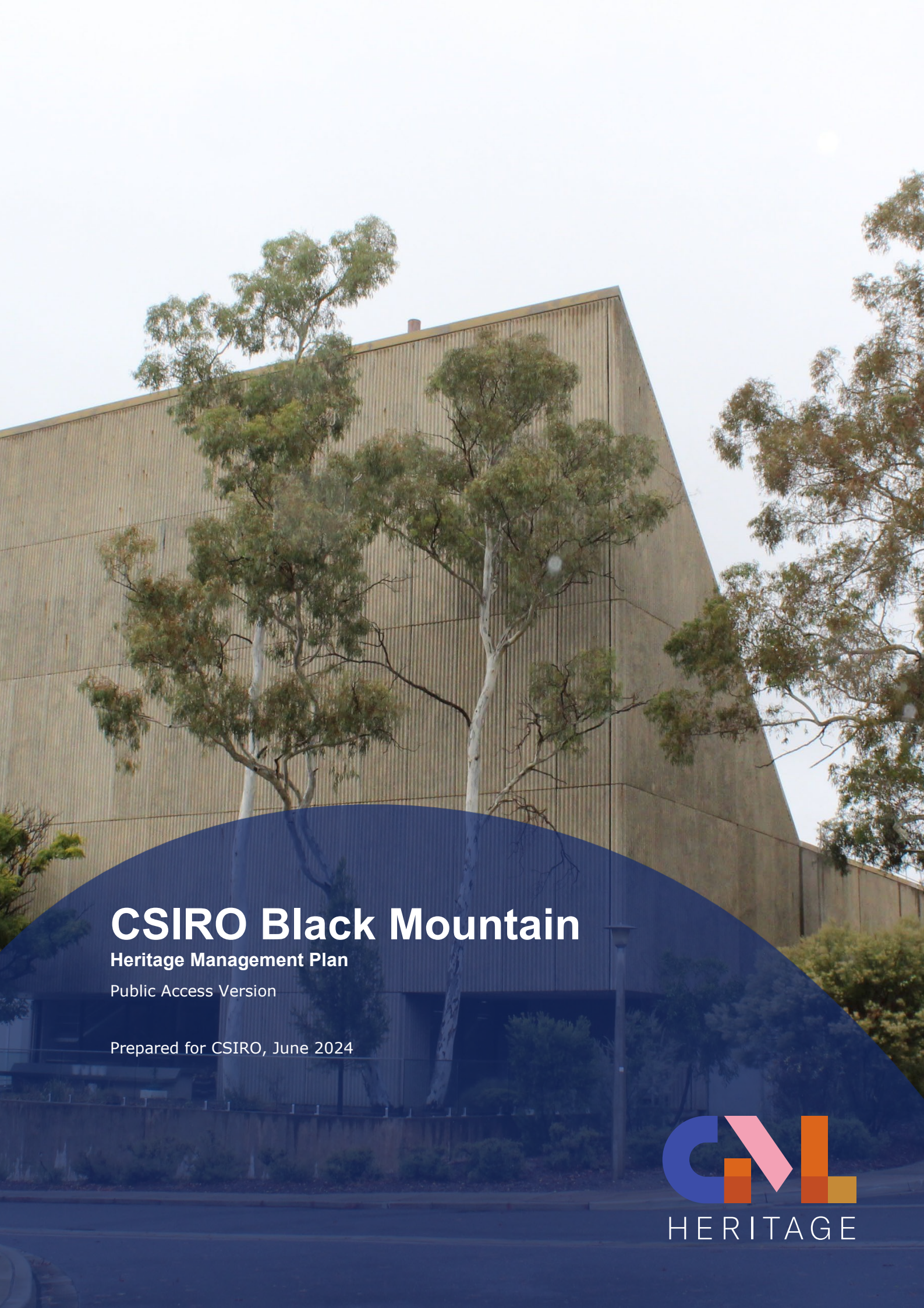

CSIRO Black Mountain

Heritage Management Plan

Public Access Version

Prepared for CSIRO, June 2024

HERITAGE

Acknowledgement of Country

GML Heritage respects and acknowledges the Ngunnawal and Ngambri people, their lands and waterways, their rich cultural heritage and their deep connection to Country, and we acknowledge their Elders past and present. We are committed to truth-telling and to engaging with Ngunnawal and Ngambri people to support the protection of their culture and heritage. We strongly advocate social and cultural justice and support the Uluru Statement from the Heart.

Confidentiality warning

Location information, descriptions and images of Aboriginal sites and artefacts have been redacted from this report. It may be made publicly available by the CSIRO.

Report register

The following report register documents the development of this report, in accordance with GML's Quality Management System.

Job No.	Issue No.	Notes/Description	Issue Date
23-0023	1	Draft Report	31 July 2023
23-0023	2	Second Draft Report	2 November 2023
23-0023	3	Third Draft Report	19 December 2023
23-0023	4	Final Draft Report	28 March 2024
23-0023	5	Final Report (AHC approved)	11 June 2024

Quality management

The report has been reviewed and approved for issue in accordance with the GML quality management policy and procedures.

It aligns with best-practice heritage conservation and management, *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* and heritage and environmental legislation and guidelines relevant to the subject place.

Indigenous cultural and intellectual property

We acknowledge and respect the inherent rights and interests of the First Nations in Indigenous Cultural and Intellectual Property. We recognise that Aboriginal and Torres Strait Islander people have the right to be acknowledged and attributed for their contribution to knowledge but also respect their rights to confidentiality. We recognise our ongoing obligations to respect, protect and uphold the continuation of First Nations' rights in the materials contributed as part of this project.

Copyright

Images

Source of images is GML Heritage unless otherwise stated.

Cover image

CSIRO Library, 2023. (Source: GML Heritage)

Executive summary

CSIRO Black Mountain, owned and occupied by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), demonstrates Commonwealth Heritage values in two individual buildings and across the whole site. This heritage management plan (HMP) for CSIRO Black Mountain provides guidance for the conservation of these heritage values.

CSIRO Black Mountain occupies a triangular site on the slopes of Black Mountain, west of the Australian National University and east of the Australian National Botanic Gardens. Its establishment in Canberra in the late 1920s was the result of the Australian Government's effort to establish a national scientific research centre in the new capital. The site was originally dedicated to the two Divisions of Economic Entomology and Economic Botany (later Plant Industry) and focused on improvements for the agriculture industry. The upgrades at the site over its history have ensured it has remained at the forefront of scientific endeavour and the site has been the place of several scientific breakthroughs. Today it is CSIRO's main Canberra campus.

This HMP has been prepared to meet the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) requirements for Commonwealth Heritage places and to provide practical guidance to the owners and users of CSIRO Black Mountain. It also aims to provide an understanding of the heritage values of the site and recommends policies and actions to guide decision-making.

Summary of key findings

- The Commonwealth Heritage Listed places at CSIRO Black Mountain—CSIRO Main Entomology Building (now known as the 'CSIRO Foundation Building') and Phytotron (now known as the 'Phytotron and Phenomics Centre' or the 'High-Resolution Plant Phenomics Centre')—are in good condition and continue to contribute to the understanding of the CSIRO's role in science and research in Australia.
- The whole CSIRO Black Mountain site has been identified as having Commonwealth Heritage value and should be managed to best-practice standards for the protection, conservation, presentation and transmission of its heritage values for the benefit of current and future generations.
- Indigenous Heritage values have been identified at the site and the Aboriginal past-use of this important landscape should be interpreted.
- CSIRO Black Mountain's heritage values should guide decision-making about the site.
- The site as a whole and numerous individual buildings have been continuously used and upgraded for scientific purposes which contribute to the heritage values

of the place. The operational significance of the Phytotron and other equipment-heavy buildings should be balanced with a careful conservation approach that allows for the retaining of original fabric and demonstrating the site's historical and scientific importance.

- The possibility of natural heritage values at the site should be investigated.
- The listed and identified heritage values and attributes of CSIRO Black Mountain are in good condition and should be maintained through management and conservation in accordance with this HMP.
- Any proposals for works or actions which may impact the listed and identified heritage values of CSIRO Black Mountain should be assessed for their heritage impact with all necessary approvals being obtained.
- Development proposals across the site should follow design-in-context guidelines.
- Policies and actions provided in this HMP should be followed and implemented in accordance with the priorities and timelines established in this document.

Navigating this plan

I want to…	Then go to…
Understand the language and terms used in this plan.	Appendix A—Glossary, abbreviations and definitions
Know the goals of this heritage management plan.	Section 1.2
Understand the site boundary of CSIRO Black Mountain.	Section 1.3
Understand the listed values of CSIRO Black Mountain.	Section 1.4
Find out about the history of CSIRO Black Mountain.	Section 2
Understand the Aboriginal archaeological context and the buildings and landscape of CSIRO Black Mountain.	Section 3
Find out what makes CSIRO Black Mountain significant.	Section 4
Understand the issues and opportunities for CSIRO Black Mountain's management.	Section 5
Know what laws and regulations apply to CSIRO Black Mountain.	Section 5.2
Understand how to manage and conserve CSIRO Black Mountain's heritage significance.	Section 5.1, 5.5
Know who is responsible for the management of CSIRO Black Mountain.	Section 5.3
Know when to engage with the local Aboriginal community and understand the management requirements for the Indigenous Heritage values.	Section 5.1.4 and 5.7
Know what the priority actions are for managing CSIRO Black Mountain	Section 6
Know how to implement the policies and activities in this document	Section 6
Know the Dos and Don'ts for maintaining a heritage place.	Appendix C—Maintenance Dos and Don'ts

Contents

1 Introduction

1 Introduction

1.1 Background

GML Heritage Pty Ltd (GML) has been engaged by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to prepare an updated Heritage Management Plan (HMP) for the CSIRO Black Mountain site in the Australian Capital Territory (ACT).

CSIRO Black Mountain, located on the eastern, lower slopes of Black Mountain, is CSIRO's main Canberra site. Its establishment in Canberra in the late 1920s was a direct outcome of the Australian Government's effort to establish a scientific research centre in the new national capital. It was the embodiment of the ideal of 'national science' being vital to the nation's economic progress. The site was originally dedicated to the former Division of Economic Entomology and Division of Economic Botany (later known as Division of Plant Industry). It is associated with several significant scientific breakthroughs which have influenced the agricultural industry and Australia more broadly.

The heritage values of CSIRO Black Mountain are formally recognised through the inclusion of two buildings on the Commonwealth Heritage List (CHL):

- CSIRO Main Entomology Building,[1] Clunies Ross St, Acton, ACT, Australia (Place ID 105348)
- Phytotron,[2] Julius St, Acton, ACT, Australia (Place ID 105560).

In addition, the CSIRO site as a whole has been determined, through the heritage assessment in this HMP, to possess heritage values. However, these values have not been formally included in the CHL.

Under s341S(1) of the *Environment Protection and Conservation Act 1999* (Cth) (EPBC Act), CSIRO, as a Commonwealth agency, is required to prepare a Heritage Management Plan (HMP) for Commonwealth Heritage places that it owns and/or controls to identify, protect, conserve, present and transmit the heritage values of the place.

[1] This building is now referred to as the 'CSIRO Foundation Building'.

[2] This building is now referred to as the 'Phytotron and Phenomics Centre' or the 'High-Resolution Plant Phenomics Centre'.

This HMP updates the 'CSIRO Black Mountain Heritage Management Plan' prepared by Environmental Resources Management Australia Pty Ltd (ERM) (referred to as the 2017 HMP).

A review of the 2017 HMP was undertaken prior to the preparation of this revised HMP under s341X of the EPBC Act. The review assessed the management plan for its consistency with the Commonwealth Heritage management principles and its effectiveness in protecting and managing heritage values. The findings from the review have helped inform the development of this updated HMP.

This HMP is consistent with the EPBC Regulations, particularly Schedule 7A 'Management plans for Commonwealth Heritage places', and Schedule 7B 'Commonwealth Heritage management principles' (refer to Appendix B for the compliance schedule).

1.2 HMP objectives

At its simplest, a HMP details what is significant in a place and, consequently, what policies are appropriate to enable that significance to be retained in its future use and development. [1] CSIRO is responsible for managing CSIRO Black Mountain and its heritage values. This HMP has been prepared to assist CSIRO in meeting this requirement, including its legislative obligations under the EPBC Act.

The key objectives of this HMP are to:

- guide the management of CSIRO Black Mountain so that its heritage values are identified, conserved, protected, presented, transmitted to future generations and, if appropriate, rehabilitated;
- provide an up-to-date understanding of the place and its heritage significance through an investigation of its context, history and heritage fabric;
- establish a framework for the effective long-term management and conservation of the heritage values of CSIRO Black Mountain;
- provide practical heritage policies and recommendations to guide day-to-day decision making about the place;
- facilitate the ongoing operation of CSIRO Black Mountain in a manner that protects and promotes its heritage values, and avoids and mitigates any impacts to these values; and
- comply with all regulatory requirements for management plans for Commonwealth Heritage places.

1.3 The site

The study area for this HMP encompasses the whole CSIRO Black Mountain site. It is a triangular shaped area of approximately 37 hectares and occupies Block 3, Section 2 Acton and Block 4, Section 85 Acton (Figure 1.1).

Figure 1.1 Aerial showing the location of CSIRO Black Mountain in its context in north Canberra. (Source: Nearmap with GML overlay, 2023 © Nearmap, all rights reserved.)

The site is bounded by Clunies Ross Street to the southeast, Barry Drive to the northeast, and Frith Road and the Botanic Gardens to the west. The site is at the eastern base of Black Mountain and the Black Mountain Nature Reserve and is adjacent to the Australian National University. The site is described in more detail in Section 3 of this HMP.

The CSIRO Foundation Building (formerly known as the CSIRO Main Building or CSIRO Main Entomology Building) (Building 101) and the Phytotron and Phenomics Centre (also known as the High-Resolution Plant Phenomics Centre) (Building 005) are located in the eastern part of the site and face Clunies Ross Street.

Under the National Capital Plan (NCP), administered by the National Capital Authority (NCA) the CSIRO Black Mountain site is a 'Designated Area' under the CSIRO (Black Mountain) Precinct Code. Refer to Section 5.2.3 for further information on the NCA and NCP.

1.4 Heritage context

1.4.1 Commonwealth Heritage List

The CHL is a list of heritage places owned or controlled by the Australian Government. Places in the list can have natural, Indigenous and/or built heritage values, or a combination of these. Places included in the list have been found to meet one or more of the nine CHL criteria. The threshold of significance required to reach the CHL criteria is that the place must have 'significant' heritage value.

The CSIRO Foundation Building (listed as the 'CSIRO Main Entomology Building') and the Phytotron and Phenomics Centre (listed as the 'Phytotron') are individually listed in the CHL. Two other buildings (Blowfly Insectary Numbers 1 and 2) were included in the CHL but were demolished in 2015. A Heritage Impact Statement and archival recordings were prepared to cover these demolition works.

The statutory listings for CSIRO Black Mountain are outlined in Table 1.1.

Table 1.1 Statutory listings at CSIRO Black Mountain.

Place	Commonwealth Heritage List (CHL)
CSIRO Main Entomology Building **Building 101**	Listed in 2004 Place ID: 105348 Listing boundary encompasses building footprint only. Included for its a) historical and d) characteristic value
Phytotron **Building 005**	Listed in 2004 Place ID: 105560 Listing boundary encompasses building footprint only. Included for its a) historical, b) rarity, f) technical achievement and h) associative (significant people) value.
Blowfly Insectary Numbers 1 and 2	Removed from CHL—Demolished 2015 Place ID 105559

Place	Commonwealth Heritage List (CHL)
	These buildings were demolished in 2015 following a referral to the Minister for the Environment and DCCEEW.

1.4.2 Non-statutory listings

Other, non-statutory listings also apply to buildings at CSIRO Black Mountain.

The Main Entomology Building and Phytotron and former Blowfly Insectary buildings were included on the Register of the National Estate (RNE) in 1999 and 2003. The RNE ceased to have statutory effect in February 2012 and listings do not provide direct legal protection or prescriptive requirements for management. The RNE is retained by the Commonwealth as an archival database of places.

The Phytotron and F.C. Pye Field Laboratory are included on the Australian Institute of Architects ACT Chapter Register of Significant Architecture. This register is a list of buildings determined by the Institute's Heritage Committee to be of architectural significance to the ACT. The listing does not provide legal protection or have statutory authority.

Table 1.2 Non-statutory listings at CSIRO Black Mountain.

Place	Register of the National Estate [2]	Institute of Architects Register of Significant Architecture [3]
CSIRO Main Entomology Building	Registered in 1999 Place ID: 13620	—
Phytotron	Registered in 2003 Place ID: 102830	Registered since 1986 RSA No: R136
CSIRO F.C. Pye Laboratory [3]	—	Registered since 2021 RSA No. R142
Blowfly Insectary Numbers 1 and 2	Registered in 2003—Demolished 2015 Place ID: 102826	—

[3] It is noted that through a referral to the Minister for the Environment and DCCEEW, CSIRO have received approval for the demolition of the F.C. Pye Laboratory Building 019/A on grounds of contamination and non-compliance.

1.5 Methodology

1.5.1 Structure of this HMP

The sections of the report are outlined below with a brief description of their content.

Table 1.3 Outline structure of the CSIRO Black Mountain HMP.

Executive summary: provides an overview of the HMP findings and recommendations.
Section 1—Introduction: provides a background and methodology to the HMP, location and heritage status of the site.
Section 2—Historical context: provides a summary history of the site, including the establishment of CSIRO in Australia and in Canberra and later developments.
Section 3—Physical context: provides an overview of the site, its setting, including its current condition.
Section 4—Heritage values: provides the existing Commonwealth Heritage values of the two CHL places and a Commonwealth Heritage values assessment of the CSIRO Black Mountain site as a whole. Provides a comparative analysis of similar sites in the ACT. A description of the condition of the heritage values is also provided.
Section 5—Developing policy—constraints and opportunities: discusses the constraints and opportunities affecting the future conservation, management and interpretation of the heritage values of CSIRO Black Mountain to inform the development of policies.
Section 6—Conservation policies, actions and implementation: provides specific policies and actions for conservation and management, and includes an implementation framework with priorities, timing and responsibilities.
Appendices
Appendix A—Terminology, abbreviations and definitions
Appendix B—Compliance tables for Schedules 7A and 7B of the EPBC Act Regulations
Appendix C—Dos and Don'ts for the maintenance of fabric
Appendix D—Unanticipated Finds Protocol
Appendix E—Commonwealth Heritage List citations for the CSIRO Main Entomology Building and the Phytotron

1.5.2 Relevant documentation

The following heritage and background documents have been referenced in the preparation of this report:

- 'CSIRO Black Mountain Heritage Management Plan', prepared by ERM for CSIRO, 2017 (referred to as the 2017 HMP);
- 'Statement of Heritage Impact Proposed Masterplan' (20 year and 7 year) for CSIRO Black Mountain, prepared by Rappoport Pty Ltd, 2013;

- 'CSIRO Black Mountain Heritage Study', prepared by Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson for CSIRO, 2005;
- 'Heritage Assessment of Buildings 102, 104, 135, 135A, 164, 165, 168, 103, 105, 106, 173', prepared by Duncan Marshall, 2005 (referred to as the 2005 Heritage Study);
- 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005;
- 'Documentation of Certain Heritage Places on the CSIRO Black Mountain Site', prepared by Duncan Marshall and Dr Robert Boden, 1997;
- the EPBC Act and its Regulations;
- *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* (the Burra Charter); and
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) guidelines for Commonwealth Agencies, *Working Together: Managing Commonwealth Heritage Places* and *Working Together: Managing National Heritage Places*.

1.5.3 Site inspections

Inspections of the site were conducted by the GML project team on 1 May 2023. The aim was to inspect the physical fabric of the site, including the condition, as well as the relationship to its broader setting, and to understand the changes that have occurred since 2017 and the context for future planned works.

Interior inspections were limited to key buildings on-site and were limited to visual inspections. No opening up or detailed assessment of building fabric or condition was conducted.

1.5.4 Consultation

Stakeholder consultation

To inform the development of this HMP, consultation was undertaken with relevant stakeholders from CSIRO, including with the Estate, Heritage and Leasing Coordinator and CSIRO State Manager.

Consultation helped to identify the views of key stakeholders regarding management and operational requirements of the site and plans for its future.

Aboriginal community consultation

Consultation for this project with the Aboriginal community to assess the Indigenous heritage values of the site study area was undertaken in accordance with the

Commonwealth's *Ask First* guidelines.[4] As part of the process of assessing the Indigenous heritage values of a place, the heritage values associated with it must be identified by the relevant local Indigenous community.

These guidelines generally require that the relevant Traditional Owners and any other Indigenous people with rights and interests in the area are identified. The process of identifying relevant Traditional Owners has been addressed in the ACT through the issuing of an official Representative Aboriginal Organisation (RAO) list by ACT Heritage.

The Commonwealth Heritage Management Principle 6 states:

> Indigenous people are the primary source of information on the value of their heritage. The active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.[5]

Consultation included invitations to all four of the ACT's RAOs to participate in the project.

Expressions of interest in the project were conveyed by two groups:

- Buru Ngunawal Aboriginal Corporation (BNAC); and
- Mirrabee.

Both respondent groups were invited to attend a site inspection to assess cultural values relating to the project area.

The site inspection was attended only by a Mirrabee representative, Reuben House on 19 May 2023. BNAC was unable to attend. It comprised targeted, and opportunistic, pedestrian inspection of areas of ground surface exposure across CSIRO Black Mountain and included the bushland areas to the north and southwest of the site.

Ground surface exposures were generally only found on the western side of the site. The locations of previously recorded sites were also inspected, including the locations of scarred trees.

In November 2023, the second draft version of this HMP was provided to BNAC and Mirrabee for review and comment.

BNAC provided feedback over the phone to GML, the findings of which have been implemented into this HMP.

Mirrabee did not provide additional commentary.

Public notification

In accordance with s341S(3) and reg 10.03C of the EPBC Regulations, comments will be invited on the draft HMP from members of the public, key stakeholders and community groups with rights and interests in the place.

1.5.5 Limitations

This HMP is subject to the following limitations:

- This report is primarily based on existing documentation. Limited new historical research has been undertaken. The historical outline draws mostly on information provided by the 2017 HMP and 2005 'CSIRO Black Mountain Heritage Study'.
- Assessment of natural heritage values was not undertaken as part of the preparation of this report.
- Consultation to determine community views about social or aesthetic values was not undertaken for this HMP.
- The site description and analysis were prepared following the inspection of the site, without intervention into the building fabric. Visual observation primarily informed this analysis.

1.6 HMP terminology

The Main Entomology Building is now known as the 'CSIRO Foundation Building'. The CHL citation refers to the 'CSIRO Main Entomology Building', however CSIRO have advised DCCEEW of the name change. For the purposes of clarity, this HMP generally uses the name 'Foundation Building' except in reference to the Commonwealth Heritage Place, when 'Main Entomology Building' is used.

The CHL citation refers to just the 'Phytotron' however, the place is now known as the 'Phytotron and Phenomics Centre' or the 'High-Resolution Plant Phenomics Centre'. For simplicity the HMP uses the name 'Phytotron and Phenomics Centre' except in reference to the Commonwealth Heritage Place, when just 'Phytotron' is used.

1.7 Acknowledgements

GML gratefully acknowledges the assistance of the following people over the course of the project:

- Helga Quental Faria De Sousa, Estate, Heritage and Leasing Coordinator, CSIRO;
- Irene Ford, Estate and Leasing Management Manager, CSIRO;
- Peter Zaffina, CSIRO;
- Mick Kath, State Manager, CSIRO; and
- David Eschbach, CBIS ACT teams, CSIRO.

1.8 Endnotes

[1] Australia ICOMOS, James Semple Kerr, The Seventh Edition Conservation Plan, 2013.

[2] Australian Heritage Database Register of the National Estate, Department of Climate Change, Energy, the Environment and Water, 'CSIRO Main Entomology Building, Clunies Ross St, Acton, ACT, Australia', Australian Heritage Database, viewed at: http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=13620, accessed 13 July 2023.

[3] Australian Institute of Architects, ACT Notable Buildings, viewed at https://www.architecture.com.au/explore/notable-buildings/act, accessed 21 July 2023.

[4] Australian Heritage Commission, *Ask First: A Guide to Respecting Indigenous Heritage Places and Values 2002*, Canberra, p 6; Department of the Environment, *Engage Early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), 2016, Canberra.

[5] Australian Government 2019, *Australia's Commonwealth Heritage, Working Together: Managing Commonwealth Heritage Places*, p 16.

2 Historical context

2 Historical context

2.1 Aboriginal overview

For over 25,000 years, Aboriginal people have occupied the hills and plains of the Molonglo Valley. They lived a nomadic hunter-gatherer lifestyle, setting up camps as they travelled in response to the availability of natural resources.[1] The landscape formed an integral part of the local Aboriginal people's lifestyle and belief system. Ridges were used as tracks, and hills such as Mount Ainslie and Black Mountain provided navigational points for moving through the landscape. Mount Pleasant formed the tail end of Mount Ainslie and Mount Majura ridges and provided access from higher ground to the Molonglo River.[2]

Historical observations and archaeological evidence attest to the occupation of the Black Mountain and Sullivans Creek area by Aboriginal people prior to the settlement of the area by Europeans.[3] In 1954, Bluett noted that early settlers had recorded observations of at least 'one group camped at the foot of Black's Mountain close to Canberry Creek'.[4]

Various other historical observations noted that the area was well used by Aboriginal people and was rich in food sources.

According to Gillespie[5], resources in this environment would have been good, including freshwater fish like Murray Cod in the Molonglo River, a variety of reptiles, birds, insects (Bogong Moths) and larger animals like possums, wallabies and kangaroos, as well as a variety of roots and yams.

Wright in 1923 (as recorded in Watson in 1927) succinctly observed the Aboriginal group in the Canberra area, with specific reference to Black Mountain:

> The tribe numbered about four or five hundred individuals divided into isolated groups, who camped where food was plentiful. Excepting on special occasions such as a corroboree, a camp usually was formed by one family. A camp consisted of a rude shelter, made of boughs for protection against rain and the prevailing winds, or, when the camp was more permanent, a hut was constructed of bark.
>
> Usually the aborigines carried two to six spears each, some of which were barbed and some plain. The spears were hurled with throwing sticks or womerahs. They also used boomerangs, nulla nullas or clubs made of wood, and stone axes. For purpose of defence, they used two forms of shields; one was broad and light for defence against spears and the second smaller and more solid for defence against nulla nullas. They made fishing lines and snares out of the tendons drawn from the tails of kangaroos and wallabies. They constructed canoes from bark, which were cut from a suitable elbow of a tree and were structures very like the early English coracles. For protections against the cold, they made rugs or cloaks from the skins of kangaroos and wallabies.

> Their food consisted of opossums, wallabies, bandicoots, turtles, fish, eggs, grubs and snakes. These were cooked whole, after their entrails had been removed; and, at each repast it was customary for the male aboriginal to consume the most savoury and delicate portions.[6]

The Black Mountain area would also have provided protection from prevailing northern winds and a close source of water. Flood[7] observes that the general range of material cultural artefacts would in fact have been moderately restricted in quantity and complexity, reflecting the need for greater upland mobility based on climatic restrictions. According to Moss:

> It is probable that sites on the northern side of the Molonglo would have preference in the summer while the sheltered valleys on the south side would prove more congenial in winter, but in my opinion stone age man did not remain in the city area through winter on account of the low temperatures which prevail. He would probably have spent the winter months in the warmer climates of the Murrumbidgee Valley.[8]

Flood[9] also notes that climatic restrictions would have been a factor in the reduced population sizes of groups in the uplands areas; smaller groups were favoured due to the need to migrate between seasonal resource zones and pursue warmer climates in the colder months. Groups are typically recorded as comprising around 20–30 people, coming together in larger groups for festive/meeting occasions. Population estimates of the total tribal size of the area vary from around 500[10] to around 700–800[11] people, although their congregation as a total group was rare. Smaller group estimates vary from 'family or larger groups' of up to around 50 people.[12]

Kabaila[13] has interpreted the groups of Aboriginal people camped at the base of Black Mountain as evidence of seasonal, nomadic habitation. Ethnohistorical records indicate that their rudimentary shelters (mia-mias) were temporary and seasonal rather than permanent camps, and were set up along a 'nomadic route' based on the availability of resources. This route was well defined and identified by Kabaila[14] as a pathway along Sullivans Creek and between Black Mountain and O'Connor Ridge, heading west towards Belconnen.

The base of Black Mountain is identified in several historic sources as the site of one of the main ceremonial areas in Canberra.[15] The site was identified as being located at the 'former Administrative offices at Acton'[16]—a location which has since been established as the current entrance to the Australian National Botanic Gardens.[17]

Kabaila quotes the following description from Bluett:

> The night would be lit up with the cooking fires at a hundred or more mia-mias spread along the Creek; the four or six blazing bonfires lighting up the big cleared dancing ground; the painted and decorated performers, greased bodies glistening in the firelight; children goggle-eyed with excitement; old men chanting and tapping their feet; the women clapping hands and slapping buttocks to the rhythm of the dance.[18]

Estcourt observes that the arrival of European settlers had a devastating impact on local Aboriginal populations [19] with the 1860s population of around 60 people reduced to 5 or 6 by 1872. This was reported in the *Goulburn Herald* on 9 November 1872. The main culprit was disease; 'diseases such as measles and smallpox had decimated the Aboriginal population of the Highlands, and only a few survivors remained' by the 1870s. [20]

In 1954, according to Jackson-Nakano [21], Bluett recorded that Aboriginal people were still occupying and working in their own country in 1927, despite the fact that the land had been incorporated into the Federal Capital Territory. However, the numbers of Aboriginal people appeared to have been fairly low, with the observation that:

> Up to the acquisition of the territory by the Commonwealth there were some ten or twelve purebreds and lighter shades working in their shiftless, spasmodic way on Yarralumla and surrounding stations. These have either died or drifted onto other parts. Canberra knows them no more. [22]

The presence of contemporary Aboriginal families with connections to Country indicates that the Aboriginal people have not 'died or drifted onto other parts' but have maintained their cultural presence on Country throughout the twentieth century.

2.2 European history

The first official Europeans to visit the area of the present-day city of Canberra were James Vaughan, Joseph Wild, and Charles Throsby in December 1820, who were led by Aboriginal guides. [23] They recorded seeing the fires of the Aboriginal people, but not the individuals themselves. [24] Although the exploration party initially left the area, several subsequent return excursions were made in the following years. The area was dubbed the 'Kamberry Plains' or 'Limestone Plains' and, by 1823, cattle were being grazed on a nearby station at Bungendore. [25]

2.3 Establishing the Federal Capital Territory

During the late 1890s, there was much debate over the location of the seat of government for the new Commonwealth of Australia. Various sites for the Federal Capital Territory were considered during the years leading up to Federation, but it was not until 1908 that the final site selection was made, with the region of Yass-Canberra nominated for the federal capital by surveyor Charles Robert Scrivener.

Scrivener's choice was an elevated site straddling the Molonglo River with mountains and hills to the northwest, northeast and south. The shape of the territory was largely determined by access to water. The original surveying parties were instructed to be scrupulous about securing the best water catchment for the new capital. [26]

In 1909, legislation was passed for the transfer of an area of 911 square miles to the Commonwealth to form the Territory,[27] with approximately 35,500 hectares of land compulsorily acquired by the Commonwealth from New South Wales.[28]

Over the next 30 years, Canberra sought to establish itself through innovative city design, economic production, increased population density and technological feats.

2.3.1 The Griffins' plan

An international competition to design the new city commenced in 1911. In May 1912, after considerable debate and 137 entries, two Chicago-based architects—Walter Burley Griffin and Marion Mahony Griffin—won the competition. The Griffins were interested in urban design that integrated buildings, gardens and the broader landscape, linking suburban communities and city centres. In their designs they aimed to draw references from the broader natural setting of the place.

The Griffins' plan (Figure 2.1) also drew on two of the prominent town planning theories prevalent at the time:

- City Beautiful—a philosophy widely discussed and implemented in North American architecture and urban planning circles during the 1890s and 1900s. The movement advocated the promotion of beauty, not only for its own sake but also as an uplifting moral and civic force for the betterment of the community.
- Garden City—an urban planning style initiated in 1898 by Sir Ebenezer Howard in Britain. The concept was that garden cities were planned as self-contained communities surrounded by green belts or parks with short commuting times and preservation of the surrounding countryside landscape. Canberra's older local residential areas that have their origins in this planning philosophy contain many parks, gardens and ample open space protected from through traffic.

By combining these two philosophies with their sensitivity to the existing landscape, the Griffins' design proposed a planned capital with unique purpose, symbolism and character.

Figure 2.1 The Griffins' plan of design for the federal capital showing land, water and municipal axes, 1911. The three formal basins of the city centre and their flanking lakes are especially clear in this plan. (Source: NAA, A1, 1917/7242, Item ID 35772)

2.4 Origins of CSIRO

CSIRO had its genesis in the establishment of a preliminary Advisory Council of Science and Industry by the government of WM Hughes in early 1916. World War I had brought home to the Australian Government the relationship between scientific research, economic strength and national power and Hughes was enthusiastic about the nation-building potential of an Australian national science body.

Due to funding being focused on Australia's war effort, the unpopularity of the idea amongst the states and post-war economic stringency, the Council (by 1920 named the Institute of Science and Industry) suffered for want of funds and was unable to accomplish much of significance.

However, the idea of a national scientific research body had the support of the Bruce-Page government, who had aims for a successful organisation that was better funded, more ambitious in scope and decentralised in structure. This was the Council for Scientific and Industrial Research (CSIR), which was established by way of the *Science and Industry Research Act* 1920. Appointed as its foundation chairman was the engineer and inventor George Julius.

As the Australian economy was heavily dependent on primary industries in this period, CSIR's research effort was, at first, naturally directed towards achieving increased productivity, enhanced quality and better economic returns in these industries. The research program was thus organised into five areas:

1 animal pests and diseases;

2 plant pests and diseases;

3 preservation of foodstuffs;

4 forest products; and

5 fuel problems.

Of these, research relating to plant pests and diseases was to be undertaken by the Division of Economic Botany (later the Division of Plant Industry) and the Division of Economic Entomology.

The purpose of the Division of Economic Botany was to work on the following matters of 'great economic importance' to the nation: the improvement of pastures and other problems of significance in the pastoral industry; the breeding of plants to produce varieties that gave higher yields and exhibited greater resistance to drought and disease; the identification and classification of Australian plants as a fundamental component of plant research, culminating in the establishment of a national herbarium; and the selection and development of root-stocks for fruit trees.

The Division of Economic Entomology was to conduct research relating to insect pests in the agricultural, horticultural and pastoral industries, research of enormous national importance in view of the economic losses that pests caused.

2.4.1 CSIRO comes to Canberra

To give meaning to the idea of national science, the government decided in 1927 that facilities would be provided in Canberra for research to be undertaken in the Divisions of Economic Botany and Economic Entomology.

CSIR Chairman, George Julius, approached the Federal Capital Commission (FCC) for reservation of 40 acres on the eastern slope of Black Mountain in Canberra, the new national capital. This was on basis that Council's administration would move there within a few years, with the Division of Economic Entomology and Division of Economic Botany, to be established there immediately.[29]

In 1928 Dr Robin Tillyard, previously of Cawthron Institute, Nelson, New Zealand was appointed as Chief of Division of Economic Entomology and Dr Bertram Thomas Dickson formerly of McGill University, Canada, was appointed Chief of Division of Economic Botany.

In July 1928, the Council visited Canberra in Tillyard's absence and selected a site on the eastern slope of Black Mountain. The site was at the northwestern end of Walter Burley Griffin and Marion Mahony Griffin's 'municipal axis' in their design for the city. This axis ran in a northwesterly direction from Mount Pleasant to Mount Vernon—now called City Hill—and continued on to Black Mountain.

CSIR was late in the process of obtaining a building site in Canberra, compared to other organisations. The site was suggested by the FCC Chairman, Sir John Butters and the Director-General of Works, John Smith Murdoch. At the time there was a stone quarry in the vicinity.

Mapping from the period[30] indicates that the CSIR site did not contain any farming buildings. Three paddock fencing lines within or near to the study site, including one fence running roughly north–south, is notated as a 'three and one barbed and netting fence'. The map also indicates that the site was in an area that appears to have contained components of 'thickly timbered sapling undergrowth' (extending down from Black Mountain and possibly touching the western side of the site), 'gum box and apple' lightly timbered land to the northeast, and cleared creek flats bordering Sullivans Creek (formerly Canberry Creek) to the southeast.

Due to Canberra's unfavourable climate and poor soils, the site selected was a far from ideal location for carrying out botanical and entomological research. Notwithstanding these practical deficiencies with the Black Mountain site, the establishment of Divisions in Canberra on a prominent location on the municipal axis demonstrated the importance of the concept of national science to the government and CSIR itself.

2.4.2 Establishment of the Black Mountain site

After the decision was made in 1927 to site the central offices, laboratories and other facilities for the two Divisions in Canberra, planning proceeded on a design for the campus. The FCC was tasked to design scientific research laboratories, associated offices and support buildings including glasshouses and insectaries. The design envisaged a campus of buildings along the slope of Black Mountain facing east down the proposed University Avenue towards the new Civic Centre across the area allocated to the future university (Figure 2.4).

