PATHWAYS: GRANITIC SAND



RAISED DECK: STEEL MESH WALKWAYS

MATERIALS PALETTE

The System Garden will adopt a standard materials palette in order to provide consistency and create a legible hierarchy of access and spaces. The materials palette is based on the University's Campus landscape design standards with particular materials selected to complement the garden character of the space.

The materials palette is as follows:

Main paths: University Grey Brick

Minor paths: Granitic sand

Raised decks: Galvanised steel mesh walkways (used where plant roots and soil compaction need to be avoided)

Feature paving: Slate paving

Garden edging: Corten steel

Garden gates: Laser cut corten steel. (Pattern to be developed by System Garden team)

Any other materials used should be in accordance with the Campus landscape design standards.



FEATURE PATHWAYS: SLATE PAVING



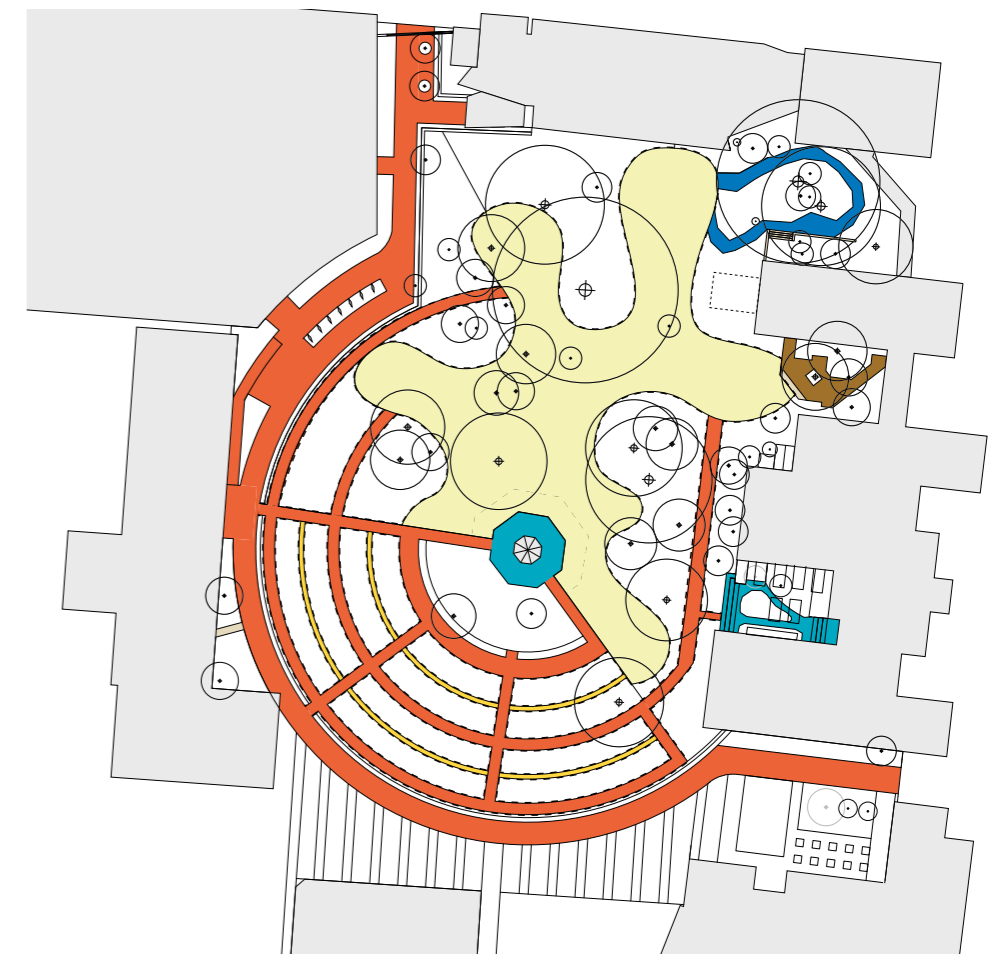
SLATE MULCH



NATURAL BARK MULCH



PINE BARK MULCH



CORTEN CLAD CONCRETE WALL



GARDEN EDGING: CORTEN STEEL



FEATURE GATES: LASER CUT CORTEN STEEL



NATURAL TURF

MATERIALS PALETTE - LIGHTING AND POWER

The lighting of the System Garden will include functional lighting and feature lighting.

The perimeter path around the System Garden will be open 24hrs whilst the central core of the System Garden will be closed at night except for organised events. The lighting strategy is to provide functional lighting for the perimeter path and feature lighting for the rest of the garden. Feature lighting should be designed to work for specific events and or to be viewed from the perimeter path. Power points will be provided at strategic points within the garden to facilitate events and temporary lighting. The existing lighting along the eastern edge of the System Garden will be decommissioned.

The lighting palette is as follows:

- Perimeter path: LED pole lighting in accordance with UoM Campus Standards; and
- Feature lighting: temporary lighting commissioned for events or more permanent sculptural installations, this can be within the System Garden.



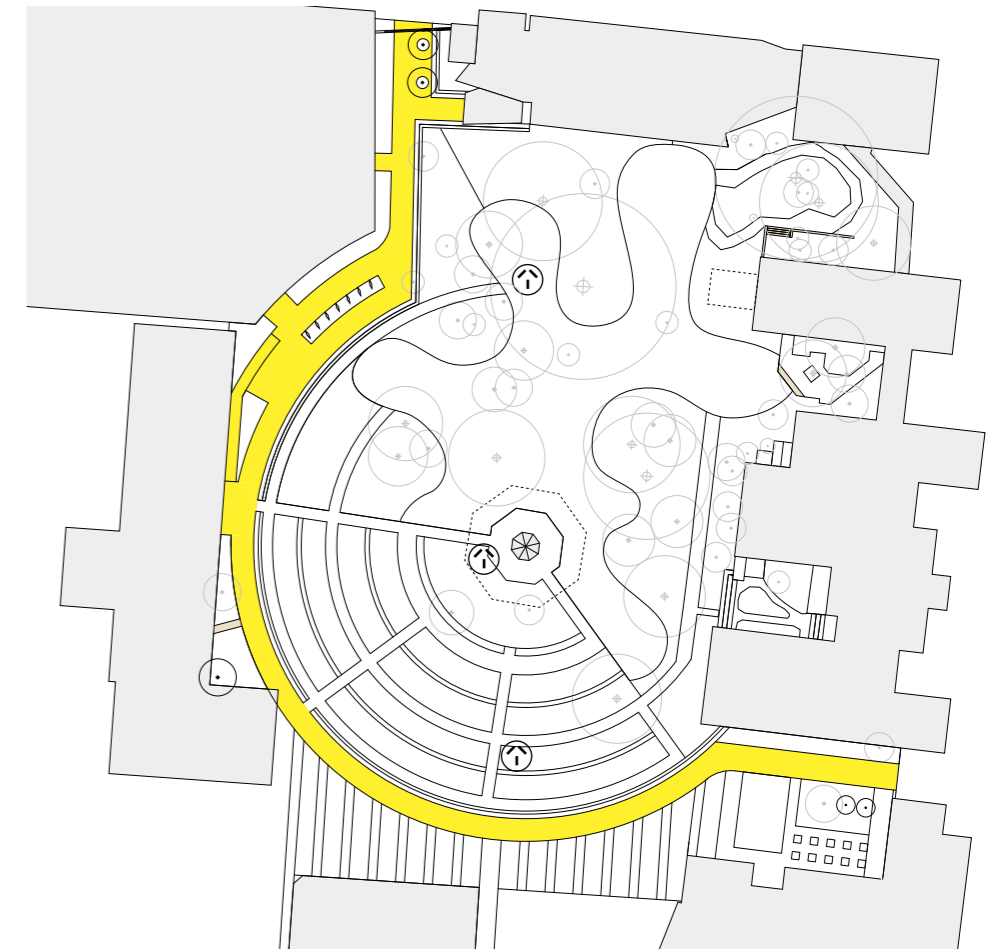
FUNCTIONAL LIGHTING: UOM STANDARD LED POLE LIGHT



LITTER BINS: STAINLESS STEEL LITTER AND RECYCLING



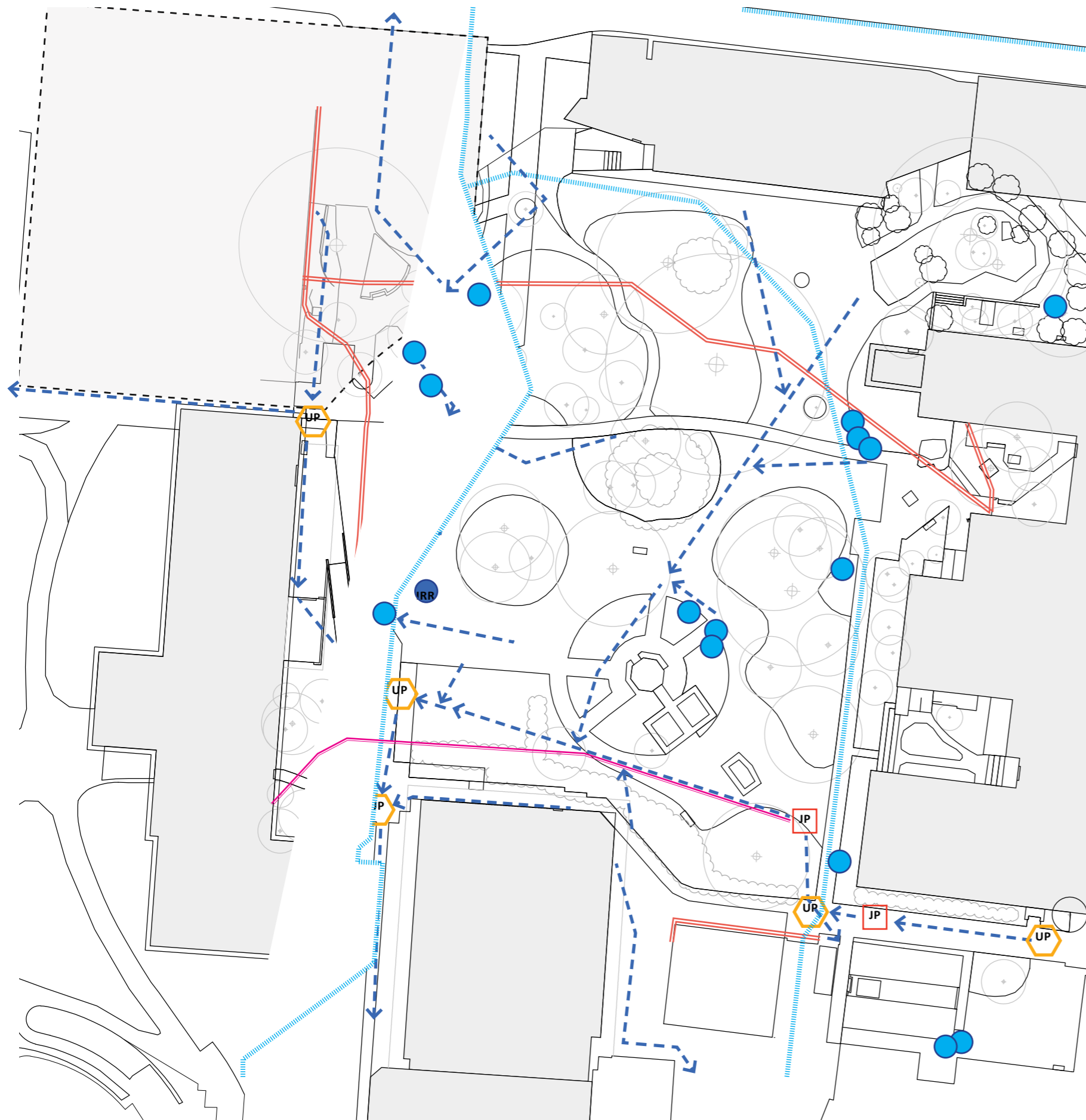
FEATURE LIGHTING: INSTALLATION BY 'FIELD OF LIGHT', NASHVILLE BY BRUCE MUNRO,



MAIN LIGHTING

POWER OUTLET

PLAN ILLUSTRATING ZONES FOR LIGHTING AND POWER, SCALE 1:1000



MATERIALS PALETTE - CONSOLIDATING SERVICES

There are number of existing services within the System Garden, including storm water, electrical, reclaimed water and fibre optic cables. Many of these services are old and may be unused. Soil area is limited for any new planting and any additional area that can be used for plants is valuable. The masterplan proposes an audit of existing services, the focus of the study will be:

- Audit of all existing services to provide an up to date, accurate map of the services within the System Garden to guide future planting;
- Review of any services that can be decommissioned to provide more usable soil areas within the System Garden; and
- Review of stormwater pits to ascertain whether any pits can be removed and whether stormwater can be retained on site to be used by the garden planting instead of piping off site.

For latest services layout refer to UoM services plan

KEY

- STORM WATER PIPE
- ELECTRICAL
- RECLAIMED WATER PIPE
- FIBRE OPTIC CABLE
- WATER UNCLASSIFIED
- UNCLASSIFIED PIT
- JUNCTION PIT



PLAN SHOWING EXISTING SERVICES IN THE SYSTEM GARDEN, SCALE 1:500

FURNITURE

Furniture will be kept to a minimum within the System Garden. The furniture palette is based on the University's Campus landscape design standards with specific furniture selected to suit the needs of the garden.

The furniture palette is as follows:

- Seating: York seat with back, in teak timber. These seats can be donated by bequest and with commemorative brass plates attached to the seat back;
- Litter bins: Stainless steel litter and recycling bins. Boinis will be kept to the perimeter of the garden for ease of emptying;
- Plant pots: All pots should be volcanic stone 'finish' plant pots to match existing pots;
- Temporary fencing: During the development of the garden, some areas of temporary fencing may be required to prevent excessive wear to the garden. Mild steel hoops should be used; and
- any other furniture required should be in accordance with the Campus landscape design standards.