The design of the building for the Divisions of Economic Botany and Economic Entomology (Figure 2.2) was also completed by the FCC and consisted of the Central Block for administrative offices and a wing for each Division at either end. The designing architect being W Hayward Morris (who also designed the Institute of Anatomy (now the National Film and Sound Archive of Australia building) which was completed in 1929); the construction of insectaria and glasshouses started first, located behind each wing (FCC 1928).

Construction commenced on the southern Entomology wing in 1929 and the northern Botany wing in 1930. Refer to Section 2.5 for further historical information on the Foundation Building (Building 101).

Further up the slope of Black Mountain, insectaries, greenhouses and a space for experimental field plots were to be built. By the middle of 1929, two of the insectaries were completed and in operation (Figure 2.5) (since demolished).

By mid-1931, the Division of Plant Industry (originally named Economic Botany) (Figure 2.3) glasshouses had also been constructed (also since demolished).

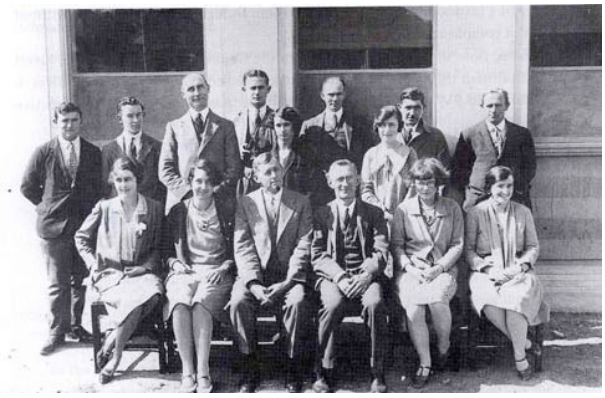

Figure 2.2 A 1930 photograph of the Division of Entomology Staff with the Foundation Building as the backdrop. (Source: CSIRO, Reproduced in CSIRO Blg 101 CMP, 2005[31])

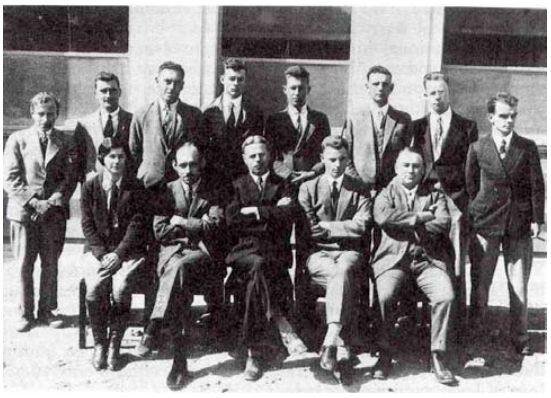

Figure 2.3 A 1930 photograph of the Division of Plant Industry. (Source: CSIRO, Reproduced in CSIRO Blg 101 CMP, 2005[32])

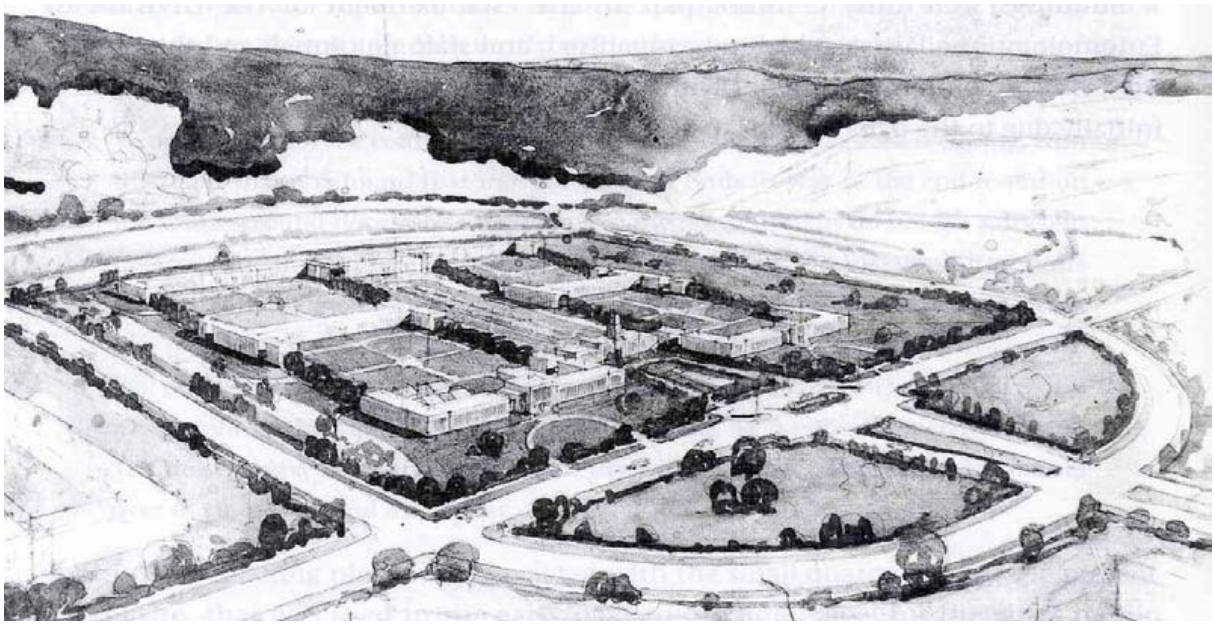

Figure 2.4 Aerial Perspective of the proposed CSIR Complex, Black Mountain, 1928. (Source: CSIRO, Entomology Archives. Reproduced Upton 1997 [33])

Figure 2.5 Two insectaries (Buildings 123 and 132, since demolished) during construction in April 1929. The Sydney and Melbourne Buildings on Northbourne Avenue are visible in the background. (Source: National Archives of Australia (NAA), Item ID 3151427.)

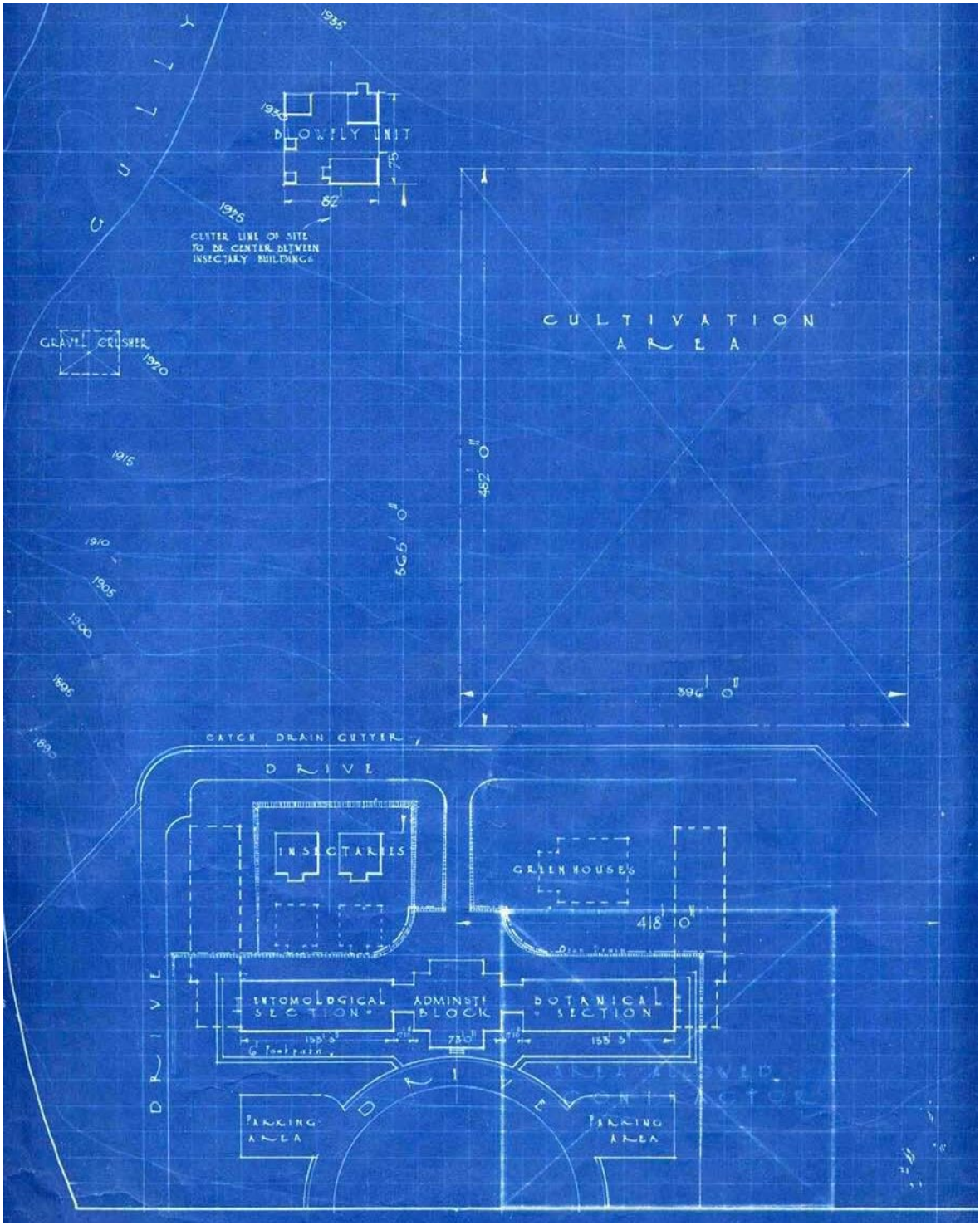

Figure 2.6 Site plan, 1929 (Source: CSIRO, FCC Drawing AC2127.)

By 1933, ten acres of the Black Mountain site had been cleared and planted with experimental crops, and a small experimental orchard was being established on a further acre (Figure 2.6).

The Division of Plant Industry worked at this time to beautify the Black Mountain site by planting kurrajongs across the front of the barn, and oaks and cypress alongside the main road beside the experimental plots. Over the years 1932–1934, the Parks and Gardens Branch of the Commonwealth Department of the Interior assisted in this beautification program by planting ornamental trees and shrubs and laying down lawns in the immediate vicinity of the buildings (Figure 2.7).[34]

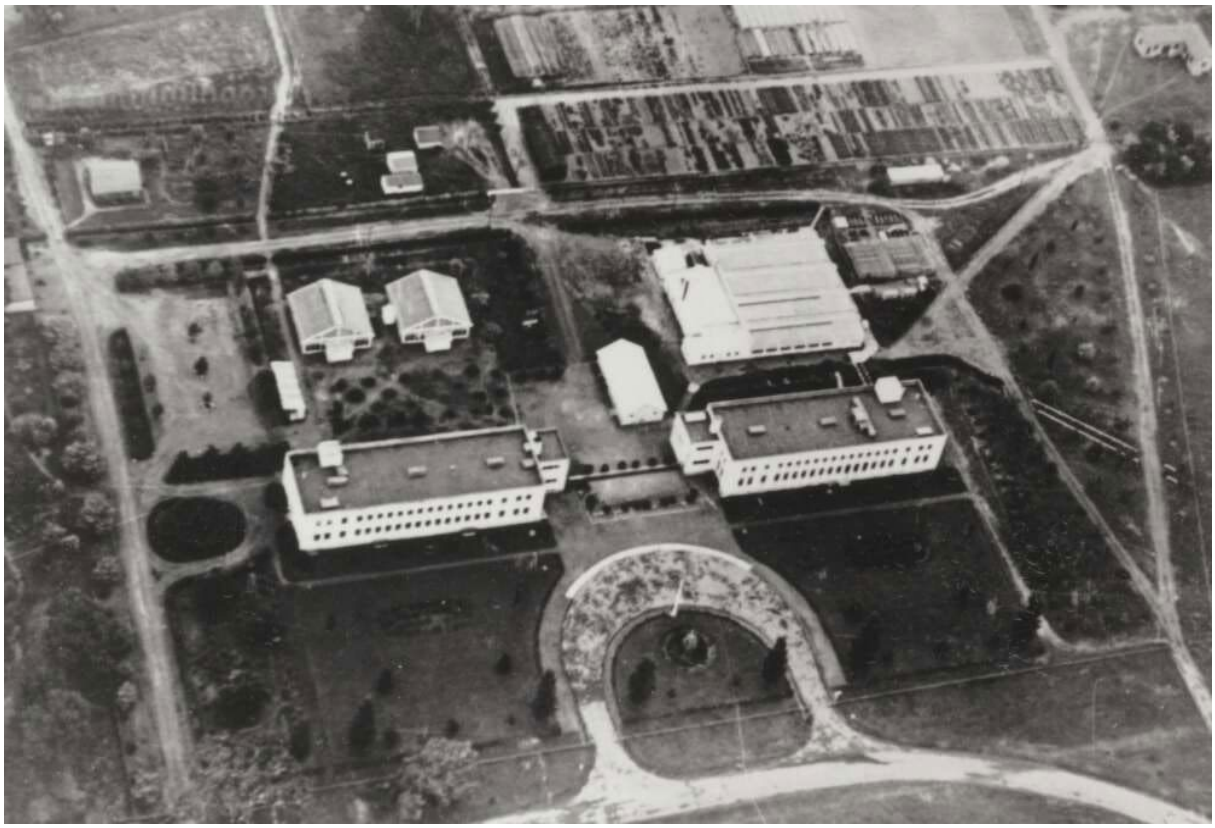

Figure 2.7 1938 aerial photograph showing the early period of construction, and experimental and research crops behind buildings and landscape planting. (Source: National Library of Australia, Bib ID 2254595.)

2.4.3 Change to CSIRO and progress at Black Mountain

In 1949, following the separation of military and civil research through the establishment of a separate military specific research agency, CSIR became the Commonwealth Scientific and Industrial Research Organisation (CSIRO). This change of structure, together with the additional prestige and resources it had gained from the war, gave a boost to CSIRO. By the early 1950s, it had five times as many staff as it had immediately before the outbreak of the war, its divisions had grown from five to fourteen, and it was carrying out research of a far more complex nature. However, lack of facilities impacted the efficiency of research projects. This was felt across the widely scattered research stations, including at Black Mountain. In 1950–1951, an attempt was made to resolve

this at Black Mountain by commencing the construction of the central administration block, which was to include a library, a Microbiology Laboratory consisting of controlled temperature and humidity rooms, and other facilities for the shared use of both the Divisions of Economic Entomology and Plant Industry. The central administration block was completed in 1954–1955 and officially opened in 1956.

A substantial federal government funding increase to CSIRO in the late 1950s and early 1960s enabled two major capital programs—the Parkes radio telescope and a phytotron for the Division of Plant Industry at Black Mountain. The Phytotron building officially opened in 1962 (Building 005); refer to Section 2.6 for more information on the Phytotron and Phenomics Centre.

While the building of these two major projects left CSIRO in general with scant funds, development at Black Mountain continued throughout the late 1950s, 1960s and 1970s. Key buildings constructed during this time include:

- 1957—the first air-conditioned insectary for the Division of Economic Entomology, marking an important step in entomological research (Building 103);
- 1960–61—insect proof glasshouse for the Division of Economic Entomology;
- 1961–62—biochemistry laboratory for the Division of Plant Industry (Building 002);
- 1963—Australian National Insect Collection (in Building 137);
- 1963—the first stage of the new laboratory for Land Research and Regional Survey Division (Building 201); the second part was opened in 1968;
- 1964—headquarters of the Computing Research Section (Building 401A, since demolished), which was the central unit of a national computer network that serviced all Commonwealth scientific establishments and universities (Figure 2.9 and Figure 2.10). It was opened in two parts, with the second part opened in 1981 (Building 401C);
- 1966—F.C. Pye Field Laboratory (Building 019);
- 1968—the second stage of the Land Research and Regional Survey Laboratory (Building 201);
- 1970—Agronomy Laboratory and Administration Building for the Division of Plant Industry (Building 1, since demolished) (Figure 2.11);
- 1971—Laboratory for the Soils Division (Building 301, now the Bruce Butler Laboratory) (Figure 2.12 and Figure 2.13);
- 1972—Library (Building 060); and
- 1972—Stored Grain Research Laboratory (Building 135), completed for the Division of Economic Entomology and funded by the Australian Wheat Board.

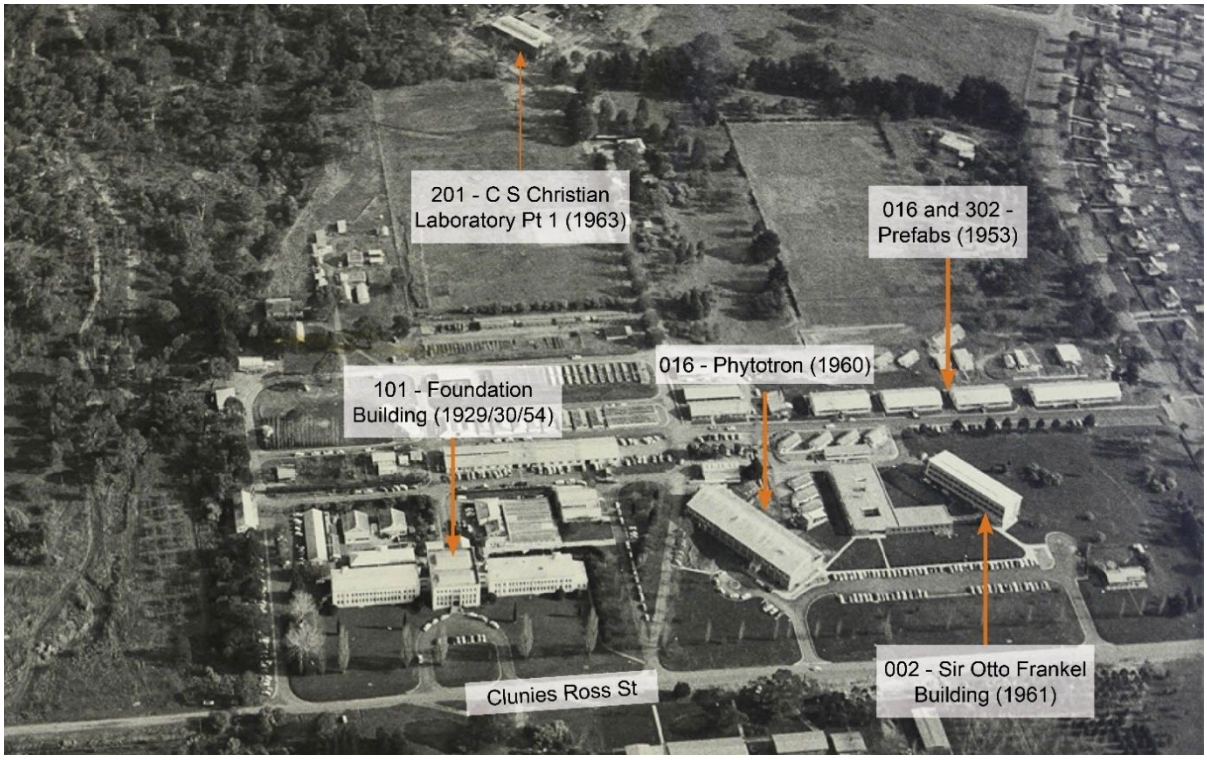

Figure 2.8 c1963 aerial photograph of CSIRO Black Mountain, with key buildings and construction dates identified. (Source: CSIRO Business and Infrastructure Services team with GML overlay.)

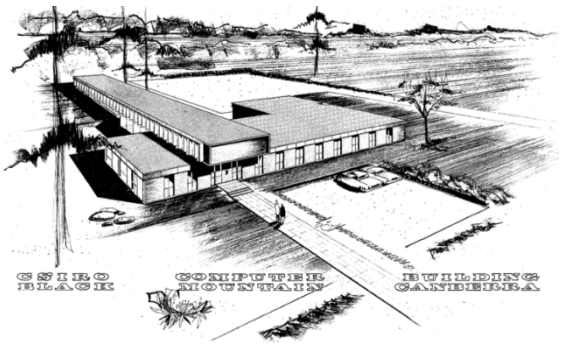

Figure 2.9 Perspective drawing of Building 401A, c1963. (Source: CSIRO[35])

Figure 2.10 1971 photograph of the Agronomy Laboratory (Building 1), now demolished. (Source: NAA Item ID 30108483.© Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.11 1971 photograph of the Laboratory for the Soils Division, now Bruce Butler Laboratory (Building 301). (Source: NAA Item ID 30108480. © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.12 The Bruce Butler Laboratory today.

Figure 2.13 Construction of the Library (Building 060) in 1971. (Source: NAA, Item ID 30108524. © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.14 The Library, today.

2.4.4 Recent development

During the 1970s, there was a climate of financial restraint at CSIRO; however, construction at Black Mountain continued. Over the next 30 years, major works at the site included the construction of:

- 1974—Herbarium (Building 502) (major extension in 1994, Building 502A);
- 1974—internal alterations and refurbishment of the Central Block of Building 101;
- 1978—Australian National Soil Archive (Building 208);
- 1980—Potting Shed (Building 070);
- 1981—Computing Hall for the Division of Computing Research, now the Computer Wing Substation (Building 401C). During 1982–1983, the Division received approval to acquire a Control Data Cyber 205 computer. The computer, costing $8 million, started operations at Black Mountain in August 1984. At the time, it was the most powerful computer in world (Figure 2.16 and Figure 2.17); [36]
- 1983—Crop Adaptation Laboratory (Building 073);
- 1986—Plant Molecular Biology Laboratory (Building 079);
- 1988—Quarantine Insectary (Building 083);
- 1990—Microscopy Centre (Building 011);
- 1991—Childcare Centre (Building 601): CSIRO was the first federal government agency to build childcare facilities for the children of staff. The Black Mountain facility was the first of these centres, with others soon following in Sydney and Melbourne. It was hoped that the provision of childcare facilities on-site at CSIRO establishments would encourage more women to pursue careers in science;
- 1994—Transgenic Glasshouses (Buildings 087–092): in 1996–1997, genetically modified wheat trialled in one of these greenhouses became the first transgenic cereal to be grown in an open field in Australia when it was grown at Ginninderra. [37]
- 1994—Herbarium (Building 502) was extended to include Building 502A (Figure 2.18);
- 2000—Discovery Centre (Building 702), the first visitors' centre devoted to showcasing Australia's science and innovation. It was completed in 1999 and opened officially by Prime Minister John Howard in 2000. It was designed by Daryl Jackson Alastair Swayn Pty Ltd and, in that year, the building won the highest honour in the Australian Institute of Architects (ACT Chapter) Awards, receiving one of two Canberra Medallions.

Figure 2.15 1980 photograph of Building 401C shortly after construction. The building was constructed over a small creek bed. (Source: CSIRO [38])

Figure 2.16 Building 401C today (Source: CSIRO, 2024)

Figure 2.17 1974 photograph of the Herbarium (Building 502) shortly after construction. (Source: NAA, Item ID 9744424 © Commonwealth of Australia, NAA, all rights reserved.)

More recently, in the 2000s and 2010s, development has continued and refurbishment of the Foundation Building (Building 101) in 2009 and new buildings to facilitate the growing scientific reach of CSIRO such as the Bayer Glasshouse (Building 711), numerous polyhouses and polytunnels, the Cropatron APPF Glasshouse (Building 211), the Synergy Building (801), the National Bushfire Behaviour Research Laboratory (Building 216) and the Field Support Facility (Building 313). Many of the more recent constructions, including the Synergy Building and the Field Support Facility, are intended

to service numerous Divisions with multi-functional spaces, an approach that differs from what has been done previously at Black Mountain where buildings were largely constructed with one or two Divisions in mind.

The January 2020, a hailstorm that caused damage to many central Canberra buildings impacted the CSIRO site as well. Roof and wall cladding, glazing and solar panels across the site were damaged, including Buildings 101, 005, 702, 135, 137, 150 and 179, amongst others. Works are currently underway to rectify this damage and most of the work has required removal and replacement of damaged fabric with, where possible, like-for-like equivalents. Sixty-five glasshouses (90 per cent of those across the site) were badly damaged and many of them were removed due to the extent of damage. [39]

CSIRO has been consolidating its research activities from other sites e.g. Acton, Campbell, Crace and Yarralumla to Black Mountain over the last few years. Research activities have also been relocated from Ginninderra, ACT to a new rural facility at Boorowa, NSW.

As part of this consolidation, construction is underway on a large National Research Collections building, which is located directly north of the Library across Dickson Way. This facility will house various collections including the Australian National Wildlife Collection currently stored at Crace.

The CSIRO Black Mountain site also forms part of a collaborative Global Precinct for plant and environmental sciences called the National Agricultural and Environmental Sciences Precinct (NAESP) on the Black Mountain site. Partners include CSIRO, the Australian National University and other allied partners.

2.5 CSIRO Foundation Building

The following contains an overview of the history of the CSIRO Foundation Building (formerly known as the Main Entomology Building) (Building 101).

The FCC were charged with preparing a design for a single, large building (Building 101) to house both the Divisions of Economic Botany and Economic Entomology, with each division having its own laboratory in the wings of the building. A central block would house administrative offices, an entomology museum, a library and records repository (Figure 2.6). The two laboratory wings of the CSIRO Foundation Building were to be built first, with a central, linking block intended to follow immediately after for administrative use.

In September 1929, the Parliamentary Standing Committee on Public Works gave its approval for the erection of the main building. Progress was swift with construction commencing in February and the South Wing for Entomology completed and occupied in October. The building's formal opening was delayed until 12 March 1930. The status of

scientific research in Australia was reflected in the opening of the first completed laboratory building by Prime Minister Scullin, with many dignitaries present (Figure 2.19). The opening of the Entomology wing took place in front of the south door to the wing and featured exhibits on the success of the prickly pear eradication program and other work of the Division.[40]

Figure 2.18 Prime Minister JH Scullin and official guests at the opening of the Entomology wing, March 1930. (Source: NAA, Item ID 3196262)

Due to the onset of the Great Depression, construction of the central administrative block was postponed and work on the north (Botany) wing slowed down. In the interim, the Division of Economic Botany (re-named the Division of Plant Industry in 1929) was housed at the University of Sydney until December of that year and later on the upper floor of the new Entomology building.

The Division of Plant Industry was eventually moved into the newly completed building north of the Entomology wing in December 1930 (Figure 2.20). Unlike the South Wing, the North Wing was never formally opened.[41] According to a contemporary description of the structure, the building consisted of a block of well-lit and well-equipped laboratories, with those on the ground floor devoted to plant pathology, physiology and genetics, and those on the upper floor to plant introduction, agrostology, general botany, biometrics and noxious plants.[42]

Figure 2.19 The Entomology (left) and Plant Industry (right) Buildings in 1933. (Source: NAA, Item ID 3203722)

Following completion, the two wings were used as laboratories and offices by the Divisions in relation to their scientific work (Figure 2.21 and Figure 2.22).

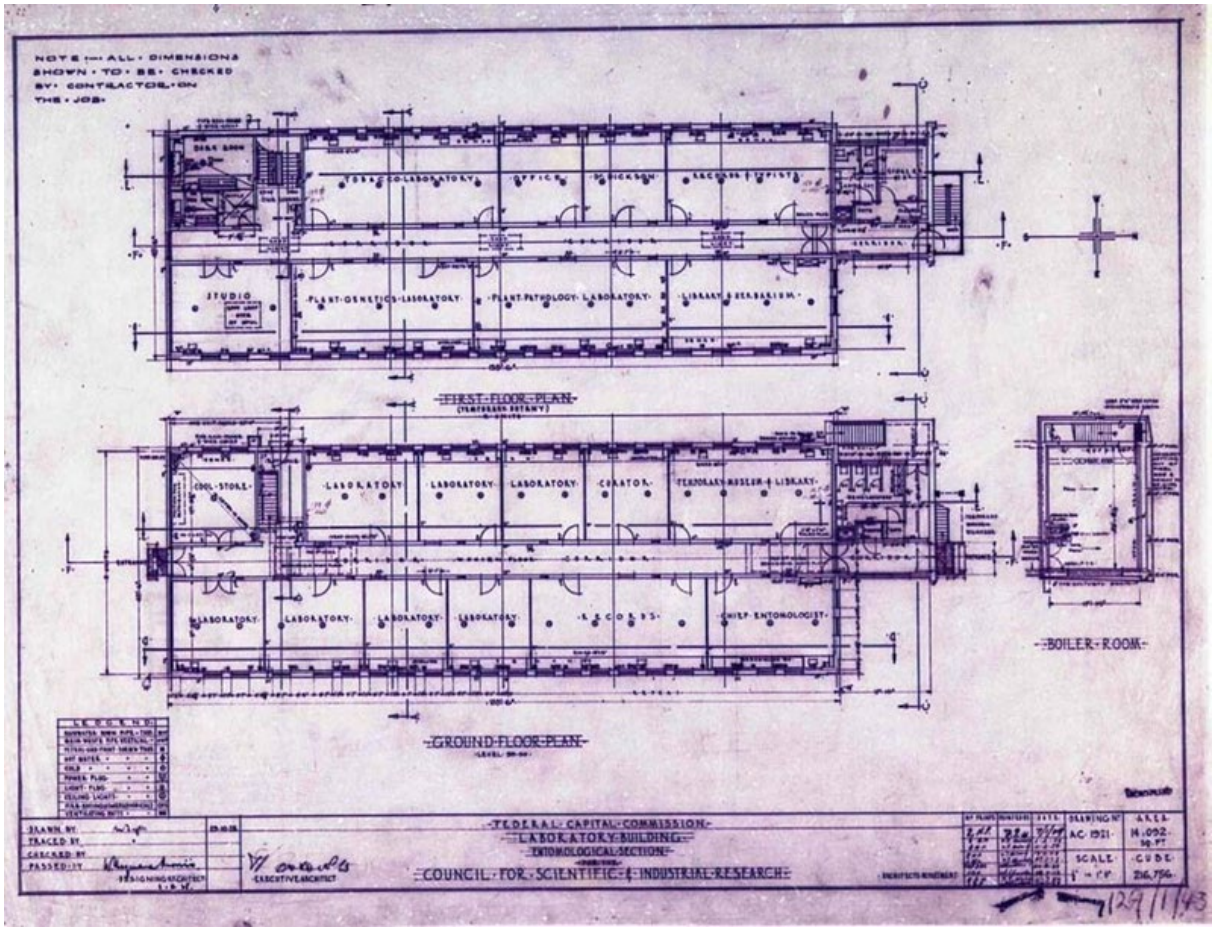

Figure 2.20 Ground floor plan of the Entomology (south) wing. (Source: FCC Drawings AC1921, CSIRO, as reproduced in ERM, 2017 HMP)

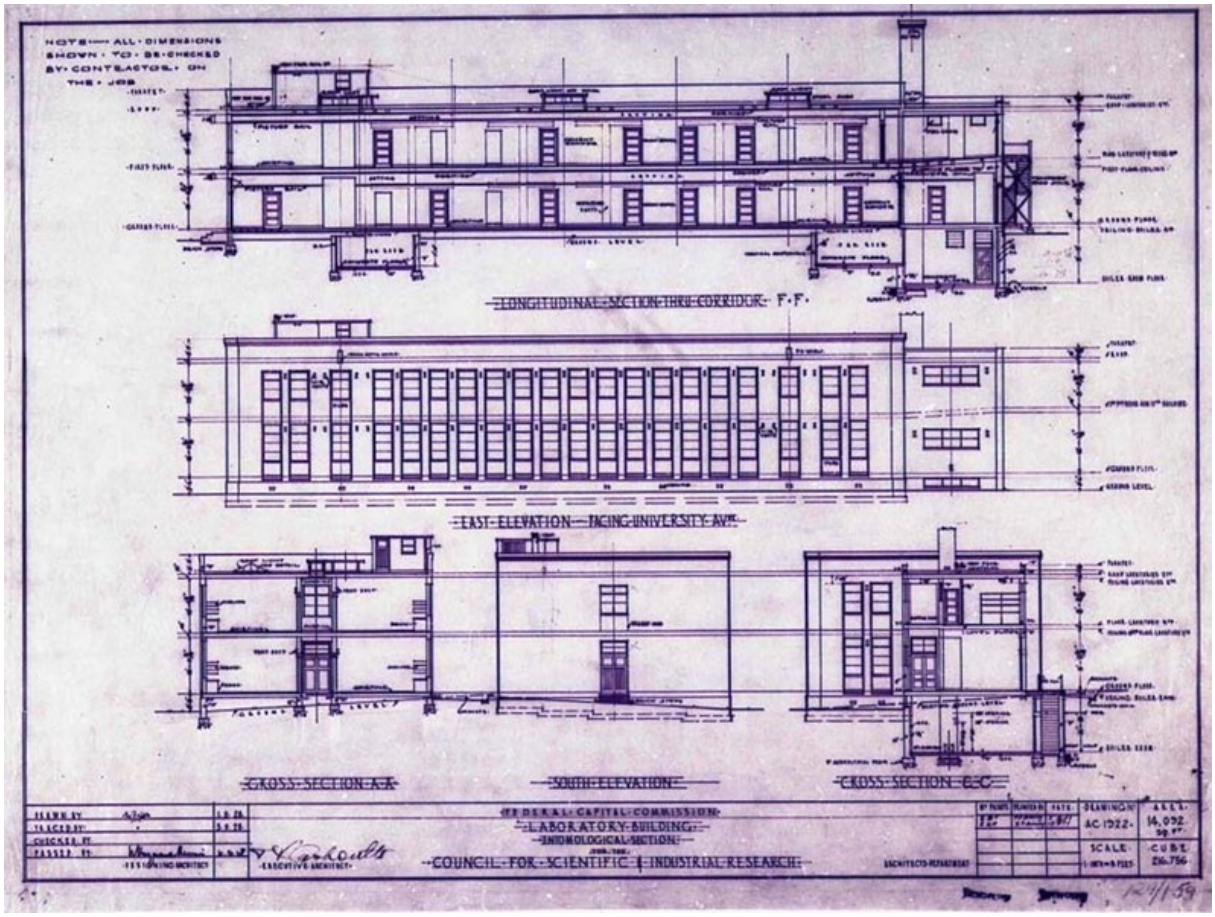

Figure 2.21 Elevation and section drawings of the Entomology (south) wing. (Source: FCC Drawings AC1922, CSIRO, as reproduced in ERM, 2017 HMP)

Lobbying for a central block to be built between the two separate wings continued in the mid–late 1940s, and in 1945 the Commonwealth Works Department was asked to prepare drawings for it. However, no funding was available at the time for the work.[43] Eventually, in 1951, construction commenced on the long-missing central administration block under the management of builder Frank Waters.[44] The long delay in building a central block reflects many issues beyond the control of CSIRO, including the Great Depression of the early 1930s, the hiatus during World War II and post-war reconstruction priorities.

The Central Block was opened in 1956 and accommodated offices and research facilities for both Divisions and also housed the site library.

After the opening, the Division of Plant Industry ballooned in size and the increased number of staff was used to justify new buildings. In 1962, the Phytotron was completed which, along with other new buildings (the Agronomy Laboratory and the Administration Building for the Division of Plant Industry), allowed the Division of Plant Industry to move out of the building and by the early 1970s, the Division had moved out of the wing entirely. During this period, some CSIRO head office functions were housed in the

building. At some point, these functions moved out and the building became solely used by the Division of Economic Entomology.[45] Internal works were undertaken during this period to accommodate the needs of the Division in its newly expanded domain.

In 1972, the Black Mountain Library building was completed and the library that had been held in the Central Block was relocated there.

Numerous changes to the wings and Central Block were undertaken over the years, including internal refurbishments and room layout changes in the 1970s; the installation of new Colorbond roof and gutters, works to the Controlled Temperature Rooms and refit of laboratories in 1993; and refurbishment of the ground and first floors of the Central Block in 1995.

Hailstorms in 2020 caused severe damage and water ingress to buildings across the CSIRO site, including the Foundation Building. The building's six detailed skylights had to be replaced due to damage, along with solar panels that had been installed in 2019.

Interior refurbishments have been carried out in the Central Block, which now acts as the main entrance for visitors as well as being used for other administrative functions.

2.6 The Phytotron and Phenomics Centre building

The following contains an overview of the history of the CSIRO Phytotron and Phenomics Centre (also known as the High-Resolution Plant Phenomics Centre; Phytotron) (Building 005).

In 1948, the Chief of the Division of Plant Industry, Dr (later Sir) Otto Frankel began investigating the development of the world's first Phytotron at Caltech, Pasadena in the United States. A Phytotron is a controlled environment for plant research. These laboratories were designed to address research questions related to plant adaptation and to investigate the influence of a variety of environmental factors such as light, water and temperature. The development of large-scale Phytotrons is relatively recent.

The building of a Phytotron in Canberra promised a significant advancement in the ability to study plant adaptation. Plant adaptation was considered to be very important in Australia given the reliance on agriculture, horticulture and forestry. Prior to the building of the Phytotron, the study of plant adaptation was undertaken at field stations in Australia. Frankel successfully persuaded CSIRO and the Commonwealth Government to fund the construction of a Phytotron in Canberra and, during the late 1950s, engineering and architectural design commenced. The design of the Canberra Phytotron was to be different to the American Phytotron regarding the development of controlled environment cabinets used in conjunction with regulated glasshouses.

The Phytotron was designed by architect Roy Grounds and the specialised cabinets were designed by RN Morse of the Engineering Section of CSIRO. The building was constructed by KD Morris and Sons with WE Bassett and Associates as consulting engineers. Building works commenced in December 1960 and were completed in eighteen months. Its design was assisted by the construction of a prototype building, since demolished, to test aspects of its engineering. The facility was officially opened by Prime Minister RG Menzies in August 1962 (Figure 2.23–Figure 2.28).