BENCHES: TIMBER 'YORK' SEAT WITH BACK



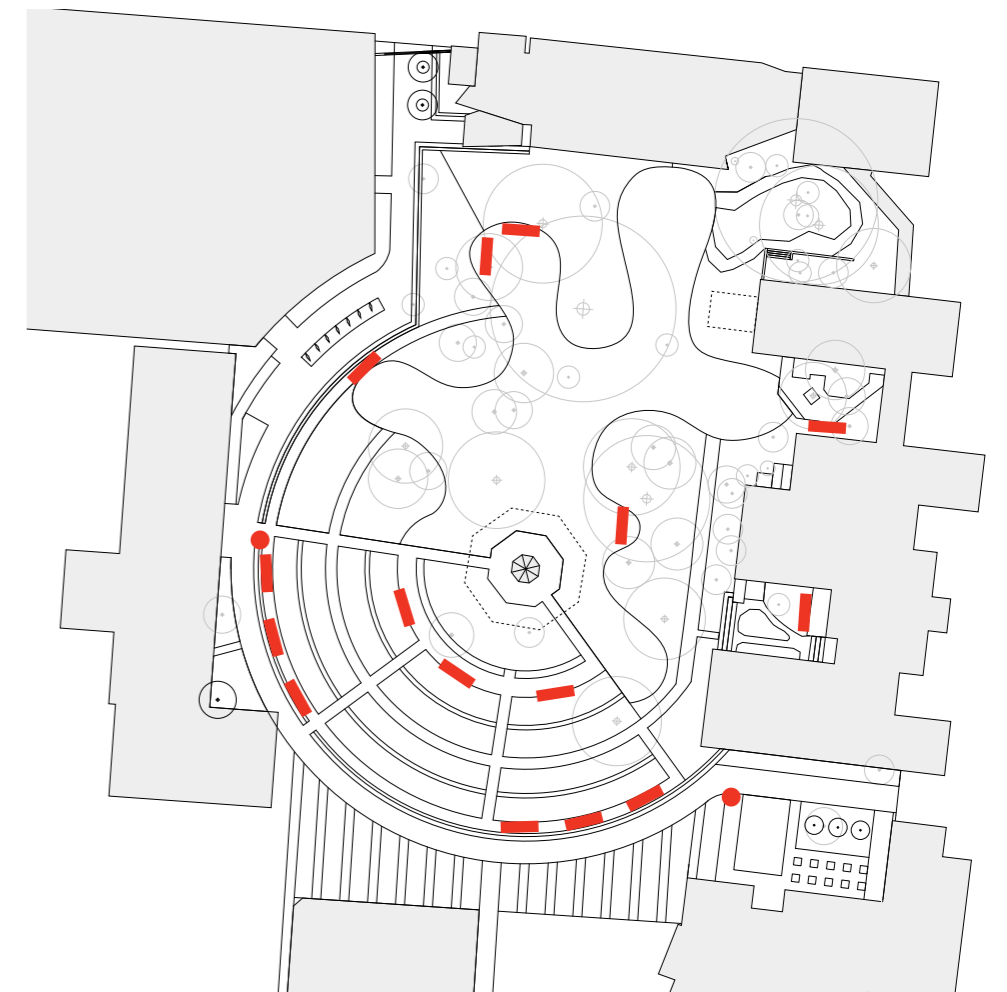
LITTER BINS: STAINLESS STEEL LITTER AND RECYCLING



PLANT POTS: VOLCANIC STONE POTS, SIZES VARY



TEMPORARY FENCING: MILD STEEL HOOP FENCING



PROPOSED FURNITURE LOCATIONS

— SEATING

● LITTER BINS

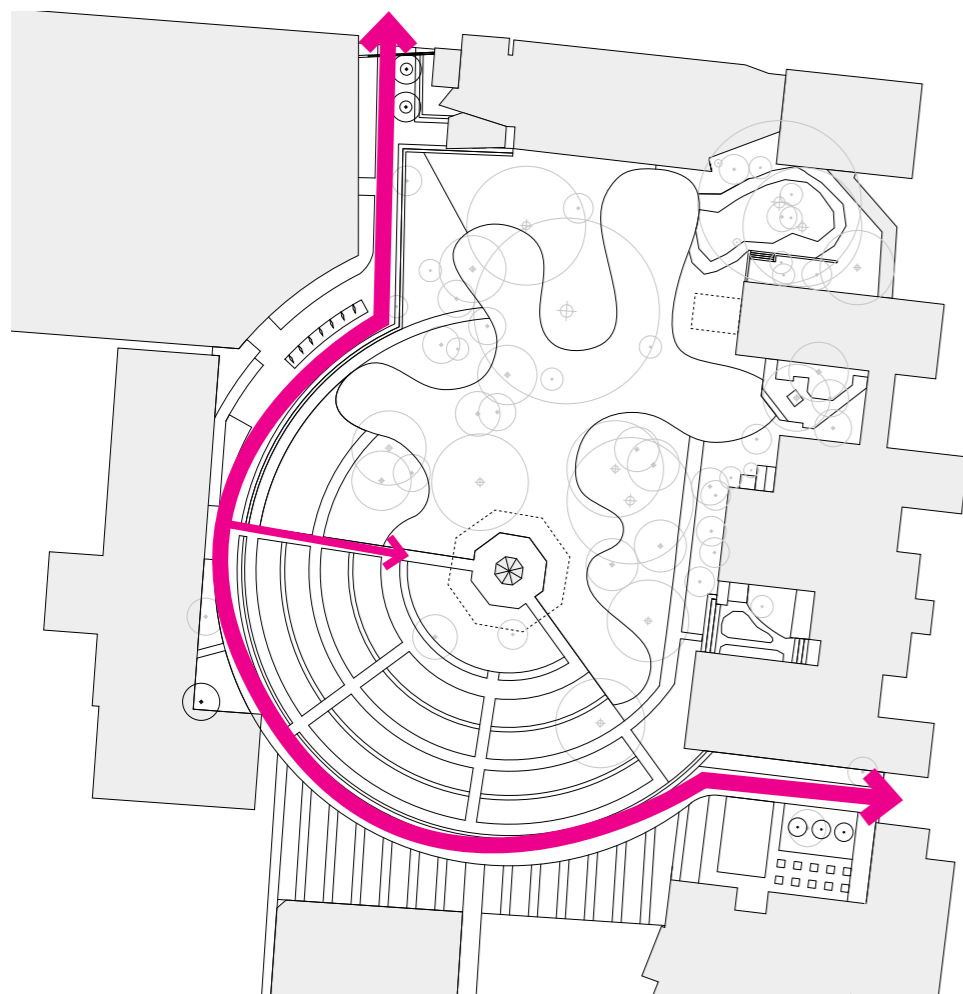
PLAN ILLUSTRATING PROPOSED FURNITURE LOCATIONS, SCALE 1:1000

ACCESS

Pedestrian and vehicle access has been designed to help enhance the experience of the garden. In order to maintain the quality of the garden, unnecessary compaction of garden areas will be prevented through pedestrian and vehicle traffic. The pedestrian and vehicle traffic will be controlled through the path hierarchy and System Garden gates.

Pedestrian and vehicle access

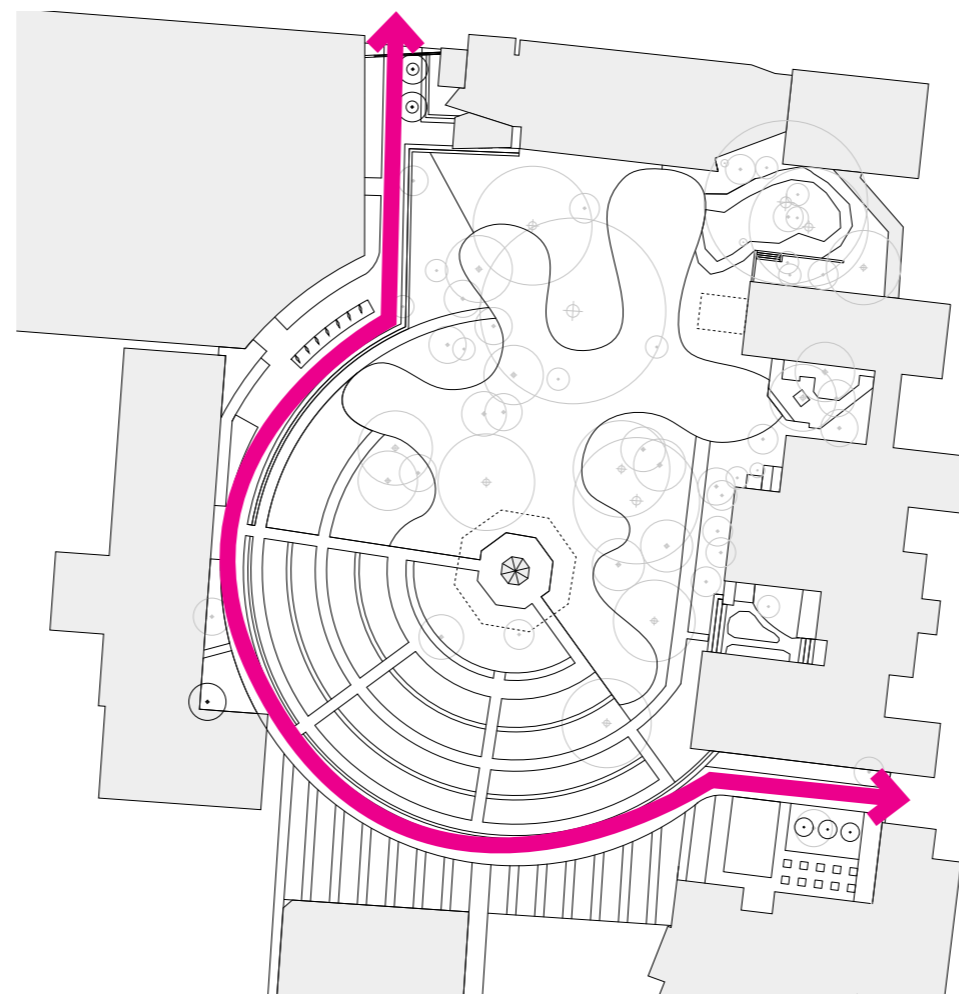
- the new perimeter path will carry the majority of pedestrians accessing the WEBS buildings and therefore preventing unnecessary trampling through the System Garden;
- access to the System Garden will be through the central gate on the west side of the perimeter;
- the System Garden will be closed at night to protect valuable plant specimens from theft or vandalism; and
- access for facade cleaning and other essential building maintenance tasks will be along the perimeter path and the central gate on the western perimeter.



DAY TIME ACCESS

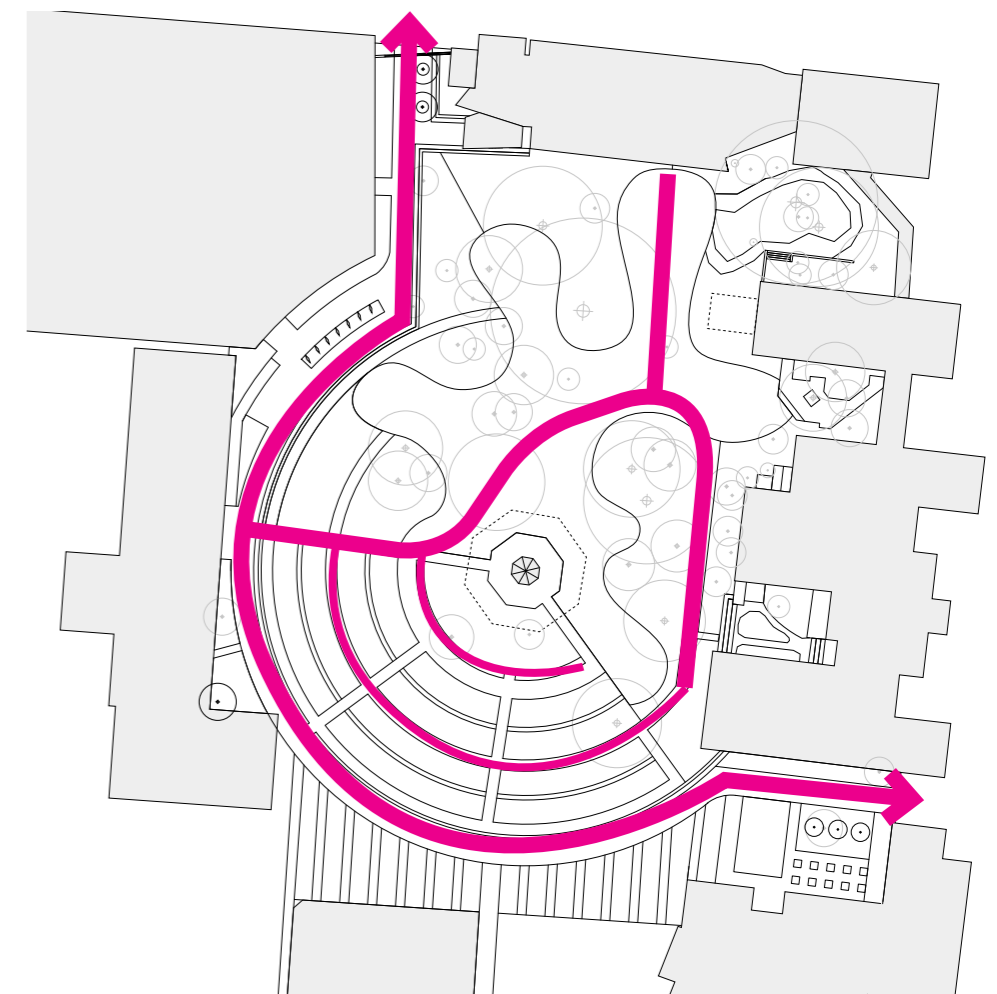
— MAIN PEDESTRIAN FLOW

— MINOR PEDESTRIAN FLOW



NIGHT TIME ACCESS

— MAIN PEDESTRIAN FLOW



SERVICE/MAINTENANCE VEHICLE ACCESS

— LARGE VEHICLE: E.G. FACADE MAINTENANCE VEHICLES

— SMALL MAINTENANCE VEHICLE E.G. GATOR

ART AND EVENTS IN THE GARDEN

Art, installations and performances will continue to be encouraged within the gardens. In particular events and installations which promote and explore understanding of the plant kingdom. Permanent sculptural installations are discouraged due to lack of space unless specifically commissioned and in accordance with the teaching and learning objectives of the System Garden. The masterplan proposes additional infrastructure to be installed to manage the influx of pedestrians and enhance the possibilities for using the garden. These will include the following:

- new edging around the garden beds to protect the gardens from trampling; and
- external power points within the gardens to allow use of external power for installations.

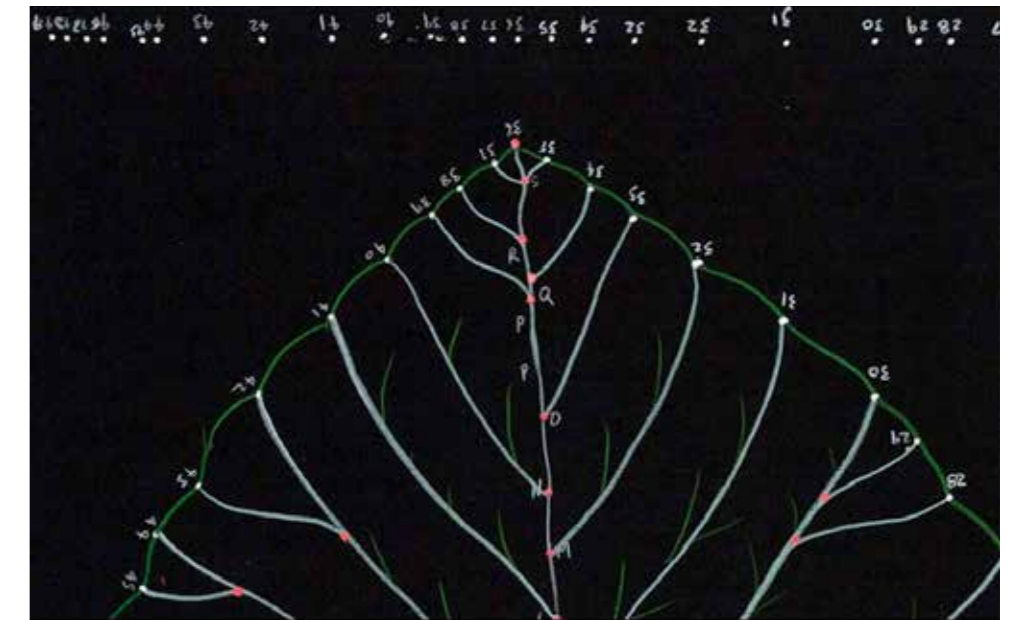
Guidelines for temporary events, art and installations

Any events and installations must consider the welfare of the garden and ensure that the proposed event will not result in damage to the plants or undue soil compaction. The following is recommended:

- events must obtain the permission of the gardens staff, providing details of where, when, numbers expected and type of event;
- limit numbers of gatherings to 100 people maximum;
- large gatherings should be avoided immediately after wet weather;
- all rubbish should be removed after the event by the organisers;
- temporary furniture is allowed;
- food and beverage production such as barbeques are discouraged from the central System Garden but can be installed on the perimeter path; and
- take all precautions to prevent damage to plants and soil.



TEMPORARY INSTALLATION: DALE CHIHULY GLASS SCULPTURES, SEATTLE



MUSIC INSTALLATION: DYLAN MARTORELL'S PLANT SCORE, THE SYSTEM GARDEN, OCTOBER 2017



PERMANENT SCULPTURE: THE EXISTING SUNDIAL




















MASTERPLAN ELEMENTS

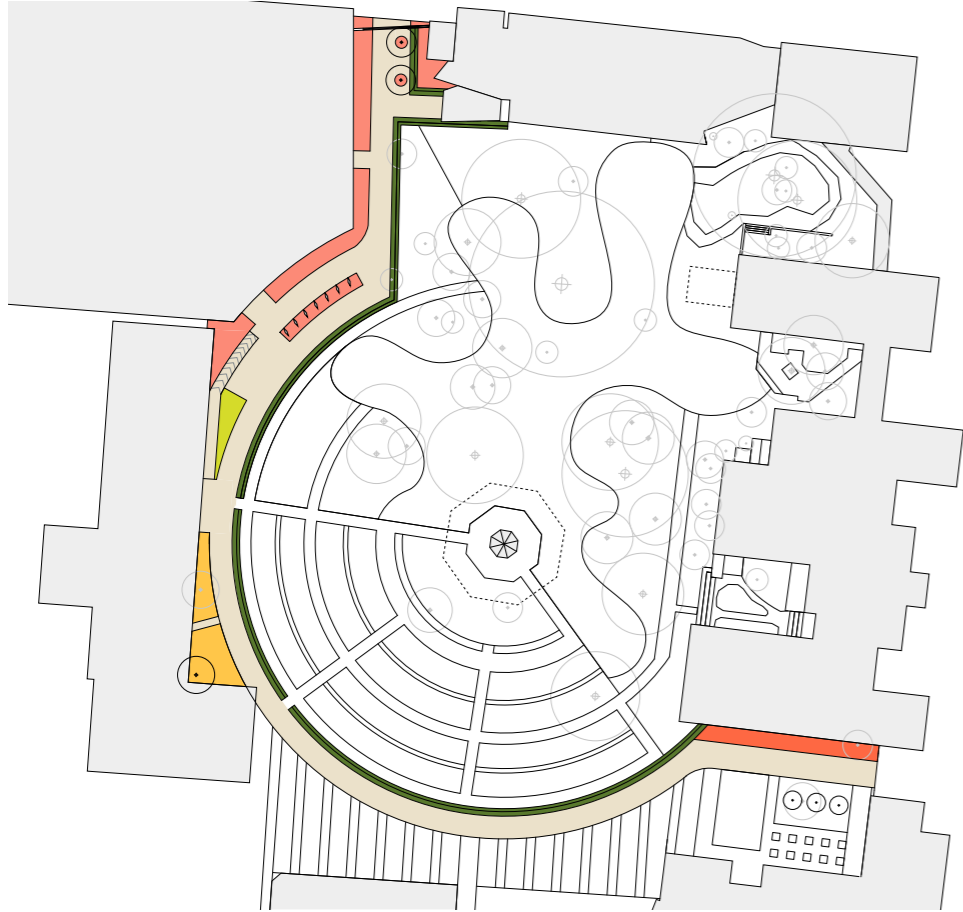


MASTER PLAN ELEMENTS

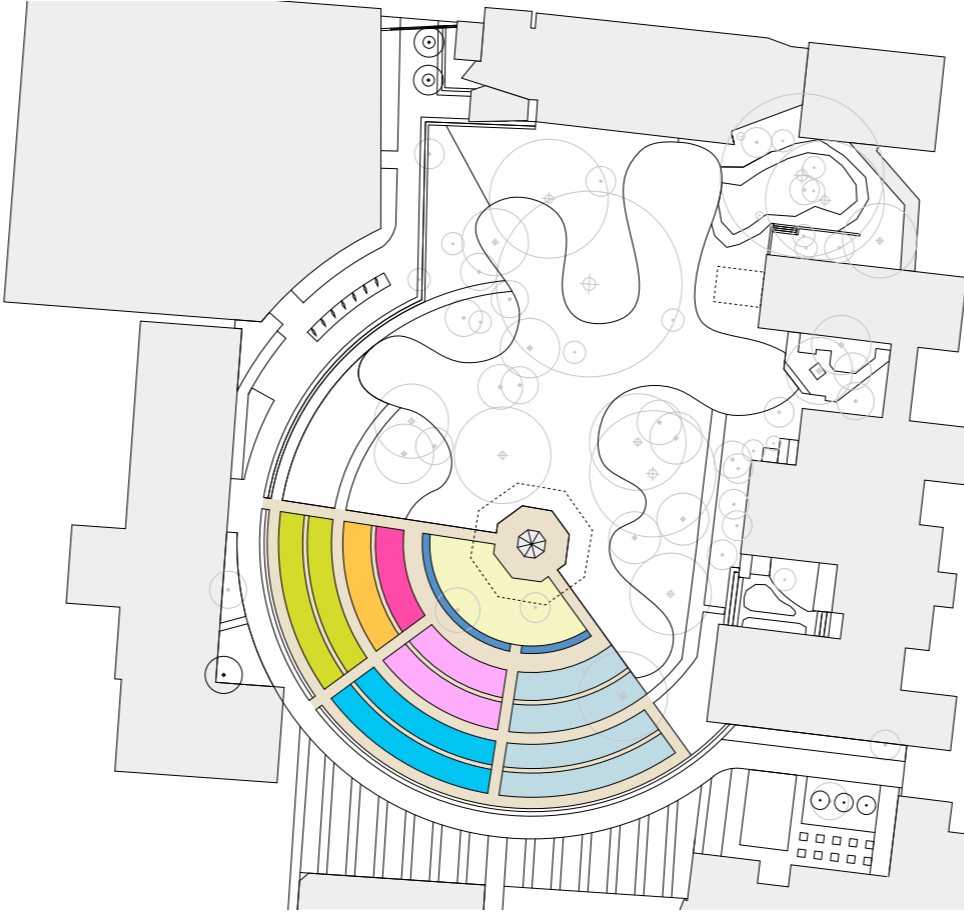
The garden spaces of the System Garden are grouped into five distinct spatial typologies, each of which will be discussed in detail in the following pages. The five typologies are:

- the perimeter and edge spaces;
- the formal garden;
- the informal garden;
- the courtyard gardens; and
- the research and innovation garden.