The focus of the work of the Canberra Phytotron was agriculture, forestry and horticulture, and its prime research years were the 1960s to the 1970s. The Canberra Phytotron was the major research facility for the Division of Plant Industry during these years and is still in use today.

Until the advent of the Canberra Phytotron, field stations were challenged by problems when developing pastures, especially in Queensland, and other problems such as diseases in tobacco plants. The Phytotron buildings allowed for the control of climatic conditions when studying and growing plants. This facilitated the examination of plant adaptation to climate change and other environmental variables, unlike previously when experiments were conducted in the field and environmental variables could not be readily controlled. The Phytotron was considered a major benefit to research in such areas.

Other major achievements of the Canberra Phytotron include analysis related to the control of flowering and yield potential definitions and improvements. These latter studies are considered to be of international standing. Research at the Phytotron is also important in relation to research on global warming and increases in carbon dioxide. Furthermore, as a prominent national research facility, the Canberra Phytotron has been an important meeting place for scientists from around Australia and overseas.

Originally, the Canberra Phytotron was equipped with three diesel generators to provide power in case mains power was interrupted. These were located at the east end of the building on the ground floor. The original generators were decommissioned (it is not documented when) and the area was converted to a workshop. Another change to the Canberra Phytotron was the creation of a new entry door in the south elevation at the east end of the building.

The Canberra Phytotron underwent refurbishment between 1998 and 2000 to meet evolving building compliance standards. The refurbishment works consisted of re-glazing the glasshouse, new sunshades on the east end, replacement of the fumigation chamber at the west entrance with an air lock, repainting, floor tiling to the southern entrance lobby, replacing terrazzo with painted fibro-cement panels and cladding to the balustrades alongside the glasshouses. The building was refurbished again in 2009. Like other buildings on site, the January 2020 hailstorm caused damage to the Phytotron glasshouses that has since been remedied.

Figure 2.22 1962 photograph of the south and east elevations of the Phytotron. (Source: NAA, Item ID 8832401 © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.23 The Phytotron and Phenomics Centre today. (Source: CISRO, 2024)

Figure 2.24 1967 photograph of the viewing window and door between the glasshouses and central corridor. (Source: NAA, Item ID 11662272 © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.25 Scientists at work in the row of connected glasshouses, 1962. (Source: NAA, Item ID 11899559 © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.26 The Phytotron and Phenomics Centre shortly after completion, 1962. (Source: NAA, Item ID 11899630 © Commonwealth of Australia, NAA, all rights reserved.)

Figure 2.27 The Phytotron and Phenomics Centre today. (Source: CISRO, 2024)

2.7 Key associations

The CSIRO Black Mountain site has strong associations with important figures in scientific research, including politicians who supported the early push for a national science body; researchers and scientists whose work at Black Mountain helped to sustain Australian industries or establish breakthrough research that affected Australian lives; the chiefs of Divisions; and donors whose contributions improved working conditions, availability of equipment and provided ongoing financial scholarship support.

The following list is not exhaustive and does not aim to capture all associations with the site. Numerous other scientists and researchers have made an invaluable contribution to the work of CSIRO and further research may contribute to the heritage values of the place.

- Frederick Charles Pye, grazier, entered the sheep and wool industry at an early age and divided his time between properties in the country and his business interests in the Sydney. He owned grazing land in many parts of Australia. In 1962 Pye approached the CSIRO and offered his property 'Geraldra' at Stockinbingal (near Cootamundra) as gift for the further development of agricultural research at CSIRO Black Mountain and CSIRO Darwin, NT sites. The only condition of the gift was that CSIRO use either the property itself or the proceeds of its sale for research relating to grazing or farming. As the property was not a suitable site for a research station, the CSIRO sold the land and applied a substantial portion of the $500,000 profit to the construction of the F. C. Pye Field Environment Laboratory. At the time, the building was a 'unique concept in field research'. The laboratory provided an essential link between practical agriculture and the controlled research of the Phytotron. The funds provided the laboratory building itself, major items of equipment, and a fellowship scheme to enable overseas scientists to participate in the research programme.[46]
- Dr Jim Desmarchelier, who devised an insecticide cocktail to kill insect pests in Australian grain. This innovation saved the nation's wheat export industry. Refer to Section 2.8 for further information on Desmarchelier's work.
- Dr Bertram Thomas Dickson, the first Chief of Division of Plant Industry from 1927–1951.
- Dr (later Sir) Otto Frankel, the Chief of the Division of Plant Industry from 1951–1962.
- Robert John (Robin) Tillyard, the first Chief of Division of Economic Entomology from 1928–1934.
- Alexander John Nicholson, the Chief of Economic Entomology from 1936–1949.
- Doug Frew Waterhouse, Chief of the Division of Entomology from 1960–1981.
- Cliffard Stuart Christian, the Chief of Division of Land Research 1957–1960. He and a colleague, Alan Stewart, proposed a land system survey involving the then

revolutionary concept of using air photographs to identify broad scale recurring patterns of land units, and then determining their characteristics by stereoscopic examination (adding an illusion of depth to a flat image) and field traverse sampling.

- Bruce E Butler was the Officer in Charge of the Black Mountain (Canberra) Laboratory for the Soils Division from 1954. His work made an important contribution to pedology (soil) and geomorphology in Australia.[47]
- Robert Ingpen AM, who was the creator of the Land Research Mural in Building 201 and the replica in the Discovery Centre (Building 702). Ingpen was employed as a graphic designer of the Agricultural Liaison Unit of CSIRO.

2.8 Scientific achievements at Black Mountain

The following information provides a summary of some of the scientific achievements that have occurred at or been attributed to specific buildings at CSIRO Black Mountain.

The Computer Research Centre (Building 401A) housed a Control Data Corporation CDC 3600 computer, then one of the most powerful computers in the world, which was linked to subsidiary CDC 3200 computers in Sydney, Melbourne and Adelaide. This nationwide computer network gave CSIRO and other Australian science institutes unprecedented computational power and apparently attracted considerable interest overseas.[48] Later computer work in 1980s saw the most powerful computer in the world acquired by the Division of Computing Research, a Control Data Cyber 205 computer.[49] The building was demolished in 2019.

In 1972–1973, the Stored Grain Research Laboratory (Building 135), in conjunction with the Pest Infestation Control Laboratory in the United Kingdom, carried out a global survey to measure the scale of pesticide resistance in all grain producing countries. The Laboratory was soon recognised as a world leader in its field. Its value was outstandingly demonstrated in 1976 when research carried out at the facility by CSIRO scientist Jim Desmarchelier devised an insecticide cocktail to kill insect pests in Australian grain, an innovation that saved the nation's wheat export industry. The investment by government and the private sector in CSIRO during the foregoing period paid handsome dividends for the nation. Aside from Desmarchelier's work, Doug Waterhouse, the Head of Entomology, achieved another breakthrough in insect control when, during 1963–1964, he invented Aerogard. Soon after in that decade, the Division of Economic Entomology began research on another control agent in retaliation to the dung beetle, whose unsavoury feeding habits were nonetheless of great use in reducing the breeding of bush flies.[50]

CSIRO's Black Mountain achieved prominence in another spectacular way on 26 June 1967 when an estimated worldwide TV audience of 400 million people in 24 countries

watched CSIRO scientists at work in the Phytotron. This was part of the world's first live multinational TV broadcast titled *Our World*.[51]

Many other revolutionary concepts and scientific research advancements have been developed and fostered at CSIRO Black Mountain.

2.9 Endnotes

1 Wright, WD 1923, *Canberra*, John Andrew & Co, Sydney, p 58.

2 GML Heritage, 'Duntroon House Gardens, Heritage Management Plan', report for Defence, May 2014, 'Annex B—B.1 Heritage Assessment for Duntroon House Gardens', p 9.

3 Estcourt G. 2007, 'Indigenous Heritage Study—Stage 1 Overview of ANU Properties', unpublished report to ANU Green, p 4.

4 Bluett W 1954, 'The Aborigines of the Canberra District at the arrival of the White man', unpublished paper read to the Canberra & District Historical society, 29 May 1954, p 1.

5 Gillespie, L 1979, 'Aborigines of Canberra and nearby areas'. *Canberra Historical Journal* Vol 4, p 19–25.

6 Wright 1923 in F Watson 1927, *A Brief History of Canberra, the Capital City of Australia*, published by Federal Capital Press of Australia Ltd., Canberra p 14–15.

7 Flood, J 1980, *The Moth Hunters*, published by Australian Institute of Aboriginal Studies, Canberra, p 127.

8 Moss, HP 1939, 'Evidences of Stone Age Occupation of the Australian Capital Territory', *Report of the Congress (ANZAAS)* Vol 24. pp163–165.

9 Moss, HP 1939 'Evidences of Stone Age Occupation of the Australian Capital Territory', *Report of the Congress (ANZAAS)* Vol 24. p128.

10 Watson, F 1927. A Brief History of Canberra, the Capital City of Australia, published by Federal Capital Press of Australia Ltd., Canberra, p 14.

11 Gillespie, L 1979, 'Aborigines of Canberra and nearby areas'. *Canberra Historical Journal* Vol 4, p 20.

12 Watson, F. 1927. *A Brief History of Canberra, the Capital City of Australia*, published by Federal Capital Press of Australia Ltd., Canberra, p 14.

13 Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT, p 47.

14 Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT, p 47.

15 This observation is made by Wright 1923, Watson 1927, Moss 1939, Bluett 1954, Gillespie 1979, Flood 1980, Kabaila 1997 and Estcourt 2003.

16 Watson, F 1927, *A Brief History of Canberra, the Capital City of Australia*, published by Federal Capital Press of Australia Ltd., Canberra p 15; Bluett W 1954, 'The Aborigines of the Canberra District at the arrival of the White man', unpublished paper read to the Canberra & District Historical society, 29 May 1954.

17 Estcourt G., 2007 Indigenous Heritage Study—Stage 1 Overview of ANU Properties. Unpublished report to ANU Green.

18 Bluett W 1954, 'The Aborigines of the Canberra District at the arrival of the White man', unpublished paper read to the Canberra & District Historical society, 29 May 1954; quoted in Kabaila op. cit. p 48.

[19] Estcourt G 2007, 'Indigenous Heritage Study—Stage 1 Overview of ANU Properties', unpublished report to ANU Green.

[20] Flood. op cit p 8.

[21] Jackson-Nakano, A 2001, 'The Kamberri: A History of Aboriginal Families in the ACT and Surrounds', *Aboriginal History Monograph 8, Weereewaa History Series Volume 1*, published in the ACT, p 166.

[22] Jackson-Nakano, A 2001, 'The Kamberri: A History of Aboriginal Families in the ACT and Surrounds', *Aboriginal History Monograph 8, Weereewaa History Series Volume 1*, published in the ACT, p 166.

[23] Flood, J 2010, Moth Hunters of the Australian Capital Territory: Aboriginal Traditional Life in the Canberra Region, second edition, Gecko Books, Marleston, p 37.

[24] Gillespie, LL 1984, *Aborigines of the Canberra region*, Lyall L. Gillespie, Campbell ACT, p 29.

[25] Baskin, J, Hobbs, R, and Riboust, P 1996, *Uriarra–Stromlo Heritage Study*, Volume 1, National Trust of Australia, Canberra, p 19.

[26] Allen, C, 'How were the ACT's boundaries determined?', *ABC News*, 28 April 2016, https://www.abc.net.au/news/specials/curious-canberra/2016-04-11/how-the-act-borders-were-determined/7304358.

[27] Gillespie, L, Gungahlin Analysis of History, report prepared for NCDC, 1985. Appendix 7.

[28] Sheaffe Papers, printed for the Commonwealth of Australia, published book 1913, National Archives of Australia, viewed 2 July 2019, Series Number M4071, Barcode Number 1873726, p 118.

[29] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 34.

[30] Federal Territory Feature Map (NLA. 1915).

[31] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 37. Photographs reproduced from Upton, M S 1997 'A Rich and Diverse Fauna: the history of the Australian National Insect Collection', 1926-1991, CSIRO Publishing, Melbourne.

[32] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 37. Photographs reproduced from Upton, M S 1997 'A Rich and Diverse Fauna: the history of the Australian National Insect Collection', 1926-1991, CSIRO Publishing, Melbourne.

[33] Upton, MS 1997, *A Rich and Diverse Fauna: the history of the Australian National Insect Collection*, 1926–1991, CSIRO Publishing, Melbourne.

[34] 'Fourth Annual Report of the CSIR for the year ended 30 June, 1930', p. 12; 'Fifth Annual Report of the CSIR for the Year ended 30 June, 1931', p. 14; 'Seventh Annual Report of the CSIR for the Year ended 30th June, 1933', pp. 8, 21, 24; 'Eighth Annual Report of the CSIR for the Year ended 30 June, 1934', p. 8, as quoted in 'CSIRO Black Mountain Heritage Study', prepared by Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson for CSIRO, 2005.

[35] CSIRO, 2021, 'CSIROpedia: CSIRO Computing History, Appendix 8: Locations', accessed 13 December 2023 at <https://csiropedia.csiro.au/csiro-computing-history-appendix-8-locations/>

[36] 'CSIRO Annual Report 1980/81', p. 84; 'CSIRO Annual Report 1984/85', p. 14, as referenced in Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p17.

[37] 'CSIRO Annual Report 1993-94', p. 60; Canberra Times, 16 January 1997, as referenced in Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p21.

[38] CSIRO, 2021, 'CSIROpedia: CSIRO Computing History, Appendix 8: Locations', accessed 13 December 2023 at <https://csiropedia.csiro.au/csiro-computing-history-appendix-8-locations/>

[39] *The Canberra Times*, 'Hail smashes glasshouse crop research at CSIRO Black Mountain site', January 21, 2020.

[40] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 38.

[41] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 39.

[42] 'Fifth Annual Report of the CSIR for the Year ended 30th June', 1931, pp 14.

[43] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 41.

[44] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 43.

[45] 'Conservation Management Plan for the CSIRO Main Entomology Building', prepared by Duncan Marshall and Marilyn Truscott, 2005, p 44.

[46] CSRIO, CSIROpedia, Frederick Charles Pye, accessed at: https://csiropedia.csiro.au/frederick-charles-pye/ viewed on 31 July 2023.

[47] Webster, R. Ginninderra revisited: the contribution of B. E. Butler to statistical pedology, Soil Research 49(3) 203-211 https://doi.org/10.1071/SR10174.

[48] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared by for CSIRO, p 17.

[49] 'CSIRO Annual Report 1980/81', p. 84; 'CSIRO Annual Report 1982/83', p. 81; 'CSIRO Annual Report 1984/85', p. 14., as referenced in Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p20.

[50] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared by for CSIRO, p 18.

[51] CSIRO, John Sarkissian 25 June 2017, 'Our World—The First Global Satellite Programme' 26 June 1967 (AEST), accessed 18 May 2023, sourced: https://www.parkes.atnf.csiro.au/people/sar049/our_world/.

3 Physical context

3 Physical context

3.1 Introduction

This section provides a physical description of the Black Mountain site. It includes general descriptions of the natural environment, the archaeological and cultural background, and the urban setting and landscape features, as well as built elements and other features within the site boundary.

All photographs have been taken by GML in 2023 unless otherwise stated.

3.2 Natural environment

Black Mountain reaches 813 metres above sea level, with slopes comprising sandstone, quartzite and shales, and minor outcrops of mudstone and greywacke (silcrete). CSIRO Black Mountain is situated on the lower eastern slopes, between 300 and 600 metres from Sullivans Creek.

The soil landscape for the project area is Luxor variant b, a transferral landscape which occurs in the ACT on the flanks of Black Mountain and Tuggeranong Hill. It comprises moderately deep soils formed from eroded parent materials washed from areas upslope, with small spur lines of bedrock protruding through. Generally, it is a poorly drained soil landscape that is moderately subject to erosion. [1]

Despite the generally poorly drained nature of the soils in this landscape, the landform and location of CSIRO Black Mountain is positioned where Aboriginal archaeological sites are likely to occur—it is close to a permanent water course and strategically high ground, and is sheltered on the lee side of the hill with outcrops of source materials suitable for stone tool production.

The process of soil formation on the lower slopes would have been generally cumulative and would have facilitated the creation of archaeological sites, although erosion may have affected site integrity.

The area would also have supported tall, grassy woodland vegetation with dominant species expected to include Yellow Box (*Eucalyptus melliodora*) and Apple Box (*E. bridgesiana*).

3.3 Archaeological and cultural background

In archaeological terms, the intensive occupation of the Canberra area is evidenced by the 'large numbers of implements and flakes which have been found in several places in the city area including Pialligo, Black Mountain Peninsula and the slopes of Mt Ainslie'.[2]

Local historian Lyall Gillespie collected many artefacts from the areas mentioned above throughout the 1970s. He reported: 'On each occasion I found more implements and flakes—more than 500 in total. The implements were mainly scrapers, blades and points. I also found pieces of good quality ochre and animal bones, which had been buried for a long time.'[3]

Some decades earlier, from 1929 through to the late 1930s, Moss collected artefacts in the areas of Black Mountain and Black Mountain Peninsula, as well as around the Old Canberra Hospital and Sullivans Creek. The collection included a diverse range of artefacts that supported Gillespie's later observations.[4]

The areas of the Federal Capital Administrative Offices (now occupied by the Australian National Botanic Gardens) and also the Old Canberra Hospital (now part of the ANU) were surveyed by Moss and '30 artefacts and 23 items of debitage'[5] were recovered. A survey of the Acton Peninsula recovered 'nine thumbnail scrapers, three cores, one undescribed artefact, one backed blade, one hammer stone, six hammer anvils, one burin, four fragments of/or complete ground axes, two utilised flakes, one mortar, one scraper and twenty-three items labelled as waste material'.[6]

In 1934, Kinsela found a hatchet on the site of the National Film and Sound Archive (formerly the Australian Institute of Anatomy) and further work between the Old Canberra Hospital, the National Film and Sound Archive and Sullivans Creek revealed a large grinding stone and two pounding stones.[7]

Summarising the length of time Aboriginal people occupied the region, Kabaila notes: 'Upper sediments of archaeological excavations [around Canberra] have found evidence of a permanent, intense occupation of the region beginning from…4,500 years ago.[8] However, on a broader scale, Flood notes evidence that the general area was occupied around 21,000 years ago (the Birrigai Rock Shelter, near Tidbinbilla).[9]

Recent research by Kabaila at Black Mountain recorded another archaeological site comprised of 15 artefacts, including microflakes and cores indicating that the site was used for working and manufacturing stone tools.[10] It was located close to the Australian National Botanic Gardens entrance in an area with a nearby watercourse and was interpreted as being evidence of a more permanent, long-term encampment.

Other observations about Black Mountain include Gillespie's note that ochre had been found there[11], and Kabaila's recording of a stone arrangement comprising a ring of rocks approximately 13–16 metres in diameter with a small ring (3 metre diameter) within it.

However, Kabaila casts some doubt about its authenticity, suggesting that it could be a recent (1950s) artefact of cultural parallelism.[12]

3.3.1 Register search

Data held in the ACT Heritage Register indicates a number of sites have been recorded on Black Mountain:

Location descriptions removed.

- **BM1**: Isolated artefact (no description details) recorded by Barz in 1985[13]
- **BM2**: Artefact scatter comprising three artefacts (no description details) also recorded by Barz in 1985
- **BM3**: Isolated artefact (no description details) recorded by Barz in 1985
- **BM4**: Artefact scatter and Potential Archaeological Deposit (PAD) recorded by Barz in 1985. Comprises 19 artefacts including quartz, quartzite and chert pieces. Artefact types include two cores and the rest are flakes.
- **BM5**: Scarred tree of probable Aboriginal origin recorded by Officer in 1995[14]
- **BMF4**: Isolated artefact (no description details) recorded by Navin Officer 2003[15]
- **BMF9**: Isolated artefact (no description details) recorded by Navin Officer 2003[16]
- **BMF10**: Isolated artefact (no description details) recorded by Navin Officer 2003[17]
- **BMF11**: Isolated artefact (no description details) recorded by Navin Officer 2003[18]
- **IF3**: Isolated artefact (no description details)
- **IF6**: Isolated artefact (no description details)

Information removed due to sensitivity.

Two further sites have been recorded across Sullivans Creek within the Australian National University:

- **Sullivans Creek 1**: A corroboree site recorded in the CAS database from information provided by Bluett in 1954. The site is listed as destroyed, but location data indicates that it was close to the lower reaches of Sullivans Creek.
- **Institute of Anatomy site**: A hatchet found in 1934 by Kinsela. The location of this artefact was recorded as 100 metres west of the Australian Institute of

Anatomy, near Sullivans Creek. The details of the location are unknown and it is considered to have been destroyed.

Information removed due to sensitivity.

3.3.2 Previously recorded sites

Two sites had previously been recorded within the CSIRO Black Mountain site. They were recorded in 2015 as part of an archaeological assessment for a new carpark.[19]

Sites identified included:

- **BMOS1**: Three artefacts comprising two broken quartz flakes and one broken mudstone flake.
- **PAD BM1**: A zone of relatively undisturbed ground in the near vicinity of the artefact scatter.

Both sites were located to the south of Building 060 in an area now occupied by a carpark. Both the PAD and the artefact site were destroyed as part of the carpark development.

A potential scarred tree was also noted in the report; however, an arborist report notes that the tree was approximately 60 years old and not likely to represent an Aboriginal scarred tree. The tree was subsequently removed and is being stored lying on the ground behind Building 216. It was retained on the basis that it may have been a scarred tree. The tree was inspected during the site inspection and was found to be rotting and in poor condition.

3.3.3 Identified sites

During the site inspection, one new / previously unrecorded isolated artefact (CSIRO BMIF1) was found—a small quartz flake 29 millimetres long, 20 millimetres wide and 5 millimetres thick (Figure 3.1 to Figure 3.4).

This artefact was within an area where topsoil had eroded through wind and rain action, but also due to the general vehicular use of the area. The ground was comprised of compacted A_2 horizon soils with some gravels eroding out. Although subject to some disturbance and deflation, this area was generally part of a level zone well within the likely range of locations for Aboriginal occupation. It is likely to have some residual archaeological potential and is assessed as being a Potential Archaeological Deposit (PAD BM2) (Figure 3.5 to Figure 3.7 and mapping at Figure 3.8 and Figure 3.9).

Figure 3.1 Artefact CSIRO BMIF1.

Confidential photograph removed.

Figure 3.2 Artefact CSIRO BMIF1.

Confidential photograph removed.

Figure 3.3 Artefact CSIRO BMIF1.

Confidential photograph removed.

Figure 3.4 Artefact CSIRO BMIF1.

Confidential photograph removed.

Figure 3.5 PAD BM2.

Confidential photograph removed.

Figure 3.6 PAD BM2.

Confidential photograph removed.

Figure 3.7 PAD BM2.

Confidential photograph removed.

Figure 3.8 Location of the PAD BM2 in the context of the CSIRO Black Mountain site. (Source: Nearmap with GML overlay 2023 © Nearmap, all rights reserved.)

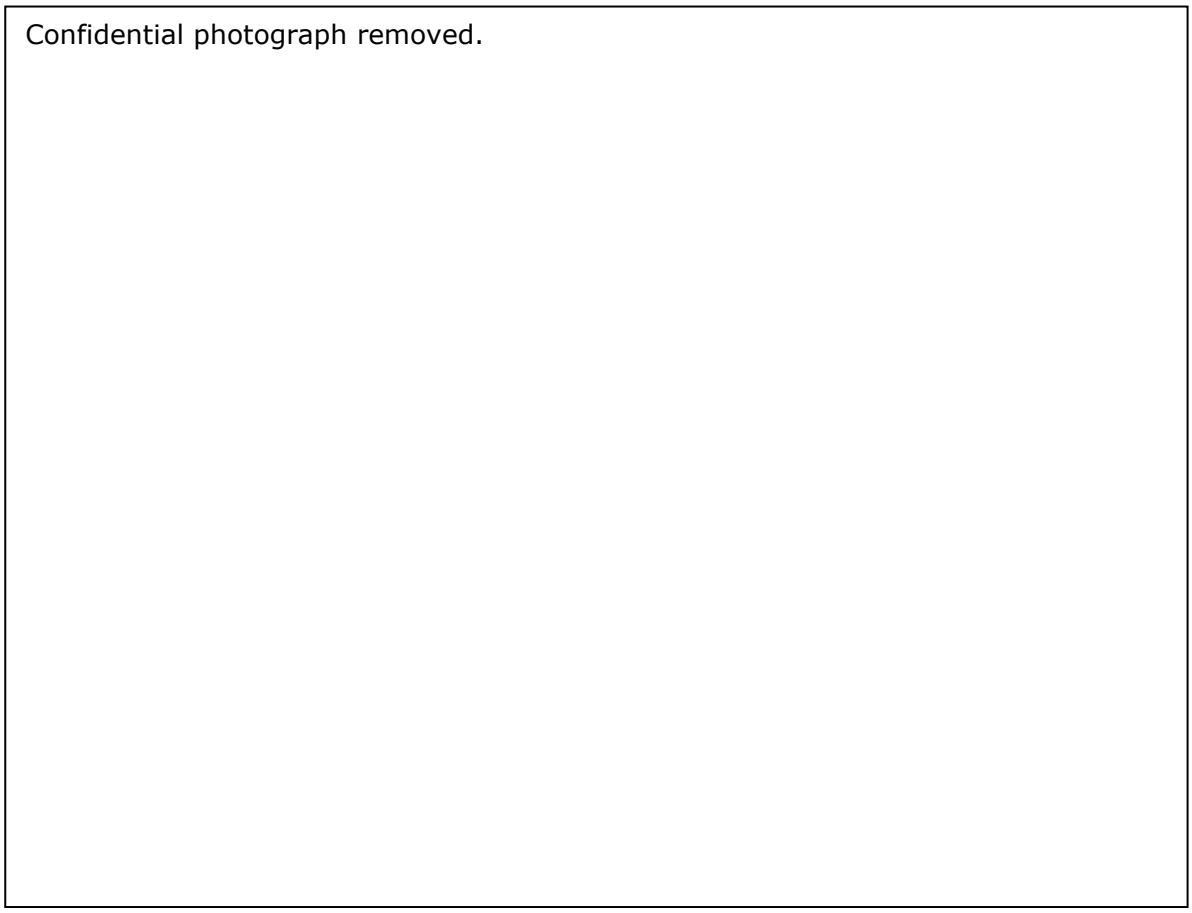

Figure 3.9 Location of the PAD BM2. Note that the PAD does include land on the western side of the CSIRO site boundary. (Source: Nearmap, with GML overlay 2023 © Nearmap, all rights reserved.)

No other sites or artefacts were found. No additional scarred trees and no areas of cultural heritage sensitivity were noted.

3.3.4 Aboriginal community comments

During the site inspection, discussions were held regarding the cultural significance of the study area. The following observation were made.

The study area is part of a broader cultural landscape that is of high significance to the local Aboriginal community. The study area and its immediate environs on the eastern side of Black Mountain is within an area intensely occupied for cultural activities, such that it was specifically recorded by early settlers and ethnographers in the region. The area was a focus for large community gatherings and included a known ceremonial area now occupied by the entrance gates of the Australian National Botanic Gardens.

The substantial impact to the study area due to the development of the CSIRO site has rendered that cultural landscape illegible. However, the Ngunnawal and Ngambri people

hold Black Mountain, its slopes and surrounds, and Sullivans Creek in high regard as culturally significant Country.

3.3.5 Conclusions

Overall, the site inspection found that the Indigenous heritage values of the study area are mainly bound up in its historical associations with it use as a significant occupation area in close association with a ceremonial zone to the south. There remains little tangible manifestation of this cultural landscape within the study area.

One isolated artefact (CSIRO BMIF1) was found on the site in association with an area of potential archaeological deposit (PAD BM2). The artefact was left in the location it was found.

Summary of register search

In summary, ethnohistorical observations from the area and archaeological site records indicate that, prior to European settlement, the study area was likely a rich cultural zone where the resource-rich environment of the Sullivans Creek valley provided a forum for ceremonial activities in the nearby area.

Bluett's 1954 reports of hundreds of cooking fires along the creek, Wright's 1923 reports of cultural details of the everyday life of people camping at the base of Black Mountain, along with reports of ceremonial sites at what is now the Australian National Botanic Gardens, all suggest a complex and stable society.

Collections of past artefacts indicate the reasonably intense occupation of the zone with a complex technological assemblage.

These factors suggest that the CSIRO site is likely to have the potential for archaeological remains in the less disturbed parts of the study area.

3.4 Urban context

3.4.1 The setting and landscape characteristics

The broader setting of CSIRO Black Mountain includes the eastern slopes of Black Mountain, the upper areas of the Australian National University and the northern boundary of the Australian National Botanic Gardens. The eucalyptus tree canopy of Black Mountain and the Australian National Botanic Gardens obscures the rear boundary and creates a dense treelined backdrop to the built-up site. To the front of the site, the urban context of the Australian National University contributes to the setting of the CSIRO buildings along Clunies Ross Street.

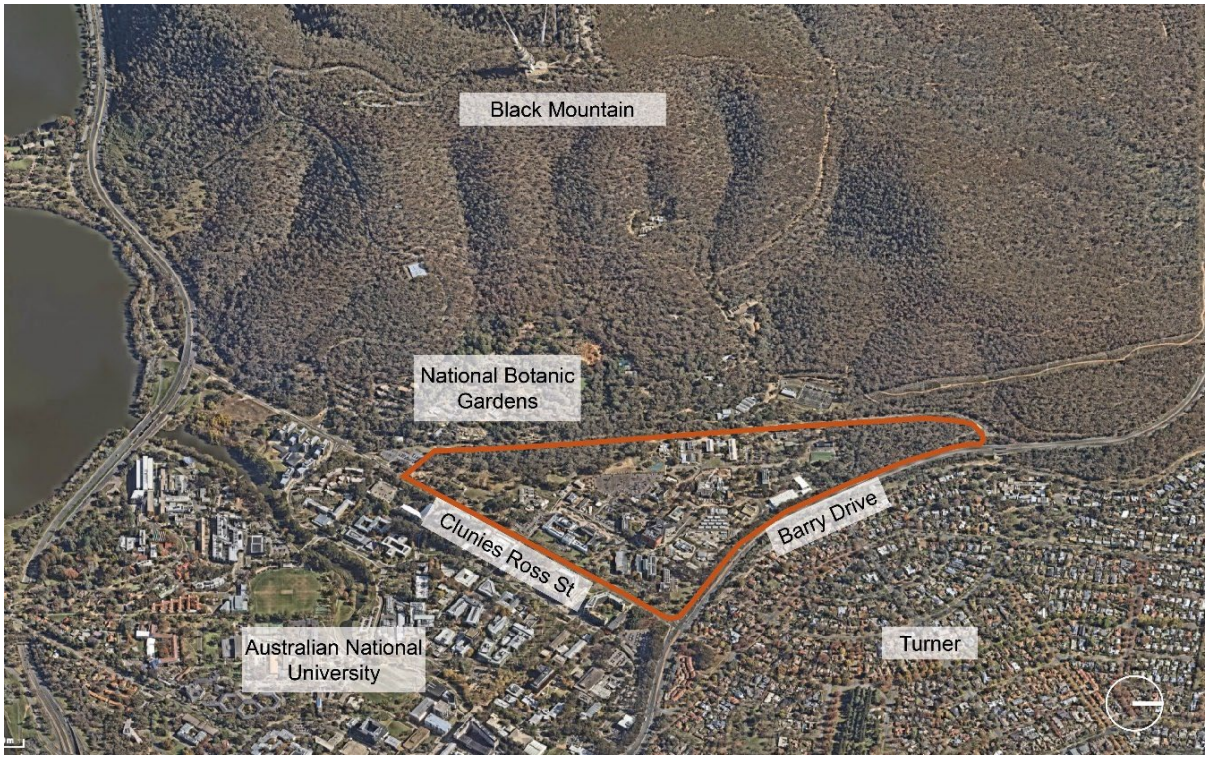

Figure 3.10 Oblique aerial of the setting of CSIRO Black Mountain, marked in orange. The tree canopy is contiguous from Black Mountain and the Australian National Botanic Gardens into the site and the urban context of the Australian National University and Turner contribute to the setting of the Clunies Ross Street buildings. (Source: Nearmap with GML overlay 2023 (© Nearmap, all rights reserved.)

The immediate setting of the site itself is a campus-like environment with large, multistorey buildings and clusters of smaller structures and glasshouses set within a treed and grassed landscape. Natural landscapes and designed gardens with native and introduced species fill the open areas between roads and buildings.

Figure 3.11 Radiata pines to the east of Building 301.

Figure 3.12 Scattered eucalyptus trees to the north of Building 301.

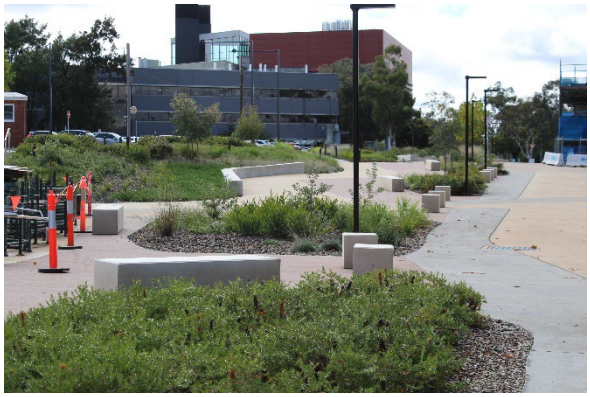

Figure 3.13 A formal landscaped pedestrian area behind Buildings 179 and 150.

Figure 3.14 The landscaped front nature strip between the buildings and Clunies Ross Street.

The site slopes down towards Clunies Ross Street and Barry Drive and many areas have been terraced to accommodate these grades. The elevated areas of the site afford views over the Australian National University toward the Canberra city centre and Mount Ainslie. A views analysis is provided at Section 3.4.2 of this HMP.

The site contains numerous historical plantings, which date possibly from the early phases of development in the late 1920s and 1930s. These, as well as the later plantings, contribute to the site's visual setting.

Cultural plantings of particular interest include the:

- Three mature and one sapling Italian cypresses, or Roman cypresses (*Cupressus sempervirens 'Stricta'*), spaced evenly along the front of the Foundation Building (Building 101). These are thought to have been planted in 1929 or the early 1930s.[20]
- A line of Lombardy poplars (*Populus nigra 'Italica'*) along Clunies Ross Street. These are thought to be remnant plantings dating from the 1920s or 1930s.[21]
- Flowering plums (*Prunus cerasifera 'Nigra'*) along the façade of the Foundation Building (Building 101), planted in 2019.
- Group of kurrajong (identified as *Brachychiton populneus* ssp. *Triloba*) at the eastern corner of North Science Road and Dickson Way. These are a subspecies of the common kurrajong which is native to the Canberra region and occurs mainly in the western plains of NSW and in Queensland. They are thought to have been planted in the 1920s under the direction of Dr Bertram Thomas Dickson, the then Chief of the Division of Plant Industry and later the first Chief of CSIRO.
- California incense cedar (*Calocedrus decurrens*) at the western corner of the Discovery Centre (Building 702), thought to be planted at the same time as the kurrajongs under the direction of Dr Dickson.
- Three cabbage trees (*Cordyline Australis*) at the entrance to the Phytotron and Phenomics Centre (Building 005). These trees, native to New Zealand, are said to

represent three New Zealanders who had a strong association with the Phytotron and Phenomics Centre —Otto Frankel, Lloyd Evans and John Ludwig.[22]

- Mature pin oaks (*Quercus palustris*) along the eastern side of Dickson Way.
- Row of gums along the eastern side of North Science Road.
- Row of radiata pines (*Pinus radiata*) near the powerline to the southeast of Building 504.

A large yellow box (*Eucalyptus melliodora*) in the gravel area to the north of Bruce Butler Laboratory (Building 301) may be a remnant from the native tree cover pre-CSIRO.

Figure 3.15 The California incense cedar at the western corner of the Discovery Centre (Building 702).

Figure 3.16 The group of kurrajong at the eastern corner of North Science Road and Dickson Way.

Figure 3.17 The row of pin oaks along the eastern side of Dickson Way.

Figure 3.18 The magnificent yellow box to the north of the Bruce Butler Laboratory (Building 301).

3.4.2 Views analysis

Significant views from within CSIRO Black Mountain

The location of CSIRO Black Mountain on the slopes of Black Mountain allows for unimpeded and framed views from several vantage points around the site. When looking west from within the site, Black Mountain and the Black Mountain Tower are the dominant features in the landscape, and highly visible from the site. The proximity of CSIRO to Black Mountain provides a dramatic visual backdrop for the site. Other distant views are gained from the site towards Mount Ainslie, the Canberra city centre and Australian Parliament House and the distant hills beyond.

Key external views are identified through the following photographs.

Figure 3.19 A photo of the view from the newly established landscape area behind Building 150 towards Black Mountain and Black Mountain Tower. The mountain and tower are visible from many locations on the site and contribute to the landscape qualities.

Figure 3.20 A photo of the view from near Building 211 looking south. Australian Parliament House and hills beyond are visible between the foreground eucalyptus trees.

Figure 3.21 A photo taken from Dickson Way looking east which provides glimpses of the Canberra city.

Figure 3.22 Photo taken from near Building 019 looking in a northeast direction towards Mount Ainslie.

Significant views to CSIRO Black Mountain

Key views towards CSIRO Black Mountain are largely from Clunies Ross Street. The unimpeded view from Clunies Ross Street towards the Foundation Building is a significant view that is appreciated by vehicle and pedestrian traffic on the street and within the Australian National University western precincts.

Figure 3.23 A photo from near Clunies Ross Street of the unimpeded view towards Foundation Building and Black Mountain beyond.

Figure 3.24 View from near Clunies Ross Street towards the Discovery Centre (Building 702) and Phytotron and Phenomics Centre (Building 005). The view here is dominated by deciduous and evergreen trees.

3.6 Built elements

The following section describes built elements at the Black Mountain site. The two CHL Places—the CSIRO Foundation Building and the Phytotron and Phenomics Centre—are described in detail, followed by a summary of the remaining buildings in Section 3.5.3.

A list of buildings that have been removed from the site since 2017 is provided in Section 3.5.5.

The fact that a building or structure is included in Section 3.5 does not necessarily indicate it has heritage value. The descriptions are provided as contextual information to understand the site. However, the information in these descriptions, as well as the historical context in Section 2, assists in assessing heritage values in Section 4.

Figure 3.25 Map of CSIRO Black Mountain, 2023. (Source: CSIRO)

3.6.1 CSIRO Foundation Building (Building 101)

Building setting

The CSIRO Foundation Building (Building 101) addresses Clunies Ross Street and is highly visible from the public domain. It is set within an open landscape with a formal planting arrangement. To the rear of the building is a courtyard and numerous two and three-storey buildings that obscure views towards the rear of the building.

The landscaped zone to the southeast (front) of the building has a circular driveway and several car parks, a row of Lombardy poplars (*Populus nigra 'Italica'*) along Clunies Ross Street, four symmetrically planted Roman cypresses (*Cupressus sempervirens 'Stricta'*). The garden beds directly in front of the building were cleared in 2019 and planted with numerous small trees (flowering plums, *Prunus cerasifera 'Nigra'*) and shrubs. Flagpoles, signage, footpaths and access ramps are also in the area.

Figure 3.26 Row of Lombardy poplars at the boundary of CSIRO Black Mountain, along Clunies Ross Street.

Figure 3.27 Row of flowering plums and small shrubs along the building elevation that were planted in 2019 when the garden beds were cleared.

The land to the northeast (rear) of the building slopes from northwest down to the southeast. A glazed staircase link has been constructed to the rear of the Central Block and provides access to the adjacent Building 179. A courtyard at the rear of the building has been formed by two and three-storey buildings, including Buildings 137, 150, 179, 135. Buildings 137, 150, 179 and 135 were under refurbishment at time of writing. Construction hoardings and infrastructure is further blocking views to Building 101.

Figure 3.28 Construction hoardings around Building 179, the glass clad stairwell and the Central Block of Building 101 to the left.

Figure 3.29 The landscaped courtyard to the rear of Building 101. The North Wing is visible at the rear of the photograph.

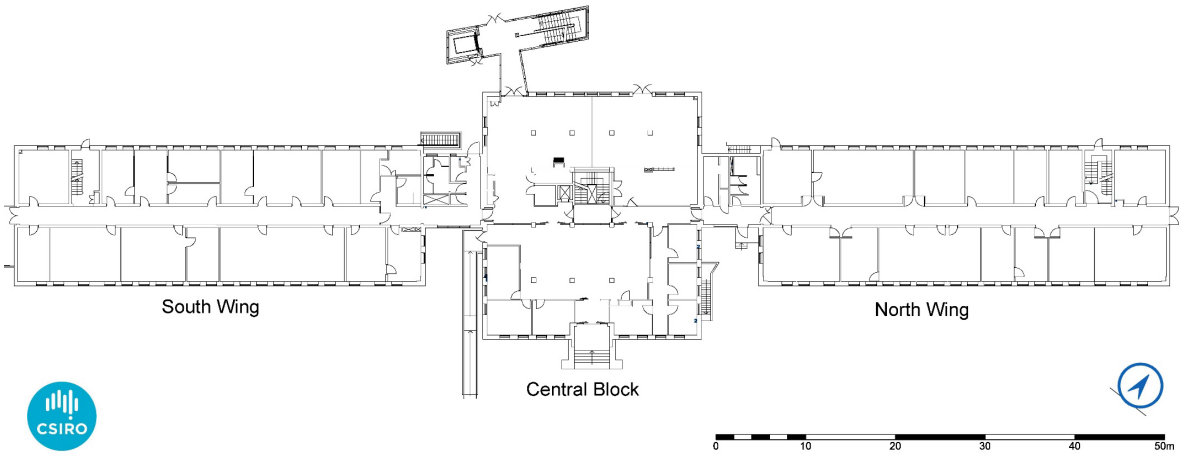

Figure 3.30 Ground floor plan of Building 101. (Source: CSIRO, 2023)

Exterior description

The CSIRO Foundation Building consists of the Central Block and North and South Wings (Figure 3.30). The Central Block is four storeys, including a basement, and the two wings are both three storeys, including small basements (Figure 2.6). The building is constructed of rendered and painted brickwork, with reinforced concrete floors. The original reinforced concrete roofs of the two wings were roofed over with low-pitched metal roofs.

Although the building was constructed over a period of 26 years, it demonstrates key characteristics of the inter-war Stripped Classical style of architecture, a style employed on numerous buildings in Canberra. Key features of this style exhibited by the building include:

- its symmetrical façade, divided into vertical bays indicating its classical origins; classical entablature (the horizontal decoration at the top of the walls); and
- elements of Art Deco style, including the treatment of the spandrels (wall panels above and below the windows), decorative motif panels and leadlight ceiling diffusers which include the wheat and scarab motif.

The portal entrance to the Central Block has restrained ornamentation, consisting of simple, sandstone clad surfaces. The ground and first-floor windows are linked with a continuous sandstone frame that, with the sandstone spandrel panels between the windows, subdues them to emphasise verticality. This detailing around ground and first-floor windows carries around to the north and south elevations of the Central Block.

The windows are double hung and timber-framed, painted green, and there is a wrought iron balustrade at the third-floor central balcony. The central block has a double-hipped metal roof set behind a parapet. The roof is not visible from ground level.

Figure 3.31 The façade of the Central Block. The sandstone portal, green painted timber windows with surrounding sandstone framing emphasises verticality—a characteristic of the inter-war Stripped Classical style of architecture.

On each side of the Central Block is a two-storey link building which provide access on the ground and first floors to the side wings, known as the North and South Wings. Each floor of the link has a slim, horizontal window. Mechanical plant is visible on the flat roofs of the link buildings.

Figure 3.32 CSIRO Foundation Building (Building 101).

The windows to the front and rear elevations of the North and South Wings display a similar architectural style to the windows of the Central Block. While the materials are different, the pairs of windows are linked by an inset band in the render and the spandrels are detailed, which again emphasises verticality. The Central Block spandrels are sandstone, while on the wings they are rendered concrete and have a shallow folded-plane profile. Windows are steel-framed and there are short metal hoods projecting over the ground floor windows. Some windowpanes have been replaced by grilles or otherwise vents have been inserted into some windows.

Figure 3.33 Detailed window treatment on the South Wing.

Figure 3.34 Detail of a second-floor window of the North Wing.

A number of downpipes are mounted on the front elevation, and there are numerous services installed on the rear elevation.

The wings have a simple, horizontal entablature formed in render and running along the upper part of the external walls. Each wing has four small decorative panels mounted on the upper external walls with motifs of a scarab beetle on the South Wing and a wheat sheaf on the North Wing. They are designed to represent the two former CSIRO Divisions of Entomology and Plant Industry, the original occupants of the buildings and site. The same motifs are also found internally in the skylights, refer to Figure 3.38.

Figure 3.35 Decorative motif panel on the North Wing, front elevation. The wheat represents the CSIRO Division of Plant Industry, the original occupant of the North Wing.

Interior description

The interior of the Central Block has been refurbished and features parquetry flooring, terrazzo stair treads, plaster ceilings, including some painted timber coffering, and suspended ceilings. Many finishes have been upgraded over the years.

The interiors of the wings generally feature rendered walls, linoleum floors, plaster ceilings and stained timber doors, architraves and skirtings (Figure 3.36). An exception is the ground floor, North Wing, where fire doors were installed to the rooms off the central corridor. Each wing has a central corridor with laboratories, offices and other rooms either side. Original partition walls are generally constructed of terracotta blockwork to enable their removal if necessary. The laboratory furniture and office fittings are generally new replacements.

There is one set of original terrazzo stairs with metal balustrade and timber handrails in each wing (Figure 3.37). The interior spaces have many surface mounted services, including fire systems, along the corridor ceilings.

Figure 3.36 An interior corridor showing original timber door architraves and linoleum flooring.

Figure 3.37 An original stairwell with terrazzo treads and risers. The balustrade has been brought up to code by installing a Perspex sheet.

The first-floor corridor of each wing has three leadlight ceiling diffusers lit by skylights (Figure 3.38). The pattern of the leadlight reflects the exterior decorative motif panels—scarab beetles and wheat sheafs. These skylights were badly damaged by the 2020 hailstorm. CSIRO had them remade to match as part of the hail remediation project.

Figure 3.38 Coloured glass diffuser/skylight in the North Wing with the wheat sheaf symbol. The glass was fully replaced after the 2020 hailstorm.

The extent of original furniture or moveable heritage related to the original use of the building is not known.

The South and North Wings are open at either end to the neighbouring buildings. Access can be made from the South Wing into the corridors of Building 135 and from the North Wing into Building 137. A more recent glass clad stairwell provides access to Building 179 from the Central Block.

3.6.2 The Phytotron and Phenomics Centre (Building 005)

Building setting

The Phytotron and Phenomics Centre (also known as the High-Resolution Plant Phenomics Centre) (Building 005), is located to the north of Julius Road, which is the entrance road to the site. The building is oriented north–south so that the 15 glasshouses

face directly north to capture sufficient light. This orientation was continued in the neighbouring buildings, 005, 702 and 002/079.

Within the building's setting is a narrow access road to the lower carpark, grassed areas with planted specimen trees and a small, semi-enclosed courtyard with low retaining wall set into the rising ground to the southwest.

Three cabbage trees (*Cordyline Australis*) are located immediately to the west of the building, to the north of the main entrance. These trees, native to New Zealand, are said to represent three New Zealanders who had a strong association with the Phytotron and Phenomics Centre—Otto Frankel, Lloyd Evans and John Ludwig.[23] To the northwest of the building near the carpark is a group of kurrajong trees (*Brachychiton populneus* ssp. *Triloba*), which differ from the local species and are considered to be uncommon in the Canberra region. These trees are believed to be the only mature examples of the subspecies in Canberra. They are thought to have been planted by or under the direction of Dr Bertram Thomas Dickson (first Chief of the Division of Plant Industry and later the first Chief of CSIRO); however, no specific information is available about the trees to indicate the reason for their planting, or associations with people or events in the time.

Exterior description

The Phytotron and Phenomics Centre building displays some features of the post-war international style, such as cubiform shapes in the patterning of the south elevation, plain, smooth wall surfaces and external sun control hoods.

The site orientation, design and fabric of the building were selected to facilitate the function of the purpose-built structure. The building consists of two distinct linear halves. The northern side of the building is a row of 15 glasshouses made of rendered blockwork half-height walls topped with glass side walls and roofs (Figure 3.39). The southern side of the building is a rendered blockwork structure with a steep pitched metal skillion roof (Figure 3.40).

The lower level contains evaporating ponds and fans for the airconditioning for the upstairs laboratories.

The external windows and doors on the masonry side of the building feature deep concrete frames that protrude from the façade and have rounded corners (Figure 3.41). The south elevation has painted rainwater downpipes at regular intervals which, with the fascia and gutter board, provide a visual framing for the elevation. Windows are aluminium-framed.

The main entrance to the building is on the southern side, which originally had parquetry flooring that has been replaced with slate tiles. However, most access is made to the building through the recently added airlock portal entrance on the western elevation. The airlock allows for the controlled movement of material into the building. This replaced a

former large fumigation chamber. The entrance portico has replicated to some degree the original protruding frames of the southern elevation (Figure 3.40).

The building is equipped with solar panels for domestic hot water. These are an original part of the building's engineering services. These were a very early Australian example of the use of solar hot water and are still operational.

A lift shaft was added to the eastern elevation in 2013 which has somewhat detracted from the simple design. The metal clad skillion roof was replaced in 2023.

Figure 3.39 The northern elevation of the Phytotron and Phenomics Centre.

Figure 3.40 The western elevation of the Phytotron and Phenomics Centre. The cabbage trees (*Cordyline Australis*) are in the left of the photo.

Figure 3.41 Main entrance to the Phytotron and Phenomics Centre, showing the deep, curved frame/portico. (Source: ERM 2015; a recent photograph was not possible due to scaffolding obscuring views)

Figure 3.42 The eastern elevation of the Phytotron and Phenomics Centre. The lift shaft was installed in 2013. The scaffolding is associated with the 2023 roof sheeting replacement.

Interior description

The Phytotron and Phenomics Centre building has a simple linear floorplan. It has a central corridor which provides access to the row of glasshouses on the northern side and the masonry structure to the southern side which contains a variety of other facilities. Internally, there is a mixture of face blockwork and some recently painted blockwork walls. Ceilings are typically light-weight ceiling tiles.

Level 1 (the ground floor) houses laboratories, offices, change areas, a workshop and plant areas, including the evaporating ponds and fans for the air conditioning of upstairs laboratories. Level 2 features laboratories, the glasshouses, plant area and the main workshop. Level 3 contains a staff room and Level 4 features plant space.

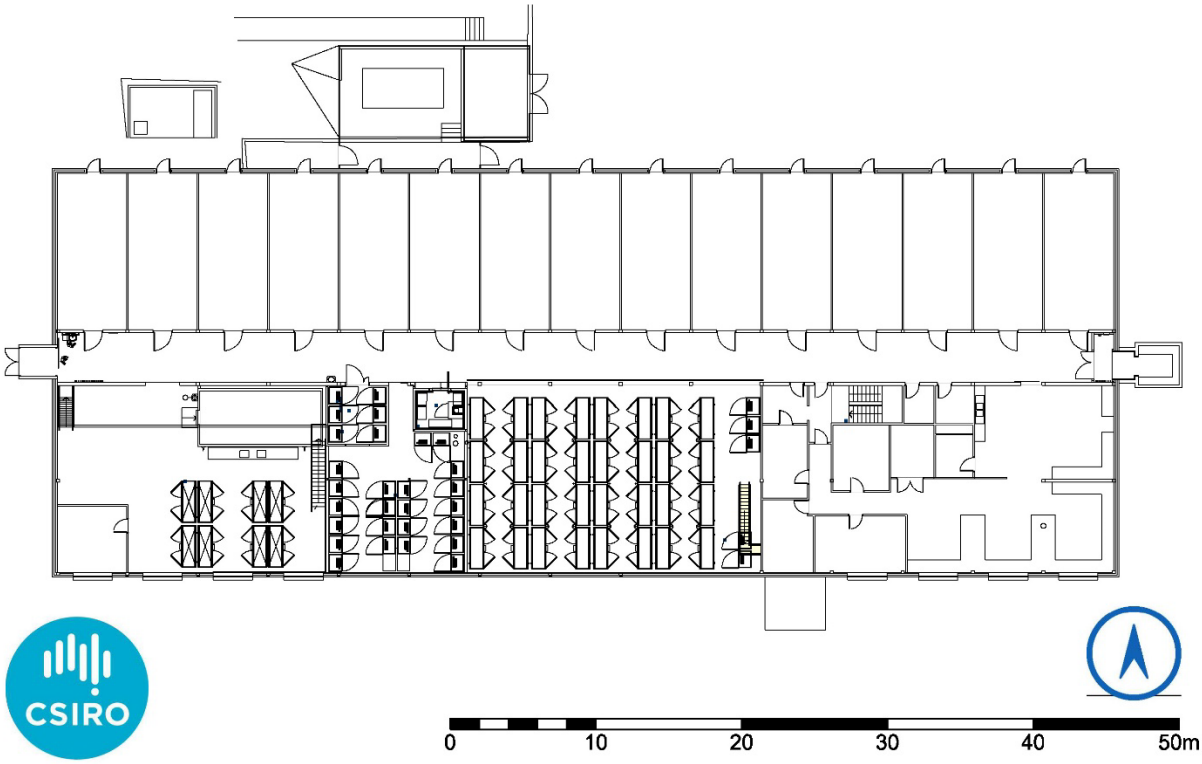

Figure 3.43 Plan of Level 2, Building 005. The glasshouses are to the north of the central corridor, laboratories, plant area and the main workshop are to the south of the corridor. (Source: CSIRO)

Controlled environments for research are achieved in the 15 glasshouses as well as 400 refrigerated cabinets, which are either used in conjunction with the glasshouses or located in other parts of the building.

Internally, the building has been adapted to suit current scientific requirements and little original fabric remains. The building was fully refurbished in 2009 and 2013, with further upgrades completed to the lower floor laboratory facilities in 2022.

Figure 3.44 View along the central corridor. The glasshouses are accessed from the dark green doors to the left.

Figure 3.45 A typical glasshouse.

Figure 3.46 One of the large workshop areas on Level 2.

Figure 3.47 One of the laboratories. The rounded corner aluminium windows of the southern elevation are visible from this room.

Upgrades have been proposed for the Phytotron and are intended to be completed by June 2024. The works would involve decommissioning the lower-level ponds and installing a closed loop water chiller and electric heat pump system instead. The ponds and associated pipework have been determined to be at end of life, being too inefficient and costly to maintain and operate. The mechanical plant would be installed in the carpark to the northeast. The upgrade works are intended to ensure the building can continue to operate.

3.6.3 Black Mountain buildings

The following tables provide background information on the other buildings at Black Mountain. The information provided includes a brief building description and any relevant historical information or notable scientific developments that are associated with the buildings.

Building name and No.	002 Sir Otto Frankel Building
Construction date	1961–1962 Refurbished and extended in 2006 and 2009
Details	The three-storey masonry, rectilinear building was constructed as the new biochemistry laboratory for the Division of Plant Industry. Windows on the northern façade are each fitted with an external folded metal awning. The building is joined to Building 079 and, internally, reads as a single building. Building 002 has undergone several changes including an extension in 2006 and 2009 and is currently used for administration and offices. Little original fabric remains internally, and changes have occurred to the exterior; however, the building continues to demonstrate the design principles.
Images	

Building name and No.	005 Phytotron and Phenomics Centre
Construction date	1960 Refurbished in 2009
Details	Refer to Section 3.5.2. for further information about the Phytotron and Phenomics Centre.

Images	

Building Name and No.	016 Prefab
Construction date	1953
Details	The building is a prefabricated, rectilinear single-storey structure, with central entry portico, and steel-framed windows along the southern façade. It has a corrugated iron gable roof with green vertical corrugated steel wall cladding. Building 016 was used in 1959 for Division of Plant Industry soils research. Historical aerials from the 1950s show that this building was originally one of four similar or identical buildings along North Science Road; now only Building 302 and Building 016 remain. It is noted that CSIRO plans to demolish this building (along with Building 302 as part of the Glasshouse Masterplan.
Images	

Building name and No.	019 019A Extension F.C. Pye Field Laboratory and Extension
Construction date	1966 Extended in 1986
Details	This building, designed for the Division of Plant Industry by architects Ancher, Mortlock, Murray and Woolley, was officially opened by the Governor-General Lord Casey on 31 August 1966. Its purpose was to provide facilities for research into the field environment of plants. The construction of the building had been made possible by a gift to the CSIRO of the 8,600-acre property *Geraldra*, near Stockinbingal, by its owner, the prominent NSW grazier F.C. Pye. The only condition of the gift was that CSIRO use either the property itself or the proceeds of its sale for research relating to grazing or farming. As the property was not a suitable site for a research station, it was sold and the funds were used to build the F.C. Pye Field Laboratory at Black Mountain. This building has an elegant and restrained design featuring a simple internal courtyard plan with offices and laboratories around the perimeter. The exterior design features a simple masonry wall with a continuous high level window band and broad floating horizontal roof form. There are also timber-lined soffits and a sculptural cantilevered entry stair. The interior features terrazzo floors, black steel framework and extensive timber and glass. The day-lit courtyards include small internal garden areas. The building is an example of the late twentieth-century international style with cubiform overall shape, overhang for shade and a plain, smooth wall surface. An extension to the building was completed in 1986 and responds sympathetically to the original design. Structural modifications were undertaken c2000–2002, including an upgrade of the entrance to improve accessibility by means of a ramp. The Australian Institute of Architects (ACT Chapter) awarded the building the 25 Year Award (now named the Enduring Architecture Award) in 2009, recognising its ability to meet the brief provided by the then Chief of Division of Plant Industry Dr John Philip and his wife Frances, who were closely involved in the design philosophy and choice of materials.[27] The F.C. Pye Field Laboratory has been unused since 2015 due to hazardous materials and compliance issues. Through a referral to the Minister for the Environment and DCCEEW, CSIRO have received approval for the demolition of Building 019/A on grounds of contamination and non-compliance. Approval to the demolition was granted 17 November 2022.

Images	 

Building name and No.	060 Library
Construction date	1972 Refurbished and extended in 2005
Details	The CSIRO Library is a dramatic building with a strong, tall, angular, vertical main element faced in ribbed, pre-cast concrete panels. It was designed by the Canberra branch of the Department of Works in association with O'Mahony Neville and Morgan architects. The building displays features of the late twentieth-century Brutalist style, with strong shapes, boldly composed; a diagonal element contrasting with horizontals and verticals; large areas of blank wall; and precast concrete. The interior volume spans four levels, with the angular roof forming a wedge that encloses mezzanine bookstacks, with linear skylights inserted in the angled ceiling. In 2003, the library and its architects were given a 25-year award by the Australian Institute of Architects ACT Chapter in recognition of its 'significant contribution to the environment and cultural heritage of Canberra'.

Images	The recent addition to the library was designed by Cox Humphries Moss Architects and won the Sir Zelman Cowen Award for Public Buildings in the 2005 ACT Architecture Awards. 

Building name and No.	061, 065, 070, 071, 086 Animal House Australian Tree Seed Centre Potting shed Pump House Seed Germination Store
Construction date	61: 1973 65: 1977 070: 1980 071: 1980 086: 1993
Details	This group of buildings are support and ancillary buildings constructed out of masonry block walls and corrugated metal skillion or gabled roofs. They were built in the 1970s through to the 1990s.

Images	

Building name and No.	073 Crop Adaptation Laboratory
Construction date	1983
Details	Building 073 is a three-storey masonry building that is currently used for offices and laboratories. The building expresses elements of functionalist style and late twentieth-century Brutalist style in such features as ribbon-like windows; columns not emphasised; roof concealed by a parapet; metal-framed windows and long horizontal spandrels; strong shapes, boldly composed; and large areas of blank wall.
Images	

Building name and No.	076 Polycarbonate Shade house
Construction date	1981 Refurbished in 2009

Details	Building 076 is a standard rectilinear glasshouse with aluminium framing and polycarbonate cladding.
Images	

Building name and No.	079 Sir Otto Frankel Building Extension
Construction date	1986
Details	Building 079 joins the earlier-built Building 002 (1961) and functions as a cohesive office building. The building functions as the main entry point to both buildings and accommodates office and administrative facilities. The building is a masonry and concrete construction with aluminium horizontal-ribbon windows on each level. A curved concrete wall encloses an outdoor courtyard at the southeast corner of the site. The building is named after Dr Otto Frankel, the Chief of the Division of Plant Industry from 1951–1962.
Images	

Building name and No.	083 Biosecure Glasshouse Facility
Construction date	1988
Details	Building 083 is a single-storey, concrete masonry construction with an adjoining glasshouse building to the north. The building is accessed via concrete staircase or ramp and the entry is identified by a curved concrete masonry façade. The roof material is a vertical corrugated steel cladding that folds down partially onto the wall façade.
Images	

Building name and No.	87, 88, 89, 90, 91, 92, 95, 96, 97, 98, 99, 100 Transgenic Glasshouses
Construction date	1994 and 1998
Details	The Transgenic Glasshouses are rectilinear single volume spaces of steel frame construction. Large panes of glass clad the walls and gable roofs of the steel structures sit upon a partial-height wall, constructed of concrete blocks. Numerous air conditioning systems are attached at ground level to the outside of the building. Notably, in 1996–1997, genetically modified wheat raised in a trial in one of these greenhouses became the first transgenic cereal to be grown in an open field in Australia when it was grown at the CSIRO Ginninderra site. The glasshouses have been temporarily reclad in poly material until the Glasshouse Masterplan is completed. They are then planned for demolition.

Images	

Building name and No.	101 CSIRO Foundation Building
Construction date	Entomology wing: 1929 Plant Industry wing: 1930 Central Block: 1954–1955 Refurbished in 2009
Details	Refer to Section 3.5.1 for further information about the Foundation Building.
Images	

Building Name and No.	113 Laboratory and glasshouses
Construction Date	1965
Details	Building 113 is a single storey brick building with a flat, corrugated metal roof. The building was constructed as a laboratory with five glasshouses on

Images	either side of the masonry building. The glasshouses were demolished in 2020 after extensive damage during the 2020 hailstorm. 

Building name and No.	135 Stored Grain Research Laboratory
Construction date	1972, extended in 1991
Details	Building 135 was completed in 1972. The building is a two-storey masonry construction, with double-height, off-form concrete fins on the South Road façade. The building is connected to the South Wing of Building 101 and is architecturally sympathetic with the broad horizontal member echoing classical entablature (the horizontal decoration at the top of the walls), formed by the fibro-cement fascia. The building demonstrates key characteristics of the late twentieth-century Stripped Classical style of architecture, including a symmetrical façade, horizontal emphasis, regular bays formed by off-form concrete fins, and the broad horizontal member echoing classical entablature at the top of walls. In 1972–1973, the Stored Grain Research Laboratory, in conjunction with the Pest Infestation Control Laboratory in the United Kingdom, carried out a global survey of pesticide resistance to measure the scale of the problem in all grain producing countries. The laboratory was soon recognised as a world leader in its field. The building is currently being refurbished after the 2020 hailstorm.

Images	

Building name and No.	137 DF Waterhouse Laboratory
Construction date	1980
Details	Building 137 was constructed to house the Australian National Insect Collection (ANIC). It was constructed as a two-storey extension to the North Wing of Building 101. The construction of Building 137 was planned from 1964 onwards and the building was officially opened in May 1982. The building is a two-storey masonry construction. The northern façade comprises of equal spaced masonry planes, and fenestrated with regularly spaced vertical slit windows. It displays some elements of the late twentieth-century Stripped Classical style, including a horizontal skyline, regular bays and a broad horizontal member echoing classical entablature. Internally, the building has large halls housing the insect collection with small offices along one side. The design of the entrance foyer is of interest as a tall space with extensive timber lining. Roof sheets were damaged by the 2020 hailstorm and have been replaced in 2023. The building is named after Doug Frew Waterhouse, who was a renowned entomologist, a fine scientist and an accomplished administrator. He worked within the CSIRO Division of Entomology for over 60 years and was its Chief for 21 years until his retirement in 1981.

Images	

Building name and No.	138 Quarantine Insectary
Construction date	1980 Extended in 1989
Details	This building is a single storey masonry construction with various skillion rooves. A steel-framed glasshouse is attached to the north elevation facing the South Road.
Images	

Building name and No.	147, 148, 149 Glasshouses
Construction date	1988
Details	These glasshouses are rectangular in plan, of steel-frame construction, and have glazed walls that sit on a partial-height, concrete block wall with glass panels attached to a steel-frame, gable roofed structure.

Images	

Building name and No.	150 Australian National Insect Collection and laboratories
Construction date	1988
Details	Building 150 is a two-storey rectangular, blonde brick construction, with gable roof, accommodating office and laboratory space. The building adjoins Building 137 and forms the rear boundary of the Building 101 rear courtyard. The building was re-roofed in 2023.
Images	

Building name and No.	151 and 152 Glasshouses
Construction date	1988
Details	These two identical glasshouses are rectangular, aluminium-framed, and curved roof structures, with glass roofs and walls on partial-height, lightweight material walls.

Images	

Building name and No.	154 Glasshouse Services Building
Construction date	1989
Details	This building is a single-storey, concrete block building with attached workshops built from corrugated metal. Curved awning details add interest to an otherwise simple building.
Images	

Building name and No.	179 Biosciences Laboratory
Construction date	2009
Details	This is a large, double-storey, contemporary building comprising laboratories and offices, clad in aluminium-material wall panels, with a vertical metal-blade sun shading screen on windows to the west. The building adjoins Building 135 and was re-roofed in 2023.

Images	 Source: ERM, 2017.

Building name and No.	201 CS Christian Laboratory
Construction date	1964 and 1968
Details	This building was constructed by the Department of Works to house the Laboratory for Land Research and Regional Surveys. It is of masonry construction and has a U-shaped layout. The three components of the building vary in height from one storey to three storeys, depending on the site grade. The main entry foyer contains a Robert Ingpen mural painted directly onto a wall. Artist Robert Ingpen was employed as a graphic designer of the Agricultural Liaison Unit of CSIRO. The mural is approximately 4 metres in width by 2.5 metres in height and illustrates scientific procedures scientists use to observe, understand and modify the natural environment. The mural is intact, retaining a high level of integrity and is in good condition with colours that remain vivid. Recently, CSIRO has scanned the mural and had it reproduced, which is now mounted in the Discovery Centre (Building 702). The interiors of the building feature timber-slat panelling on the ceilings, timber-framed doors and framework, exposed timber beams and upper horizontal glazing/louvres above the doorways and offices. The building was named after Clifford Christian, who was Chief of the Division of Land Research, CSIRO 1957–1960 and a member of the CSIRO Executive 1960–1972. The building had been in continuous service for CSIRO for 48 years but has been unoccupied since 2015. Through a referral to the Minister for the Environment and DCCEEW, CSIRO has received approval for the demolition of Building 201 on the grounds of contamination and non-compliance. Approval for the demolition was granted on 3 November 2022.

Images	

Building name and No.	208 Australian National Soil Archive/Store
Construction date	1978
Details	Building 208 is a single-storey brick building with a flat roof. An external louvred sunscreen is attached to the front, northern façade.
Images	

Building name and No.	210 Archives Store
Construction date	1980
Details	Building 210 is a large, rectangular storage building, single-storey, with double-height volume over southern half the building. Walls are clad in commercial aluminium panels with extended building height volume and feature Klip Lok-style corrugated cladding.

Images	

Building name and No.	211 Cropatron Australian Plant Phenomics Facility Glasshouses
Construction date	2012
Details	Building 211 is a rectangular, gable roof, steel-framed glasshouse.
Images	

Building name and No.	216 National Bushfire Behaviour Research Laboratory
Construction date	2021
Details	This building is a single-storey, multi-level volume space, with corrugated steel wall cladding. The laboratory houses the CSIRO Bushfire Behaviour and Risks research team and contains a Pyrotron and a Vertical Wind Tunnel to study the behaviour of fires.

Images	

Building name and No.	301 Bruce E Butler Laboratory
Construction date	1971
Details	Building 301 is a rectilinear, three-storey, exposed brick building, featuring an exposed, white painted concrete frame. It was constructed as the Laboratory for the Soils Division. The concrete frame contrasts with the brown brick exterior, creating a regular square grid pattern across the building façade. The building displays some characteristics of the late twentieth-century Brutalist style of architecture, including strong shapes, boldly composed; an expressed reinforced concrete structure; and vertical slit windows. Fixed horizontal, externally coloured (orange, white, yellow) steel louvres shade all window openings. The main entry is identified by a concrete-framed portico and accessed via a street-level walkway from Christian Road. A four-storey brick tower is located at the eastern end of the building. It houses (the now unused) rain simulator to study the effects of rain on soil. Bruce E Butler was the Officer in Charge of the Canberra Laboratory for the Soils Division from 1954. His work made an important contribution to pedology and geomorphology in Australia.

Images	

Building name and No.	302 Prefab 3
Construction date	1953
Details	The building is a prefabricated, rectilinear, single-storey structure, with a central entry portico and steel-framed windows along the southern façade. It has a corrugated iron gable roof with green, vertical corrugated steel wall cladding. Building 302 was used in 1959 by the Land Research and Regional Survey (LRRS) Division. Historical aerials from the 1950s show that this building was originally one of four similar/identical buildings along North Science Road. Of these, only two remain—Buildings 302 and 016. It is noted that CSIRO plans to demolish this building (along with Building 016 as part of the Glasshouse Masterplan.
Images	

Building name and No.	313 Field Support Facility
Construction date	2021
Details	The building is a double-height, single-storey, purpose-built facility. The building has a single skillion roof, and is constructed of concrete block, corrugated metal wall cladding and horizontal, metal screen panels. It was designed by AMC Architecture and built in 2021 to provide a centralised facility for field support functions, with a separate secured enclosure for vehicle storage and a covered washdown bay.
Images	

Building name and No.	401C Computer Wing Substation
Construction date	1981
Details	This building is a two-storey masonry construction with a combination flat and central-mansard roof, in vertical corrugated cladding. The ground level of the building is open and it was built over a creek (refer to Figure 2.16 for a photograph at the time of construction). A more recent addition was made to the northern entry of the building. The building has a continuous clerestory window along the front façade, facing Clunies Ross Street. Building 401C was part of a larger complex of buildings that once held the most powerful computer in Australia. It now sits isolated from the remainder of the Black Mountain site.

Images	

Building name and No.	502 Herbarium
Construction date	1974 Extended in 1994–1995 (502A)
Details	Building 502 is a large structure made up of two connected, rectangular plan buildings. Entry is made at the section that joins the two buildings. The building is constructed of light grey bricks and has aluminium or PVC windows and angular metal awnings over the northern windows. The building houses the Centre of Australian National Biodiversity Research and the Australian National Herbarium. It is associated with Dr Bertram Thomas Dickson, the Head of Division of Plant Industry, who initiated the national herbarium at Black Mountain in 1930.
Images	

Building name and No.	504 Library and Archives Store
Construction date	1980

Details	Building 504 is a single-story, masonry structure, presenting to the street as a series of plain red brick walls. This building is predominantly used for storage.
Images	

Building name and No.	507 Guardhouse
Construction date	1991
Details	Building 507 is a small, rectangular plan guardhouse, located at the main vehicular entry to the CSIRO Black Mountain site. The exterior of the building has aluminium metal composite panel cladding and a single skillion roof. This building is planned for demolition.
Images	

Building name and No.	601 Child Care Centre
Construction date	1991

	Refurbished in 2006
Details	This building was completed in August 1991 as a childcare centre. CSIRO was the first federal government agency to build childcare facilities for the children of its staff. The Black Mountain facility was the first of these centres, with others soon following in Sydney and Melbourne. It was hoped that the provision of childcare facilities on site at CSIRO establishments would encourage more women to pursue careers in science. The building is a predominantly white-painted brick structure with intersecting gable roof with corrugated metal roof cladding. The building has a large outdoor playground with a covered outdoor area attached to the north of the building. In recent years, CSIRO has ceased providing childcare services and now leases the building to an external childcare provider.
Images	

Building name and No.	701 Glasshouse
Construction date	1998
Details	Glasshouse 701 sits with other glasshouses (87, 88, 89, 90, 91, 92, 95, 96, 97, 98, 99, 100). It is a rectilinear single volume space of steel-frame construction. Large panes of glass clad the walls and the gable roof of the steel structure sits upon a partial-height wall constructed of concrete block.

Images	

Building name and No.	702 Discovery Centre
Construction date	1991 Refurbished in 2016
Details	The CSIRO Discovery Centre is a multi-storied structure with suspended walkways enveloped by a vast atrium space. Internally, the building has been established as a public interpretation centre with information panels and interactive displays about the site and its research. After several years of lobbying by the Division of Plant Industry to establish a visitors' centre at Black Mountain, work commenced in May 1997 on the construction of the Discovery Centre. The building was designed by architects Daryl Jackson Alastair Swayn and is understood to be the first centre devoted to showcasing Australian science and innovation. It was completed in 1999 and officially opened by Prime Minister John Howard in 2000. In that year, the building won the highest honour in the ACT Architecture awards, receiving one of the two Canberra Medallions awarded. The building was refurbished in 2015–2016 for CSIRO Enterprise Groups, who were previously located in at the Campbell CSIRO site. The conference room, cafe and exhibition space remained in the building. The building incorporates contemporary energy-saving technologies, including geothermal heating and stack effect ventilation.

Images	

Building name and No.	706, 707, 708 Polyhouses
Construction date	2007 and 2009
Details	These three glasshouses are rectangular in plan with gable roofs and aluminium frames. The walls curve in to form the roof, creating a continuous frame from the wall to gable peak.
Images	

Building name and No.	709 Polytunnel
Construction date	2009
Details	Building 709 is a polytunnel with a curved roof. The structure is constructed of aluminium.

Images	

Building name and No.	711 Bayer Glasshouse
Construction date	2017
Details	Building 711 is a large, rectangular, gable roof, aluminium-framed glasshouse.
Images	

Building name and No.	801 Synergy Building
Construction date	2017
Details	The Synergy Building was completed in 2017 to contain research and support facilities with purpose-built laboratories. The multi-storey building is expressed in two parts: a laboratory wing and office and support facilities wing. The floor plan is an X-shaped layout. The exterior of the building comprises perforated, anodised louvres in a variety of colours. The adjoining rectangular building to the east provides a covered, concrete-framed entry, and a concrete staircase with the upper levels clad in red

	aluminium panelling. The building has won numerous design awards, including the 2018 ACT Chapter Australian Institute of Architects Award for Sustainability and Public Architecture.
Images	

3.6.4 Other support buildings and structures

The following minor/support buildings and structures are present at CSIRO Black Mountain.