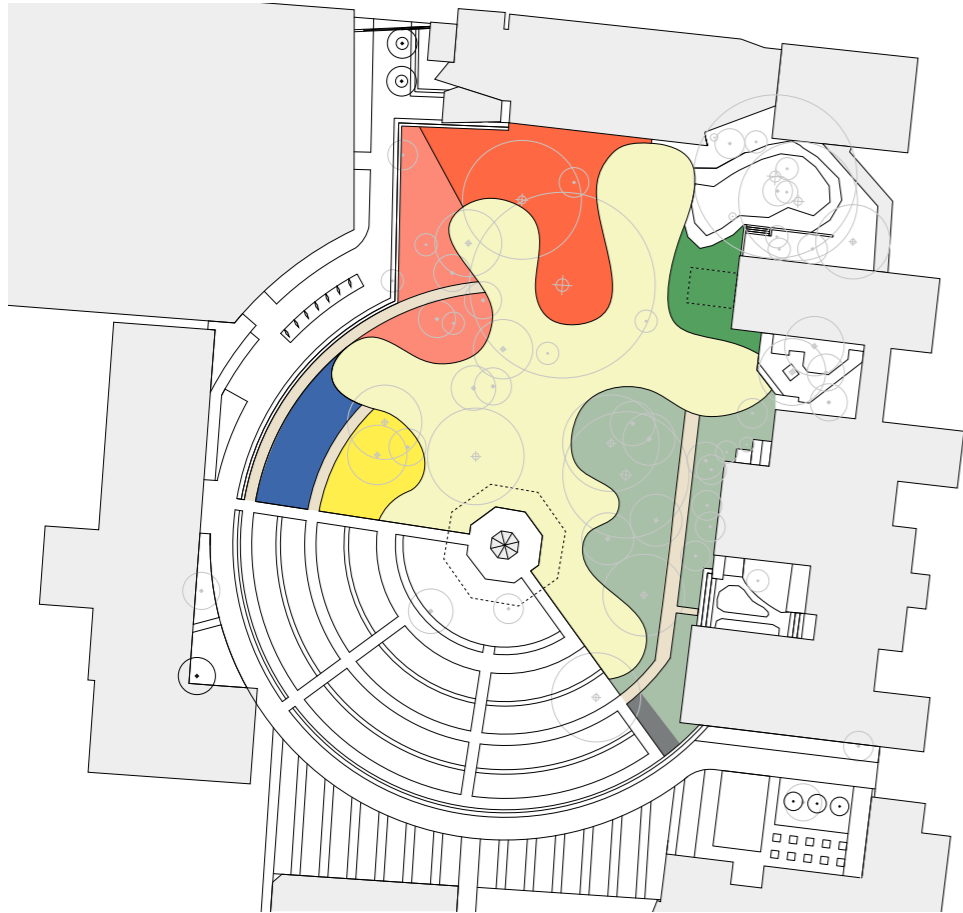
 DILLENIIDAE	 ASTERIDAE
 MAGNOLIIDAE	 CYCAD
 HAMAMELIDIDAE	 PINIDAE
 LILLIIDAE	 RAINFOREST
 CARYOPHYLLIDAE	 LICHENS, MOSSES AND FERNS
 ZINGIBERIDAE	 GNETALES
 ALISMATIDAE	 APOTHECARY
 ARECIDAE	 SUSTAINABILITY GARDENS
 COMMELINIDAE	 RESEARCH PLOTS
 ROSIIDAE	



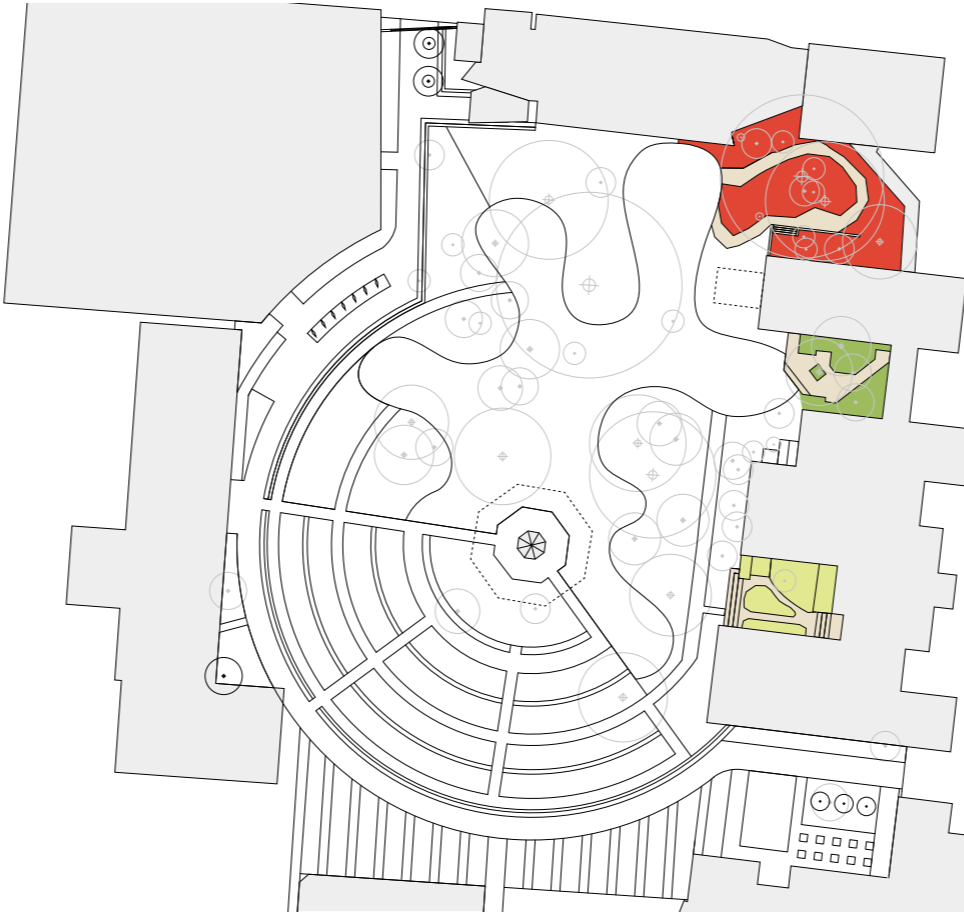
THE PERIMETER AND EDGE SPACES



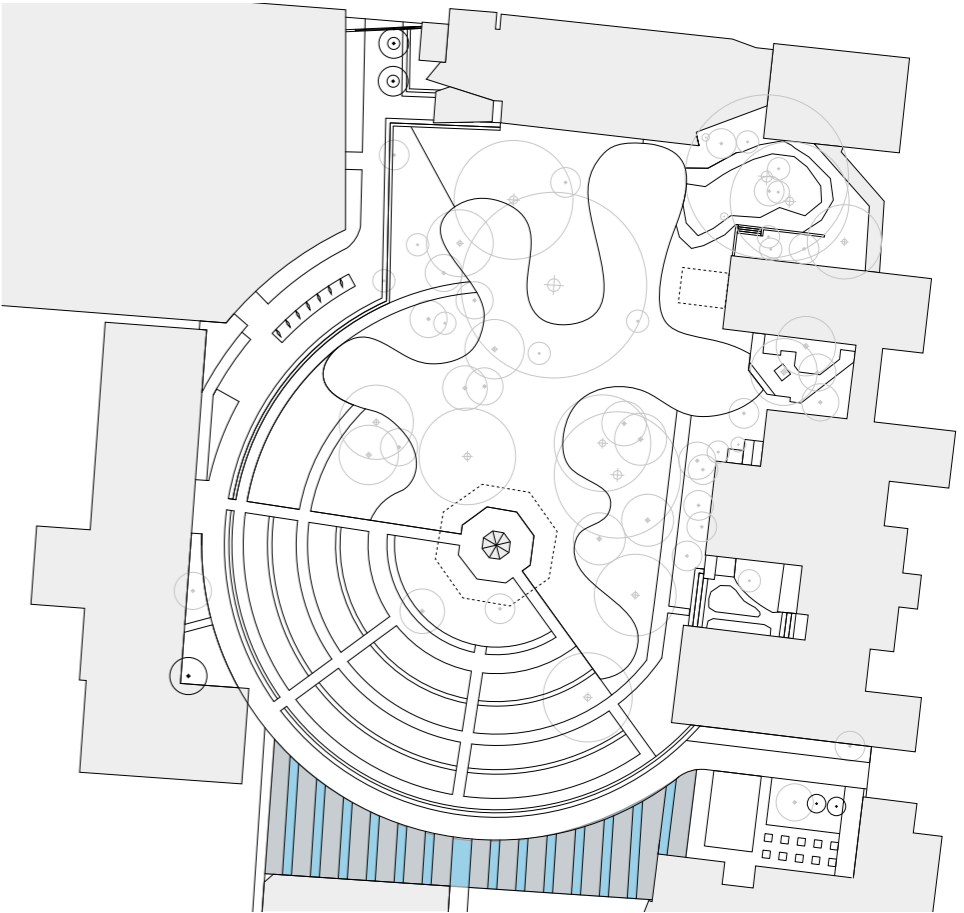
THE FORMAL GARDEN



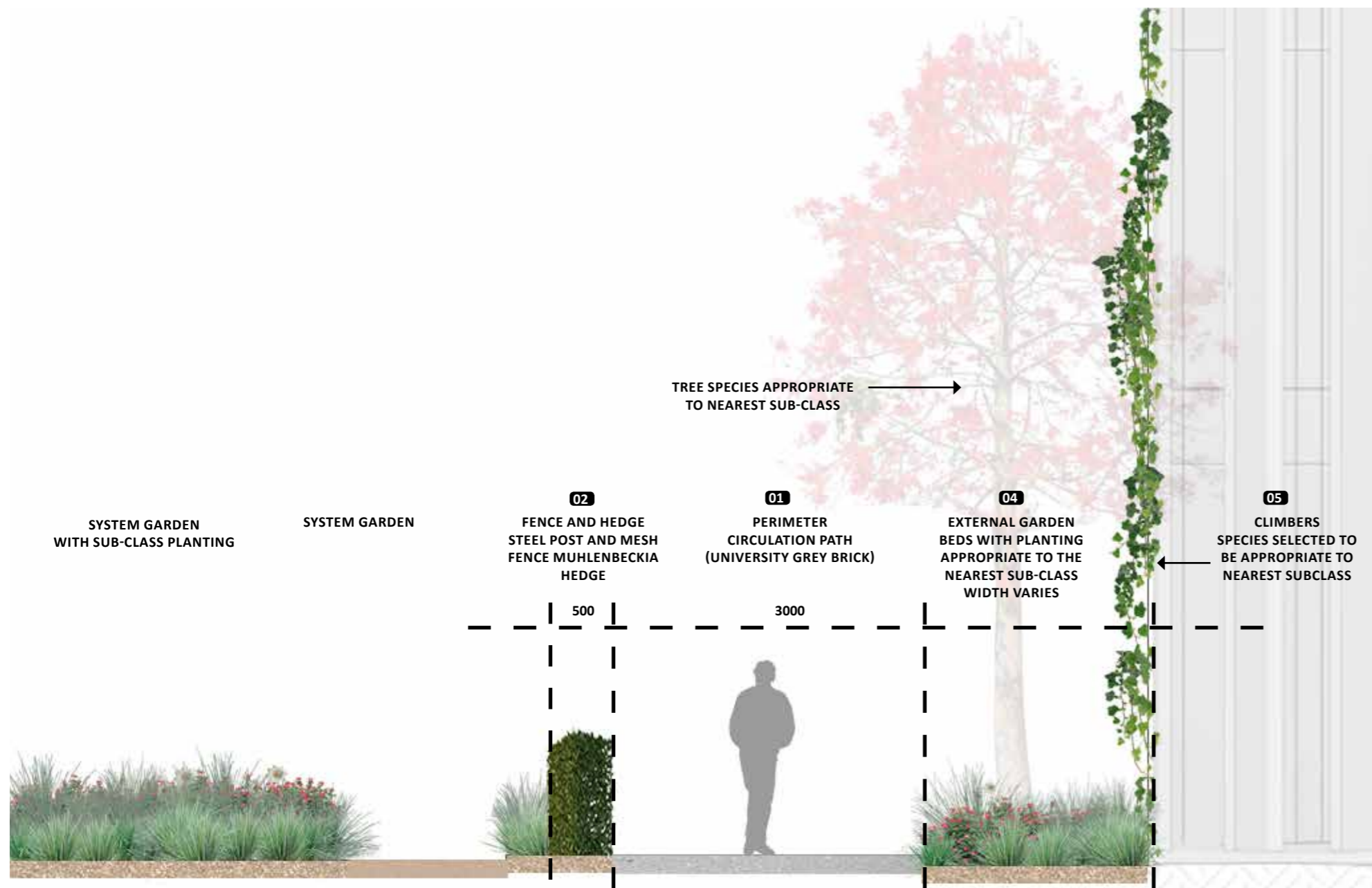
THE INFORMAL GARDEN



THE COURTYARD GARDENS



THE RESEARCH AND INNOVATION GARDEN



TYPICAL SECTION THROUGH THE PERIMETER PATH AND EDGE



01 PERIMETER PATH: UNIVERSITY GREY BRICK, LAID TO RADIUS



02 PERIMETER HEDGE: MUEHLENBECKIA COMPLEXA

PERIMETER PATH AND EDGE SPACES

The perimeter of the garden will provide the protective ring around the garden that both provides circulation and a backdrop of vertical green, screening out the buildings to help create the feeling of calm within the garden. The fence and hedge creates a strong delineation separating and insulating the System Garden from the outside world (campus).