072—Toilets
112—Amenities block
116—Flammable store
146—Offices
159—Store
163—Lunch and ablution unit
167—Bulk store
166—Store
169—Gas bottle store—north
170—Flammable liquids store
171—Dosing enclosure
173—Cryogenics Depot
177—Shade house
178—Shade house
180—Village Green pergola
204—Headhouse
209—Lunchroom
215—Boiler enclosure
307—Store
308—Storage shed
309—Flammable liquids store
310—Butler gas store
503—Store
507—Guardhouse
508—Transportable
511—Bird cage
512—Bird cage
602—Transportable
710—Laboratory gas store
802—Bike shed

3.6.5 Demolished buildings

The following table lists the buildings that have been removed from the site since the last HMP was prepared in 2017 and shows the extent of change on the site. The demolition of buildings with potential heritage value was assessed through the heritage impact assessment process, and potential adverse impacts were notified to DCCEEW.

Building No.	Building name	Construction date
001	Agronomy and administration	1970
010	General Store	1947
027	Glasshouse	1954
028	Glasshouse	1956
053	Glasshouse	1969
054	Glasshouse	1969
055	Glasshouse	1970
056	Glasshouse	1970
062	Glasshouse	1973
063	Glasshouse	1978
064	Glasshouse	1978
066	Glasshouse	1977
067	Glasshouse	1977
068	Glasshouse	1978
069	Glasshouse	1978
075	Shadehouse	1981
077	Crossatron North Wing	1983
078	Crossatron South Wing	1983
080	Glasshouse	1985
082	Glasshouse	1988
084	Glasshouse	1990
085	Glasshouse	1991
093	Glasshouse	1994
094	Glasshouse	1994

Building No.	Building name	Construction date
111	Black Mountain Gymnasium	1968
142	Bicycle shed	1981
142A	Bicycle shed	1981
303	Glasshouse	1968
401	401A,B Main Building	1964
505	Equipment store	Unknown
703	Glasshouse	2001
704	Glasshouse	2001
705	Glasshouse	2001

3.7 Comparative analysis

Comparing CSIRO Black Mountain with other former or current CSIRO places included on statutory heritage lists provides a useful context for understanding the relative importance, rarity and representativeness of CSIRO Black Mountain. Representativeness refers to a place as having value because it is a fine representative example of an important class of significant place or environment.

The following comparative analysis has been drawn from the 2017 ERM HMP and other research and compares three current or former CSIRO sites across the ACT, including:

- the former CSIRO Forestry Precinct, Yarralumla, ACT;
- CSIRO site Ginninderra, ACT; and
- the former CSIRO site Gungahlin (Crace), ACT.

The information gathered for the comparative analysis has been drawn from desktop research, primarily using the information provided in the Australian Heritage Database.

3.7.1 Former CSIRO Yarralumla, ACT

Heritage status and significance	The former CSIRO Yarralumla site currently has two listings on the CHL including the Australian Forestry School (former) (Place ID 105426) and the CSIRO Forestry Precinct (Place ID 105595). While the architectural style of the buildings, particularly the former Australian Forestry School, contributes to the significance of precinct, so does its association with former students and scientists, and their scientific achievements.
Description	The CSIRO Forestry Precinct comprises a purpose-built complex of buildings and associated infrastructure related to the Commonwealth's Forestry and Timber Bureau. The precinct formed an important national scientific institution

Heritage status and significance	The former CSIRO Yarralumla site currently has two listings on the CHL including the Australian Forestry School (former) (Place ID 105426) and the CSIRO Forestry Precinct (Place ID 105595). While the architectural style of the buildings, particularly the former Australian Forestry School, contributes to the significance of precinct, so does its association with former students and scientists, and their scientific achievements.
	and demonstrates the Commonwealth's interest in scientific endeavour and the vision of Canberra as the location for science, as well as general government administration.
Intactness and condition	The site is no longer leased or maintained by the CSIRO. The condition of the site is not known.
Current use	The CSIRO Yarralumla site was used by CSIRO for various office-based and scientific activities. The CSIRO lease expired in June 2022. The current site managers are seeking planning approval for the redevelopment of the site into a mixed-use residential precinct.

3.7.2 CSIRO Ginninderra

Heritage status and significance	The CSIRO Ginninderra site is not included on any heritage registers. A Heritage Assessment prepared for the site by ERM (2014) found that the site has important historic heritage values in relation to the Charnwood Homestead site, which has archaeological potential that may provide insight into nineteenth-century history and the use of the local area. The site has potential aesthetic significance to the local community arising from its landscape characteristics; however, this has not been determined through a social significance assessment. The site is also known to contain Indigenous and natural heritage values of significance.
Description	The CSIRO Division of Plant Industry established a Plant Industry Experimental Site at Ginninderra in the late 1950s, where it undertook research into various crops in support of the Australian agricultural industry. Several buildings present at the CSIRO Ginninderra site were functional in nature and include various sheds, vehicle shelters, animal pens and a small number of residences for site managers and overseers. These buildings were constructed on-site from the late 1950s onwards. Several Aboriginal and historic heritage sites have also been recorded at the CSIRO Ginninderra site including stone artefact sites, the Charnwood Homestead site, historic tree markers and historic artefact scatters, including ceramics, broken ceramics and glass.
Intactness and condition	The condition of the CSIRO Ginninderra site is not known. In 2023 CSIRO commenced a program of removing up to ten buildings to prepare the property for proposed future urban redevelopment.
Current use	The CSIRO Ginninderra site is located on Commonwealth land. In 2011, CSIRO identified that the property was underutilised for agricultural research. In 2016, the site was reclassified as 'Urban' on the General Policy Plan for Metropolitan Canberra through an Amendment to the National Capital Plan. The re-zoning has paved the way for CSIRO to approach the market and

Heritage status and significance	The CSIRO Ginninderra site is not included on any heritage registers. A Heritage Assessment prepared for the site by ERM (2014) found that the site has important historic heritage values in relation to the Charnwood Homestead site, which has archaeological potential that may provide insight into nineteenth-century history and the use of the local area. The site has potential aesthetic significance to the local community arising from its landscape characteristics; however, this has not been determined through a social significance assessment. The site is also known to contain Indigenous and natural heritage values of significance.
	identify interest in a sustainable urban development informed by science and innovation. The research activities have now been relocated to a new purpose-built facility and station at Boorowa, NSW and CSIRO are commencing a process to refer the divestment of the site to the Minister for the Environment and DCCEEW.

3.7.3 Former CSIRO Gungahlin (Crace)

Heritage status and significance	Gungahlin Homestead is included on the CHL in two overlapping listings, Gungahlin Homestead and Landscape (Place ID 105437) and Gungahlin Complex (Place ID 105434). The Gungahlin Complex listing primarily covers the house, outbuildings and carriageway, while the Homestead and Landscape listing covers the whole site. The site is important for its ability to convey a history of rural property living within its former use as a national research station, encompassing major changes of homestead architecture resulting from economic booms. It is also important for its association with Federation; it is one of few two-storey late nineteenth-century country estates of the pre-Canberra rural district. The site's use as a CSIRO facility has not been formally identified in the values.
Description	The former CSIRO Gungahlin site comprises the Gungahlin Homestead and various buildings, associated landscapes and infrastructure for use as a scientific wildlife research station. Gungahlin is a former pastoral property homestead landscape that has been adapted for use as a scientific wildlife research station. The site comprises a complex of buildings, a carriage way and carriage loop with tree plantings, former garden areas and former paddocks with remnant dams and water race.
Intactness and condition	The original homestead and outbuildings, including their internal and external features and fabric, are highly significant and must be maintained and conserved. The CSIRO constructed facilities are in good condition.
Current use	From the 1950s onwards, it was owned and managed by CSIRO and was divested to a private owner in 2002. CSIRO's existing 20-year lease for the site is now coming to an end and the organisation is expected to vacate the property in 2024.

3.7.4 Conclusions of comparative analysis

The CSIRO Black Mountain site is comparable to the heritage values and attributes of the other former or current CSIRO sites at Yarralumla, Ginninderra and Gungahlin (Crace).

The sites share long histories of use by CSIRO for scientific research. Their landscapes have been adapted and buildings established for these purposes. All of these CSIRO sites have been adapted throughout the twentieth century until the present, including the demolition and construction of buildings in response to developments in research activities.

The three CSIRO sites that were reviewed above were established at existing pastoral or research sites—Yarralumla at the Forestry School, which was acquired by CSIRO in 1975; Ginninderra at the Charnwood Homestead, which was acquired in the 1960s; and the former Gungahlin Homestead, acquired in the 1950s. In contrast, CSIRO Black Mountain is unique in that it was established on an unoccupied site that was not previously associated with a research body or established homestead.

The other sites contain buildings that have been adapted to suit the needs of CSIRO research endeavours, whereas all buildings at Black Mountain were purpose-built for specific research purposes. Some of the buildings present at the study area date from the late 1920s and early 1930s and have been continuously adapted for changes in technological requirements.

CSIRO Black Mountain and the former Australian Forestry School are similar in that elements of their sites were designed by the FCC. Characteristics of the inter-war Stripped Classical style that was employed by the FCC are evident in both the Forestry School and the Foundation Building at Black Mountain. While the FCC designed the Forestry School building prior to the CSIRO's acquisition of the site, the principal characteristics of the FCC and its favoured architectural style is evident at both sites.

While the CSIRO have occupied numerous sites across the ACT, research activities at other ACT sites have been reduced or ceased in full, leaving CSIRO Black Mountain as a focal point for the organisation in the region. CSIRO Black Mountain is rare in that it has operated as a fully functional research site that has continued to be adapted to suit contemporary needs. With the changing needs of the organisation, the attributes of CSIRO Black Mountain have become rare in the Canberra context.

3.8 Endnotes

[1] NSW Office of Environment and Heritage 2016, 'Soil Landscapes of the Australian Capital Territory'.

[2] Gillespie, L 1979 'Aborigines of Canberra and nearby areas'. *Canberra Historical Journal* Vol 4. P 20.

[3] Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT, p 47.

[4] Moss, HP 1939, 'Evidences of Stone Age Occupation of the Australian Capital Territory', *Report of the Congress (ANZAAS) Vol 24*, pp 163–165.

[5] Estcourt G 2007, 'Indigenous Heritage Study—Stage 1 Overview of ANU Properties', unpublished report to ANU Green, p 6.

[6] Estcourt G 2007, 'Indigenous Heritage Study—Stage 1 Overview of ANU Properties', unpublished report to ANU Green: in this quotation, Estcourt references Bindon 1973 and Freeman Collett 1993.

[7] Estcourt G 2007, 'Indigenous Heritage Study—Stage 1 Overview of ANU Properties', unpublished report to ANU Green.

[8] Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT, p 31.

[9] Flood, J 1980, *The Moth Hunters*, published by Australian Institute of Aboriginal Studies, Canberra.

[10] Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT p 48.

[11] Gillespie 1984 in Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT p 51.

[12] Kabaila, PR 1997, *Belconnen's Aboriginal Past: a Glimpse into the Archaeology of the Australian Capital Territory*, published by Black Mountain Projects Pty, Ltd, ACT, p 48.

[13] Barz, R 1985, 'An Archaeological Survey of the site of the proposed extension to the Australian National Botanic Gardens, Canberra', as reported in the ACT Heritage Register: note that the Register attributes the authorship as 'Barx'.

[14] Officer, K 1995, 'Aboriginal Archaeological Survey, Proposed Nursery and Depot Complex', ANBG, Canberra, as reported in the ACT Heritage Register.

[15] Navin Officer 2003, 'Investigations of Aboriginal Heritage Places along fire trails in Canberra Nature Parks', unpublished report to ACT Heritage Unit, as reported in the ACT Heritage Register.

[16] Navin Officer 2003, 'Investigations of Aboriginal Heritage Places along fire trails in Canberra Nature Parks', unpublished report to ACT Heritage Unit, as reported in the ACT Heritage Register.

[17] Navin Officer 2003, 'Investigations of Aboriginal Heritage Places along fire trails in Canberra Nature Parks', unpublished report to ACT Heritage Unit, as reported in the ACT Heritage Register.

[18] Navin Officer 2003, 'Investigations of Aboriginal Heritage Places along fire trails in Canberra Nature Parks', unpublished report to ACT Heritage Unit, as reported in the ACT Heritage Register.

[19] Streat Archaeological Services 2015, 'Proposed Development at CSIRO Black Mountain Laboratories, Clunies Ross Street, Acton ACT: Aboriginal Archaeological and Cultural Heritage Assessment', report for Rappoport Heritage Consultants.

[20] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p 26.

[21] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p 26.

[22] Australian Heritage Database, Department of Climate Change, Energy, the Environment and Water, 'Phytotron, Julius St, Acton, ACT, Australia', Australian Heritage Database, viewed at http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105560, accessed 17 July 2023.

[23] Australian Heritage Database, Department of Climate Change, Energy, the Environment and Water, 'Phytotron, Julius St, Acton, ACT, Australia', Australian Heritage Database, viewed at: http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105560, accessed 17 July 2023.

[24] Australian Heritage Database, Department of Climate Change, Energy, the Environment and Water, 'Kurrajong Trees & Incense Cedar, Dickson Way, Acton, ACT, Australia', viewed at: http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=102827, accessed 17 July 2023.

[25] CSIRO, 2013 *CSIRO's other icon celebrates 50 years*, viewed at: https://csiropedia.csiro.au/csiros-other-icon-celebrates-50-years/, accessed: 23 July 2023.

[26] CSIRO Annual Report 1980/81, p 84; 'CSIRO Annual Report 1984/85', p 14., as referenced in Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p 15.

[27] Australian Institute of Architects ACT Chapter, 2009 ACT Architecture Awards, p11.

[28] Umwelt 2022, 'Heritage Impact Assessment CSIRO Black Mountain F.C. Pye Laboratory (Building 019)', prepared for CSIRO, p 16.

[29] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared by for CSIRO, p 21.

[30] 'CSIRO Twenty-fourth Annual Report 1971/72', p 12; Collis, *Fields of Discovery*, pp 71–77 as referenced in Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p 18.

[31] CSIRO 2011, CSIROpedia, *Douglas Frew (Doug) Waterhouse [1916–2000]*, Accessed: 24 May 2023, https://csiropedia.csiro.au/waterhouse-douglas-frew/.

[32] Coresearch, *Fresco Painted for Land Research Division,* May 1964, Vol 62, p 2, accessed 24 May 2023, https://csiropedia.csiro.au/wp-content/uploads/2018/09/coresearch_1964.pdf.

[33] Lee, KE 1988, 'A history of the CSIRO Division of Soils: 1927–1997 CSIRO Land and Water, Adelaide Technical Report 43/98', November 1998 https://publications.csiro.au/rpr/download?pid=legacy:853&dsid=DS1, p 21.

[34] Duncan Marshall, Madeleine Maple, Alistair Grinbergs, Brendan O'Keefe, Michael Pearson 2005, 'CSIRO Black Mountain Heritage Study', prepared for CSIRO, p 40.

[35] NSW Office of Environment and Heritage, 'Heritage Terms and Abbreviations', p 8.

[36] Department of the Environment and Energy 2004, 'The CSIRO Forestry Precinct, Banks St, Yarralumla, ACT, Australia', Australian Heritage Database.

[37] CSIRO Ginninderra, 'Building removals underway on Ginninderra', May 2023, accessed 20 July 2023, https://ginninderraproject.com.au/building-removals-underway-on-ginninderra/.

4 Heritage significance

4 Heritage significance

CSIRO Black Mountain contains two Commonwealth Heritage List (CHL) places which meet the criteria:

- Main Entomology Building (CSIRO Foundation Building)—criteria a) processes or historic, and d) characteristic.
- Phytotron (Phytotron and Phenomics Centre)—criteria a) processes or historic, b) rarity, f) technical and h) significant people.

This section presents the existing Commonwealth Heritage assessment for the two CHL places alongside an updated assessment of the Commonwealth Heritage values of the CSIRO Black Mountain site as a whole, covering Indigenous and historic heritage values. The assessment has drawn on the findings of the 2017 ERM HMP, however further detail and analysis of the values has been provided in this update.

The clear presentation of these values provides CSIRO with a comprehensive understanding of all heritage values, which in turn allows for appropriate management policies to be developed (Section 5), prepared and implemented (Section 6).

4.1 Commonwealth Heritage values

The following provides the official values for the two CHL places at the CSIRO site: the Main Entomology Building and the Phytotron.

4.1.1 Main Entomology (Foundation) Building

Table 4.1 Official Commonwealth Heritage values of the Main Entomology Building, now known as the CSIRO Foundation Building.

Commonwealth Heritage criteria	Assessment against the criteria
Criterion (a) ***Processes***	***The place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history.***
Official Statement	Main Entomology Building: The Main Entomology building is significant for its association with the history of Commonwealth scientific research, particularly the scientific work of the Division of Entomology and the Division of Plant Industry. It is associated with basic entomological scientific work including taxonomic work and the Australian National Insect Collection, which are of international standing, as well as applied work on veterinary entomology and the biological control of weeds.

Commonwealth Heritage criteria	Assessment against the criteria
	The building is associated with early scientific endeavour in Canberra and the earliest phase of the development of the then CSIR (now the CSIRO). It is also significant as the first purpose-built laboratory complex for the CSIR and is one of at least five scientific buildings established in the Australian Capital Territory by the Commonwealth up to 1950. Attributes: The whole building, particularly the original parts associated with the Council of Scientific and Industrial Research (CSIR).
Criterion (b) ***Rarity***	***The place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.***
Official Statement	Not listed under this criterion.
Criterion (c) ***Research Potential***	***The place has significant heritage value because of the place's importance to yield information that will contribute to an understanding of Australia's natural or cultural history.***
Official Statement	Not listed under this criterion.
Criterion (d) ***Characteristic***	***The place has significant heritage value because of the place's importance in demonstrating the principal characteristics of:*** ***i. a class of Australia's natural or cultural places; or*** ***ii. a class of Australia's natural or cultural environments.***
Official Statement	The Main Entomology Building is a good example and one of nine examples in Canberra of the Inter-War Stripped Classical Style. The 1956 central block, while later than the 1929-30 wings, generally continues and is sympathetic to the style of the wings. Attributes: The architectural style and detail of the whole building, particularly the 1929-30 wings.
Criterion (e) ***Aesthetic***	***The place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics values by a community or cultural group.***
Official Statement	Not listed under this criterion.
Criterion (f) ***Creative or Technical Achievement***	***The place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.***
Official Statement	Not listed under this criterion.
Criterion (g) ***Social Values***	***The place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.***
Official Statement	Not listed under this criterion.

Commonwealth Heritage criteria	Assessment against the criteria
Criterion (h) ***Significant People***	***The place has significant heritage value because of the place's special association with the life or works, or group of persons, of importance in Australia's natural or cultural history.***
Official Statement	Not listed under this criterion.
Criterion (i) ***Indigenous Tradition***	***The place has significant heritage value because of the place's importance as part of Indigenous tradition.***
Official Statement	Not listed under this criterion.

4.1.2 Phytotron

Table 4.2 Official Commonwealth Heritage values of the Phytotron, now known as the Phytotron and Phenomics Centre.

Commonwealth Heritage criteria	Assessment against the criteria
Criterion (a) ***Processes***	***The place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history.***
Official Statement	The CSIRO Phytotron has been associated with the specific scientific work of the Division of Plant Industry that included the study of pasture development diseases in tobacco and other crops, the analysis of the control of flowering plants, and the nature and improvement of yield potential. Some of this work is considered to be of international standing. The phytotron demonstrates a major step in the development of the scientific study of plant adaptation to climate and other environmental variables with all previous studies conducted 'in the field'. The Phytotron is of importance as one of a group of major expensive scientific facilities of the post-war Commonwealth Government scientific endeavour that include the Parkes radio telescope, Homopolar Generator at ANU and the Lucas Heights reactor. Attributes: The whole of the building that has enabled research and scientific study to be undertaken.
Criterion (b) ***Rarity***	***The place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.***
Official Statement	The CSIRO Phytotron, a building in which plants can be grown in controlled climatic conditions, was built in 1962, and was the third major phytotron in the world. As no further major phytotrons were developed after the 1970s, due to a change in the study of plant adaptation, and with several other phytotrons now demolished, the CSIRO Phytotron is a rare, early surviving example of a large scale phytotron which combines glasshouses and controlled environment cabinets.

Commonwealth Heritage criteria	Assessment against the criteria
	Attributes: The original form and fabric of the Phytotron including its large scale and glasshouses in combination with controlled environment cabinets.
Criterion (c) ***Research Potential***	***The place has significant heritage value because of the place's importance to yield information that will contribute to an understanding of Australia's natural or cultural history.***
Official Statement	Not listed under this criterion.
Criterion (d) ***Characteristic***	***The place has significant heritage value because of the place's importance in demonstrating the principal characteristics of:*** ***i. a class of Australia's natural or cultural places; or*** ***ii. a class of Australia's natural or cultural environments.***
Official Statement	Not listed under this criterion.
Criterion (e) ***Aesthetic***	***The place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics values by a community or cultural group.***
Official Statement	Not listed under this criterion.
Criterion (f) ***Creative or Technical Achievement***	***The place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.***
Official Statement	Although influenced by the two preceding phytotrons located in Pasadena, USA and Paris, France, the CSIRO design was the first to use large controlled temperature glass houses in combination with control environment cabinets. It has technical importance for its early use of solar panels. Attributes: Its use of controlled temperature glasshouses in combination with control environment cabinets. Also, its early use of solar panels.
Criterion (g) ***Social Values***	***The place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.***
Official Statement	Not listed under this criterion.
Criterion (h) ***Significant People***	***The place has significant heritage value because of the place's special association with the life or works, or group of persons, of importance in Australia's natural or cultural history.***
Official Statement	The Phytotron is important for its association with the designer Roy Grounds. Although not a major example of the Post-War modern architectural styles or Grounds' architectural work, it well demonstrates Grounds' design skills with its innovative laboratory functional features and the modern style architectural expression of the building with its smooth wall surfaces and cubiform patterning in the sunhoods.

Commonwealth Heritage criteria	Assessment against the criteria
	Attributes The innovative laboratory functional features and the modern style architectural expression of the building with its smooth wall surfaces and cubiform patterning in the sunhoods.
Criterion (i) ***Indigenous Tradition***	***The place has significant heritage value because of the place's importance as part of Indigenous tradition.***
Official Statement	Not listed under this criterion.

4.2 Heritage assessment of the whole site

An assessment of the whole CSIRO Black Mountain site against the CHL significance criteria is provided in the following table. To be included in the CHL, a place must have significant heritage value. A place has to meet one or more of the CHL criteria to have Commonwealth Heritage value.

4.2.1 Heritage values analysis

This section of the report analyses the heritage values of CSIRO Black Mountain against each of the nine Commonwealth Heritage criteria. It covers both Indigenous and historic heritage values.

Table 4.3 Assessment of the whole CSIRO site against Commonwealth Heritage criteria.

Commonwealth Heritage criteria	Assessment against the criteria
Criterion (a) **Processes**	***The place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history.***
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** The CSIRO Black Mountain site is of importance in the course of Australia's cultural history as it demonstrates the Commonwealth Government's effort to establish a scientific research centre in the new national capital. It is important as an embodiment of the ideal of national science being vital to the nation's economic progress. Its establishment in Canberra demonstrates how this view was held by Prime Minister WM Hughes and his successor SM Bruce. The CSIRO Black Mountain site is important as a place designed and built as part of the Federal Capital Commission phase of development in

Commonwealth Heritage criteria	Assessment against the criteria
	Canberra. It is also important for its association with the Griffins' plan for the national capital as it stands at the terminus of the municipal axis, which had been reserved for institutes of higher learning and again demonstrates the importance of the then-CSIR in the Government's nation-building ambitions. Several significant breakthroughs have been made at the site which have influenced the agriculture industry and Australia more broadly. In addition to the significance of the site as a whole, individual buildings have significant historical associations in their own right. Major developments include: • research into the dung beetle prior to its introduction to Australia to control fly populations; • insecticide to manage pests in Australian grain which saved the nation's wheat export industry; • the invention of Aerogard; • participation of Phytotron and Phenomics Centre scientists in the first live, multinational TV broadcast; and • housing a Control Data Corporation CDC 3600 computer, then one of the most powerful computers in the world, amongst others. The site has been continuously used since the 1930s and adapted to suit contemporary scientific research requirements. It continues to provide a research environment for scientific achievements. Numerous plantings across the site may date from the early establishment of the CSIR, including Italian or Roman cypresses, Lombardy poplars, kurrajongs and a California incense cedar. These are of historical significance and demonstrate ambitions held by early CSIR and CSIRO staff to beautify the site. CSIRO was the first federal government agency to build childcare facilities for the children of its staff. The Black Mountain centre was the first of these, with others soon following in Sydney and Melbourne. The childcare centre is significant as it was established with the hope that the provision of childcare facilities on-site at CSIRO establishments would encourage more women to pursue careers in science. Attributes are as follows: • the continuous function and use of the site by CSIRO for ongoing scientific research; • the whole of the site, including the setting and location adjacent to the Australian National University and at the terminus of the municipal axis and within the slope of Black Mountain; • the general site layout, including the park-like character of the site with wide setbacks, large areas of open space, substantial specimen trees, and buildings within the open landscape setting; and • the individual buildings and landscape elements ranked as being of low, moderate and high significance in Table 4.5 and Table 4.6. CSIRO Black Mountain meets this criterion.

Commonwealth Heritage criteria	Assessment against the criteria
Criterion (b) **Rarity**	***The place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.***
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** CSIRO Black Mountain is rare in the ACT as a purpose-built and continuously used research facility for the CSIRO. Unlike other CSIRO sites in the ACT, Black Mountain was established on an undeveloped site and all buildings were constructed to the specific requirements of scientists. The continued use of the site since its establishment in the 1920s and its sustained occupation and ongoing development to suit contemporary research needs is unusual. As a component of the CSIRO Black Mountain site, the Phytotron and Phenomics Centre is a rare and early example of a large scale phytotron which combines glasshouses and controlled environment cabinets. In addition, it is possible that some of the research equipment used at CSIRO Black Mountain is uncommon or rare but additional research would be needed to confirm this. Attributes are as follows: • the continuous function and use of the site by CSIRO for ongoing scientific research; • the ongoing adaptation of the site for changing needs; • the evidence of the FCC's involvement in the early design including the Foundation Building; • the general site layout; and • the Phytotron and Phenomics Centre. CSIRO Black Mountain meets this criterion.
Criterion (c) **Research Potential**	***The place has significant heritage value because of the place's importance to yield information that will contribute to an understanding of Australia's natural or cultural history.***
Assessment against criteria	**Indigenous:** The nature, extent and significance of PAD BM2 is unknown at this stage and therefore should be assumed to have some significance until demonstrated otherwise. As an archaeological deposit, PAD BM2 would meet criterion c) scientific—having the potential to yield information that could contribute to an understanding of Australia's natural or cultural history. Archaeological deposits in this PAD may provide further detailed scientific information on the Aboriginal use of this landscape. CSIRO Black Mountain meets this criterion for its Indigenous heritage values. Attributes: PAD BM2 (including CSIRO BMIF1). **Historical:**

Commonwealth Heritage criteria	Assessment against the criteria
	CSIRO Black Mountain is unlikely to yield new information that would contribute to an understanding of Australia's cultural history. Information regarding the operation of the site and the research undertaken in its laboratories is well documented. CSIRO Black Mountain does not meet this Commonwealth Heritage criterion.
Criterion (d) **Characteristic**	***The place has significant heritage value because of the place's importance in demonstrating the principal characteristics of:*** ***i. a class of Australia's natural or cultural places; or*** ***ii. a class of Australia's natural or cultural environments.***
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** CSIRO Black Mountain clearly demonstrates the principal characteristics common to CSIRO's scientific research facilities around Australia. Each CSIRO research facility has distinct functions and, over decades, each has evolved to develop its own characteristics associated with purpose-built structures and infill. At Black Mountain, the undeveloped site allowed for site planning by the FCC to suit the needs and expectations of the then CSIR and the Divisions of Entomology and Plant Industry, of which some remains. The design and construction of the individual buildings across the sloped site represent the historic phases of development of the site and of CSIRO. While the site has adapted to changing technology since the early twentieth century and many buildings have been disposed of, the extant buildings demonstrate key phases of development, including the site's establishment and the FCC period (eg the North and South wings and the position of the site on the municipal axis); the change to the CSIRO (eg Central Block) and the major funding boost to projects of the 1950s and 1960s (eg Phytotron and Phenomics Centre); and later developments such as the concerted effort to encourage women to pursue careers in science (eg childcare). Numerous on-site buildings demonstrate key characteristics of style and periods of architecture, such as: • F.C. Pye Field Laboratory (Building 019) is significant as an example of late twentieth-century international style of architecture and demonstrates characteristic cubiform shape, smooth wall surfaces and 'Corbusian' window motifs. • Stored Grain Research Laboratory (Building 135) displays some characteristics of the late twentieth-century Stripped Classical style of architecture. • Library (Building 060) is significant as an example of the late twentieth-century Brutalist style, with boldly composed strong shapes, large areas of blank wall and precast concrete walls. Attributes are as follow: • the general site layout; and

Commonwealth Heritage criteria	Assessment against the criteria
	• individual buildings and cultural plantings that demonstrate the periods of development and key characteristics. CSIRO Black Mountain meets this criterion.
Criterion (e) **Aesthetic**	***The place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics values by a community or cultural group.***
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** The CSIRO Black Mountain has not been formally tested against this criterion for the aesthetic characteristics and value held by communities or cultural groups. However, it is likely that, if tested, there may be aesthetic characteristics valued by a community or cultural group. CSIRO Black Mountain contains numerous historical plantings from the early phases of the site's development in the 1930s. These, and subsequent plantings, contribute to the site's visual setting and include garden plantings and Lombardy poplars along the southern elevation of Building 101, which contribute to the site's visual setting and views from Clunies Ross Street. The setting and views provided by these plantings have both aesthetic and historic significance as they were established in the 1930s, during a development phase of the site, and demonstrate efforts to beautify the site. Pin oaks present along the eastern side of Dickson Way also contribute to the site's visual setting. Further north, along Christian Road, mature pine trees are also present and are valuable for their associations with the historical development of the site. At this stage, CSIRO Black Mountain has not been found to meet this Commonwealth Heritage criterion.
Criterion (f) **Creative or Technical Achievement**	***The place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.***
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** CSIRO Black Mountain, including the existing laboratories and office buildings, do not demonstrate a high degree of creative or technical achievement. The buildings have been purpose built to meet technical requirements for scientific functions. They reflect the materials and style of the period and some have undergone alteration and refurbishment, diminishing the integrity of the original buildings. It is possible that some of the research equipment used at the site demonstrates a high degree of technical achievement, but additional research is needed to confirm this.

Commonwealth Heritage criteria	Assessment against the criteria
	At this stage CSIRO Black Mountain does not meet this Commonwealth Heritage criterion.
Criterion (g) **Social Values**	**The place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.**
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** CSIRO Black Mountain has had a strong, continuing association with CSIRO researchers and other staff employed over many years. In addition, public visitation to the Discovery Centre may warrant exploration. However, a formal evaluation of community-held social value would need to be undertaken to prove that the site is valued. At this stage, CSIRO Black Mountain has not been found to meet this Commonwealth Heritage criterion.
Criterion (h) **Significant People**	**The place has significant heritage value because of the place's special association with the life or works, or group of persons, of importance in Australia's natural or cultural history.**
Assessment against criteria	**Indigenous:** The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** CSIRO Black Mountain is associated with the CSIRO, a nationally important research organisation that has played a significant role in the research and advancement of science and technology in Australia. CSIRO Black Mountain is associated with important figures in scientific research, including politicians, researchers and donors: • F.C. Pye, who donated an 8600 acre property near Stockinbingal for CSIRO to use for agricultural research. • Robert Ingpen AM, who was the creator of the Land Research Mural in Building 201 and the replica in the Discovery Centre (Building 702). • Dr Bertram Thomas Dickson, the first Chief of Division of Plant Industry (1927–1951). • Dr (later Sir) Otto Frankel, the Chief of the Division of Plant Industry (1951–1962). • Jim Desmarchelier, who devised an insecticide cocktail to kill insect pests in Australian grain, an innovation that saved the nation's wheat export industry. • Doug Frew Waterhouse, Chief of the Division of Entomology for 21 years until his retirement in 1981. • Numerous other associations such as C.S. Christian, Bruce Butler, and many others not described here.

Commonwealth Heritage criteria	Assessment against the criteria
	Attributes are as follows: • the site layout, including named buildings; • Robert Ingpen Land Research Mural; and • plantings associated with Dickson.
Criterion (i) **Indigenous Tradition**	**The place has significant heritage value because of the place's importance as part of Indigenous tradition.**
Assessment against criteria	**Indigenous:** The scarred tree, now removed and lying behind Building 216, is a tangible manifestation of the traditional use of the area by Aboriginal people in the past. However, its condition means that it is no longer able to convincingly communicate that tradition. The Indigenous heritage values of CSIRO Black Mountain do not meet this criterion. **Historical:** The historical heritage values of CSIRO Black Mountain do not meet this criterion.

4.2.2 Summary assessment findings

The assessment above finds that CSIRO Black Mountain possesses heritage values that meet Commonwealth Heritage criterion a), b), c), d) and h) and meets the threshold for listing, as a whole, on the CHL.

The isolated Aboriginal archaeological artefact (CSIRO BMIF1), while being a tangible reminder of the occupation of the area by Aboriginal people in the past, will not meet the threshold for inclusion on the Commonwealth Heritage values.

A statement of significance for the site as a whole is provided below.

Statement of significance—whole CSIRO Black Mountain site

The CSIRO Black Mountain site is of historical importance as part of Australia's cultural history as it demonstrates the Australian Government's effort to establish a scientific research centre in the new national capital. As a major component of the national scientific organisation, its establishment in Canberra demonstrates the ideal of a national science program being vital to the nation's economic progress—a view held by Prime Minister William (Billy) Morris Hughes and his successor Stanley Melbourne Bruce.

The CSIRO Black Mountain site is important as a place designed and built as part of the FCC phase of development in Canberra. It is also important for its association with the Griffins' plan for the national capital as it stands at the terminus of the municipal axis,

which had been reserved for institutes of higher learning and again demonstrates the importance of the CSIR in the Government's nation–building ambitions.

The scientific breakthroughs that have been achieved by CSIRO researchers at Black Mountain are highly significant and have influenced the agricultural industry and Australia more broadly.

CSIRO Black Mountain, as a purpose-built and continuously used CSIRO research facility, has become increasingly rare in the ACT. Unlike other CSIRO sites in the ACT, Black Mountain was established on an undeveloped site and all buildings were constructed to the specific requirements of scientists. The continued use of the site since its establishment in the 1920s and its sustained occupation and ongoing development continues to enable a legacy of scientific achievements.

CSIRO Black Mountain clearly demonstrates the principal characteristics common to CSIRO's scientific research facilities around Australia. Each CSIRO research facility has distinct functions and, over decades, each site has evolved to develop its own characteristics associated with purpose-built structures and infill. At Black Mountain, the undeveloped site allowed for site planning by the FCC to suit the needs and expectations of the then-CSIR and the Divisions of Entomology and Plant Industry, of which some remain and have continued to adapt to changing technology.

The design and construction of the individual buildings across the Black Mountain site represent historic phases of the development of the site and CSIRO. While the site has adapted and many earlier buildings have been disposed of, the extant buildings demonstrate key phases of development, including the site establishment and the FCC period, the change to the CSIRO, the major funding boost to projects of the 1950s and 1960s and later developments such as the concerted effort to encourage women to pursue careers in science.

CSIRO Black Mountain is associated with the CSIRO, a nationally important research organisation that has played a significant role in the research and advancement of science and technology in Australia. The site, and its buildings, are associated with important figures in scientific research, including politicians, researchers, and donors.

The nature, extent and significance of PAD BM2 is unknown at this stage and therefore should be assumed to have some significance until demonstrated otherwise. As an archaeological deposit, PAD BM2 meets criterion c) scientific—having the potential to yield information that could contribute to an understanding of Australia's natural or cultural history. Archaeological deposits in this PAD may provide further detailed scientific information on the Aboriginal use of this landscape.

4.3 Heritage attributes

The above significance assessment of the CSIRO Black Mountain site identifies that, in addition to the two existing CHL places, the site as a whole is of Commonwealth Heritage value. These values are embodied in the fabric of the place itself, its uses, associations and meanings, as well as its visual and aesthetic qualities and the reaction that the site (or its individual elements) evokes in people who regard it as important.

Different components of a place may make different relative contributions to its heritage value. Loss of integrity of components of the place may also diminish significance. Table 4.5 sets down some of the attributes that contribute to the overall heritage value of CSIRO Black Mountain.

4.3.1 Ranking of Significance

To assist in the management of heritage attributes and elements that make up the heritage values of Black Mountain, the elements of the site have been ranked by significance.

Understanding the significance and contribution of various features of the site enables an informed approach to heritage conservation and management. The following rankings have been used to assist with assessing the contribution that individual attributes/elements make to the potential Commonwealth Heritage values of the site. An explanation of significance rankings is provided in Table 4.4. To provide clarity for CSIRO site managers the management requirements for each ranking of significance is included in this table, refer to Policy 2.1 for the full explanation of the requirements. The rankings are applied to the built elements in Table 4.5 and landscape elements in Table 4.6.

Table 4.4 Explanation of the heritage significance ranking.

Ranking	Explanation of heritage significance ranking	Management requirements, refer to Policy 2.1
High	The attribute/element makes an irreplaceable contribution to the significance of the place as a whole. Without this attribute/element, the significance of the place is diminished. Loss or unsympathetic alteration would diminish the heritage values of the place. Generally, these elements include a high degree of original fabric or attributes with heritage values and may include intangible components such as views and functional relations, which directly contribute to their values.	For buildings/elements of **high significance**, retain and conserve these with the aim of retaining the maximum amount of original fabric in its original form where possible and enhancing heritage significance. Alteration or removal may be justified in the case of extraordinary or major unforeseen events, or if it can be demonstrated that it would be essential for critical maintenance

Ranking	Explanation of heritage significance ranking	Management requirements, refer to Policy 2.1
		or operation CSIRO Black Mountain.
Moderate	The attribute/element makes an important contribution to the significance of the place as a whole. Without this element the significance of the place may be diminished. Loss or unsympathetic alteration is likely to diminish the heritage values of the place.	For buildings/elements of **moderate significance,** retain and conserve the element and/or fabric. Alteration or removal may be justified if it is important to allow for a compatible use, if it can be demonstrated that it is necessary to the conservation of the place in another way, if it would enhance heritage significance, or if it is important for the maintenance of Black Mountain.
Low	The attribute/element makes an important contribution to the significance of the place as a whole. Without this element the significance of the place as a whole may not be diminished, provided mitigation measures are implemented.	For elements of **low significance,** retain and conserve the element or fabric, but adaptation, modification or removal could proceed if it will result in a demonstrable benefit. Alteration or removal may be justified if there is direct benefit to elements of high significance, or if it is importance for maintenance of CSIRO Black Mountain.
Neutral	The attribute/element does not embody, reflect or demonstrate heritage values. The element does not contribute to the heritage values of the site, nor does it detract from the overall heritage values of the place.	For buildings/elements of **neutral significance,** elements or fabric may be removed, altered or replaced.
Intrusive	The attribute/element detracts, or has the potential to distract, from the significance of the place.	For buildings/elements **intrusive to the significance,** elements or fabric may be removed, altered or replaced.

Table 4.5 Significance rankings for the built elements at CSIRO Black Mountain.

Building No.	Building name	Ranking of significance	Notes on significance
–	CSIRO Black Mountain as a whole site	Moderate (overall)	Identified to be of Commonwealth Heritage value overall.
002	Sir Otto Frankel Building	Moderate	Moderate significance as part of a large development program in the 1960s. Associated with Sir Otto Frankel.

Building No.	Building name	Ranking of significance	Notes on significance
005	Phytotron and Phenomics Centre	High	Individual CHL Place. Original interior and exterior fabric is highly significant, including but not limited to site orientation, glasshouses, rendered blockwork finish, original main entrance portico, concrete and aluminium window frames.
016	Prefab 2	Moderate	Rare remnant from the build-up of the site in the 1950s. One of two remaining prefab structures in this location demonstrating the lightweight construction types of the 1950s. Contributes to an understanding of the changing development periods and building types on site.
019	F.C. Pye Field Laboratory	High	Significant design merit and association with grazier FC Pye. Designed by notable firm Ancher, Mortlock, Murray and Woolley. Note that this building is approved under the EPBC Act for demolition.
019A	F.C. Pye Laboratory extension	Low	
060	Library	High	Significant design merit.
061	Animal House	Neutral	
065	Australian Tree Seed Centre	Neutral	
070	Potting shed	Neutral	
071	Pump House	Neutral	
072	Change rooms and toilets	Neutral	
073	Crop Adaptation Laboratory	Moderate	Potential design interest, expresses elements of functionalist style and late twentieth-century Brutalist style.
076	Polycarbonate Shadehouse	Neutral	
079	Sir Otto Frankel Building Extension	Moderate	Potential design interest.
083	Biosecure Glasshouse Facility	Low	
086	Seed Germination Store	Neutral	

Building No.	Building name	Ranking of significance	Notes on significance
087	Transgenic Glasshouse	Low	
088	Transgenic Glasshouse	Low	
089	Transgenic Glasshouse	Low	
090	Transgenic Glasshouse	Low	
091	Transgenic Glasshouse	Low	
092	Transgenic Glasshouse	Low	
095	Glasshouse	Low	
096	Glasshouse	Low	
097	Glasshouse	Low	
098	Glasshouse	Low	
099	Glasshouse	Low	
100	Glasshouse	Low	
101	Foundation Building	High	Individual CHL Place. Original interior and exterior fabric is highly significant, including but not limited to metal window frames, timber joinery, stair balustrades, terrazzo stair treads and risers, corridor cornices, reconstructed glass diffuser/skylight, wheat and scarab motifs, window arrangement, symmetrical façade, classical entablature, sandstone spandrel, balustrade, low-profile roof, central entrance.
112	Amenities block	Neutral	
113	Laboratory and Glasshouses	Neutral	
116	Flammable Store	Neutral	
135	Stored Grain Research Laboratory	Moderate	Demonstrates design merit and key characteristics of the late twentieth-century Stripped Classical style. Associated with the work of Jim Desmarchelier.
135A	Stored Grain Research Lab Extension	Low	
137	DF Waterhouse Laboratory	Moderate	Some design merit, displaying some elements of the late twentieth-century Stripped Classical style.

Building No.	Building name	Ranking of significance	Notes on significance
			Internally, the entrance foyer has design interest as a tall space with extensive timber lining. Associated with Doug Frew Waterhouse.
138	Quarantine Insectary	Neutral	
146	Offices	Neutral	
147	Glasshouse	Low	
148	Glasshouse	Low	
149	Glasshouse	Low	
150	ANIC and labs	Low	
151	Glasshouse	Low	
152	Glasshouse	Low	
154	Glasshouse Services Building	Neutral	
159	Store	Neutral	
163	Lunch and ablution unit	Neutral	
166	Store	Neutral	
167	Bulk store	Neutral	
169	Gas bottle store—north	Neutral	
170	Flammable liquids store	Neutral	
171	Dosing enclosure	Neutral	
173	Cryogenics Depot	Neutral	
177	Shadehouse	Neutral	
178	Shadehouse	Neutral	
179	Biosciences Laboratory	Neutral	
201	CS Christian Laboratory	Moderate	Demonstrates design merit. Associated with Clifford Stuart Christian. Note that this building is approved under the EPBC Act for demolition.
204	Headhouse	Neutral	

Building No.	Building name	Ranking of significance	Notes on significance
208	Australian National Soil Archive/Store	Neutral	
209	Lunchroom	Neutral	
210	Archives Store	Neutral	
211	Cropatron—APPF Glasshouse	Neutral	
216	National Bushfire Behaviour Research Laboratory	Neutral	
301	Bruce Butler Laboratory	Moderate	Design merit, displaying some characteristics of the late twentieth-century Brutalist style of architecture. Associated with Bruce Butler.
302	Prefab 3	Moderate	Rare remnant from the build-up of the site in the 1950s. One of two remaining prefab structures in this location demonstrating the lightweight construction types of the 1950s. Contributes to an understanding of the changing development periods and building types on site.
307	Store	Neutral	
308	Storage shed	Neutral	
309	Flammable liquids store	Neutral	
310	Butler gas store	Neutral	
313	Field Support Facility	Neutral	
313A	Field Support Carport	Neutral	
401C	Computer Wing Substation	Moderate	Some design merit with floating first-floor over creek.
401D	Generator Enclosure	Neutral	
502	Herbarium	Moderate	Associated with Dr Bertram Thomas Dickson, the Head of Division of Plant Industry, who initiated the national herbarium at Black Mountain in 1930.
502A	Herbarium extension	Neutral	
503	Store	Neutral	
504	Library and Archives Store	Neutral	

Building No.	Building name	Ranking of significance	Notes on significance
507	Guard House	Neutral	
508	Transportable	Neutral	
601	Child Care Centre	Moderate	This building was the place of the first federal government agency to build childcare facilities for the children of its staff to encourage women to pursue science.
602	Transportable	Neutral	
701	Glasshouse	Low	
702	Discovery Centre	High	The first centre devoted to showcasing Australian science and innovation.
706	Polyhouse	Neutral	
707	Polyhouse	Neutral	
708	Polyhouse	Neutral	
709	Polytunnel	Neutral	
710	Laboratory Gas Store	Neutral	
711	Bayer Glasshouse	Neutral	
801	Synergy Building	Neutral	
802	Bike Shed	Neutral	

The heritage values of the plantings and landscape elements have been ranked.

Table 4.6 Significance rankings for the landscape elements at CSIRO Black Mountain.

Name	Ranking
Italian cypresses, or Roman cypresses (*Cupressus sempervirens 'Stricta'*) in front of the Foundation Building (Building 101).	High
Lombardy poplars (*Populus nigra 'Italica'*) along Clunies Ross Street.	High
Flowering plums (*Prunus cerasifera 'Nigra'*) along the façade of the Foundation Building (Building 101).	Low
Group of kurrajong (identified as *Brachychiton populneus* ssp. *Triloba*) at the eastern corner of North Science Road and Dickson Way.	High
California incense cedar (*Calocedrus decurrens*) at the western corner of the Discovery Centre (Building 702).	High
Three cabbage trees (*Cordyline Australis*) at the entrance to the Phytotron and Phenomics Centre (Building 005).	High

Name	Ranking
Mature pin oaks (*Quercus palustris*).	Moderate
Row of gums along the eastern side of North Science Road.	Moderate
Row of radiata pines (*Pinus radiata*) near the powerline to the southeast of Building 504.	Low
A large yellow box (*Eucalyptus melliodora*) in the gravel area to the north of Bruce Butler Laboratory (Building 301). (May be a remnant from pre-CSIRO)	High

4.4 Condition of the heritage values

The EPBC Regulations, which govern the content of management plans for Commonwealth Heritage places, require that such plans include a description of these heritage values and their condition. Under the EPBC Act, managers of heritage places are required to establish the best means to assess and monitor the condition of heritage values, and a best practice approach is still evolving. Reviewing previous assessments of heritage values against existing heritage criteria makes it possible to monitor the condition of the heritage values over time, as this will reveal any changes to the presence or nature of heritage values.

In addition, the management of the heritage values should provide for regular monitoring and reporting on the conservation of the heritage values, which relies on an understanding of those values, along with their measuring and monitoring.

4.4.1 Methodology for assessing condition

The heritage values of CSIRO Black Mountain are embodied in the attributes of the place, which include both tangible and intangible aspects. Through these attributes, the site represents and demonstrates its heritage values. The heritage values of CSIRO Black Mountain including the Foundation Building and Phytotron and Phenomics Centre can be considered to be in good condition if they are well demonstrated and strongly manifest at the site. Values in good condition have not been weakened or lost their expression due to poor conservation; decay of fabric or social connections; intrusive elements that obscure the site's ability to express its values; or, ultimately, a loss of attribution of cultural significance to the site by the community.

The relationship between the condition and integrity of a heritage place (its attributes) can be an indicator of its health and the condition of heritage values:

> A place in good condition with a high degree of integrity of elements that contribute to significance will retain heritage values, while one in poor condition and with a with a low degree of integrity of significant features is likely to have lost heritage values to varying degrees. [1]

Therefore, consideration of both the condition and integrity of a heritage place's attributes is necessary in order to understand the condition of its heritage values.

Guidelines for judging the physical condition and integrity of heritage places and their attributes are outlined in Table 4.7. They have been adapted from the State of the Environment guidelines for assessing condition and integrity across a range of heritage places.[2]

Table 4.7 Criteria for assessing physical condition and integrity.

Physical condition (of fabric)	Integrity
Good The important features of a site, or place, are well maintained. For example, a garden is well kept, or a building is structurally sound, weathertight, and with no significant repair needed. Internally, walls, floors and joinery are well maintained.	**High** The features, or attributes, that contribute to the value of the place are very largely intact and not compromised by significant removals, modifications or additions.
Fair A site, or place, retains its important features, including landscape elements, vegetation, associated movable objects etc., but these are in need of conservation action and maintenance. For example, a building is structurally sound, but has inadequate maintenance and is in need of minor repair.	**Moderate** There has been some loss of important elements, or attributes, but the site or building still retains sufficient significant fabric for its values to be understood and interpreted. Intrusions are not substantial.
Poor A site, or place, demonstrates damage to, or loss of, significant fabric including landscape elements, movable objects, archaeological deposits, etc. For example, a building exhibits signs of damage from water penetration, rot, subsidence, fire damage etc. Internally, walls, floors or joinery are missing, or in dilapidated condition.	**Low** A site, or place, has had important features, or attributes, removed or substantially altered. For example, original cladding of the walls or roof may have been removed or destroyed, or re-arranged entirely, interiors may have been removed or destroyed, or re-arranged with the insertion of a new interior. Where the values of a site, or place, do not relate directly to fabric (such as in a place valued for its association with a historical event, or for community associations or use), judgement must be made on the impact of changes in diminishing the ability of the viewer to understand the associations of the place.

Assessment of condition and integrity of heritage values

This assessment of the condition of CSIRO Black Mountain's heritage values is based on a site inspection undertaken in May 2023. The condition of the listed Commonwealth Heritage values for the Foundation Building is presented in Table 4.8 and for the Phytotron and Phenomics Centre is presented in Table 4.9.

The condition of potential Commonwealth Heritage values is addressed in Table 4.10.

The site inspection involved a high-level review of the site and its fabric, but did not involve a detailed investigation of building conditions (including research or scientific equipment).

Table 4.8 Condition and integrity of the Foundation Building's Commonwealth Heritage values.

Criteria	Summary of Heritage Values	Relevant Attributes	Condition of Attribute	Integrity	Condition of value
(a) Processes	• The Foundation Building is of Commonwealth Heritage significance due to its association with the history of Commonwealth scientific research as well as for the work of the Divisions of Plant Industry and Entomology. • It is also significant as the first purpose-built laboratory complex for the CSIR.	• The whole building, particularly the original parts associated with the Council of Scientific and Industrial Research (CSIR).	Good	Moderate	Good
(f) Creative/ Technical Achievement	• The place is a good example and one of nine examples in Canberra of the inter-war Stripped Classical style. • The 1956 Central Block, while built later than the 1929–1930 wings, generally continues and is sympathetic to the style of the wings.	• The architectural style and detail of the whole building, particularly the 1929–1930 wings.	Good	Moderate	Good

Table 4.9 Condition and integrity of the Phytotron and Phenomics Centre's Commonwealth Heritage values.

Criteria	Summary of Heritage Values	Relevant Attributes	Condition of Attribute	Integrity	Condition of Value
(a) Processes	• The CSIRO Phytotron and Phenomics Centre has been associated with the specific scientific work of the Division of Plant Industry. • The Phytotron and Phenomics Centre demonstrates a major step in the development of the scientific study of	• The whole of the building that has enabled research and scientific study to be undertaken.	Good	High	Good

Criteria	Summary of Heritage Values	Relevant Attributes	Condition of Attribute	Integrity	Condition of Value
	plant adaptation to climate and other environmental variables, with all previous studies conducted 'in the field'. • The Phytotron and Phenomics Centre is of importance as one of a group of major expensive scientific facilities of the post-war Australian Government's scientific endeavour.				
(b) Rarity	• The CSIRO Phytotron and Phenomics Centre was the third major phytotron in the world. As no further major phytotrons were developed after the 1970s due to a change in the study of plant adaptation, and with several other phytotrons now demolished, the CSIRO Phytotron and Phenomics Centre is a rare, early surviving example of a large scale phytotron which combines glasshouses and controlled environment cabinets.	• The original form and fabric of the Phytotron including its large scale and glasshouses in combination with controlled environment cabinets.	Good	High	Good
(f) Creative or Technical	• Although influenced by the two preceding phytotrons located in Pasadena, United States and Paris, France, the CSIRO design was the first to use large controlled temperature glasshouses in combination with control environment cabinets. It has technical importance for its early use of solar panels.	• Its use of controlled temperature glasshouses in combination with control environment cabinets. Also, its early use of solar panels.	Good	High	Good

Table 4.10 Condition and integrity of CSIRO Black Mountain's identified Commonwealth Heritage values.

Criteria	Summary of heritage values	Relevant attributes	Condition of attribute	Integrity	Condition of values
(a) Processes	• CSIRO Black Mountain is important as it demonstrates the Australian Government's effort to establish a scientific research centre in the new national capital. • It is important as an embodiment of the ideal of national science being vital to the nation's economic progress. • The CSIRO Black Mountain site is important as a place designed and built as part of FCC phase of development in Canberra and for its association with the Griffins' plan of Canberra. • Several significant breakthroughs have been made at the site which have influenced the agricultural industry and Australia more broadly. • The site has been continuously used since the 1930s and adapted to suit contemporary scientific research requirements. It continues to provide a research environment for scientific achievements.	• The whole of the site; • the continuous function and use of the site by CSIRO for ongoing scientific research; • the location adjacent to the Australian National University and at the terminus of the municipal axis; • the setting, views, historical cultural plantings associated with the early establishment of the site; and • the individual buildings.	Good	High	Good
(b) Rarity	• CSIRO Black Mountain is rare in the ACT as a purpose-built and continuously used research facility for the CSIRO. • The continued use of the site since its establishment in the 1920s and its sustained occupation and ongoing development to suit contemporary research needs is unusual.	• The CSIRO's continued use of the site; • the ongoing adaptation of the site for changing needs;	Good	High	Good

Criteria	Summary of heritage values	Relevant attributes	Condition of attribute	Integrity	Condition of values
	• As a component of the CSIRO Black Mountain site, the Phytotron and Phenomics Centre is a rare and early example of a large scale phytotron which combines glasshouses and controlled environment cabinets.	• the evidence of the FCC's involvement in the early design including the Foundation Building; • the general site layout; and • the Phytotron and Phenomics Centre.			
(c) Research Potential	• PAD BM2 has the potential to yield information that could contribute to an understanding of Australia's natural or cultural history.	• PAD BM2	Good	High	Good
(d) Characteristic	• CSIRO Black Mountain clearly demonstrates the principal characteristics common to CSIRO's scientific research facilities around Australia. • At Black Mountain, the undeveloped site allowed for site planning by the FCC to suit the needs and expectations of the then CSIR and the Divisions of Entomology and Plant Industry, of which some of this planning remains. • The design and construction of the individual buildings across the sloped site represent the historic phases of development of the site and CSIRO.	• CSIRO Black Mountain as a whole; and • individual buildings and cultural plantings that demonstrate the periods of development and key characteristics.	Good	High	Good

Criteria	Summary of heritage values	Relevant attributes	Condition of attribute	Integrity	Condition of values
(h) Significant People	• CSIRO Black Mountain is associated with CSIRO, a nationally important research organisation. • CSIRO Black Mountain is associated with important figures in scientific research, including politicians, researchers, and donors.	• the site as a whole; • named buildings; • Robert Ingpen Land Research Mural; and • plantings associated with Dickson.	Good	High	Good

4.5 Endnotes

[1] Australia, State of the Environment 2011, Supplementary Information, Study of condition and integrity of historic heritage places, Michael Pearson and Duncan Marshall for the Department of Sustainability, Environment, Water, Population and Communities, p 28.

[2] Australia, State of the Environment 2011, 'Supplementary Information, Study of condition and integrity of historic heritage places', Michael Pearson and Duncan Marshall for the Department of Sustainability, Environment, Water, Population and Communities, p 45.

5 Developing Policy—Opportunities and Constraints

5 Developing policy—opportunities and constraints

This section discusses issues affecting the future conservation, management and interpretation of the heritage values of CSIRO Black Mountain, including the two CHL places. It contextualises and provides focus for the development of policies and implementation actions discussed in Section 6.

Key constraints and opportunities for CSIRO Black Mountain, discussed within this section, arise from the following:

- the heritage values of the place;
- statutory obligations and legislation that govern the management of the place;
- the management responsibilities of CSIRO;
- operational requirements, including use and access, potential change and development;
- condition of the physical fabric;
- consultation management;
- opportunities for interpretation initiatives; and
- consideration of environmental sustainability, hazards and risks.

5.1 Implications arising from heritage values

5.1.1 Management of heritage values

The heritage values of CSIRO Black Mountain give rise to a range of management obligations and requirements, the most fundamental of which is to ensure that the site is managed in accordance with its heritage values and that these are conserved and protected for present and future generations. The heritage values need to be understood, celebrated and sustained by CSIRO, users of the site and the broader community. The investigation of opportunities to interpret these heritage values also needs consideration.

The Commonwealth Heritage values of the Foundation Building recognise the building for its historical and characteristic significance and the Phytotron (Phytotron and Phenomics Centre) is recognised for its historical, rarity, technical achievement and association with signifcant people values. The assessment of heritage values in Section 4.2, identified that in the CSIRO Black Mountain site, as a whole, would meet the significance threshold for inclusion in the Commonwealth Heritage List (CHL). In accordance with its responsibility to assist the Minister for the Environment and the Australian Heritage Council (AHC) in the identification, assessment and monitoring of any listed or potential Commonwealth

Heritage values, CSIRO's decisions about the site should be informed both by the listed Commonwealth Heritage values of the site, and the other identified heritage values which may need management.

The key obligations arising from CSIRO Black Mountain's heritage values are to:

- conserve and protect the heritage values of CSIRO Black Mountain, including the two CHL places and the identified heritage values of the whole site, while supporting the site's continuing use as a place of scientific research;
- maintain and conserve the attributes which embody the heritage values of the place;
- effectively communicate the heritage values of CSIRO Black Mountain;
- ensure that the ongoing management of CSIRO Black Mountain optimises the place's heritage values through appropriate conservation, adaptation and interpretation; and
- take all measures that can reasonable be taken to mitigate the impact from change and/or development.

Refer to Section 6.3

5.1.2 Best practice heritage management

Heritage management plan as a guiding document

HMPs are developed as a best-practice tool for the ongoing management of heritage places. This HMP has been prepared in accordance with the requirements for management plans for Commonwealth Heritage places under the EPBC Act (refer to Section 5.2.1) and provides a useful framework for the management of both of the Commonwealth Heritage places and the site as a whole. The primary function of this HMP is to guide CSIRO in the conservation, protection and presentation of the place's heritage values.

This HMP should be adopted as the principal guiding document for future management of the heritage values of the place.

Burra Charter principles

The *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance 2013* (the Burra Charter*)*, provides the policy basis for management of the heritage values of CSIRO Black Mountain.

Management and works at CSIRO Black Mountain should be carried out in accordance with the conservation principles, processes and practices set out in the Burra Charter.

The preparation of this HMP, including the heritage conservation principles, policies and guidelines, has been informed by the Burra Charter and its practice notes.

A fundamental aspect of the Burra Charter is that decision-making is guided by significance. Section 2 of the Burra Charter states:

2.1 Places of cultural significance should be conserved

2.2 The aim of conservation is to retain the cultural significance of a place

2.3 Conservation is an integral part of good management of places of cultural significance

2.4 Places of cultural significance should be safeguarded and not put at risk or left in a vulnerable state

In this context, 'conservation' includes all the activities ascribed to it in the Burra Charter, including maintenance, restoration, reconstruction and adaptation, and can cover significant areas, elements and fabric of the place, as well as key visual and physical relationships.

Management and works at CSIRO Black Mountain should be carried out in accordance with the conservation principles, processes and practices set out in the Burra Charter.

The preparation of this HMP, including the heritage conservation principles, policies and guidelines, has been informed by the Burra Charter and its practice notes.

Refer to Policy 1.1, Policy 1.2, Policy 2.1, Policy 2.3, Policy 2.6, Policy 2.7

5.1.3 Engaging appropriate expertise

Appropriately qualified personnel, consultants and contractors should be engaged to guide the management and conservation of the heritage values.

Professional heritage consultants should be engaged to provide advice regarding heritage significance assessments, interpretation, impact assessments, and when planning or undertaking conservation works or interpretation works.

Contractors and tradespeople with specialist expertise should be engaged to advise and undertake conservation works and any specialist maintenance tasks. As the Phytotron and Phenomics Centre and other laboratory areas contain specialist equipment that require technical knowledge to maintain, specialist expertise in the maintenance of this equipment should be engaged, when needed. Inappropriate works can have effects on the operations and functions of the building, and the heritage values that are related to their ongoing use. Contractors and tradespeople should have appropriate expertise and be inducted to the site to ensure they understand the special requirements.

Refer to Policy 1.4, Policy 2.1, Policy 2.3, Policy 2.8, Policy 4.1

5.1.4 Archaeology and Unforeseen discoveries

Archaeological sites

The heritage values of CSIRO Black Mountain include the Aboriginal archaeological sites PAD BM2 and BMIF1. These sites should be protected by being designated as sensitive zones that should be avoided by future development proposals.

Where avoidance is not possible, development proposals for these zones should be subject to a Heritage Impact Assessment in consultation with the RAOs.

Unforeseen Discoveries

It is possible that Aboriginal archaeological artefacts could be encountered while undertaking works across the site, and particularly in proximity to the zone of the PAD BM2 and near the isolated artefact CSIRO BMIF1.

It is unlikely that historical archaeology may be discovered.

If either historical or Aboriginal archaeological artefacts or remains were to be unexpectedly encountered, an unanticipated finds protocol should be implemented, Appendix D—Unanticipated Finds Protocol. All workers should be made aware of the unanticipated finds protocol as part of a site induction.

A recommended unanticipated finds protocol is as follows:

- Cease work in the immediate area.
- Notify the CSIRO Black Mountain ACT Operations State Manager.
- The site area should be secured by the construction site manager and an archaeologist must be called to the site to assess the nature and significance of the find.
- The archaeologist would assess the required management of the find based on its significance and in conjunction with the construction site manager. Management actions may include contacting the Traditional Owners where the find relates to Aboriginal archaeology, along with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and ACT Heritage to discuss and confirm management actions.
- Construction work would resume after the implementation of appropriate mitigation measures.

Refer to Appendix D—Unanticipated Finds Protocol for a full protocol.

Refer to Policy 1.3, Policy 2.3, Policy 2.9, Policy 5.2 and Appendix D—Unanticipated Finds Protocol

5.2 Legislative management framework

5.2.1 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

Management and conservation of CSIRO Black Mountain is undertaken within a statutory planning framework. The heritage legislation that is relevant to CSIRO Black Mountain is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

The EPBC Act was established in part to protect places of natural or cultural heritage value which are nationally significant, or are owned or controlled by the Commonwealth. As elements of the CSIRO Black Mountain site are included in the Commonwealth Heritage List (CHL) and the site is on Commonwealth land, it is subject to the provisions of the EPBC Act and the *Environment Protection and Biodiversity Conservation Regulations* (2000) (EPBC Regulations).

The EPBC Act is the Australian Government's central piece of environmental legislation. The objects of the EPBC Act are 'to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance'.[1] It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. The EPBC Act provides a streamlined environmental assessment and approvals process for actions affecting protected matters. It also provides for the protection and management of important natural and cultural places.[2] It is administered by DCCEEW.

Protected matters under the EPBC Act are the nine matters of national environmental significance (MNES); the environment on Commonwealth land; and the environment in general, when it is being impacted by an action of a Commonwealth agency.[3]

Commonwealth Heritage Places and Heritage on Commonwealth Land

The EPBC Act regulates actions on, or impacting on, the environment on Commonwealth land, or actions by Commonwealth agencies impacting the environment anywhere. This includes protecting all heritage values on Commonwealth land or affected by the actions of Commonwealth agencies.

Commonwealth land includes land owned by the Commonwealth or a Commonwealth agency, as well as land held under lease by the Commonwealth or a Commonwealth agency. As such, heritage values on land leased by the Commonwealth are also protected under the EPBC Act.

Section 528 of the EPBC Act defines heritage values as including a place's 'natural and cultural environment having aesthetic, historic, scientific or social significance, or other

significance, for current and future generations of Australians'.[4] This definition of heritage values covers Aboriginal and non-Aboriginal cultural heritage values as well as natural heritage values.

To assist in identifying heritage on Commonwealth land, the EPBC Act establishes the CHL. The CHL comprises those places owned or controlled by the Commonwealth that have been assessed as having 'significant' heritage values against the criteria established under the EPBC Act. The EPBC Act places a number of management obligations on Commonwealth agencies if they own or control a CHL place, outlined below.

Heritage values may also occur in the environment on Commonwealth land without being included in the CHL.

Consequently, as CSIRO Black Mountain is on Commonwealth land, all heritage values at the site or that are impacted by the actions of CSIRO are protected under the EPBC Act, whether listed or otherwise identified. This includes the Commonwealth Heritage values of the Foundation Building and Phytotron and Phenomics Centre, as well as the identified values of the whole CSIRO Black Mountain site. CSIRO is also responsible for identifying, assessing and monitoring all heritage values at CSIRO Black Mountain (see Section 4).

Heritage management plan and strategies

Under section 341S of the EPBC Act, a Commonwealth agency must make a heritage management plan (HMP) to protect and manage the Commonwealth Heritage values of a Commonwealth Heritage place it owns or controls. The plan must address matters prescribed by the EPBC Regulations and must not be inconsistent with the Commonwealth Heritage management principles. The agency must seek advice from the AHC and the Minister for the Environment before making or updating the plan. Following the preparation of an HMP, it must be registered as a legislative instrument on the Federal Register of Legislation as soon as practicable (section 341S).

When a plan is made under section 341S, a Commonwealth agency must not contravene this plan or authorise any other person to do something that would contravene the plan. If there is no HMP made under the EPBC Act, a Commonwealth agency must take all reasonable steps to ensure its activities relating to a place are not inconsistent with the National or Commonwealth Heritage Principles. These principles are set out under Schedules 5B and 7B of the EPBC Regulations and encourage the identification of a place's heritage values and their conservation and presentation through the application of the best available skills and knowledge. They also encourage community (including Aboriginal community) involvement and cooperation between the various levels of government.

In addition to preparing HMPs, under section 341ZA of the EPBC Act, if a Commonwealth agency owns or controls one or more places, it must prepare a written heritage strategy for managing the places to protect and conserve their Commonwealth Heritage values.

The agency must seek advice from the AHC and the Minister for the Environment before making or updating the strategy. The strategy must also be consistent with the Commonwealth and National Heritage management principles.

Within the timeframe of the heritage strategy, an agency must also conduct a program to identify the Commonwealth Heritage values for each place it controls, produce a register which sets out these values, and give the Minister for the Environment a copy of this register. This register may be used in supporting a Commonwealth agency meeting its obligations under section 341Z to identify heritage values and support their assessment through nomination to the CHL.

The CSIRO's current strategy is the Heritage Strategy for CSIRO Land and Buildings (2016–2026) and is available at: https://www.csiro.au/en/about/locations/heritage-management.

Undertaking an action and EPBC Act approvals

Under section 341ZC of the EPBC Act, a Commonwealth agency must not take an action which is likely to have an adverse impact on the National or Commonwealth Heritage values of a National or Commonwealth Heritage place unless:

- there is no feasible and prudent alternative to taking the action; and
- all measures that can reasonably be taken to mitigate the impact of the action are taken.

The EPBC Act does not define the term 'adverse', but the *Significant Impact Guidelines 1.2 Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides context that adverse impacts are of a lower threshold than a significant impact.[5] The meaning of 'significant impact' is discussed further below.

CSIRO must also obtain all necessary approvals under the EPBC Act before taking an action which could impact on protected heritage values.

Under the Act any person, including CSIRO, must not take an action that has, will have or is likely to have a significant impact on a matter protected under the EPBC Act without approval from the Minister for the Environment. There are substantial penalties for taking such an action without approval.

If CSIRO is taking an action which is likely to have a significant impact on:

- the Commonwealth Heritage values of a Commonwealth Heritage place (ie the Foundation Building and the Phytotron and Phenomics Centre;
- heritage values on Commonwealth land (ie the whole of the CSIRO Black Mountain site); or
- heritage values in any part of the environment,

then CSIRO will need to refer this action to the Minister for the Environment to determine whether it needs assessment and approval under the EPBC Act.

Determining a significant impact

The person or organisation undertaking the action must complete a self-assessment to determine whether the action is likely to have a significant impact and therefore needs to be referred to the Minister for the Environment. In making its decision at this stage, CSIRO can only consider the effect of adverse impacts, not beneficial impacts, on the heritage values. Social and economic benefits of proposed actions which are likely to have a significant impact are only considered at the final, approval step and are not part of a heritage impact assessment.

Of relevance to CSIRO Black Mountain, the *Significant Impact Guidelines 1.2: Actions on, or Impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* provide guidance on matters which are likely to have a significant impact on heritage values. These include if there is a real chance or possibility the action will cause one or more heritage values to be lost; degraded or damaged, or notably altered, modified, obscured or diminished.

Examples of actions likely to have a significant impact include those where there is a real chance or possibility that the action will:

- permanently destroy, remove or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place
- involve extension, renovation, or substantial alteration of a heritage place in a manner which is inconsistent with the heritage values of the place
- involve the erection of buildings or other structures adjacent to, or within important sight lines of, a heritage place which are inconsistent with the heritage values of the place
- substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place.[6]

Significant cumulative impacts can also occur at heritage places. For example, an action that involves changes to an altered heritage place or landscape may be more likely to be a significant impact if, together with the changes made already, it alters the nature of the site beyond an acceptable threshold, increasing cumulative impacts to unacceptable levels.[7] For example, multiple inappropriate small changes to the significant heritage fabric of buildings could together create a significant cumulative impact.

There are three possible outcomes of a referral:

- The Minister decides that the action is **not** likely to have a significant impact on a protected matter and can go ahead without approval under the EPBC Act (a **'not controlled action'**).

- The Minister decides that an action is not likely to have a significant impact on a matter of national environmental significance, and does not require approval under the EPBC Act, because it will be taken in a 'particular manner' (a **'not controlled action: particular manner'**). This outcome is only applicable in a specific set of circumstances.
- The Minister decides that an action is likely to have a significant impact on a protected matter and requires approval under the EPBC Act (a **'controlled action'**).

The Minister may also determine that an action is 'clearly unacceptable' at the time of referral. In this case, the referred action would have to be withdrawn or reconsidered.

If an action is determined to be a controlled action, then an environmental assessment of the action must be carried out under the EPBC Act. The Minister will decide the assessment approach for the action from the range of assessment methods provided for under the EPBC Act. The EPBC Act provides statutory timelines for the assessment and approval of actions. The Minister makes a decision on whether a referred action needs further assessment and approval within 20 business days. Once this decision has been made, the timeframe for final assessment and approval depends on the assessment method chosen and the additional documentation requested.

The Minister considers the information provided through the selected assessment approach and determines if the action can go ahead and, if so, under what circumstances. At this stage, the Minister can consider detrimental environmental impacts as well as the social and economic impact of the project. At the end of this process the Minister can:

- approve the action;
- approve the action with conditions; or
- not approve the action, if the environmental impacts cannot be appropriately managed.

Divestment

Section 341ZE of the EPBC Act requires CSIRO to protect the Commonwealth Heritage values of a Commonwealth Heritage place on Commonwealth land that is sold or leased, either by CSIRO directly or by CSIRO on the Commonwealth's behalf. This requirement also applies to National Heritage places (section 342ZE)

If CSIRO sells or leases all or part of CSIRO Black Mountain, it must give the Minister for the Environment at least 40 days' notice. It must also include a covenant in the contract to protect the heritage values of the place. If such a covenant is unnecessary, unreasonable or impracticable, CSIRO must justify this to the Minister in writing and seek the Minister's advice on alternative measures to ensure the ongoing protection of the

Commonwealth Heritage values of the place. Alternative measures could include entering into a conservation agreement, or nominating the place to a state or local heritage list.

If CSIRO sells a Commonwealth Heritage place but it continues to be Commonwealth land, for example because it is sold to another Commonwealth agency or it is leased back by a Commonwealth agency, then the requirements of the EPBC Act for heritage places and values on Commonwealth land will continue to apply for the new owning agency.

While there are no current plans for divestment of CSIRO Black Mountain, ongoing heritage protection would be required if this was to occur, for example, through nomination of the site to the ACT heritage register.

Refer to Policy 1.1, Policy 1.3, Policy 1.4, Policy 1.7, Policy 2.7, Policy 5.4, Policy 6.4

5.2.2 Science and Industry Research Act 1949 (Cth)

CSIRO is established under the *Science and Industry Research Act 1949* (Cth). Under this Act the functions of CSIRO include to carry out scientific research for the purposes of:

- assisting Australian industry,
- furthering the interests of the Australian community,
- contributing to the achievement of Australian national objectives or the performance of the national and international responsibilities of the Commonwealth, and
- encouraging or facilitating the application or utilisation of the results of such research.

CSIRO's secondary functions include international scientific liaison, training of research workers, publication of research results, technology transfer of other research, provision of scientific services and dissemination of information about science and technology.[8]

The operation of CSIRO Black Mountain contributes to both the primary and secondary functions of CSIRO. Conserving the significance of the site and various buildings in working order is consistent with CSIRO's core functions. The management of the site, and particularly the Phytotron and Phenomics Centre and other equipment heavy buildings, will need careful decision-making to balance the operational and conservation requirements of the site.

5.2.3 *Australian Capital Territory (Planning and Land Management) Act 1988* (Cth)

The *Australian Capital Territory (Planning and Land Management) Act 1988* (Cth) provides for the planning and development of the ACT and management of Territory land.