Perimeter path and hedge

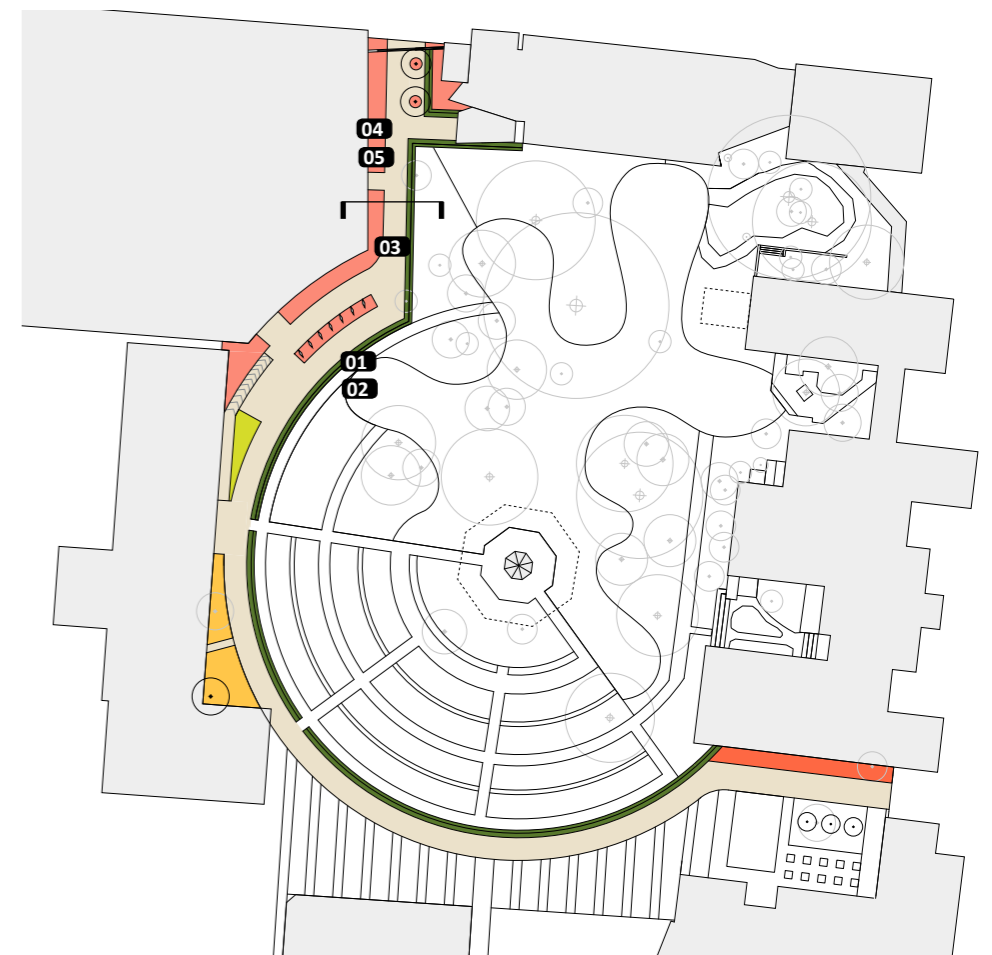
A new perimeter path will be created following the curve of the historic 1860s System Garden plan. Key features of the path and hedge are:

- 01 A new 3m wide path, surface in University Grey brick, laid to radius. The path will be the main circulation route to the WEBS development.
- 02 A new galvanised steel mesh fence and hedge, 1.2m high, planted with Muehlenbeckia complexa.
- 03 The perimeter path will have lighting.

Edge spaces

Outside of the new path, any areas that can be used will be turned into garden beds. Key features of these garden beds are:

- 04 Species will be selected to be consistent with the adjacent sub-class.
- 05 To achieve a 'green' perimeter, climbing species should be trained up building façades where there is sufficient space trees should be planted. Air conditioning units and other services should be removed from the perimeter of the System Garden and replaced on the roof. New buildings should avoid placing services around the perimeter of the System Garden.



PLAN ILLUSTRATING THE PERIMETER PATH AND EDGE SPACES, SCALE 1:1000

SYSTEM GARDEN GATES

A system of gates will allow the System Garden will be closed at night with the perimeter path left open 24hrs. The gates will be a feature of the garden and the new gates will be designed with a distinctive 'Botanical' pattern that will contribute to the identity of the garden. The gates include:

- 01** The existing System Garden gate at Professors Walk.
- 02** The new sliding gate at Tin Alley.
- 03** The new, low gate at the centre of the System Garden perimeter hedge.



01 - THE EXISTING SYSTEM GARDEN GATE, WILL BE RETAINED. IT WILL BE LEFT OPEN AT NIGHT.



A NEW 'BOTANICAL' PATTERN WILL BE DESIGNED FOR THE SYSTEM GARDEN GATES

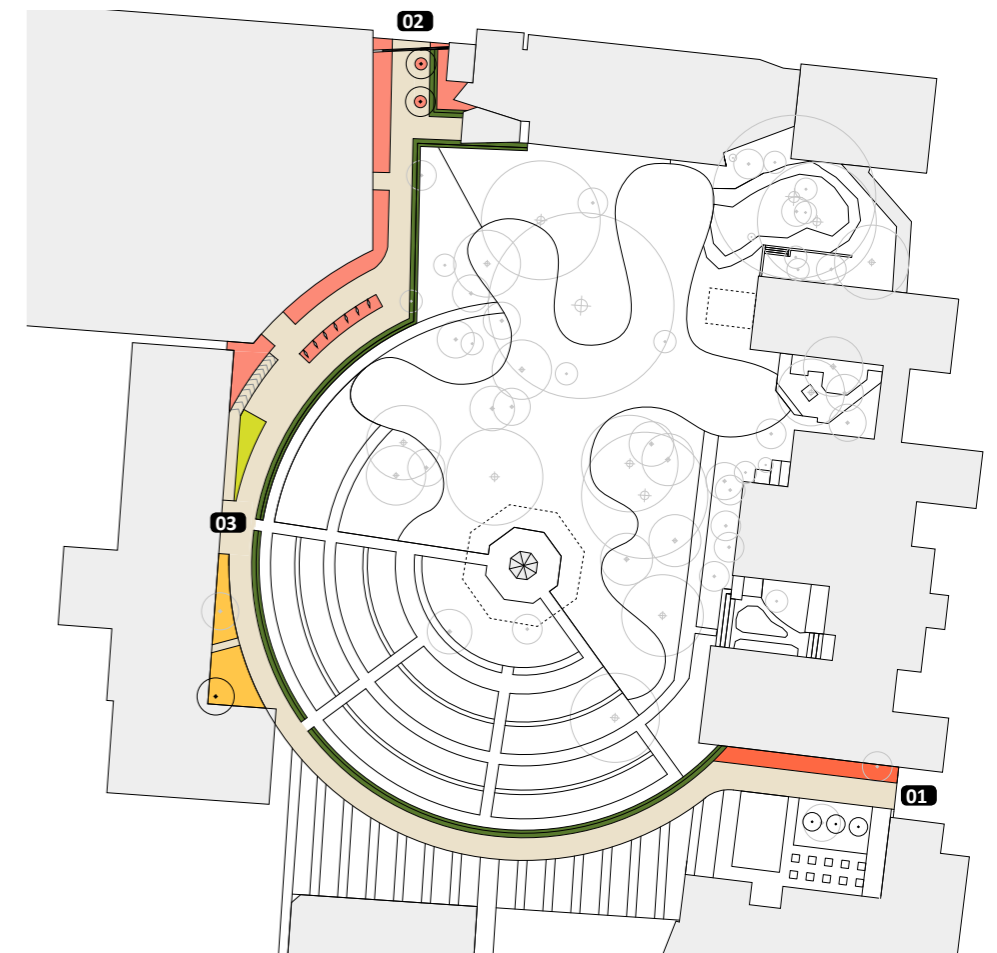


02 - THE TIN ALLEY ACCESS WILL HAVE A NEW SLIDING GATE, MADE FROM LASER CUT CORTEN STEEL



03 - THE ENTRY TO THE SYSTEM GARDEN FROM THE PERIMETER PATH WILL BE SECURED BY A NEW LOW GATE, DESIGNED TO MATCH THE NEW TIN ALLEY GATE.

FINAL REPORT: 08.03.2018



PLAN ILLUSTRATING THE LOCATIONS OF EXISTING AND PROPOSED GATES, SCALE 1:1000

ENTRY AVENUES - BIZARRE SENTRIES

01 The predominant approach to the System Garden will be either from Tin Alley in the north or Professors walk in the east. These are short corridors leading to the perimeter path, which provide ideal entry avenues to introduce visitors to the delights of the garden. As a preview of the System Garden the entry avenues will be planted with bizarre specimen trees and plants incorporated within tree pits within the brick paving. These 'bizarre' sentries will be chosen due to their tree like size and due to spectacular or unusual features. A number of these specimens already exist on site and will be transferred to these locations.



CEIBA PENTANDRA
THE SYSTEM GARDEN



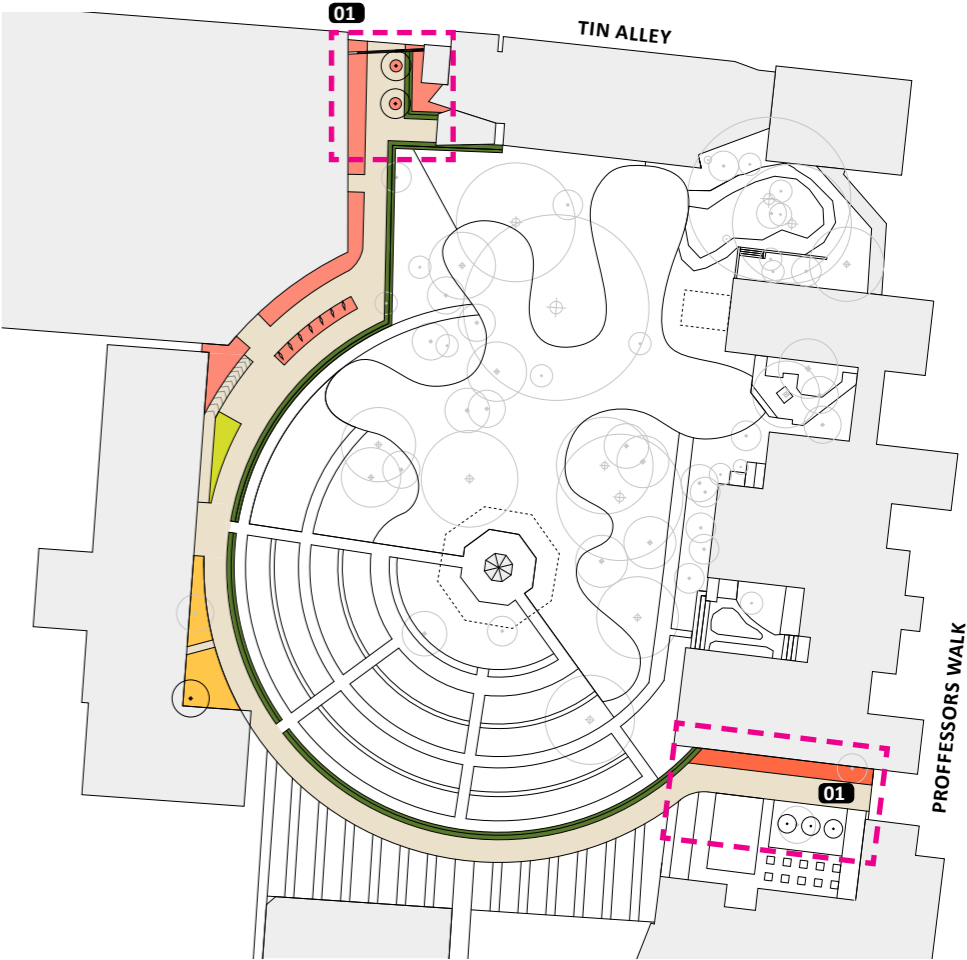
EUPHORBIA TRIGONA
STAGE 4: MASTERPLAN



XANTHORRHEA AUSTRALIS
FINAL REPORT: 08.03.2018



KINGIA AUSTRALIS



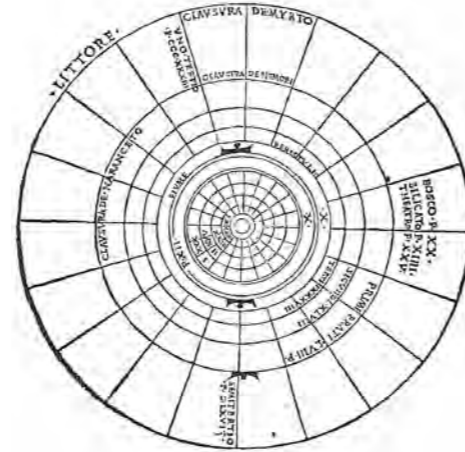
PLAN ILLUSTRATING THE LOCATIONS FOR THE BIZARRE SENTRIES, SCALE 1:1000



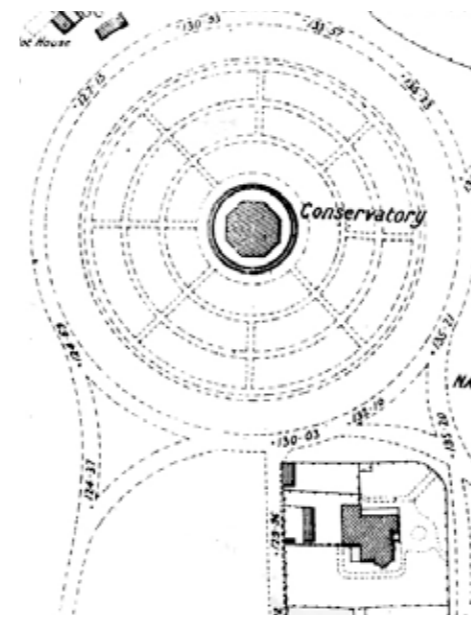
FREDERICK MCCOY, 1885
SOURCE: G PASCOE/UOM ARCHIVES



EDWARD LA TROBE BATEMAN, DATE UNKNOWN
SOURCE: ALEXANDER TURNBULL LIBRARY,
NATIONAL LIBRARY OF NEW ZEALAND



PLAN OF A GARDEN ON THE MYTHICAL ISLE
OF CYTHERA. SOURCE: FRANCESCO COLONNA,
HYPNEROTOMACHIA POLIPHILI, VENICE 1499.
FROM THE SYSTEM GARDEN, AN HISTORICAL
ANALYSIS BY GEORGE TIBBITS AND ANNE NEALE,
JULY 1998



MMBW PLAN 1896
SOURCE: STATE LIBRARY OF VICTORIA

THE FORMAL GARDEN

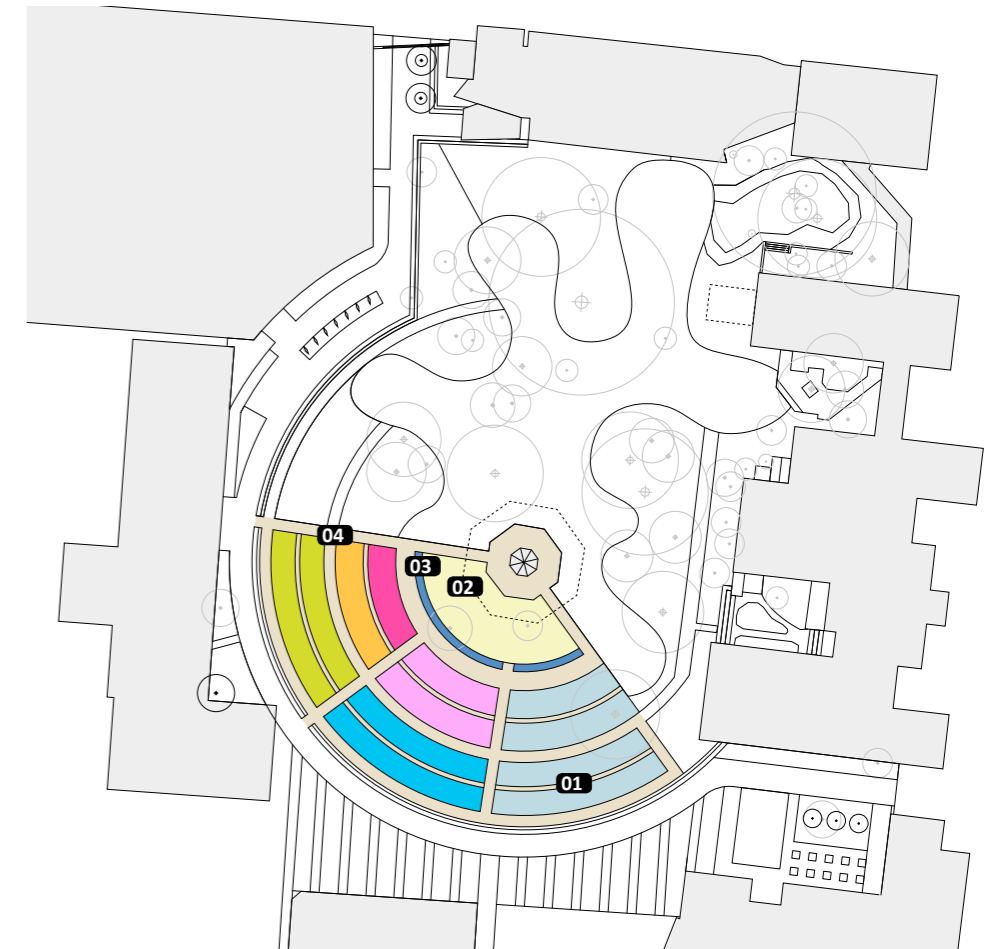
The 'Formal Garden' proposal will transform the southern section of the System Garden by re-instating the concentric circles from the original 1865 La Trobe Bateman/McCoy layout. Although no original plans exist of the design, contemporary photographs and MMBW plans allow the layout to be closely re-interpreted. In the text 'The System Garden, An Historical Analysis' by George Tibbits and Anne Neale, it is stated that La Trobe Bateman's design for the System Garden was based on architectural scenes from the 15th Century Renaissance text 'The Dream of Poliphilus'. This proposal is to rebuild part of the layout and capture the combination of scientific and romantic ideas from the original design.

Key features of the formal garden area:

- 01 Radial paths subdivide the garden to create a collection of garden beds to display the sub-classes with interpretation information.
- 02 Lawn is established around the tower to provide space similar to the original setting.
- 03 A new canal is introduced in the location of the original moat around the conservatory.
- 04 Main paths surfaced in University grey brick, minor paths surfaced in granitic sand.



THE SYSTEM GARDEN C. 1865, PHOTOGRAPHER D MCDONALD, SOURCE UNIVERSITY OF MELBOURNE ARCHIVES



PLAN ILLUSTRATING THE FORMAL GARDEN, SCALE 1:1000



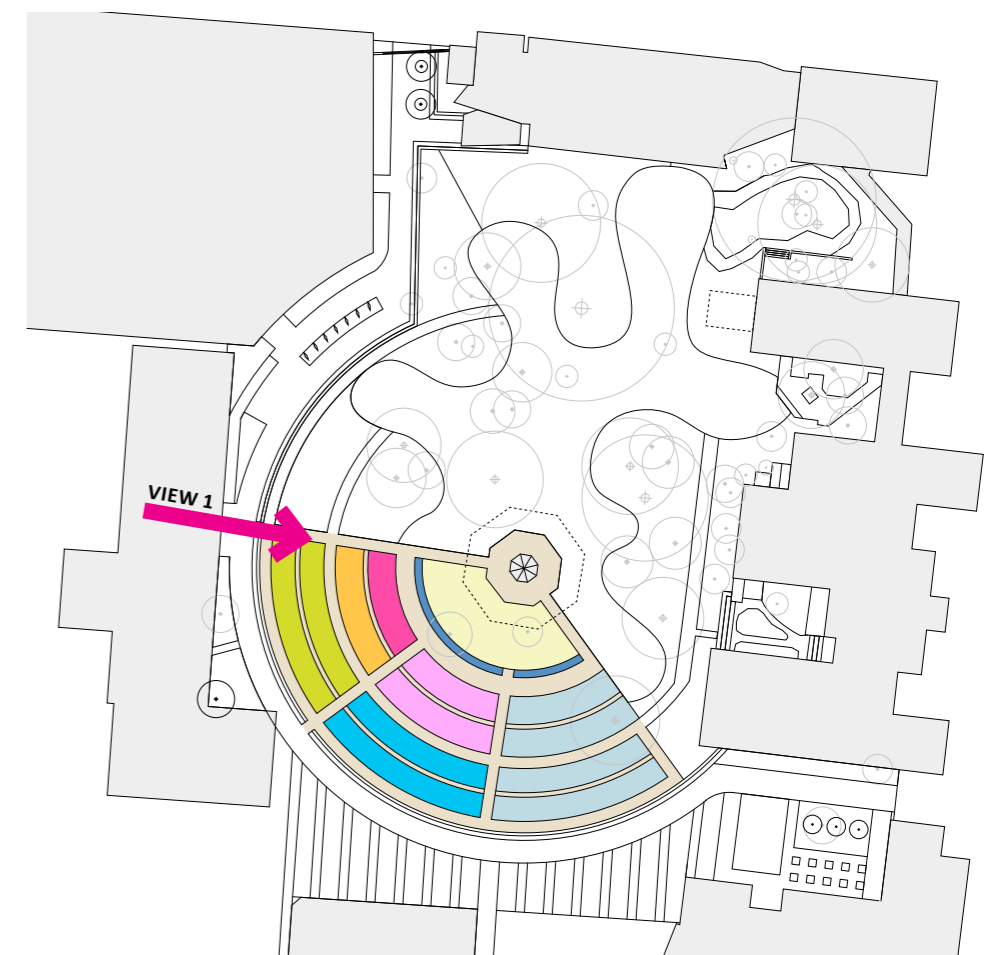
View 1: the entry to the System Garden

New formal garden beds provide an opportunity to see and understand the history of the garden. The layout of the sub-class beds allows visitors to get up close to compare the early flowering plants within the six sub-classes:

- Dilleniidae;
- Magnoliidae;
- Hamamelidae;
- Lilidae;
- Caryophyllidae;
- Zingiberidae;
- Arecidae; and
- Alismatidae



- | | |
|--|--|
| DILLENIIDAE | ALISMATIDAE |
| MAGNOLIIDAE | ARECIDAE |
| HAMAMELIDIDAE | COMMELINIDAE |
| LILLIIDAE | |
| CARYOPHYLLIDAE | |
| ZINGIBERIDAE | |



PLAN ILLUSTRATING THE FORMAL GARDEN, SCALE 1:1000

DILLENIIDAE

Description:
Dilleniidae is a small sub-class with a large diversity of plant forms including bizarre species such as the Monkey hand tree.

Identification:
Diverse forms mostly syncarpus.

Location:
The Dilleniidae bed was lost to the WEBS development. A number of specimen plants from the sub-class are in storage. A new location is proposed in the south west of the formal garden. This will provide space for a combination of shrubs and trees.

MAGNOLIIDAE

Description:
Magnoliidae is the most primitive of the flowering plants and the point where other more complex flowering plant families evolved.

Identification:
This group of flowering plant is characterised by trimerous flowers, pollen with one pore, branching – veined leaves

Location:
Relocated from the inner to the outer central bed; the location would be associated with the primitive nature of the flower group. This also aligns with McCoy's original garden theme of flowering plants starting from the outer most edge. All healthy existing plants are able to be relocated.

HAMAMELIDAE

Description:
A sub- class populated with a large proportion of taxonomically isolated plant species. This is indicative of plant communities whose original range was far reaching during a previous geologic epoch; but presently occur in restricted small areas.

Identification:
This flowering group contains many common temperate trees, oaks, elms, walnuts and sycamore. Mostly wind pollinated with flowers that are often unisexual.

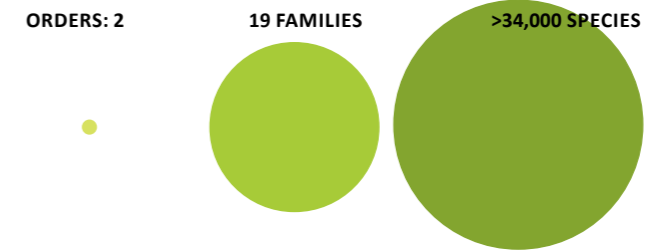
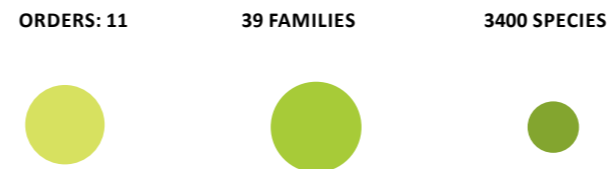
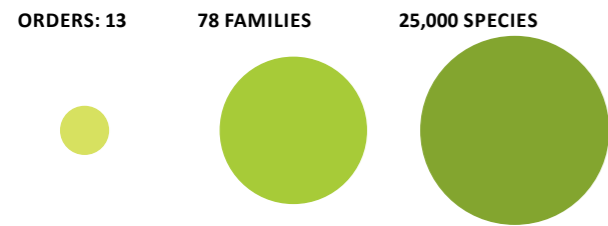
Location:
The Hamamelidae garden beds will be moved to the south east of the garden to include the established Maclura pomifera. The Casurina cunninghamiana, and Casurina glauca should be within Hammamelidae but are located amongst the gymnosperm plant group. These specimens could remain in it current location being a point for discourse; reflecting on the historical shifts in specimen classification. This would require appropriate labelling.

LILIIDAE

Description:
Liliidae are a sub-class of flowering plants that have extensively exploited insect pollination with well-developed nectaries and showy flowers.

Identification:
Characteristically (but not always) showy trimerous flowers with sepals resembling flower petals.

Location:
Lillidae will be relocated south of the tower to the inner ring of the formal garden. Most plants can be relocated including the two largest specimens, the Dracena draco and the Aloidendron barberae which have a high chance of being successfully transplanted. The orchids currently found in the System Garden will be relocated to the Australian rainforest garden, located in the north east corner.



MONKEY HAND TREE



MAGNOLIA



AMERICAN HAZENUT



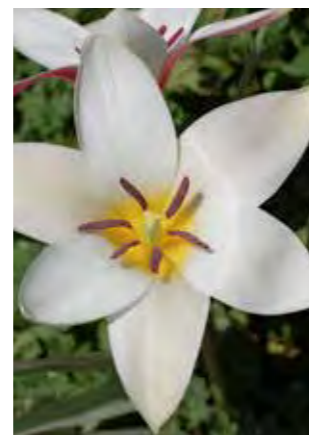
DRACENA DRACO



CHYSOPHYLLUM IMPERIALE



HIBISCUS



TULIPA CLUSIANA



TULIP TREE



TULIPA CLUSIANA



LIQUIDAMBAR



ALOIDENDRON BARBERAE



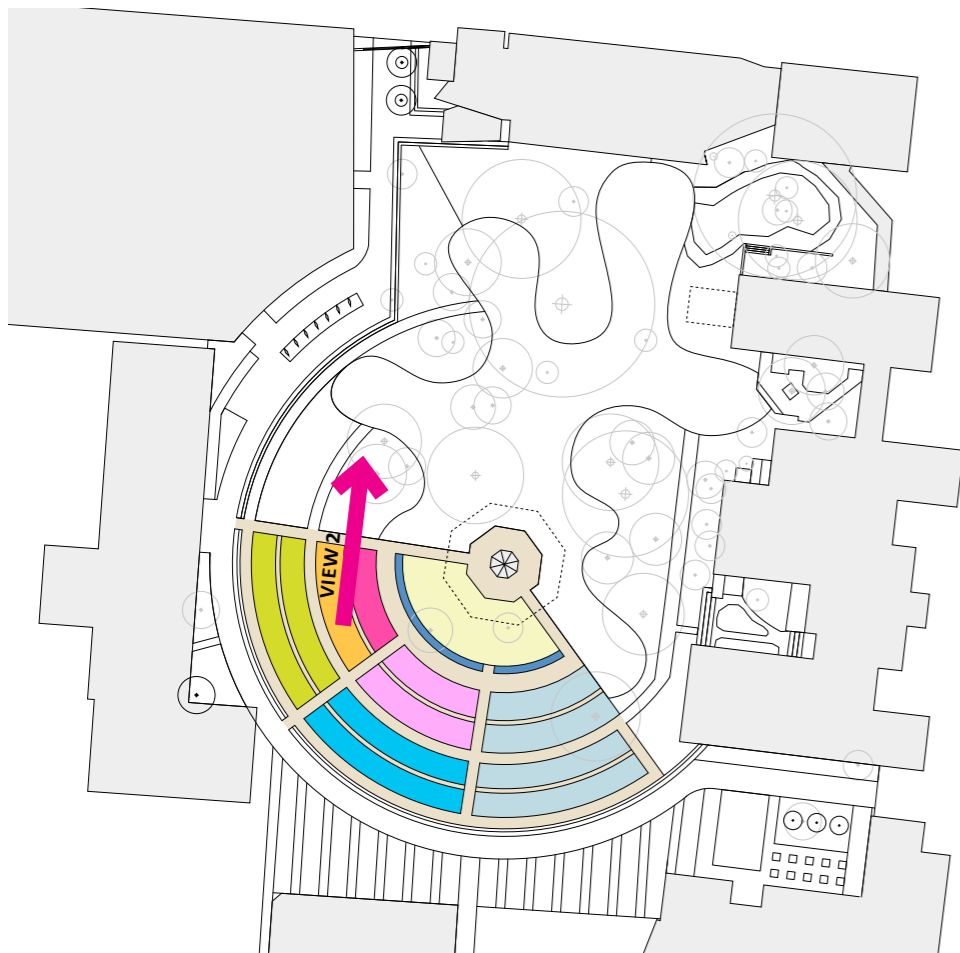
FLAX LILLY



- CARYOPHYLLIDAE
- ZINGIBERIDAE
- ARECIDAE
- COMMELINIDAE

View 2: Moving through the formal garden
 Looking north from the narrow gravel path between the Caryophyllidae and the Zingeriidae looking towards Arecidae and the palm trees from the original 1865 planting of the System Garden.

- DILLENIIDAE
- MAGNOLIIDAE
- HAMAMELIDIDAE
- LILLIIDAE
- CARYOPHYLLIDAE
- ZINGIBERIDAE
- ALISMATIDAE



CARYOPHYLLIDAE

Description:
Mostly herbs and succulents that have adapted to hot and dry climates, including many familiar cactus species.

Identification:
Most members of this sub-class produce red and yellow pigment flowers, this is unique to angiosperms.

Location:
Relocated to the inner ring of the formal garden. All of the existing plants have a good chance of being successfully relocated.

ZINGIBERIDAE

Description:
Largely coarse herbs and epiphytes are conspicuous elements of tropical forests. Zingiberidae are unique, as they resemble some characteristics of Liliidae and Commelinidae at the same time.

Identification:
The unique character of this sub-class provides identifying features separately common in two different sub- classes of the Liliidae and Commelinidae. The commonality comes together through combining septal nectaries (Liliidae); and well-differentiated sepals and petals through colour and texture (Commelinidae).

Location:
Relocated to the inner ring of the formal garden.

ALISMATIDAE

Description:
Most common genus found in this group is Sagittaria. Commonly plants in this group are herbs either aquatic or found in wet places. Some rhizomes are edible in some diagnostic characteristics

Identification:
Stout rhizome root system with leaves basal. Radial symmetry (actinomorphic) flowers unisexual or bisexual.

Location:
Canal at the centre of the System Garden.

ARECIDAE

Description:
A diverse population of plant types found in this group, encompassing herbs, shrubs, vines or trees.

Identification:
Flowers crowded together and often small and borne in a spadix. Fruit are commonly berries or fleshy fruit with thin skin encasing a central stone containing the seed.

Location:
The Aceridae is retained in its current location and expanded.

ORDERS: 11 14 FAMILIES 11,000 SPECIES



ORDERS: 8 39 FAMILIES 9000 SPECIES



ORDERS: 4 16 FAMILIES 500 SPECIES



ORDERS: 4 5 FAMILIES 5,600 SPECIES



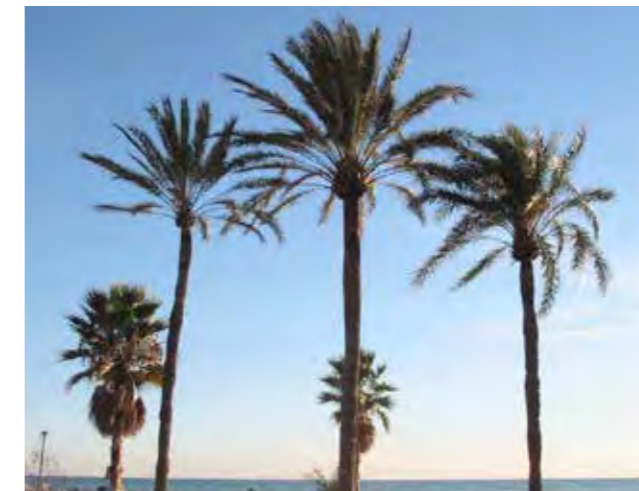
PRICKLY PEAR



ETLINGERA ELATIOR



HYDROCHARIS MORSUS



ARECACEAE FAMILY



CARPOBROTUS EDULIS



BEETROOT



MUSA PARADISIACA



MUSA PARADISIACA



BUTOMUS UMBELLATUS



CARLIUDOVICA PALMATA

WETLAND CANAL

01 Within the formal garden, part of the original canal will be recreated in its original location around the System Garden tower.

Key features of the canal:

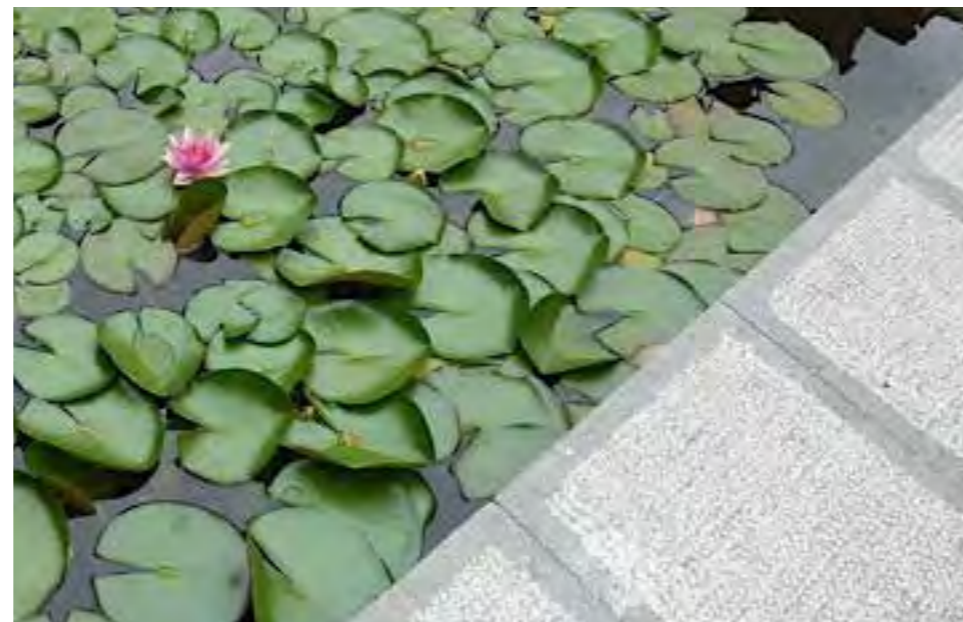
- water channel will be 1m wide, with a 300mm soil depth and a variety of water depths to suit intended planting;
- water will be filtered using a pump and filter, recessed within the paving;
- subdivided to exhibit water plants within their subclasses;
- subclasses represented include Magnoliidae and Alismatididae; and
- raised edge for safety.