The Act is designed to ensure that the interests of the people of the ACT are represented and protected in planning within the ACT, whilst also continuing Commonwealth involvement in the development of the national capital. It is administered by the National Capital Authority (NCA), whose functions include:

- preparing, administering, reviewing, and (as necessary) amending the National Capital Plan (NCP);
- fostering awareness of Canberra as the national capital and recommending to the Minister any works it considers desirable to maintain or enhance the national capital's character;
- commissioning works in Designated Areas in accordance with the NCP where no other state or Commonwealth department or authority has the responsibility to do so; and
- performing, with the approval of the Minister, planning services for any person or body, whether within Australia or overseas, and managing National Land designated in writing by the Minister as land required for the special purposes of Canberra as the national capital.

National Capital Plan

The National Capital Plan (NCP) forms the strategic planning framework for Canberra and the ACT. In accordance with section 10(1) of the *Australian Capital Territory (Planning and Land Management) Act 1988* (Cth), the NCP sets out detailed conditions for planning design and development for Designated Areas.

A Designated Area is an area of land specified as having 'the special characteristics of the National Capital'. Designated Areas include Lake Burley Griffin and its foreshores, the National Triangle, and the road reservations of the Main Avenues and Approach Routes. The National Capital Plan includes policies for planning and development in all Designated Areas. The NCA's aim, through the NCP, is to achieve high quality planning and development within a design context appropriate to its location.

The NCA is responsible for planning and development approval within Designated Areas. The NCA manages and controls some, but not all, land and water within the Designated Areas.

The CSIRO Black Mountain is **within** a Designated Area:

- CSIRO (Black Mountain) Precinct Code.

The CSIRO Precinct Code does not provide specific guidance, rather the NCP states that this precinct is subject to the provisions of the NCP Design and Siting General Code. The aim of the General Code is:

> to have quality, character and permanence consistent with the concept of a National Capital in all construction. It seeks to develop an atmosphere of civil dignity and domestic amenity. Its aim is to ensure that development in all forms will not take away from but rather add to the value of the total investment in Canberra. That is to say, development must complement and enrich its surroundings.[9]

The requirements of the Design and Siting General Code can be found at page 218 of the NCP, available at: https://www.nca.gov.au/planning/plans-policies-and-guidelines/national-capital-plan.

Works within a Designated Area require written approval from the NCA and must meet detailed conditions set out in the NCP for their planning, design and development. These works include any alteration to buildings or structures, demolition, landscaping or excavation works. A NCA Works Approval application is generally lodged after an EPBC Act referral decision has been made for proposed works. If an EPBC Act referral is not required, then a heritage impact assessment should be prepared and accompany the NCA works approval application for proposed works.

The NCA's Service Charter includes a commitment to finalise its consideration of formal applications within 15 working days. Major projects and those which require consultation or clearance from external agencies may take longer.[10]

Refer to Policy 1.6, Policy 1.7, Policy 2.7

5.2.4 *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth)

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) protects areas and/or objects that are significant to Aboriginal and Torres Strait Islander people and which are under threat of destruction. A significant area or object is defined as one that is of particular importance to Aboriginal people, according to Aboriginal tradition. The legislation must be invoked by or on behalf of an Aboriginal or Torres Strait Islander person or organisation. The Minister for the Environment may then make a declaration to protect an area, object or class of objects from a threat of injury or desecration.

5.3 CSIRO management and governance

5.3.1 Management responsibilities

CSIRO is responsible for the management of the Black Mountain site. CSIRO has primary responsibility for implementation of conservation policies and adopting the heritage management processes and decision-making procedures of this HMP.

CSIRO Business and Infrastructure Services is responsible for all buildings at CSIRO Black Mountain and general site management. The Business and Infrastructure Services is responsible for ensuring the timely implementation, review and monitoring of this HMP.

Ensuring adequate funding arrangements, resources (including people) and processes are in place to support the effective implementation of this HMP, including its future monitoring and review in accordance with the EPBC Act, must be the joint responsibility of Business and Infrastructure Services and relevant Business Units, or Divisions at the site. Business and Infrastructure Services will be responsible for self-assessing the impacts of actions they proposed at CSIRO Black Mountain in accordance with the EPBC Act.

5.3.2 Staff training and research

All CSIRO staff and contractors that undertake work at the site should have an understanding of its heritage values. This HMP should be made easily accessible to all staff members (both electronically and hardcopy versions).

The CSIRO Heritage Strategy states CSIRO's intention to develop a program for CSIRO Business and Infrastructure Services staff involved in heritage management or managing sites containing heritage significance.[11]

This intention should be enacted for CSIRO Black Mountain, and could involve separate programs for key decision makers and general CSIRO staff.

A detailed heritage training program could be prepared, to be attended by CSIRO staff who make key decisions about the management of CSIRO Black Mountain. It could include specific information on where potential impacts may arise, when to seek heritage advice and the legislative approvals and process under the EPBC Act. Annual 'refresher' training should be implemented.

A separate general heritage-awareness induction could be prepared and attended by all CSIRO staff and contractors. It should provide clear information on the heritage significance of the site, where potential impacts may arise and from where and whom further information can be sought. The CSIRO currently provide inductions for safety and

compliance of working in laboratories, which could be updated to include these heritage considerations.

Appropriate and regular training would continue to develop the capacity of CSIRO staff and contractors to appropriately manage the heritage values of Black Mountain including the Phytotron and Phenomics Centre, Foundation Building and other identified values.

Continued research into the heritage values of CSIRO Black Mountain should be fostered and promoted by CSIRO to aid in the effective management of heritage values. In particular, further investigation of the identified heritage values of the site and their inclusion in the CHL should be considered (see Section 4.2). Current and former staff of the site may have extensive knowledge about its history, including the construction, operation and changes that have happened to the buildings and equipment over time. CSIRO could seek to capture this knowledge through an interview project.

Any new research information obtained should be incorporated into CSIRO records and Corrigo (a computerised maintenance management system) and be used for interpretation or conservation as appropriate.

Refer to Policy 8.1

5.4 Use and operational requirements

5.4.1 Operational requirements and pressures

The CSIRO Black Mountain site consists of buildings that range in age from almost 100 years to recently opened, state of the art facilities. The evolution of scientific endeavour and adaptation to suit contemporary research needs are attributes of the place's heritage value. However, the CSIRO does face pressures regarding the functionality and suitability of some of the older buildings for ongoing research capability. As research technologies develop it has become apparent that some buildings are obsolete, out of date or not fit-for purpose. The challenge for the CSIRO is to continue operational capabilities within the heritage framework of the site.

In accordance with the CSIRO's statutory role and the purpose of CSIRO Black Mountain, the key needs of CSIRO relate to maintaining the buildings as functional scientific facilities. An example of an operational pressure requiring change to significant fabric is the proposed upgrades to the Phytotron and Phenomics Centre. Major upgrades are proposed for 2024, which would see lower-level ponds decommissioned and replaced with a closed loop chiller and electric heat pump system. This change would ensure the building can continue to function as needed in a more efficient manner, however the works do have the potential to cause adverse impacts through changes to the technology and function of the ponds.

The CSIRO Heritage Strategy provides helpful advice regarding conflict resolution on heritage matters, and regarding changes that may affect Commonwealth Heritage values and should be referred to guide future investigations.

Changes in use

The CSIRO has functioned as a working research campus since its establishment in the late 1920s. The use of some buildings and areas of the site have changed depending on the contemporary research needs of the organisation. For instance, up until the early 1970s, large areas of the site were dedicated to paddocks for experimentation cropping. These areas have been largely infilled with laboratory buildings to meet the changing requirements of the site. Research topics tend to change more rapidly now due to funding and strategic interests. As such, the previous approach to construct buildings for specific Divisions has been largely replaced with generalised buildings that can be used by multiple Business Units or Divisions. An example of this is the Synergy Building (Building 801) that is used by many different research groups. Although, buildings with dedicated uses are still being constructed such as the National Research Collections Building.

There remains a conflicting pressure on the CSIRO site to allow for flexibility in use while managing the heritage values, which in some cases are associated with the ongoing use of the building.

Major changes in use to key buildings, such as decommissioning the Phytotron and Phenomics Centre, would likely have an impact on the places' heritage values. Any proposed change in use would therefore need to consider impacts and ways to avoid or mitigate those impacts, particularly if the degree of change affects the ability to understand the importance of the building. Any changes or new uses should be compatible with the heritage values. The Burra Charter defines 'compatible use' as 'a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance'. [12]

Refer to Policy 1.2, Policy 2.1, Policy 2.2, Policy 2.3, Policy 2.7, Policy 3.1, Policy 3.2

5.4.2 New development and demolition

Development

The CSIRO Black Mountain site is in a period of change. A major project is underway to relocate equipment, collections and infrastructure that were housed at separate CSIRO sites across Canberra to the Black Mountain site, in consolidated buildings. As part of this project, construction is underway at the National Research Collections Building, which will house around 13 million insect, wildlife and botanical specimens. [13] As part of this work,

the Australian National Herbarium and the Australian Tree Seed Centre are undergoing minor upgrades. The potential heritage impacts of these projects were assessed through Heritage Impact Assessments.

It is expected that the site will see ongoing change over the coming years in the form of demolition and construction. While the heritage values of the site represent a potential constraint to development, the size of the site does allow for well-considered development proposals.

The large site at Black Mountain would allow for the construction of new infrastructure, however this shouldn't come at the expense of the conservation of older buildings on site or detract from the heritage values, such as views or settings.

Areas of the site that may be suitable for new development are in the northern reaches of the site and along Clunies Ross Street to the southwest of Building 101 (beyond South Road). The area around Building 401C on Clunies Ross Street is physically and visually disconnected to the rest of the CSIRO site. The demolition of the other 401 buildings has left the single building without any connection to the remainder of the site. It presents an opportunity to improve the connection and appearance of the Clunies Ross Street site boundary.

Development along the Australian National Botanic Gardens boundary may also be possible, if the views and setting of the site is not impacted. The dense, treelined boundary of the site contributes to the setting, so retaining this visual backdrop should be carefully considered. Other works that would be positive include the reconstruction of glasshouses near Barry Drive and the removal and replacement of temporary demountable structures.

Undertaking appropriate 'design in context' is usual practice when designing new buildings and is particularly relevant when designing a new structure that fits comfortably within, or adjacent to significant heritage places. Factors to consider when designing within a heritage context are a building's use, siting, orientation, formation, form, scale, mass and articulation, location, appropriateness to nearby buildings, materiality and colour. The NSW Heritage Office publication 'Design In Context, Guidelines For Infill Development In The Historic Environment' should be referred to when considering infill proposals.

The buildings across CSIRO Black Mountain are varied in materiality and form meaning the site provides more flexibility in these areas. However, respecting the curtilage and retaining buffer around heritage buildings is important. Siting orientation should be considered for efficiency and to ensure consistency across the site as many buildings are oriented east-west to benefit from northern exposure.

The campus or park-like character of the site is an important component of the whole site's heritage value. Proposals for infill development should respect these qualities and maintain wide setbacks, and large open spaces and generous landscaped settings.

Potential impacts to both historical and Aboriginal archaeology should be assessed prior to any new development being undertaken. Development of the identified Aboriginal archaeological PAD BM2 area should be avoided. Where avoidance is not possible any development proposals for this area would require detailed assessment prior to confirmation of site selection. Refer to maps of the location at Figure 3.8 and Figure 3.9.

Demolition

Other future changes involve the possible demolition of buildings. There are plans to demolish buildings, listed in Table 5.1. For both the F.C. Pye Field Laboratory/ Extension and the C.S. Christian Laboratory, Heritage Impact Assessments of the proposed works were prepared by Umwelt and referrals under the EPBC Act to the Department of Environment were submitted and approved in 2022.

Table 5.1 Table of buildings proposed for demolition at CSIRO Black Mountain.

Building No.	Building Name	HMP Heritage Value	Notes, provided by CSIRO
016	Prefab 2	Moderate	Future demolition - date TBC.
019	F.C. Pye Field Laboratory/ Extension	Laboratory: High Extension: Low	To be demolished – date TBC.
146	Offices	Neutral	To be demolished by 30 June 2024 subject to funding.
163	Lunch & Ablution Unit	Neutral	To be demolished by 30 June 2024 subject to funding.
201	C S Christian Laboratory	Moderate	To be demolished – date TBC.
302	Prefab 3	Moderate	Future demolition - date TBC.
507	Guard House	Neutral	To be demolished by 30 June 2024 subject to funding..

Article 15 of the Burra Charter explains that 'change which reduces cultural significance is undesirable' and 'demolition of significant fabric is generally not acceptable'. It could be construed that the demolition of a building with identified heritage values would be not generally acceptable and should always be the last resort when considering future possible uses.

The Burra Charter also notes that 'in some cases minor demolition of significant fabric may be appropriate as part of conservation'. The Burra Charter also specifies that

'removed significant fabric should be reinstated when circumstances permit'. Demolition to achieve positive outcomes are feasible at the CSIRO Black Mountain site, with an example being the removal of the neutral value Guard House. Other examples that may be appropriate as part of conservation, could be the removal of Building 508 and 602—which are temporary, demountable structures that are visually intrusive to the heritage values of the site.

Refer to Policy 2.1–Policy 2.4, Policy 2.7, Policy 2.8, Policy 5.1–Policy 5.4, Policy 6.1, Policy 6.2

5.4.3 Access and security

CSIRO Black Mountain Discovery Centre is open to the public on weekdays at particular times and school groups are encouraged to visit the Discovery Centre at a pre-arranged time. The interactive displays provide information about CSIRO and Australian science history, showcasing the Organisation's science and technology innovations.[14]

The remainder of the site is not open to the public; however, the site is unfenced, and pedestrians are able to enter and cross the site. In 2023, a swipe-pass boom gate system was installed at the Julius Road entrance to the site, which prevents public vehicular access. Security threats are not considered to be high-risk at the Black Mountain site, however individual buildings are secured with swipe-pass access. Enhanced security measures across the site are not required and not being actively considered by the Organisation.

Access to some buildings or areas of some buildings is restricted by ongoing experiments and investigations. Changing environmental conditions, biohazards, interference, etc can disrupt projects and requires careful management. Protocols are in place for individual labs and across whole buildings such as the Phytotron and Phenomics Centre, where visitors are required to don a clean lab coat upon arrival to prevent interference with ongoing research projects. These sort of security requirements are not likely to impact the heritage values of the site.

As the CSIRO Black Mountain is a working research centre, providing access into all buildings is not feasible, nor recommended. However, hosting controlled open days or particular events could be investigated to further develop the public's understanding of the CSIRO's role in modern Australia and the interpretation of the heritage values of the two CHL places and the broader site. The public should be actively encouraged by the CSIRO to visit the Discovery Centre as it is the site's key method of interpretating the heritage values of the site associated with its research endeavours.

The ad hoc carparking for ANU workers/residents in the southwest corner of the site (Clunies Ross Street near Dickson Road) does not contribute positively to the character, amenity or approach to the site. CSIRO have installed bollards to limit parking however

further work could be done to improve the character of the site boundary such as landscaping and re-planting.

Refer to Policy 4.1–Policy 4.4

5.5 Conservation, condition and maintenance

5.5.1 Condition

Ensuring the good condition of CSIRO Black Mountain's features contributes to the good condition of the heritage values themselves. Heritage values are expressed through tangible and intangible heritage attributes—these are identified at Section 4.2. Factors that contribute to condition of the values include the physical condition of the heritage fabric, landscape and other tangible attributes, integrity and intactness of the place, and the maintenance of use, association, access, traditions, cultural practices, knowledge or experiences associated with the intangible significance of the site. Conservation practice, regular maintenance, site management and governance arrangements, and interpretation can all contribute to maintaining heritage values in good condition.

The information on the condition of CSIRO Black Mountain is included at Sections 3 and 4.4. Much of the CSIRO Black Mountain building stock is well maintained and is in sound condition. However, the need for ongoing care and maintenance remains. For example, cyclical maintenance for the site, particularly the Foundation Building (101) and the Phytotron and Phenomics Centre (005) should be continued and periodically reviewed to ensure it is in keeping with this HMP and best heritage practice, and the management of collections and artefacts housed at the site is an important contribution to maintaining the heritage values.

Any proposed conservation or maintenance works to the significant heritage attributes of the site require careful management to ensure impacts are avoided.

The buildings that are posed for demolition have not been maintained and are in increasingly fair to poor condition.

Refer to Policy 2.5, Policy 2.6, Policy 2.7, Policy 2.8

5.5.2 Maintenance

CSIRO regularly maintains and monitors fabric and equipment at Black Mountain.

A cyclical maintenance plan should be prepared and recorded in one accessible location. This would enable a consistent approach to regular maintenance tasks, and any special conservation works. This single accessible location would enable consistency and the

ability to monitor maintenance and conservation works. It would specify how the maintenance should be carried out (what should and shouldn't be done), who should undertake them (the skills and expertise required) and how often they should be undertaken. A record of the nature and outcomes of works, interventions and maintenance should be recorded regularly in the CSIRO's Corrigo for future reference and the CSIRO Estate Leasing and Management team should always be informed of details of any work occurring at the significant buildings for reporting to DCCEEW.

As noted elsewhere in the HMP there are hazardous materials on-site and maintenance and remediation of these materials may pose risks to the heritage values. Refer to Section 5.5.3

Refer to Policy 2.1–Policy 2.9, Policy 6.1

5.5.3 Conservation issues

Ensuring that maintenance and conservation are undertaken in a timely way is an important way of avoiding issues that may lead to costly repairs to the significant heritage attributes of Black Mountain. For example, conservation issues could include water ingress or vermin infestation that damage original building fabric, or broken hardware, fixtures or fittings that are historically significant and need repair to maintain function.

The continual use and change of the site for research endeavours contributes to the heritage values of the place, and this is reflected in the buildings on the site and adaptations and changes made over time. There is an opportunity to develop conservation policies that aim to capture a sense of the evolution of the site, rather than conserving the place to any single period or era. However, change is also a conservation issue and the largest threat to the heritage values of the site.

The buildings that are posed for demolition are no longer maintained their condition is degrading, causing impacts to the integrity of values.

Refer to Policy 2.1–Policy 2.9

Hazardous materials

Demolition proposals of individual buildings have been raised, in part due to the presence of hazardous material including lead, asbestos and synthetic fibres. [15] Should further hazards be identified, the implications for the conservation/retention of affected elements of heritage value will need to be determined. The risks of retaining and conserving the affected items and potential strategies to reduce the identified risks will need to be investigated to determine whether or not the conservation/retention of affected heritage elements is feasible and in the best interests of the CSIRO community.

Hazardous materials are a common feature of heritage buildings and options to remediate can be explored that are sensitive to the heritage values of the place but that also meet compliance requirements and community expectations.

As explained in Section 5.2, when assessing the potential impacts of proposed works, such as the demolition of a building due to hazardous materials, CSIRO can only consider the effect of adverse impacts, not beneficial impacts, on the heritage values at this stage. Social and economic benefits (such as cost-benefit analysis) of proposed actions which are likely to have a significant impact are only considered at the final, approval step and are not part of a heritage impact assessment.

Refer to Policy 1.4, Policy 2.1–Policy 2.7

Setting and views

The setting and views of the CSIRO Black Mountain site are described in Section 3.4.2. They describe the internal views across the CSIRO site, particularly towards Black Mountain and the other hills of Canberra, and that the key external view into the site is from Clunies Ross Street. While the setting of CSIRO captures the broader inner-north context of Canberra, including the ANU and Australian National Botanical Gardens, the CSIRO does not have direct influence on the retention of these attributes. Rather, CSIRO can work to maintain the setting-related heritage values within the site boundary. The setting and views should be retained and considered in any future planning for the site, to conserve the campus like environment of buildings set within a treed and grassed landscape. The key views from Clunies Ross Street towards the Foundation Building and other boundary buildings should be retained.

The park-like character of the site is an important characteristic of the heritage value and should be retained and conserved. Buildings set within a landscape of grassland and trees should be encouraged in future design proposals.

On a smaller scale, the individual cultural plantings are significant attributes and should be retained and conserved as elements that contribute to the setting and amenity of the site. The site's significant trees are listed in Section 4.3.1.

Managing Change

The heritage values of CSIRO Black Mountain that are represented in the fabric should be respected and managed in accordance with this HMP, the Burra Charter and the Commonwealth Heritage management principles. Change to fabric is possible provided it is in keeping with CSIRO Black Mountain's heritage values.

The continual use and upgrade of CSIRO Black Mountain for scientific purposes contributes to the heritage values of the place, and this is reflected in the fabric of the built elements, adaptations and changes made over time, and the site more generally.

CSIRO Black Mountain has multiple heritage values which must be managed, relating to its historical importance and original fabric, architectural styles and several significant scientific breakthroughs at the site. All the heritage values of CSIRO Black Mountain should be respected and managed in accordance with this HMP, the Burra Charter and the Commonwealth Heritage management principles. However, in some circumstances decisions will be constrained by the need to take account of complex or competing outcomes for different values. For example, the importance of retaining the capabilities of the Phytotron and Phenomics Centre with operational greenhouses, may conflict with retaining original historic fabric. The CSIRO Heritage Strategy provides guidance on a process to follow when internal conflicts arise from the assessment and management of heritage values:

> Planning and conflict resolution processes will include:
>
> - the appointment of heritage professionals in the implementation of the works program including the preparation of a Heritage Impact Statement for any major works proposal;
> - the development of a robust communications strategy for conveying the heritage value of the site;
> - seeking advice from professionals when conflict arises in the ongoing management of the property's cultural heritage value;
> - consultation with the Department and the AHC or other Departments on works proposals and approaches as appropriate;
> - briefing the Minister on proposed works, their timelines and impacts; and
> - the development of risk management plans as part of wider plans for major works.[16]

There is an opportunity to conserve the elements of CSIRO Black Mountain in a way that captures the sense of continual use and change over time, rather than preserving all buildings and the whole site in a historic form at one point in time. This approach involves retaining and conserving intact original fabric as well as more recent adaptations and changes which reflect the ongoing use of the place, while sensitively providing for future upgrades which are required to keep the equipment operating as needed.

Numerous small or large changes can accumulate to create significant cumulative impacts to heritage values. Therefore any upgrades or proposed work should be carefully managed to ensure they avoid unacceptable impacts to the heritage values which make CSIRO Black Mountain important.

The relative heritage value of various elements and items should guide conservation decisions. Some elements of CSIRO Black Mountain are highly significant and have a low tolerance for change, while others have been more extensively altered over time. In some cases, early original fabric may become obsolete and a barrier to the continuing operation of the buildings. In this scenario, sensitive management is needed to facilitate change in a way that avoids and minimises heritage impacts, and ensures the relevant building and site can continue to operate. This may include retention of fabric where possible, archival recording and interpretation (see Sections 5.6 and 5.8). Advice from a suitably qualified heritage consultant would be required for any works of this nature.

Refer to Policy 2.2, Policy 2.3

5.6 Monitoring, record keeping and reporting

5.6.1 Monitoring

Monitoring heritage places and their heritage values is an important management tool. By monitoring the condition of values, fabric and other elements, it is possible to measure changes and evolution in the heritage values of CSIRO Black Mountain. The EPBC Act requires CSIRO to assess and report on the condition of the heritage values of the site (see Section 4.4); this monitoring helps to determine if there has been any change in the condition of heritage values.

The findings of the cyclical condition and maintenance works that occur at Black Mountain provide a baseline of information for monitoring heritage fabric and values. This information should be recorded and referred to by CSIRO to inform future decision making, for example on conservation activities, where to prioritise funding, and timelines for the delivery of projects. CSIRO should monitor reporting for any changes or trends in the condition of the place that are revealed through this data, for example increasing decay of certain materials. This will also inform monitoring of the condition of the heritage values and assist with reporting on changes to the condition of the heritage values in the HMP every five years (see section 4.4).

This HMP gives numerous policies and actions to implement for the management of CSIRO Black Mountain, and monitoring of their implementation should be part of this process. This will inform the HMP Review Report which must be prepared every five years under the EPBC Act (Section 341X).

Refer to Policy 2.1, Policy 2.5, Policy 2.6, Policy 6.1–Policy 6.4

5.6.2 Record keeping and reporting

CSIRO Business and Infrastructure Services maintains Corrigo, a computerised maintenance management system. All works, intervention and maintenance should be recorded in this system as part of monitoring the site (see also Section 5.6.1).

Existing information about CSIRO Black Mountain, including heritage reports, historic records, photographs and architectural drawings, are all valuable resources. Historical resources about the site are available in several places, including the National Archives of Australia and stored on-site.

This information should be collated and stored to offer a comprehensive suite of documentation relating to the design, construction and history of the site. In addition to recording the site prior to undertaking changes, this information would serve as a useful reference tool, particularly for potential future interpretation opportunities.

The Burra Charter highlights the importance of creating a record of significant places prior to any changes occurring. Prior to undertaking any changes, including conservation works or any new development, the relevant element of CSIRO Black Mountain should be documented, and these records maintained. Adequate records (ie a photographic record accompanied by a detailed description) of the existing fabric and condition of the elements should be prepared prior to works.

Alternative methods of recording aspects of the site could also be explored, such as preparing oral histories by former workers, residents, visitors and users of the place, or by digitally recording the site. These methods are also important interpretation initiatives (refer to Section 5.8).

Refer to Policy 2.1, Policy 2.5, Policy 2.6, Policy 6.1–Policy 6.4

5.7 Consultation

5.7.1 Stakeholder Consultation

CSRIO ensures that all management plans follow the EPBC Act regulations for public consultation by making draft management plans publicly available via the website and inviting stakeholders to review them.

Regular consultation with the Commonwealth department responsible for the EPBC Act should be undertaken, particularly when planning development that may have the potential to impact heritage values. Engagement with the National Capital Authority when planning development or change is also required, refer to Section 5.2.3.

Refer also to below regarding Aboriginal Traditional Owner and Community consultation.

Additionally, the Australian Institute of Architects (ACT Chapter) and National Trust of Australia (ACT) may be consulted in relation to CSIRO Black Mountain regarding any proposed works and future management of significant buildings.

There are opportunities to expand consultation with the community and stakeholders on the management of Black Mountain in certain circumstances. While social values were not found at this stage, should a detailed social values assessment be undertaken, strong and continuous social connection to the site may be identified in former and current CSIRO researchers and other staff.

Input from the identified groups could help inform decisions about conserving and celebrating the site's heritage values. For example, former CSIRO staff could provide input to interpretation displays in the Discovery Centre. A consultation protocol should be established to identify when and how the community will be consulted in relation to the place.

Refer to Policy 5.1–Policy 5.4

5.7.2 Aboriginal Traditional Owner and community consultation

Aboriginal communities are the primary authority on the value of their heritage. Aboriginal cultural values or sites, places and landscapes are determined by Aboriginal communities. As noted in Section 1.5.4, consultation with the local Aboriginal community was conducted with a Mirrabee representative to assess cultural values relating to the project area.

Elders and Traditional Owners have the authority to speak for Country and should be engaged as key stakeholders when making decisions about Black Mountain, particularly in relation to their cultural heritage (eg: use of language, incorporation of Aboriginal cultural knowledge into interpretation materials, etc). Their association and prior occupation of the land should be acknowledged.

Elders and Traditional Owners should be consulted in relation to impact assessments, ongoing management of the PAD BM2 area and any interpretation of Indigenous heritage values, including interpretation of the scarred tree removed from the carpark and situated behind Building 216. They should also be consulted when this HMP is updated. Consultation should be undertaken in accordance with the principles outlined in the *Ask First* and *Engage Early* guidelines.[17]

The ACT Representative Aboriginal Organisations (RAOs) are the:

- Buru Ngunnawal Aboriginal Corporation (BNAC)
- King Brown Tribal Group
- Mirrabee

- Ngarigu Currawong Clan

Contact details for the RAOs can be found online at: <https://www.environment.act.gov.au/heritage/heritage-registration-and-protection/development-at-heritage-sites/consultants_and_trades_directory/consultants_directory/representative-aboriginal-organisations>.

Indigenous people are the primary source of information on the value of their heritage. As part of engagement in preparing this report, the Aboriginal community has imparted their Intellectual Property to CSIRO. Indigenous knowledge in this HMP and relevant to Black Mountain more generally should be acknowledged and managed in accordance with CSIRO's Indigenous Cultural and Intellectual Property (ICIP) framework, including Our Knowledge, Our Way in caring for Country (NAILSMA, CSIRO 2020) and CSIRO's Indigenous Cultural and Intellectual Property Principles.

In additional to consultation with Elders and Traditional Owners, there is the opportunity to engage more generally with the broader Aboriginal community in relation to Black Mountain.

At other sites, CSIRO has worked with Aboriginal communities to acknowledge and celebrate their connection to country. For instance, in 2020 at the Parkes Observatory the CSIRO worked with the Wiradjuri, the Traditional Owners of the land on which Parkes Observatory is built, to acknowledge and celebrate their connection to country through the Wiradjuri naming of the instruments on site. Opportunities for engagement to further acknowledge the Traditional Owners of the Canberra region at CSIRO Black Mountain is encouraged and should be pursued.

Refer to Policy 5.1–Policy 5.4

5.8 Interpretation and education

Interpretation is an essential part of the conservation process as defined by the Burra Charter, meaning 'all the ways of presenting the cultural significance of a place'.[18] Interpretation can include the treatment of heritage fabric through maintenance, restoration, etc, as well as the use of a place and the introduction of explanatory material, events and activities.[19] Successful interpretation encourages personal appreciation and enjoyment of the experience of a place—it can also be an engaging educational tool, inspiring or deepening connections between people and places.[20]

Active interpretation of heritage places enhances community recognition, enjoyment and understanding of a site's heritage values and significance. Interpretation can also be a useful tool in explaining the layers of change at a heritage place.[21] Importantly, the maintenance and retention of the attributes of the heritage place fulfils an interpretive role in itself.

5.8.1 Existing interpretation and education programs

Existing interpretation of the heritage values of CSIRO Black Mountain involves the following:

- retention and conservation of significant physical fabric;
- the Discovery Centre and associated interpretive displays and activities;
- group programs for visiting school groups;
- information on CSIRO Black Mountain provided on the CSIRO website; and
- buildings and elements/street named after notable people:

  - Bruce E. Butler Laboratory
  - C. S. Christian Laboratory
  - Sir Otto Frankel Building
  - F.C. Pye Field Environment Laboratory
  - D. F. Waterhouse Laboratory
  - Sir Otto and Lady Frankel Garden
  - Julius Road
  - Christian Road
  - Dickson Way.

Only the Discovery Centre is open to the public at CSIRO Black Mountain. This creates some constraints on communicating the heritage values of the place. There is no interpretation or signage at the CSIRO Black Mountain, either within the site or at the boundaries which explains the heritage values of the site.

5.8.2 Opportunities for future interpretation

Implementing interpretation initiatives is an essential component of heritage management and would further increase public awareness of the heritage values of CSIRO Black Mountain.

The Aboriginal past use of this important landscape should be interpreted by the CSIRO, and should include acknowledgement of the removal of the scarred tree and interpretation of its former location, among wider interpretive elements on the CSIRO campus.

The role of women in scientific endeavour at CSIRO Black Mountain should be explored and addressed through an interpretation initiative. The CSIRO was the first federal government agency to build childcare facilities for the children of staff at Black Mountain. This program was aimed at supporting women into the workforce and would be an interesting, social history theme for the CSIRO to investigate and interpret. The impact that this initiative had on the numbers of female staff at CSIRO should be explored.

CSIRO policy no longer names buildings after notable researchers as was done in the past. Instead, recognition is given through the 'CSIROpedia, People' section of the CSIRO website.

Interpretation strategy/plan

The development of an interpretation strategy would provide a clear approach to the interpretation initiatives appropriate for the heritage place and to targeted audiences. An interpretation strategy could include:

- identification of key interpretation themes and messages—the interpretation messages should closely echo the heritage values and stories of the place;
- determination and tailoring of interpretation to the potential audiences appropriate to the heritage place—the key audiences for interpretation include site users, visitors and the broader local and national community; and
- exploration of options for a variety of interpretive initiatives and media, including off-site possibilities.

The interpretation strategy/plan would build on the existing CSIRO interpretation tools and should involve consultation with relevant stakeholders when developing the interpretation strategy/plan and specific interpretation initiatives.

Front signage

As identified elsewhere in the HMP, CSIRO Black Mountain is highly visible from Clunies Ross Street. CSIRO could investigate installing signage in key locations along the site boundary. Possible locations could be in front of the Foundation Building (101) and the Phytotron and Phenomics Centre (005), pending further research into appropriate locations.

Online engagement

The CSIRO has an extensive online presence, including an information sharing site called CSIROpedia. This platform includes existing oral histories, stories of scientific discoveries and research projects, and profiles on featured individuals associated with CSIRO.

The heritage values of the Foundation Building and Phytotron and Phenomics Centre are also posted via the main CSIRO website. These values could be presented elsewhere in a vibrant and engaging way.

Refer to Policy 2.8, Policy 5.2, Policy 7.1

5.9 Environmental sustainability

Environmental management is an important aspect of maintaining the heritage values of CSIRO Black Mountain and ensuring that they are conserved for future generations.

Where possible and compatible with the operational needs of the site, repairs should retain as much of the existing fabric as possible and maintain it in good condition so that it has a long life. New works should endeavour to retain, re-use and complement the existing site development, rather than replace it with new fabric.

Retrofitting buildings to be energy efficient and environmentally sustainable is a contemporary issue, as is operational efficiency. Reductions in energy and water consumption may be achieved through the application of environmental sustainability initiatives. Renewable energy sources, appliances and mechanical systems should be investigated and, if appropriate, used to reduce energy consumption and improve the carbon footprint of the heritage place. These projects could be suitable changes at CSIRO Black Mountain, when undertaken using a cautious approach to protecting significant heritage fabric. Any works should entail minimal impact to the place's heritage values and suitable alternatives should be investigated prior to any works being undertaken.

The impacts of a changing climate will increasingly affect both cultural and natural heritage values throughout Australia and internationally. Climate change is a potential pressure on the condition and integrity of the heritage fabric of CSIRO Black Mountain.

Specific climate change risks to cultural heritage identified in 2019 by ICOMOS's Climate Change and Heritage Working Group include:

- increased risk of fire;
- increased risk of insect pests damaging building fabric;
- heat stress on cultural significant plants;
- loss of specimen plantings in designed landscapes, parks and gardens;
- increase of air-conditioning equipment on buildings resulting in changed external appearance;
- accelerated structural deterioration or degradation from, for example, the deterioration of building fabric due to extreme temperature cycles, damage from increased wind loading and increased crystallisation of efflorescent salts from water ingress; and
- erosion and site damage from flooding, extreme weather events and rising water tables, with associated corrosion, risk of mould etc.[22]

A key threat to the heritage values of CSIRO Black Mountain is from a bushfire spreading from the neighbouring Black Mountain Nature Reserve. Fifty percent of the site is within a bushfire zone. The site is managed through a seasonal preparedness plan.

CSIRO Business and Infrastructure Services could undertake consultation with the National Bushfire Behaviour Research Laboratory at CSIRO Black Mountain to ensure that the seasonal preparedness plan is up to date and is follows best practice approaches to mitigate the risk and manage the heritage values from fire.

CSIRO Black Mountain must be a resilient heritage place to ensure it can cope with these present and future threats.

Good management is essential to achieving this. Addressing the opportunities and constraints identified in this HMP (such as conservation practice, training and development of expertise and community engagement) will strengthen the site's heritage fabric and management framework and put it in the best position to respond to the impacts of climate change.

In addition, practical measures should be taken to mitigate and adapt to the risks and impacts of climate change. Site-specific investigation is needed into how climate change will impact the specific site and what aspects of its heritage are most at risk.

Any systems to enhance the long-term sustainability of the site should be installed in a way that respects the heritage values and does not detract from significant elements or views. Heritage advice could be sought to provide advice on environmental sustainability initiatives and manage potential impacts to heritage values.

Refer to Policy 2.1, Policy 2.4

5.10 Hazards and risks

Risks to CSIRO Black Mountain's heritage values from degradation of the condition, inappropriate management or environmental threats have the potential to impact the significance, fabric or use of the place.

It is important that risks to the place are understood and managed appropriately. The vulnerability and exposure of CSIRO Black Mountain to both natural and human-caused hazards should be evaluated to determine the level of risk they pose to the place and its heritage values. Heritage should be considered when establishing any systems or processes for early warning, prevention, and management of disasters and risks.

Refer to Policy 2.1, Policy 4.4

5.11 Endnotes

[1] Environment Protection and Biodiversity Conservation Act 1999 (Cth), Section 3.

[2] Department of Agriculture, Water and the Environment, 'About the EPBC Act', viewed 12 July 2021, <https://www.environment.gov.au/epbc/about>.

[3] Department of Agriculture, Water and the Environment, 'Glossary', viewed 12 July 2021, <http://www.environment.gov.au/epbc/about/glossary#significant>.

[4] Australian Government, *Working Together—Managing Commonwealth Heritage Places: A Guide for Commonwealth Agencies*.

[5] Australian Government Department of the Environment, 2013, Significant Impact Guidelines 1.2 Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies, pp12.

[6] Australian Government Department of the Environment, 2013, Significant Impact Guidelines 1.2 Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies, pp16.

[7] Department of the Environment 2013. 'Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies, Significant impact guidelines 1.2 Environment Protection and Biodiversity Conservation Act 1999', Australian Government, p 10.

[8] CSIRO, 'We are CSIRO', <https://www.csiro.au/en/about/We-are-CSIRO>, accessed 20 July 2023.