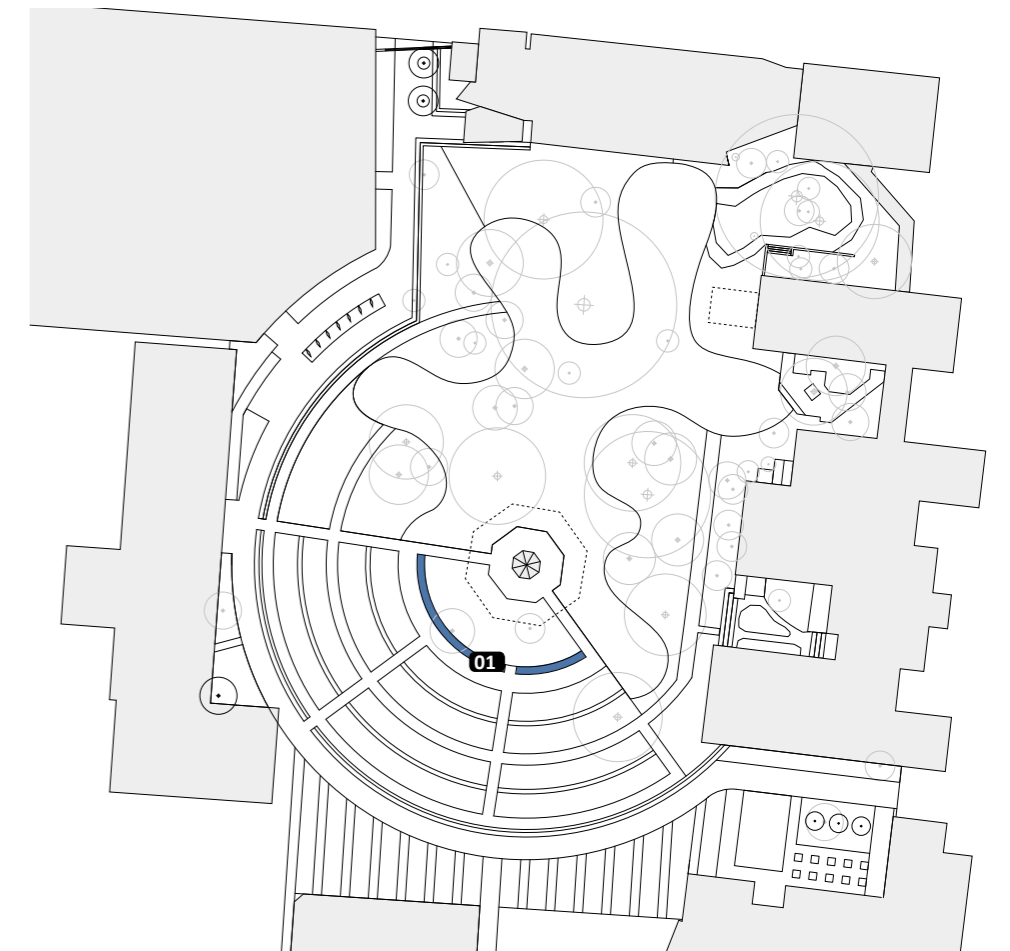
01 RAISED WATER FEATURE, LOUIS BARRAGAN, ZARAGOZA, SPAIN



CANAL WITH PLANTING, MONASH UNIVERSITY, CAULFIELD BY TCL



WATER LILY PLANTING (MAGNOLIIDAE)



PLAN SHOWING THE LOCATION OF THE WETLAND CANAL, SCALE 1:1000

THE INFORMAL GARDEN

The 'Informal' garden is a contrast to the 'formal' garden. Working with the established planting of the north section of the System Garden, the 'informal' garden proposal adjusts the edges of the existing garden beds to increase visual connection across the garden and create larger pockets of lawn to stimulate informal social areas in between adjacent sub-class gardens.

Key features of the informal garden:

- 01** The lawn is extended and widened with a meandering sinuous edge to create pockets of seating nestled within the planting beds.
- 02** Paths are minimal with the main circulation being less defined movements across lawn areas.
- 03** Sub-class garden beds are extended to provide more opportunities for planting.
- 04** Corten steel edging creates a strong defined edge to the gardens and helps to keep mulch off the grass.



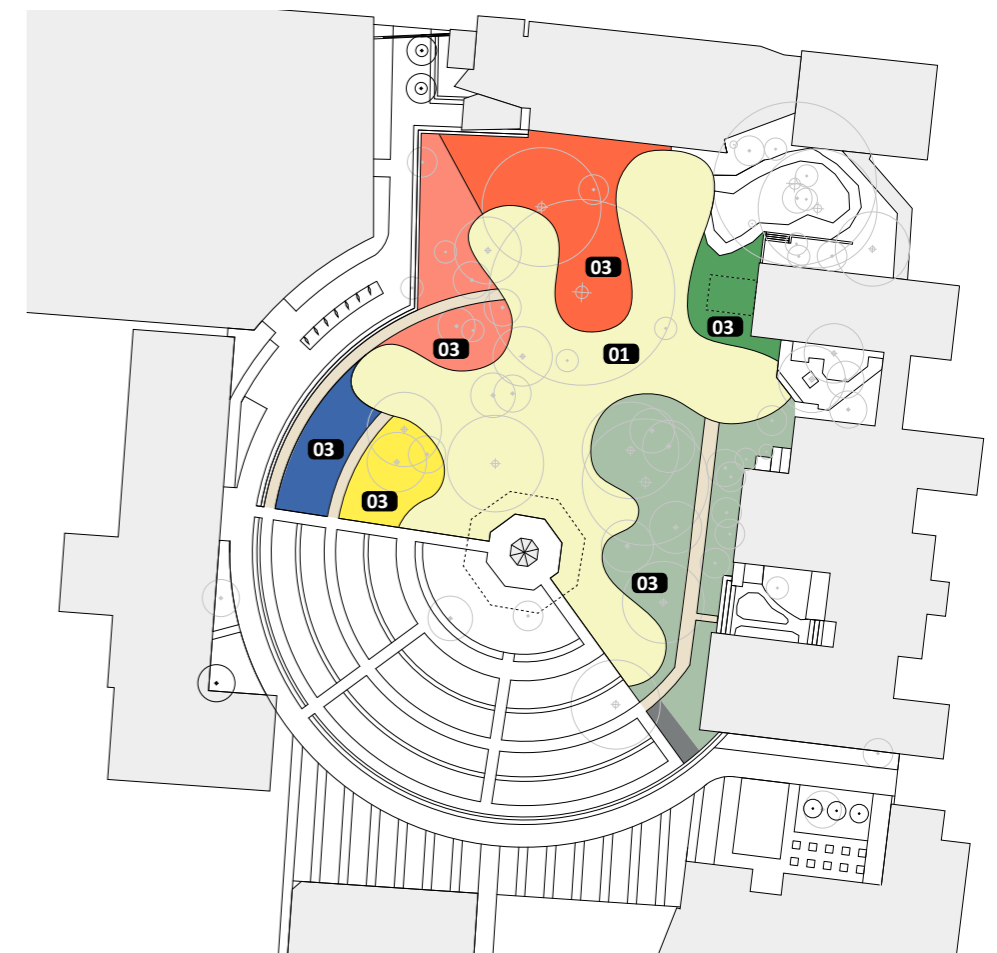
THE WILDERNESS YEARS, THE GARDEN BETWEEN 1916 AND 1922. SOURCE: J NANSON



THE ROSIIDAE GARDEN, THE INFORMAL GARDEN WORKS TO ENHANCE THE ESTABLISHED PLANTING



AN EXTENDED LAWN TO CREATE MORE SOCIAL AREAS WITHIN ESTABLISHED PLANTING



PLAN ILLUSTRATING THE INFORMAL GARDEN, SCALE 1:1000



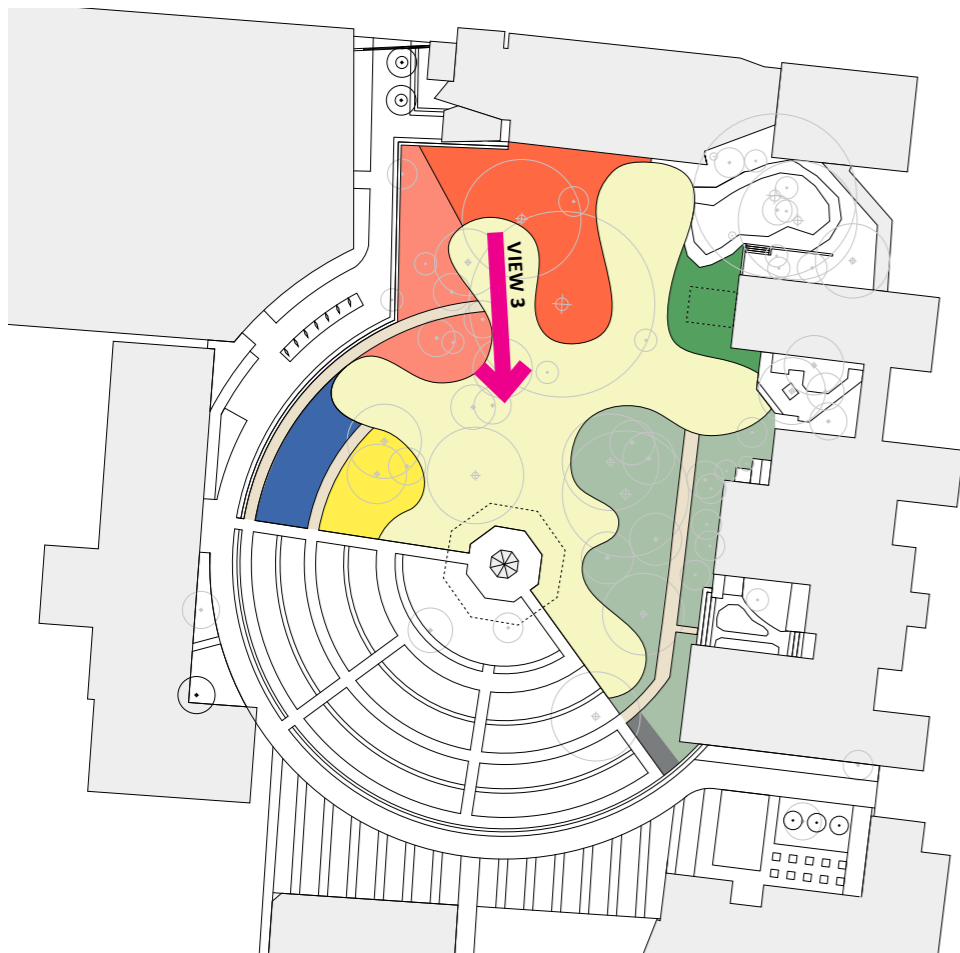
- ARECIDAE
- COMMELINIDAE
- ROSIIDAE
- ASTERIDAE
- CYCAD
- PINIDAE

View 3: View from the lawn area between Rosiidae and Asteriidae

Looking south across the garden shows how the extended lawn opens up the views and provides greater opportunities for social seating.

The north end of the informal garden allows visitors to get up close to three of the more complex flowering plants including:

- Commelinidae;
- Rosiidae; and
- Asteriidae

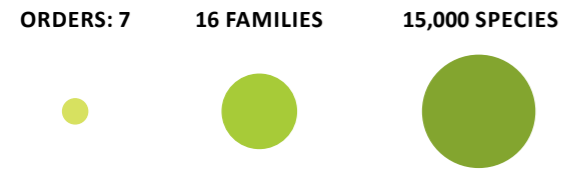


COMMELINIDAE

Description:
One of the most economically significant sub-classes; Commeliniidae includes barley (*Hordeum vulgare*), wheat (*Triticum sp.*), rice (*Oryza sativa*), corn (*Zea mays*), and sugarcane (*Saccharum officinarum*). Plants found in this group are pollinated by pollen gathering bees or by the wind.

Identification:
Grasses and sedges account for 4/5th of all species in the sub-class. The absence of septal nectaries is the defining feature of the Commeliniidae.

Location:
Relocated to the west of the outer ring of the formal garden. All of the existing plants have a good chance of being successfully relocated.

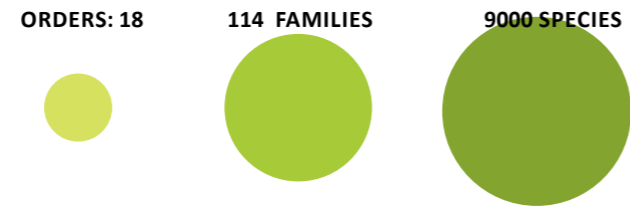


ROSIIDAE

Description:
The largest sub-class in terms of number of families and equal largest in terms of number of species. 75% of the species found in this group belong to 5 large orders. Fabales, Myrtales, Euphorbiales, Rosales, Sapindales. Includes many iconic Australian species including the Eucalyptus, Banksias and Callistemons.

Identification:
Unifying characteristics include perianth parts usually free, and stamens as many as or more than the petals.

Location:
The Rosiidae will remain in the same place and will be expanded.

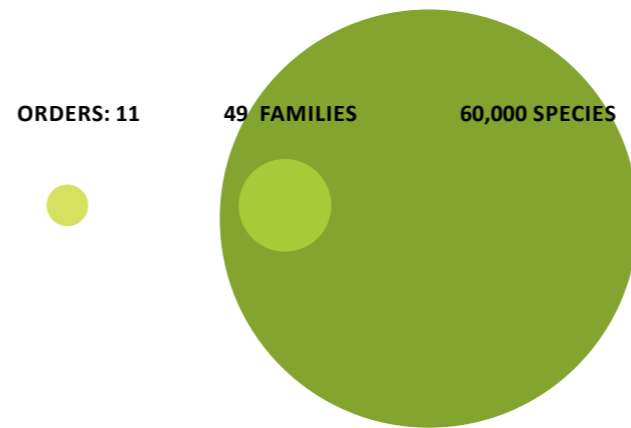


ASTERIDAE

Description:
The asteridae is the most advanced class of dicots. They utilized specialised pollinators and specialised means of presenting the pollen. "The rise of the Asteridae is closely correlated with the evolution of insects capable of recognizing complex floral patterns." A. Cronquist.

Identification:
Flowers are often well developed and showy, the corolla has fused petals, stamens attached to the corolla tube often with two fused carpels.

Location:
The Asteridae will remain in the same place and will be expanded.



POA POIFORMIS



ROSE



WAHLENBERGIA COMMUNIS



CHYSOCEPHALUM



ZEA MAYS



GERANIUMS



CALOTIS SCAPIGERA



EXISTING VIEW

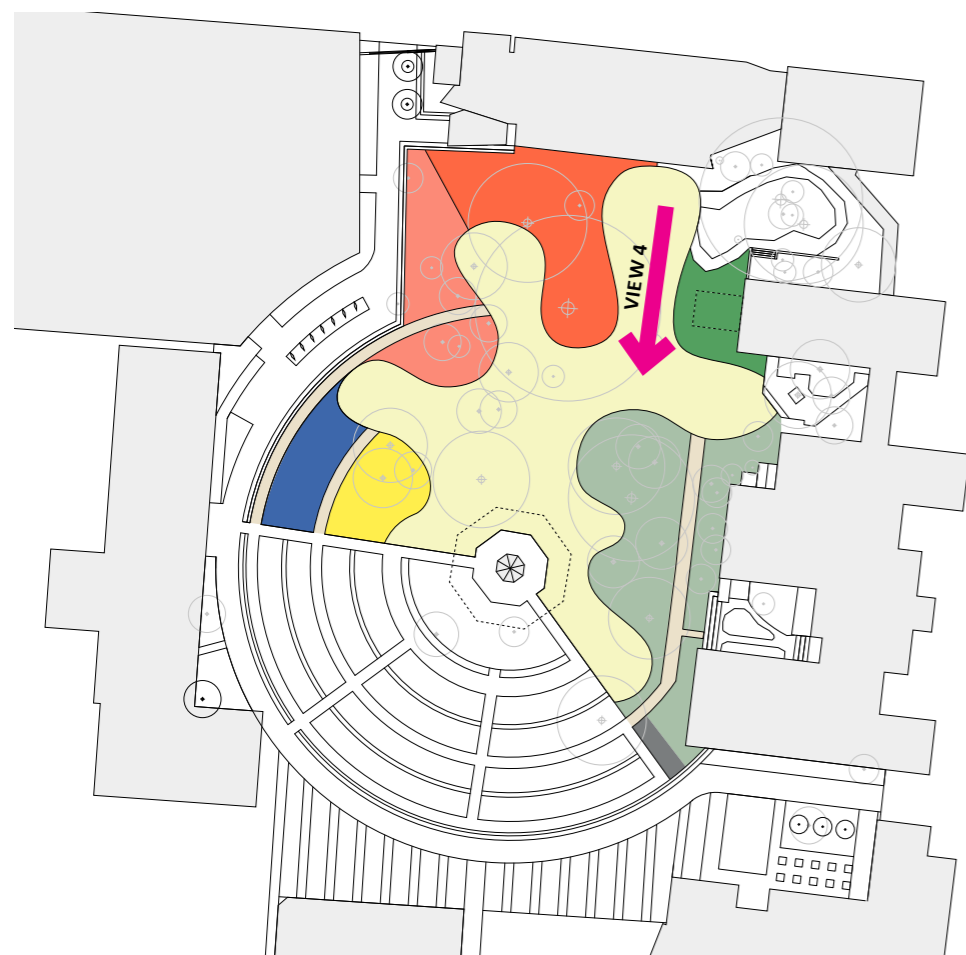
- ARECIDAE
- COMMELINIDAE
- ROSIIDAE
- ASTERIDAE
- CYCAD
- PINIDAE

View 4: View from the lawn area next to Asteridae

Looking south across the garden down past the Cycads towards the Pinidae provides an opportunity to compare some of the more complex flowering plants (Asteridae) to the much earlier non-flowering plants (Cycads)

Progressing south along the eastern edge of the garden provides encounters with a number of more primitive non flowering subclasses from within the Gymnosperm group (non-flowering plants) including:

- Ginkgoidae;
- Pinidae;
- Gnetales; and
- Cycads.



VIEW 4: VIEW FROM GARDEN NEXT TO ASTERIDAE

GINKGOIDAE

Discription:
 Monotypic genus of unusual non-flowering plants.. The order Ginkgoales first appeared 270 million years ago, with all becoming extinct except the single surviving species the Ginkgo biloba. Ginkgo biloba has various traditional medicine uses and is a source of food.

Identification:
 A distinctive fanned shaped leaf is unique among seed plants with the veins radiating out into the leaf blade.

Location:
 Proposed location to the north of Pinidae.

ORDERS:1 1 FAMILY 1 SPECIES



PINIDAE

Discription:
 Pinidae is a subclass of the gymnosperms – cone bearing seed plants. Conifers make up around 30% of the worlds forest and can survive the most hostile places. Mostly commonly an evergreen plant that does not loose their leaves in winter.

Identification:
 Identified by their simple needle like leaves and distinctive hard cones.

Location:
 The Pinidae will remain along the eastern boundary.

ORDERS: 3 6 FAMILIES - SPECIES



GNETALES

Discription:
 The Gnetales sub-class contains some 70 species across the three relict genera: Gnetum (family Gnetaceae), Welwitschia (family Welwitschiaceae), and Ephedra (family Ephedraceae). Fossilized pollen attributed to a close relative of Ephedra has been dated as far back as the Early Cretaceous. Though diverse and dominant in the Tertiary, only three families, each containing a single genus, are still alive today.

Identification:
 The Gnetales is unique to the gymnosperms with the presence of vessel elements in the xylem.

Location:
 Relocated to the corner of the eastern boundary.

ORDERS: 3 3 FAMILIES 70 SPECIES



CYCADS

Discription:
 Cycads were most common during the Jurassic period and have change very little since. There is a single order within the Cycads called Cycadales. Typically Cycads have woody ligneous trunks with a crown of large hard and stiff evergreen leaves.

Identification:
 A gymnosperm it does not produce a flower. It produces a hard naked seed. Leaves are often pinnate.

Location:
 Remaining in the same place and being expanded with the removal and relocation of the air-conditioning units and the demolition of the small annex to Botany.

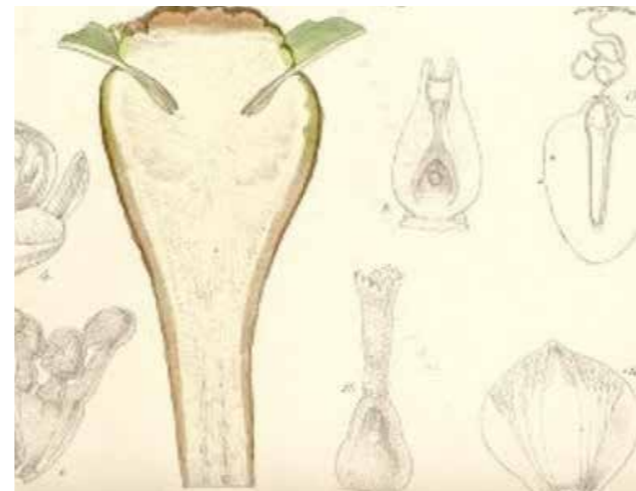
ORDERS: 1 2 FAMILIES 147 SPECIES



GINKGO BILOBA



PINACEAE: UNOPENED FEMALE CONES



WELWITSCHIA MIRABILIS - FEMALE CONES



CYCAD: SHOWING LIGNEOUS (WOODY) TRUNK



GINKGO LEAF



LAWSONIANA LEAF STRUCTURE



WELWITSCHIA MIRABILIS



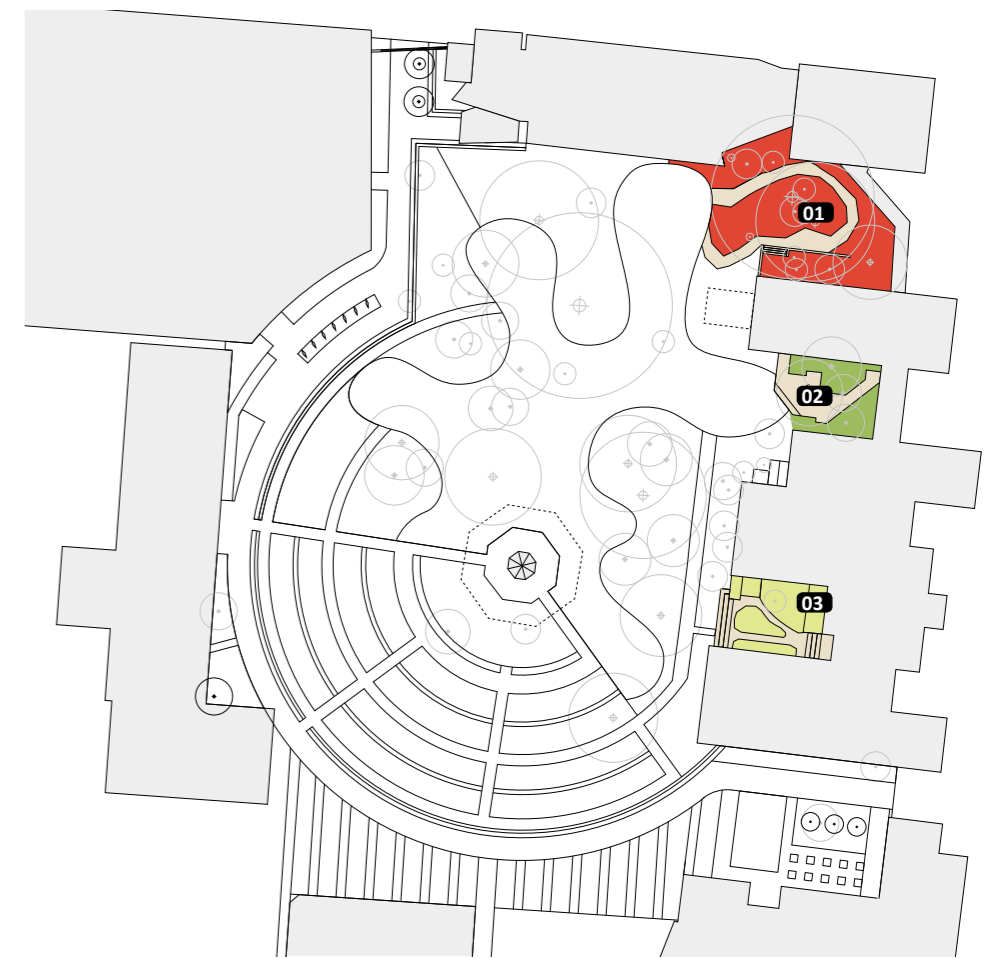
A ROSETTE OF PINNATE LEAVES AROUND A CYLINDRICAL TRUNK

COURTYARD GARDENS

The Courtyard gardens are located along the eastern edge of the System Garden. There are three separate courtyards including:

- 01 The rainforest garden;
- 02 The fern and lichen courtyard; and
- 03 The apothecary courtyard

These courtyards sit adjoining the main garden, enclosed on three sides by the Botany buildings. The enclosure provides a more sheltered shaded environment and these spaces contain established shrubs and trees which are adjusted to the specific microclimates of the location. Each courtyard provides a separate character of planting and it is proposed to retain and enhance the character of these spaces, including them in the narrative of the plant kingdom explanation of the System Garden.



PLAN SHOWING THE LOCATION OF THE COURTYARD GARDENS, SCALE 1:1000

RAINFOREST GARDEN

The rainforest garden provides is planted with Victorian and Australian native rainforest plants. Despite its small size it includes some very large specimens and provides an immersive rainforest experience. Although this garden does not conform to the order of the Cronquist based sub-class system it provides an excellent opportunity to experience and study native Australian species as well as providing a landscape that is a complete escape from the rest of the campus. Recent works to the Rainforest garden will install a steel walkway to reduce soil compaction and improve visitor experience. Further enhancements to the rainforest garden include:

- improve interpretation;
- integrate aerial planters;
- integrate native orchid planting;
- integrate fungi planting;
- obtain a view from up in the canopy using digital technology or walkways;
- relocate Billibellary's walk sign into the rainforest; and
- extend the existing billabong to integrate frog pond. The water feature should be semi natural.



THE RAINFOREST GARDEN



INCLUDE AERIAL PLANTERS WITH ORCHIDS



INCLUDE FUNGI



EXPLORE OPPORTUNITIES FOR VIEWS FROM WITHIN THE CANOPY USING DIGITAL CAMERAS



BILLIBELARY'S WALK SIGN TO BE RELOCATED INTO THE RAINFOREST GARDEN

FERN AND LICHEN COURTYARD

The middle courtyard includes a large Dawn Redwood tree and deck with a collection of ferns, mosses and lichens. These plants thrive in the shaded conditions of the courtyard and provide an opportunity to observe some of the most primitive plants and illustrate the breadth and diversity of the plant kingdom. The extent of the diversity of sub-classes on display demonstrates the reason why the University of Melbourne System Garden is so special.

The sub-classes on display in this garden include some of the most primitive plants including:

- Lichens and liverworts;
- Mosses; and
- Ferns.

Key improvements for the fern and Lichen courtyard include:

- most of the plant labels are missing from the mosses and lichens, the interpretation and labelling should be updated;
- additional aerial planters will provide further vertical interest;
- move orchids to the rainforest garden;
- repair water feature; and
- replace timber deck when it gets to the end of its useful life with steel walkway to match the rainforest garden.



VIEW LOOKING INTO THE FERN AND LICHEN COURTYARD



THE BACKDROP HELPS TO HIGHLIGHT INDIVIDUAL SPECIMENS



MOSSSES ON DISPLAY NEED UPDATED SIGNAGE

LICHENS

Discription:
Lichens are not plants, they are collaboration between a fungal element and photosynthesising algae. A primitive form of terrestrial life, lichens are believed to cover 6% of the earth surface.

Identification:
Non vascular life form, with a self contained ecosystem.

Location:
The Lichens will remain in the north east courtyard.

FUNGI

Discription:
Fungi exist within a kingdom separate to the kingdom of Plants and Bactria. One of the defining difference is the ability of fungi to excrete digestive enzymes to absorb dissolved molecules through the cell walls. Similarly to that seen in the animal kingdom.

Identification:
Does not photosynthesise

Location:
The Fungi will remain in the north east courtyard.

MOSSES

Description:
Mosses are non vascular plants and absorb nutrients through their leaves and can hold large quantities of water. Mosses reproduce through spores.

Identification:
Soft green clumps or mats, with primitive leaf forms often one-cell thick and attached to a stem.

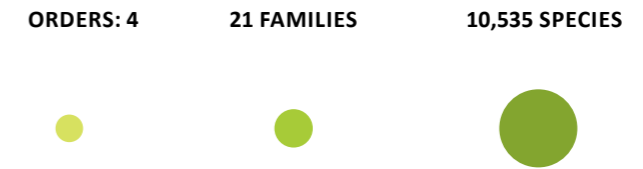
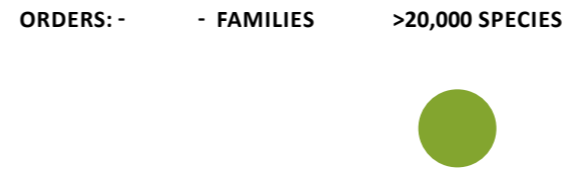
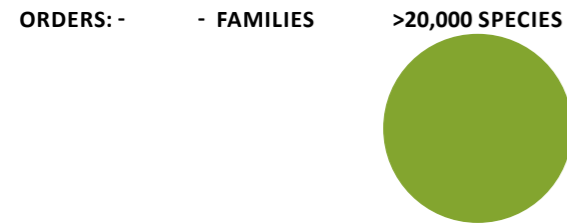
Location:
The Mosses will remain in the north east courtyard.

FERNS

Description:
Ferns are and early vascular plants, thriving on earth for two hundred million years before flowering plants evolved.. Ferns reproduce from spores.

Identification:
Ferns are leptosporangiate they produce fronds that uncoil.

Location:
The Ferns will remain in the north east courtyard.



CLADONIA CHLOROPHAEA



AMANITA MUSCARIA



ORTHODONTIUM LINEARE



DICKSONIA ANTARCTICA



DAWSONIA POLYTRICHOIDES



THE UNCOILING OF A FROND - A LEPTOSPORANGAITE FERN

APOTHECARY GARDEN

The southern courtyard is planted to display the origins of gardens through the cultivation of medicinal plants. The theme will be developed to include a much greater diversity of early cultivated herbal plants within a more formal structure. The semi enclosed nature of the courtyard is particularly suited to holding the aromas of herbs and spices and will be used to create a visual, textural and scented experience.

Key improvements for the apothecary garden include:

- introduce a formal structure such as box hedging which would have been used in early apothecary gardens;
- provide seating;
- consider an arbor for medicinal climbing plants;
- improve interpretation; and
- consider moving Wollemi Pine to Pinidae.



VIEW LOOKING INTO THE APOTHECARY COURTYARD



EXISTING MEDICINAL PLANTS SUCH AS FOXGLOVE, DIGITALIS PURPUREA



A FORMAL, SUBDIVIDED LAYOUT WITH TRAINED PLANTING WILL DISPLAY A WIDER VARIETY OF PLANTS



THE EXISTING RESEARCH PLOTS WILL BE RELOCATED AND EXTENDED



RESEARCH PLOTS, CORNELL UNIVERSITY, LONG ISLAND CAMPUS

RESEARCH GARDENS

The research gardens are located in the south and south eastern corner around the perimeter of the System Garden. The research gardens will include:

- 01 Garden maintenance areas, providing back of house space for storage and work activities.
- 02 A new green house for public display of propagation methods. A space to facilitate teaching and learning activities.
- 03 Recycling – including worm farm, compost tea and bokashi bin compost receptacle for surrounding buildings.
- 04 Urban agriculture including bee hives.
- 05 Student research plots within a defined framework of plots with a maintenance back-up strategy to ensure the plots are always taken care of.



A NEW GLASSHOUSE FOR PROPAGATING AND LEARNING. CHIHULI GARDENS, SEATTLE



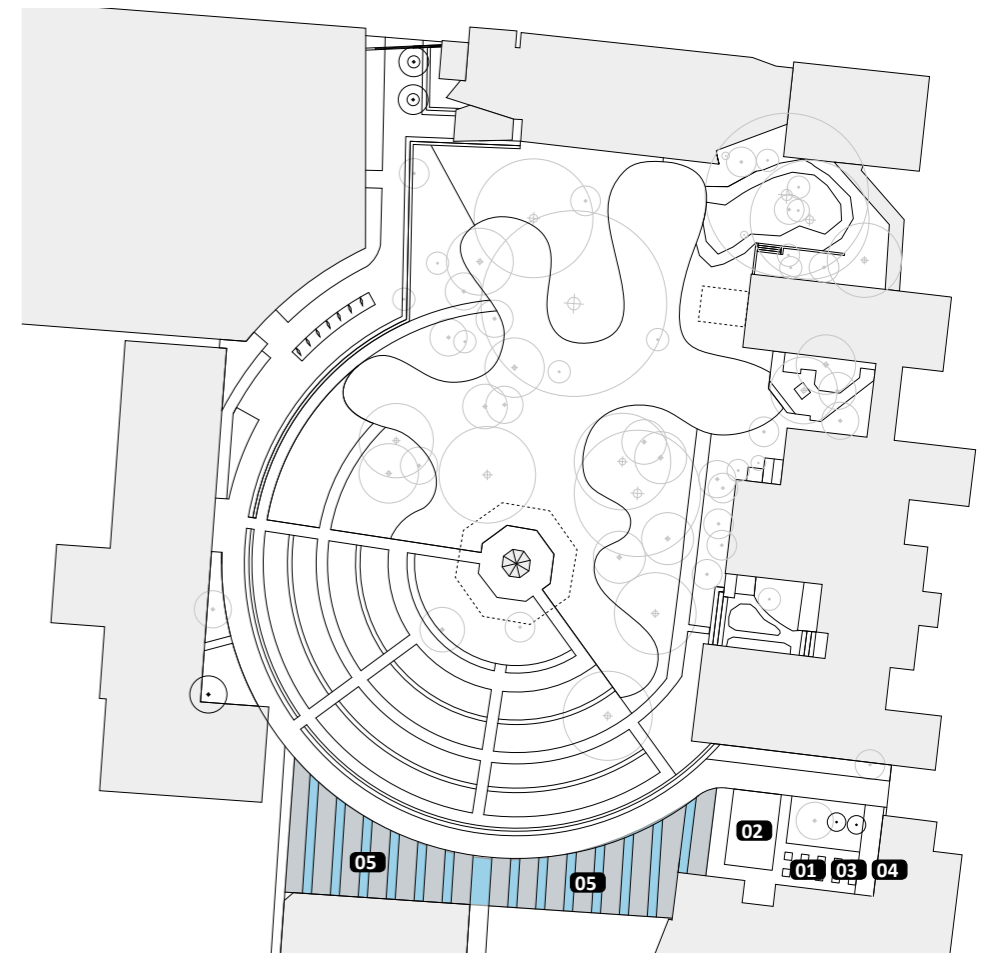
BEEHIVES WILL BE RELOCATED



A CENTRAL LOCATION FOR COMPOSTING



ENCOURAGING PROPAGATION TO BE ON DISPLAY FOR LEARNING

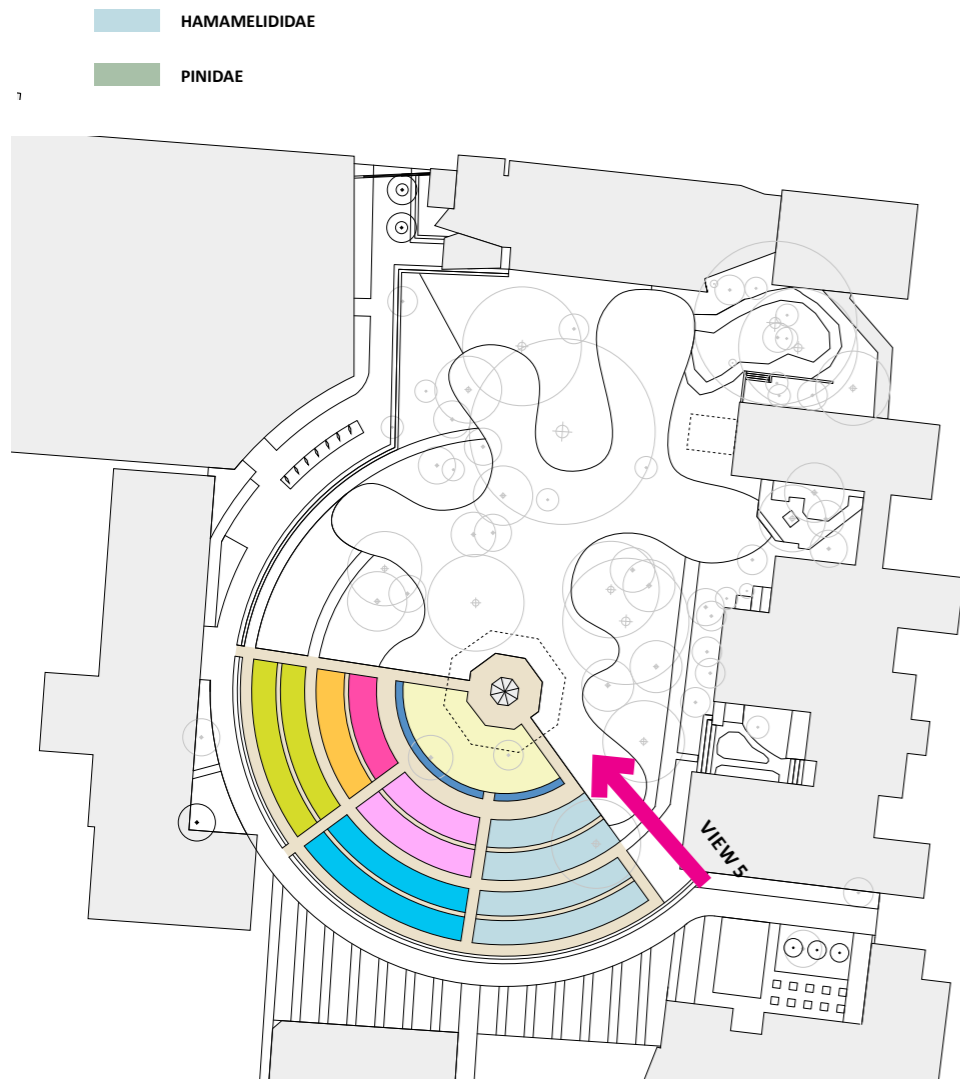


PLAN SHOWING THE LOCATION OF THE RESEARCH GARDENS, SCALE 1:1000



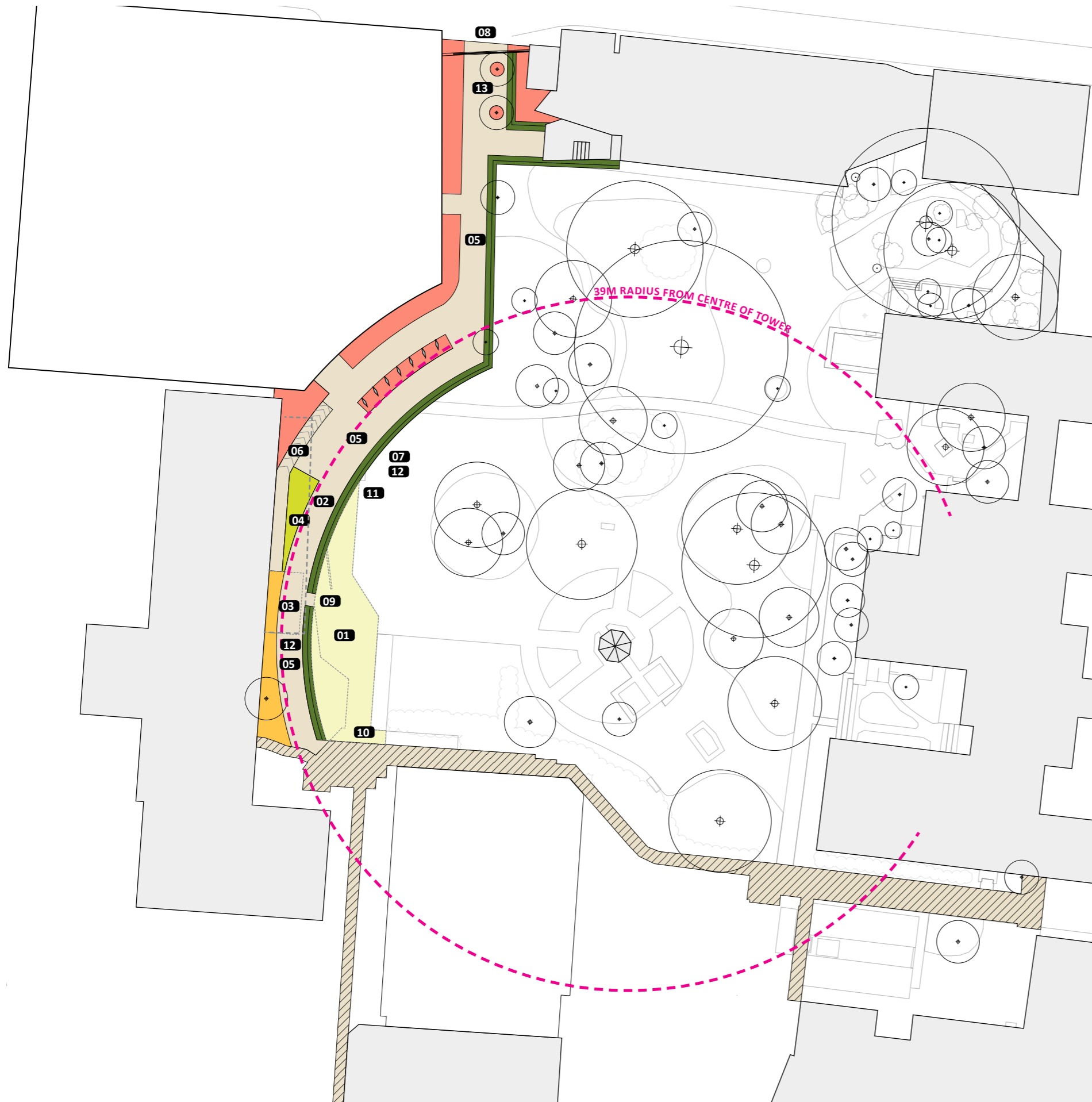
View 5: Looking into the garden

Entering from Professors walk will bring the visitor into the garden at the south east corner. Here the view looks north west to the tower over the perimeter hedge. The expanded lawn allows clear views through the garden with the Pinidae to the right and the Hammamelidiae to the left. The new water canal arcs around to the left.



IMPLEMENTATION STAGING





STAGE 1: WORKS IN TANDEM WITH WEBS 1

The stage 1 works would implement the western perimeter of the garden this will have a number of benefits including:

- returning 180m² to the System Garden;
- creating space for the displaced Dilleniidae sub-class bed to be replanted; and
- providing a 3m wide path access to WEBS which could be open at night whilst the garden is closed.

The following works would be required:

Demolition: (by WEBS contractor)

- 01** Remove brick paving, to be reused later. (135m²)
- 02** Remove existing ramp. (105m²)
- 03** Remove existing porch to building and replace with window flush with the facade. (34m², 8m long window)
- 04** Remove existing canopy. (114m²)

Construction: (by WEBS contractor)

- 05** New brick path, laid in radial pattern. (Melbourne uni grey brick) (210m² instead of the path previously proposed by WEBS plus 196m² additional brick path to connect to the south. Total 397m²)
- 06** New access ramp, 1.5m wide, concrete to match demolished ramp. (35m²)
- 07** New fence (steel mesh fence, 1.2m high to match specification of WEBS steel mesh fence, 50x50 posts, 50x50 EA frame, 50x50x3mm mesh, galvanised and black powdercoated. (86m long)
- 08** New sliding System Garden/tin alley gate. (refer Hassell drawing A5620. Change steel panel to laser cut pattern on corten steel) (5m long, 2.7m high)
- 09** New System Garden fence gate (1.2m high, 1.5m wide, steel frame, laser cut corten steel panel)
- 10** New temporary fence, re-bar steel hoops 500mm diameter, driven into soil. (16m long)

Planting (to be carried out by UoM)

- 11** New Hedge, double row at 250mm ctrs, ie 8 plants per lin. m. (86m long = 688 plants)
- 12** New planting. (from the sub-classes Rosiidae, Dilleniidae and Caryophyllidae) (assume 4plants/m², 266m² = 1064 plants).
- 13** New 'entry sentry' feature plants, planted in 1m dia. circles removed from the brick paving and edged with 4mm x 80mm corten edging. 2No.

 DILLENIIDAE	 ASTERIDAE
 MAGNOLIIDAE	 CYCAD
 HAMAMELIDIDAE	 PINIDAE
 LILLIIDAE	 RAINFOREST
 CARYOPHYLLIDAE	 LICHENS, MOSSES AND FERNS
 ZINGIBERIDAE	 GNETALES
 ALISMATIDAE	 APOTHECARY
 ARECIDAE	 SUSTAINABILITY GARDENS
 COMMELINIDAE	 RESEARCH PLOTS
 ROSIIDAE	



Stage 1 works:

Demolition: (by WEBS contractor)

- 01** Remove brick paving, to be reused later (135m²)
- 02** Remove existing ramp (105m²)
- 03** Remove existing porch to building and replace with window flush with the facade (34m², 8m long window)
- 04** Remove existing canopy (114m²)

STAGE 2: INTERIM IMPROVEMENTS

The stage 2 works would be carried out by the University of Melbourne grounds department on completion of the Stage 1 works. Additional resourcing will be required for a concentrated time estimated 4 months. The additional planting will include:

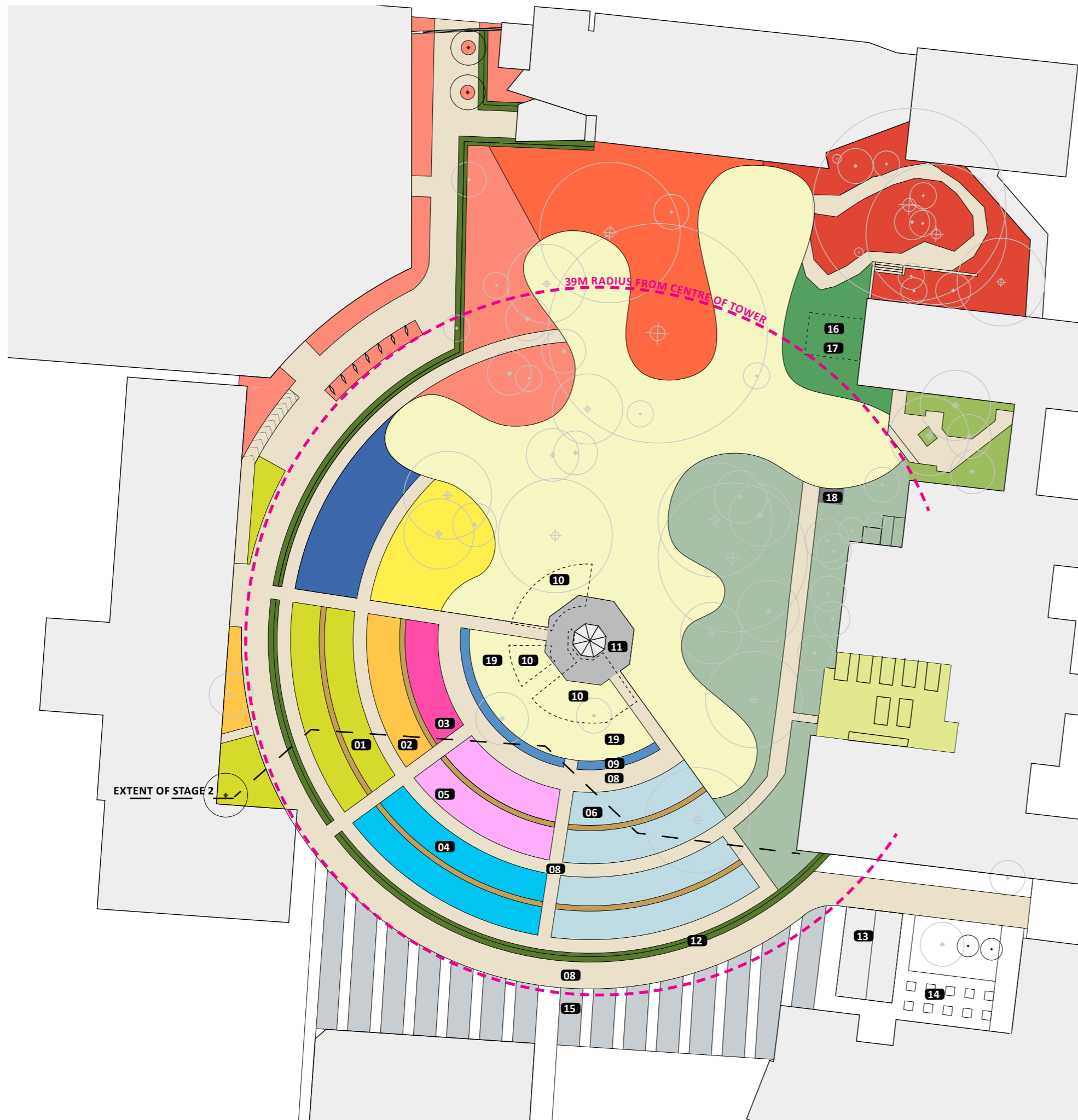
- 01 Moving and expanding Commelinidae 113.7m²
- 02 Moving and expanding Arecidae 122.4m²
- 03 Replanting and expanding Dilleniidae 96.3m²
- 04 Moving and expanding Caryophyllidae 51.5m²
- 05 Moving and expanding Zingiberidae 51.5m²

Minor capital works will be required to create the framework for the new planting this will include:

- 06 New spade edging to the formal garden beds 459.1m
- 07 Gravel paths within the formal garden 127.4m²
- 08 Demolition of existing garden beds
- 09 Reconfigure paths in apothecary courtyard
- 10 New edging to apothecary courtyard
- 11 New planting to apothecary courtyard
- 12 Repair water feature to fern courtyard
- 13 Extend billabong/ reconfigure pond for natural appeal
- 14 Relocate Orchids
- 15 Introduce Fungi
- 16 Relocate Billibellary walk sign



 DILLENIIDAE	 CYCAD
 MAGNOLIIDAE	 PINIDAE
 HAMAMELIDIDAE	 RAINFOREST
 LILLIIDAE	 LICHENS, MOSSES AND FERNS
 CARYOPHYLLIDAE	 GNETALES
 ZINGIBERIDAE	 APOTHECARY
 ALISMATIDAE	 PERIMETER HEDGE
 ARECIDAE	 DEMOLISHED ITEM
 COMMELINIDAE	 BRICK PATH
 ROSIIDAE	 GRAVEL PATH
 ASTERIDAE	 STONE PATH
	 EXISTING PATH



STAGE 3: GARDEN EXPANSION

The Stage 3 works would be carried out by external contractors to create the path and edging structure to the garden, with the University of Melbourne grounds department providing the planting. Additional resourcing will be required for the UoM grounds staff for a concentrated time estimated at 4 months. Works will include:

01	Extended Dilleniidae planting	43.4m ²
02	Extended Caryophyllidae	3.6m ²
03	Extended Zingiberidae	49.0m ²
04	Relocate and new Magnoliidae	140.0m ²
05	Relocate and new Lillidae	110.7m ²
06	Relocate and new Hamamelidae	260.3m ²
07	New corten edging to all garden beds	392.3lin.m
08	New brick paths	668.0m ²
09	New water feature and aquatic planting	29.7m ²
10	Demolition of existing garden beds	172.0m ²
11	New stone paving around tower	65.2m ²
12	Extend perimeter hedge planting	75.7lin.m
13	New glasshouse structure	
14	New recycling, composting and bee keeping facility	234.8m ²
15	Student research plots	532.9m ²
16	Remove plant and glasshouse	29.0m ²
17	New cycad planting	29.0m ²
18	New Gnetales garden bed	37.8m ²
19	New lawn	172.0m ²
20	New Interpretation	

	DILLENIIDAE		CYCAD
	MAGNOLIIDAE		PINIDAE
	HAMAMELIDIDAE		RAINFOREST
	LILLIIDAE		LICHENS, MOSSES AND FERNS
	CARYOPHYLLIDAE		GNETALES
	ZINGIBERIDAE		APOTHECARY
	ALISMATIDAE		PERIMETER HEDGE
	ARECIDAE		DEMOLISHED ITEM
	COMMELINIDAE		BRICK PATH
	ROSIIDAE		GRAVEL PATH
	ASTERIDAE		STONE PATH
			EXISTING PATH

APPENDIX 1: COSTING



APPENDIX 2: CONSULTANT REPORTS