[9] National Capital Authority, National Capital Plan, viewed 23 July 2023, https://www.nca.gov.au/sites/default/files/2023-06/national_capital_plan_rev_June_2021-2023_0.pdf, p218.

[10] National Capital Authority, 'Works Approvals', viewed 12 July 2021, https://www.nca.gov.au/planning-heritage/works-approval

[11] CSIRO, 2021, *CSIRO Heritage Strategy for Land and Buildings: 2021-2026,* p 20.

[12] Australia ICOMOS Inc, The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 2013, Australia ICOMOS, Art 1.11.

[13] CSIRO, Annual Report, 2021–22 viewed 24 July 2023, https://www.csiro.au/en/about/corporate-governance/annual-reports/21-22-annual-report

[14] CSIRO, Visit the CSIRO Discovery Centre in Canberra, viewed 23 July 2023, at https://www.csiro.au/en/education/get-involved/class-excursions/discovery-centre

[15] Umwelt 2022, Heritage Impact Assessment CSIRO Black Mountain C.S. Christian Laboratory (Building 201) prepared for CSIRO, p13.

[16] CSIRO, 2021, *CSIRO Heritage Strategy for Land and Buildings: 2021–2026,* p 17.

[17] Australian Heritage Commission, Ask First: A Guide to Respecting Indigenous Heritage Places and Values 2002, Canberra, p 6; Department of the Environment, Engage Early – Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), 2016, Canberra.

[18] Australia ICOMOS Inc, The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013, Australia ICOMOS Inc, Burwood, VIC, 2000, Article 14.

[19] Australia ICOMOS Inc, The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013, Australia ICOMOS Inc, Burwood, VIC, 2000, Article 1.17.

[20] Australia ICOMOS Inc, The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013, Australia ICOMOS Inc, Burwood, VIC, 2000, Article 8.

[21] Australia ICOMOS Inc, The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013, Australia ICOMOS Inc, Burwood, VIC, 2000, Article 15.

[22] ICOMOS Climate Change and Heritage Working Group, 2019, *The Future of our Pasts: Engaging Cultural Heritage in Climate Action*, Table 6.

6 Conservation Policies, Actions and Implementation

6 Conservation policies, actions and implementation

CSIRO Black Mountain contains two individual places of Commonwealth Heritage value and has identified heritage value across the whole site. Its Commonwealth Heritage value means that the place needs to be conserved and managed in accordance with its heritage values, the EPBC Act, and the conservation policies in this HMP. The policies in this section are based on the heritage values and the constraints and opportunities described in Sections 4 and 5.

The active implementation of these policies and actions will ensure that CSIRO meets its obligations under the EPBC Act for conserving the heritage values of CSIRO Black Mountain.

The purpose of conservation policies is to guide the ongoing and future management of the place, and to be integrated into decisions about management, development, interpretation, maintenance and long-term conservation.

The methodology for developing conservation policies is based on the Burra Charter, which provides principles, processes and practice notes for heritage conservation. The Burra Charter has been accepted as the national standard for conservation planning and work by practitioners and all Australian government heritage bodies.

6.1 Conservation policy index

Policy area	Description	Go to page
6. Documentation, Monitoring and Review	Guidance on monitoring the condition of heritage values and maintaining effective and appropriate records.	187
7. Interpretation	Guidance on the presentation and communication of heritage values.	189
8. Training and Research	Guidance on training and research framework.	190

6.2 Implementation priorities, timing and responsibilities

6.2.1 Priorities

Conservation policies listed in this section are prioritised for implementation. There are three priority categories, each responding to a different level of risk to the heritage values:

- **High**: Actions that should be undertaken immediately (within 12 months) to mitigate key risks to the heritage values. These actions are an essential component of the HMP and, without them, heritage values may suffer adverse impacts.
- **Medium**: Actions that should be planned for in order to conserve the heritage values. Resources should be organised in advance to enable their implementation and to ensure conservation of the heritage values.
- **Low**: Actions that are important to the future conservation of the heritage values but which respond to less immediate risks. Resources should be allocated in advance to enable them to be undertaken.

6.2.2 Timing

Timing parameters are provided to guide the implementation of policies and actions in line with their priority. Timing for implementation is categorised as follows:

- immediately upon adoption of the plan (within two months);
- annually;
- as required (when an action demands it);
- ongoing;
- short term (within 12 months);
- medium term (2–3 years); or
- long term (5–10 years).

6.2.3 Responsibilities

As discussed in Section 5.3.1, primary responsibility for implementation, review and monitoring of this HMP and its policies lies with the CSIRO's Business and Infrastructure Services team. This responsibility extends to any chosen contractors who undertake works on behalf of CSIRO. Other relevant parties who have responsibility to act in accordance with the heritage values and policies outlined in this HMP include any users of the place.

The individual responsibilities for the implementation of each policy are listed alongside the actions in Section 6.3 below.

6.3 Conservation policies and Implementation Plan

6.3.1 Policy Area 1: Management and Legislative Processes

Policy 1.1. Adopt this HMP as the principal guiding document for future heritage management of CSIRO Black Mountain. *Refer to Section 5.1*

Policy 1.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.1.1. Submit this HMP to the Department responsible for the EPBC Act and seek approval from the AHC. Following approval, register the HMP as a legislative instrument on the Federal Register of Legislation.	High	Immediately	CSIRO Business and Infrastructure Services
1.1.2. Implement the policies and actions set out in this HMP, in line with identified priority and timing guidelines.	High	Ongoing	CSIRO Business and Infrastructure Services
1.1.3. Refer to this HMP for all matters relating to the heritage values, conservation, and management of CSIRO Black Mountain, including master planning and development proposals.	High	Ongoing	CSIRO Business and Infrastructure Services
1.1.4. Ensure all staff and contractors working on the site have access to the information in this HMP	High	Ongoing	CSIRO Business and

Actions	Priority	Timing	Responsibility
(hardcopy and electronically) and complete suitable induction sessions to understand its importance and intent (see also Policy 8.1).			Infrastructure Services

Policy 1.2. Understand and manage the heritage values of CSIRO Black Mountain. *Refer to Section 5.1*

Policy 1.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.2.1. Ensure that the heritage values of CSIRO Black Mountain form the basis for all conservation processes, management and development actions.	High	Ongoing	CSIRO Business and Infrastructure Services
1.2.2. Manage all values at CSIRO Black Mountain that have been identified in this HMP, whether listed or not.	High	Ongoing	CSIRO Business and Infrastructure Services
1.2.3. Undertake further investigations to determine any natural heritage values associated with the site.	Medium	Medium term	CSIRO Business and Infrastructure Services

Policy 1.3. Ensure heritage management complies with the requirements of the EPBC Act. *Refer to Section 5.2*

Policy 1.3 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.3.1. Assess proposed actions for potential impacts on heritage values, including historic and Indigenous heritage values (see also Policy 2.7).	High	As required	CSIRO Business and Infrastructure Services
1.3.2. Seek approvals in accordance with the EPBC Act for any actions, where required.	High	As required	CSIRO Business and Infrastructure Services
1.3.3. Review and update CSIRO's internal heritage documentation (ie Heritage Strategy and Heritage Register) to reflect the findings of this	Medium	Long term	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
HMP and its actions in accordance with the EPBC Act.			

Policy 1.4. Review and update the HMP every five years, or following any major changes, in accordance with s 341X of the EPBC Act. *Refer to Section 5.2.1*

Policy 1.4 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.4.1. Update the HMP policies, timings and priorities based on the findings of monitoring and review undertaken in accordance with this HMP (see also Section 6.3.6).	Medium	Long term	CSIRO Business and Infrastructure Services
1.4.2 Address any trends revealed in monitoring data by refining processes for management, conservation and/or maintenance accordingly.	Medium	Long term	CSIRO Business and Infrastructure Services
1.4.3. Integrate new research on the heritage values of CSIRO Black Mountain into the updated HMP.	Medium	Long term	CSIRO Business and Infrastructure Services
1.4.4. Where appropriate, obtain specialist heritage advice when reviewing and/or making amendments to this HMP.	Medium	As required	CSIRO Business and Infrastructure Services

Policy 1.5. Ensure adequate funding is available for effective and continuing heritage management. *Refer to Section 5.3*

Policy 1.5 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.5.1. Ensure adequate funding arrangements, resources including staff, and processes are in place to support the effective implementation of this HMP, including future monitoring and review.	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 1.6. Ensure that CSIRO Black Mountain is managed in accordance with all other relevant legislative requirements. *Refer to Section 5.2.3*

Policy 1.6 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.6.1 Review and manage the site in accordance with the NCA administered CSIRO (Black Mountain) Precinct Code and the provisions of the NCP Design and Siting General Code as outlined in the NCP (see also Policy 2.7).	High	As required	CSIRO Business and Infrastructure Services

Policy 1.7. Ensure compliance with the requirements of the EPBC Act should divestment of the site be proposed. *Refer to Section 5.2.1*

Policy 1.7 Actions and Implementation.

Actions	Priority	Timing	Responsibility
1.7.1. Notify the Minister for the Environment in accordance with s 341ZE.	High	As required	CSIRO Business and Infrastructure Services
1.7.2. Ensure that the conditions of transfer to a new owner include endorsement and adoption of this HMP as the guiding document for the ongoing conservation and heritage management of CSIRO Black Mountain.	High	As required	CSIRO Business and Infrastructure Services

6.3.2 Policy Area 2: Conservation, Maintenance and Works Approval

Policy 2.1. Retain, conserve and maintain the physical fabric and elements of the Black Mountain, including Aboriginal archaeological values, landscape and building form in accordance with the significance. *Refer to Sections 4.4 and 5.5.2*

Policy 2.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.1.1. For buildings/elements of **high significance** retain and conserve these with the aim of retaining the maximum amount of original fabric in its original form where possible and enhancing heritage significance. Alteration or removal may be justified in the case of extraordinary or major unforeseen events, or if it can be demonstrated that it would be essential for critical maintenance or operation CSIRO Black Mountain.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.2. For buildings/elements of **moderate significance,** retain and conserve the element and/or fabric. Alteration or removal may be justified if it is important to allow for a compatible use, if it can be demonstrated that it is necessary to the conservation of the place in another way, if it would enhance heritage significance, or if it is important for the maintenance of Black Mountain.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.3. For elements of **low significance,** retain and conserve the element or fabric, but adaptation, modification or removal could proceed if it will result in a demonstrable benefit. Alteration or removal may be justified if there is direct benefit to elements of high significance, or if it is importance for maintenance of CSIRO Black Mountain.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.4. For buildings/elements of **neutral significance or intrusive to the significance,** elements or fabric may be removed, altered or replaced.	High	Ongoing	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
2.1.5. Retain and re-use existing fabric where possible rather than replace with new.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.6. Ensure that maintenance activities do not inadvertently damage physical fabric.	Medium	Ongoing	CSIRO Business and Infrastructure Services
2.1.7. Explore the feasibility of remediating hazardous materials rather than complete removal or demolition of significant fabric, based on an evaluation of risk to user safety and the environment.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.8. Record the nature and outcomes of works, interventions and maintenance works in Corrigo (see also Policy 6.1).	High	As required	CSIRO Business and Infrastructure Services
2.1.9. Undertake all conservation and maintenance works in accordance the principles of the Burra Charter.	High	Ongoing	CSIRO Business and Infrastructure Services
2.1.10. Seek specialist advice and appropriate skills where necessary (see also Policy 2.8).	Medium	As required	CSIRO Business and Infrastructure Services
2.1.11. Ensure that the CSIRO Seasonal Preparedness Plan is up to date and is follows best practice approaches to manage the heritage values and mitigate the risk from fire.	High	Short term and ongoing	CSIRO Business and Infrastructure Services

Policy 2.2. Retain and conserve the views and campus setting of the CSIRO Black Mountain site. *Refer to Section 3.4.2, Table 4.6, 5.5.3*

Policy 2.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.2.1. Maintain significant views to and from CSIRO Black Mountain and ensure that key views are not obstructed by new infrastructure or change.	High	Ongoing	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
2.2.2. Respect and conserve the Foundation Building as a landmark feature within its setting along Clunies Ross Street.	High	Ongoing	CSIRO Business and Infrastructure Services
2.2.3. Retain the significant trees and cultural plantings as identified in this HMP.	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 2.3. Respect the heritage values of CSIRO Black Mountain when planning any new works or changes. *Refer to Section 5.5, 5.5.3, 5.1.2, 5.1.3*

Policy 2.3 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.3.1. Mark the location of the Aboriginal archaeological PAD BM2 and artefact CSIRO BMIF1 on site plans as a sensitive zone and avoid development of this area. See also Policy 2.9, Policy 5.2.	High	Ongoing	CSIRO Business and Infrastructure Services
2.3.2. Follow 'design in context' advice when considering new development, regarding scale, set backs, siting, orientation, form, mass and appropriateness to nearby buildings.	High	Ongoing	CSIRO Business and Infrastructure Services
2.3.3. Ensure any works are consistent with the principles of the Burra Charter, including 'do as much as necessary to care for the place and to make it useable but otherwise change as little as possible'.	High	Ongoing	CSIRO Business and Infrastructure Services
2.3.4. Seek specialist heritage advice when appropriate (see also Policy 2.8).	Medium	As required	CSIRO Business and Infrastructure Services

Policy 2.4. Manage the heritage values of CSIRO Black Mountain sustainably for future generations. *Refer to Section 5.9*

Policy 2.4 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.4.1. Investigate and implement environmental sustainability initiatives and manage potential impacts to heritage values.	Medium	Medium term	CSIRO Business and Infrastructure Services
2.4.2. Investigate risks and impacts of climate change to CSIRO Black Mountain and its heritage values, and adopt practical measures to account for these risks (see also Policy Action 2.1.11).	Medium	Medium term	CSIRO Business and Infrastructure Services
2.4.3. Consider in the embodied energy held in existing buildings when investigating demolition and redevelopment.	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 2.5. Develop and implement a condition and maintenance program to monitor and conserve the heritage values of CSIRO Black Mountain. *Refer to Section 5.5*

Policy 2.5 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.5.1. Undertake regular condition inspections of the key heritage buildings by qualified professionals to review the physical condition of fabric (see also 6.3).	High	Medium term	CSIRO Business and Infrastructure Services
2.5.2. Develop and implement an ongoing cyclical maintenance program.	High	Short term	CSIRO Business and Infrastructure Services
2.5.3. Update the maintenance requirements following any major changes to the place or its fabric.	Medium	As required	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
2.5.4. Undertake and record the outcomes of an ongoing cyclical maintenance program.	High	Ongoing	CSIRO Business and Infrastructure Services
2.5.5. Record the nature and outcomes of works, interventions and maintenance works in Corrigo (see also Policy 6.1).	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 2.6. Refer to this HMP, CSIRO's internal heritage processes to make consistent and effective decisions on the potential impacts of proposed conservation works, activities and maintenance. *Refer to Section 5.1.2, 5.2.1, 5.3*

Policy 2.6 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.6.1. Refer to this HMP for conservation management, works and appropriate maintenance at CSIRO Black Mountain.	High	As required	CSIRO Business and Infrastructure Services
2.6.2. Refer to the CSIRO's internal heritage documentation (ie Heritage Strategy) for EPBC Act obligations, the decision-making hierarchy and internal works approval processes.	High	As required	CSIRO Business and Infrastructure Services
2.6.3. Consult with internal and external stakeholders when making decisions about the works, activities and maintenance to the site.	Medium	As required	CSIRO Business and Infrastructure Services
2.6.4. Document all decisions and keep records in Corrigo for future reference by the CSIRO and heritage consultants (see also Policy 6.1).	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 2.7. Assess all actions for potential impacts on the heritage values of the CSIRO Black Mountain. *Refer to Section 5.2*

Policy 2.7 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.7.1. Prepare a heritage impact assessment in accordance with the EPBC Act Significant Impact Guidelines 1.2 to assess any proposal	High	As required	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
or action for its potential to have a significant impact on the heritage values, including both historical and Aboriginal cultural values.			
2.7.2. Follow the CSIRO's internal self-assessment process to determine the likelihood of a significant impact and the need for an EPBC Act referral.	High	As required	CSIRO Business and Infrastructure Services
2.7.3. Follow the NCA's works approval process for development proposals in designated areas.	High	As required	CSIRO Business and Infrastructure Services

Policy 2.8. Engage appropriately qualified personnel, consultants and contractors to guide the management and conservation of heritage values. *Refer to Section 5.1.3*

Policy 2.8 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.8.1. Engage contractors and tradespeople with specialist expertise to advise and undertake conservation works and any specialist maintenance tasks.	High	As required	CSIRO Business and Infrastructure Services
2.8.2. Seek advice from professional heritage consultants regarding heritage significance assessments, interpretation and impact assessments.	Medium	As required	CSIRO Business and Infrastructure Services

Policy 2.9. Employ an appropriate protocol in the event of unforeseen discoveries. *Refer to Section 5.1.4*

Policy 2.9 Actions and Implementation.

Actions	Priority	Timing	Responsibility
2.9.1. Implement an unanticipated finds protocol if Aboriginal or historical archaeological deposits are encountered while undertaking works, particularly in the zone of the PAD BM2 and near the isolated artefact CSIRO BMIF1. Refer to Appendix D—Unanticipated Finds Protocol.	High	As required	CSIRO Business and Infrastructure Services

6.3.3 Policy Area 3: Use

Policy 3.1. Continue to use and recognise the heritage values of CSIRO Black Mountain as a place of scientific research and discovery. *Refer to Section 5.4*

Policy 3.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
3.1.1. Continue the existing use of the place as research campus.	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 3.2. Avoid the introduction of a new use, or function, that may result in an adverse heritage impact. *Refer to Section 5.4.1*

Policy 3.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
3.2.1. Ensure any proposed new or additional uses are compatible with the heritage values and are complementary to the use of CSIRO Black Mountain.	Medium	As required	CSIRO Business and Infrastructure Services
3.2.2. If considering new uses for the Phytotron and Phenomics Centre, ensure they are compatible with existing fabric and would not result in an adverse heritage impact.	High	As required	CSIRO Business and Infrastructure Services
3.2.3. Avoid changes in use that lessen, obscure, degrade or confuse the heritage values of CSIRO Black Mountain.	High	Ongoing	CSIRO Business and Infrastructure Services
3.2.4. Assess the heritage impacts of any proposed changes in use (see also Policy 2.7)	High	As required	CSIRO Business and Infrastructure Services

6.3.4 Policy Area 4: Access, safety and security

Policy 4.1. Ensure upgrades for safety, accessibility and building compliance are sympathetic to the heritage values of CSIRO Black Mountain. *Refer to Section 5.1, 5.4.3*

Policy 4.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
4.1.1. Seek opportunities to re-use existing fittings and locations to avoid visual clutter and physical impacts to significant fabric when replacing or introducing new equipment and services.	Medium	As required	CSIRO Business and Infrastructure Services
4.1.2. Explore sympathetic design solutions to address safety, accessibility and building compliance requirements which avoid impacts on important views and setting of CSIRO Black Mountain.	Medium	As required	CSIRO Business and Infrastructure Services
4.1.3. Seek advice from heritage professionals when planning upgrade works (see also Policy 2.8).	Medium	As required	CSIRO Business and Infrastructure Services

Policy 4.2. Consult with the ACT Aboriginal community in relation to site. *Refer to Section 5.7.1*

Policy 4.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
4.2.1. Investigate options to engage with the local Aboriginal community around access and use of the important landscape (see also Policy 5.2).	Medium	Medium term	CSIRO Business and Infrastructure Services

Policy 4.3. Encourage public access to CSIRO Black Mountain. *Refer to Section 5.1, 5.4.3*

Policy 4.3 Actions and Implementation.

Actions	Priority	Timing	Responsibility
4.3.1. Allow for continued public access to CSIRO Black Mountain through the Discovery Centre, public events and other opportunities, as appropriate.	High	Ongoing	CSIRO Business and Infrastructure Services

Policy 4.4. Integrate heritage considerations into safety and risk management. *Refer to Section 5.10*

Policy 4.4 Actions and Implementation.

Actions	Priority	Timing	Responsibility
4.4.1. Identify likely risks to the place and its heritage values.	Medium	Medium term	CSIRO Business and Infrastructure Services
4.4.2. Develop and implement preparation, mitigation and response strategies to minimise potential risks to heritage values.	Medium	Medium term	CSIRO Business and Infrastructure Services
4.4.3. Integrate heritage considerations into any systems or processes for early warning, prevention, and management of disasters and risks.	Medium	Medium term	CSIRO Business and Infrastructure Service

6.3.5 Policy Area 5: Stakeholder and Community Consultation

Policy 5.1. Undertake consultation in accordance with a consultation protocol. *Refer to Section 5.7.1*

Policy 5.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
5.1.1. Prepare a consultation protocol which identifies when and how the community will be consulted in relation to CSIRO Black Mountain, taking into account the policies of this HMP.	Medium	Short term	CSIRO Business and Infrastructure Services

Policy 5.2. In consultation with the local Aboriginal community, interpret the Aboriginal past use of this important landscape. *Refer to Section 5.7*

Policy 5.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
5.2.1. Manage the Indigenous Heritage values identified in this HMP and in further study as an important part of the site's significance (see also Policy 2.3, Policy 4.2, Policy 5.2).	High	Ongoing	CSIRO Business and Infrastructure Services
5.2.2. Consult with the ACT Aboriginal community in relation to impact assessments, ongoing management of the PAD BM2 area and any interpretation of Indigenous Heritage values.	High	Short term and ongoing	CSIRO Business and Infrastructure Services
5.2.3. Ensure consultation with members of the Aboriginal community is done in accordance with the *Ask First* and *Engage Early* guidelines when updating this HMP.	High	Long term	CSIRO Business and Infrastructure Services

Policy 5.3. Consult with community stakeholders with an interest in the heritage values of CSIRO Black Mountain. *Refer to Section 5.7*

Policy 5.3 Actions and Implementation.

Actions	Priority	Timing	Responsibility
5.3.1. Consult with groups who have specific associations the place on proposals with the potential to impact on the heritage values of CSIRO Black Mountain, such as current and former CSIRO staff. Provide this draft HMP for comment to key stakeholders, and the general public.	Medium	As required	CSIRO Business and Infrastructure Services

Policy 5.4. Consult with the Department responsible for the EPBC Act regarding heritage management of CSIRO Black Mountain. *Refer to Section 5.7*

Policy 5.4 Actions and Implementation.

Actions	Priority	Timing	Responsibility
5.4.1. Maintain regular liaison with the Department responsible for the EPBC Act.	Medium	Ongoing	CSIRO Business and Infrastructure Services
5.4.2. Seek informal comment from the Department as part of the decision-making process to assess proposals that have the potential to impact on the heritage values of CSIRO Black Mountain.	Medium	As required	CSIRO Business and Infrastructure Services
5.4.3. Discuss options for arranging a formal CHL nomination of the CSIRO Black Mountain site in accordance with the findings of Section 4.2.2.	Medium	Long Term	CSIRO Business and Infrastructure Services

6.3.6 Policy Area 6: Documentation, Monitoring and Review

Policy 6.1. Keep adequate and accurate records of decision-making, conservation and maintenance works. *Refer to Section 5.6.2*

Policy 6.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
6.1.1. Record the nature and outcomes of works, interventions and the cyclical maintenance program in the Corrigo, or equivalent.	High	Ongoing	CSIRO Business and Infrastructure Services
6.1.2. Maintain records of decision-making and keep them for future reference by CSIRO, heritage consultants and other relevant parties.	High	Ongoing	CSIRO Business and Infrastructure Services
6.1.3. Undertake photographic archival recording of relevant areas prior to any major works/new development.	Medium	As required	CSIRO Business and Infrastructure Services
6.1.4. Manage any sensitive information held or collected by the CSIRO in accordance with the Privacy Act 1988 (Cth) and any other relevant regulations or codes of ethics.	Medium	As required	CSIRO Business and Infrastructure Services

Policy 6.2. Collect and conserve documents relating to the construction, development, management and ongoing use of CSIRO Black Mountain. *Refer to Section 5.6.2*

Policy 6.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
6.2.1. Update and integrate the CSIRO Heritage Register and Corrigo. The update should include records/archives of relevance to the heritage values of CSIRO Black Mountain.	Medium	Long term	CSIRO Business and Infrastructure Services
6.2.2. Collate historic documents and background information into a comprehensive repository/index to be made available to place	Low	Long term	CSIRO Business and Infrastructure Services

Actions	Priority	Timing	Responsibility
managers and users on Corrigo or another database.			

Policy 6.3. Monitor, review and report on the condition of CSIRO Black Mountain's heritage values.

Policy 6.3 Actions and Implementation.

Actions	Priority	Timing	Responsibility
6.3.1. Regularly monitor CSIRO Black Mountain for potential impacts on its heritage values and include this data in Corrigo (see also Policy 2.5).	High	Ongoing	CSIRO Business and Infrastructure Services
6.3.2. Collate and review all monitoring data and use this information to guide ongoing decisions about the conservation of CSIRO Black Mountain's heritage values (see also Policy 6.1).	Medium	Annually	CSIRO Business and Infrastructure Services
6.3.3. Prepare an annual report on the condition and management of CSIRO Black Mountain and implementation of this HMP and provide to the head of and CSIRO Business and Infrastructure Services.	High	Annually	CSIRO Business and Infrastructure Services

Policy 6.4. Monitor the efficiency and effectiveness of this HMP on an ongoing basis. *Refer to Section 5.3.1*

Policy 6.4 Actions and Implementation.

Actions	Priority	Timing	Responsibility
6.4.1. Regularly review the status of HMP policy implementation.	Medium	Annually	CSIRO Business and Infrastructure Services
6.4.2. Undertake a review and update of this HMP every five years, or following any major changes (see also Policy 1.4).	Medium	Long term	CSIRO Business and Infrastructure Services

6.3.7 Policy Area 7: Interpretation

Policy 7.1. Develop an interpretation strategy/plan to guide effective interpretation of the heritage values of CSIRO Black Mountain. *Refer to Section 5.8*

Policy 7.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
7.1.1. Prepare an interpretation strategy/ plan to identify possible interpretation opportunities specific to the CSIRO Black Mountain.	High	Medium term	CSIRO Business and Infrastructure Services
7.1.2. Review existing interpretation initiatives and their efficacy.	High	Medium term	CSIRO Business and Infrastructure Services
7.1.3. Prepare an interpretation strategy/ plan to interpret the Aboriginal Scarred tree and its significance to the local community.	High	Medium term	CSIRO Business and Infrastructure Services
7.1.4. Ensure the key messages arising from the heritage values are conveyed in the interpretation of the place.	Medium	Medium term	CSIRO Business and Infrastructure Services
7.1.5. Consult with and involve relevant stakeholders (ie current and former CSIRO staff, and local Aboriginal communities) in the development of the interpretation strategy/plan and specific interpretation initiatives, as appropriate (see also Policy 5.1).	Medium	As required	CSIRO Business and Infrastructure Services
7.1.6. Explore opportunities for interpretative initiatives that transmit the heritage values to the local and wider community, as appropriate (eg off-site signage).	Low	Long term	CSIRO Business and Infrastructure Services

6.3.8 Policy Area 8: Training and Research

Policy 8.1. Develop the capacity of CSIRO staff and contractors to manage the heritage values of CSIRO Black Mountain. *Refer to Section 5.3.2*

Policy 8.1 Actions and Implementation.

Actions	Priority	Timing	Responsibility
8.1.1. Ensure CSIRO staff and contractors have access to the information in this HMP (hardcopy and electronically).	High	Immediately	Statutory Planning and Heritage Team
8.1.2. Develop a heritage training program for CSIRO staff involved in heritage management, and ensure key decision-making staff (ie Facilities Manager, Operations Manager) at CSIRO Black Mountain attend. Ensure decision-making staff are familiar with the heritage requirements of CSIRO Black Mountain, the EPBC Act and this HMP, and undertake annual 'refresher' training.	High	Medium term and annually	CSIRO Business and Infrastructure Services
8.1.3. Incorporate information on CSIRO Black Mountain's heritage values and significant fabric into the induction program for general staff and contractors. A general heritage-awareness induction should explain the heritage significance of the site, where potential impacts may arise and where further information can be sought.	High	Short term	CSIRO Business and Infrastructure Services
8.1.4. Incorporate new research findings as they arise into information and training for staff and contractors to maintain the highest possible management and interpretation standards (see also Policy 8.2).	Medium	As required	CSIRO Business and Infrastructure Services

Policy 8.2. Continue to foster and promote research on the heritage values of the CSIRO Black Mountain. *Refer to Section 5.3.2*

Policy 8.2 Actions and Implementation.

Actions	Priority	Timing	Responsibility
8.2.1. Prepare a schedule of priority research areas to encourage research on areas that will assist in the management of heritage values.	Low	Medium term	CSIRO Business and Infrastructure Services
8.2.2. Undertake an oral history/interview project with current and former CSIRO staff to understand more about the history of CSIRO Black Mountain.	Low	Long term	CSIRO Business and Infrastructure Services
8.2.3. Incorporate new research information into the CSIRO Heritage Register/ Corrigo as soon as it becomes available and ensure that it is used for interpretation or conservation as appropriate.	Medium	Long term	CSIRO Business and Infrastructure Services
8.2.4. Make CSIRO records available for research generally, especially those relating to the historical development of CSIRO Black Mountain.	Low	Long term	CSIRO Business and Infrastructure Services

Appendices

Appendices

Appendix A—Glossary, abbreviations and definitions

Table A1: Abbreviations

Term	Definition/explanation
ACT	Australian Capital Territory
AHC	Australian Heritage Council
AHDB	Australian Heritage Database
ANIC	Australian National Insect Collection
APPF	Australian Plant Phenomics Facility
CHL	Commonwealth Heritage List
CSIR	Council for Scientific and Industrial Research (1926–1949)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
FCC	Federal Capital Commission Commonwealth Department responsible for the planning and development of Canberra from 1 January 1925 until the Great Depression.
GML	GML Heritage Pty Ltd
HIA	Heritage Impact Assessment
HMP	Heritage Management Plan
ICOMOS	International Council on Monuments and Sites
MNES	Matter of National Environmental Significance
NAA	National Archives of Australia
NCA	National Capital Authority
NCP	National Capital Plan
NHL	National Heritage List
NLA	National Library of Australia

Term	Definition/explanation
NSW	New South Wales
PAD	Potential Archaeological Deposit
RAO	Representative Aboriginal Organisation. The RAOs in the ACT are the: • Buru Ngunnawal Aboriginal Corporation (BNAC) • King Brown Tribal Group • Mirrabee • Ngarigu Currawong Clan
RNE	Register of the National Estate The RNE ceased to have statutory effect in February 2012 and listings do not provide direct legal protection or prescriptive requirements for management. The RNE is retained by the Commonwealth as an archival database of places.

This HMP is informed by the Burra Charter in its use of the key terms and definitions, as well as other key documents including the EPBC Act. Technical terminology is outlined below.

Table A2: Technical terminology

Term	Definition/explanation
Aboriginal cultural values/Aboriginal community	Many Aboriginal communities prefer the use of the term 'Aboriginal' to the use of the term 'Indigenous'. This HMP uses the term 'Aboriginal' in reference to the Aboriginal community but maintains the term 'Indigenous' where it is defined by legislative requirements in regard to the assessment of heritage values.
Indigenous heritage value	A heritage value of a place that is of significance to Indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history, as defined in the EPBC Act
Adaptation	Modifying a place to suit proposed compatible uses.
Commonwealth Heritage List	The CHL is a list of heritage places owned or controlled by the Australian Government. Places in the list can have natural, Indigenous and/or built heritage values, or a combination of these. Places included in the list have been found to be significant for one or more of the nine criteria for the CHL. Places included in the list range from local through to World heritage levels of importance.
Commonwealth Heritage value	The values for which a place is included in the Commonwealth Heritage List (CHL). National Heritage values are significant heritage values for reasons such as of historical, research, aesthetic or social importance, or due to a place's significant rarity, creative or technical achievement, characteristic features of a class of place, association with important people or importance as part of Indigenous tradition.

Term	Definition/explanation
Compatible use	A use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance
Conservation	All the processes of looking after a place so as to retain its cultural significance. It includes maintenance and may—according to circumstance—include preservation, restoration, reconstruction and adaptation and will be commonly a combination of more than one of these.
Cultural significance	Aesthetic, historic, scientific, social, spiritual or other value for past, present or future generations. Cultural significance can include Indigenous heritage values.
Cumulative impact	The impacts arising from a range of past, present and future projects and activities in an area which in combination may have an overall significant effect on a single heritage asset.
Fabric	All the physical material of the place.
Heritage values	A place's natural and cultural environment having aesthetic, historic, scientific or social significance, or other significance, for current and future generations of Australians. Heritage values may be tangible or intangible, and are embedded in the attributes of a place such as setting, function, form, fabric, use, associations, access, traditions, cultural practices and experiential responses. Heritage values may be formalised through assessment or inclusion on heritage registers or lists, but may also be present outside formal frameworks. See also: cultural significance.
Heritage impact assessment	A heritage impact assessment (HIA) is a report that analyses the potential impacts of a proposal on the heritage values of a place. The HIA also identifies mitigation and management measures to reduce the severity of impacts, where possible. Key inputs to a HIA include the alternatives considered in the planning process for the proposal. A HIA assists with deciding if a proposal needs to be referred under the EPBC Act. HIAs need to be prepared using the EPBC Act Significant Impact Guidelines 1.1 and 1.2.
Maintenance	The continuous protective care of the fabric, contents and setting of a place, and is to be distinguished from repair. Repair involves restoration or reconstruction, and it should be treated accordingly.
National Heritage value	The values for which a place is included in the National Heritage List (NHL). National Heritage values are outstanding heritage values to the nation for reasons such as of historical, research, aesthetic or social importance, or due to a place's significant rarity, creative or technical achievement, characteristic features of a class of place, association with important people or importance as part of Indigenous tradition.
Place	A site, area, building or other work, group of buildings or other works together with associated contents and surroundings.
Preservation	Maintaining the fabric of a place in its existing state and retarding deterioration.

Term	Definition/explanation
Reconstruction	Returning a place as nearly as possible to a known earlier state and is distinguished by the introduction of materials (new or old) into the fabric. This is not to be confused with either re-creation or conjectural reconstruction which are outside the scope of this Charter.
Restoration	Returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

Appendix B—EPBC Act Compliance Table

Commonwealth Heritage Management Plan requirements

The EPBC Regulations also set out additional requirements for heritage management plans for Commonwealth Heritage Places to address at Schedule 7A. The compliance of the HMP with these requirements is addressed at Table B1.

Table B1: Requirements for Commonwealth Heritage Management Plans—EPBC Regulations Schedule 7A.

Regulation Reference	Requirement	HMP Section
Schedule 7A (a)	Establish objectives for the identification, protection, conservation, presentation and transmission of the Commonwealth Heritage values of the place.	Section 1.2
Schedule 7A (b)	Provide a management framework that includes reference to any statutory requirements and agency mechanisms for the protection of the Commonwealth Heritage values of the place.	Section 5.2
Schedule 7A (c)	Provide a comprehensive description of the place, including information about its location, physical features, condition, historical context and current uses.	Sections 2, 3
Schedule 7A (d)	Provide a description of the Commonwealth Heritage values and any other heritage values of the place.	Section 4
Schedule 7A (e)	Describe the condition of the Commonwealth Heritage values of the place.	Section 4.4
Schedule 7A (f)	Describe the method used to assess the Commonwealth Heritage values of the place.	Section 4.2
Schedule 7A (g)	Describe the current management requirements and goals, including proposals for change and any potential pressures on the Commonwealth Heritage values of the place.	Section 5
Schedule 7A (h)	Have policies to manage the Commonwealth Heritage values of a place, and include in those policies guidance in relation to the following:	
	(i). management and conservation processes to be used:	Sections 6.3.2
	(ii). the access and security arrangements, including access to the area for Indigenous people to maintain cultural traditions;	Section 6.3.4
	(iii). the stakeholder and community consultation and liaison arrangements;	Section 6.3.5

Regulation Reference	Requirement		HMP Section
	(iv).	the policies and protocols to ensure that Indigenous people participate in the management process;	Section 6.3.2, 6.3.3, 6.3.4, 6.3.5
	(v).	the protocols for the management of sensitive information;	Section 6.3.6
	(vi).	the planning and management of works, development, adaptive re-use and property divestment proposals;	Sections 6.3.2, 6.3.3
	(vii).	how unforeseen discoveries or disturbance of heritage are to be managed;	Section 6.3.2
	(viii).	how, and under what circumstances, heritage advice is to be obtained;	Section 6.3.2
	(ix).	how the condition of Commonwealth Heritage values is to be monitored and reported;	Section 6.3.6
	(x).	how records of intervention and maintenance of a heritage places register are kept;	Section 6.3.6
	(xi).	the research, training and resources needed to improve management; and	Section 6.3.8
	(xii).	how heritage values are to be interpreted and promoted.	Section 6.3.7
Schedule 7A (i)	Include an implementation plan.		Section 6.3
Schedule 7A (j)	Show how the implementation of policies will be monitored.		Section 6.3.6
Schedule 7A (k)	Show how the management plan will be reviewed.		Section 6.3.6

Commonwealth Heritage management principles

The following table sets out the Commonwealth Heritage management principles contained in Schedule 7B of the EPBC Regulations, and the relevant sections of the HMP that demonstrate consistency with the principles.

Table B2: Commonwealth Heritage management principles—EPBC Regulations Schedule 7B.

Regulation Reference	Management Principle	HMP Section
Schedule 5B (1)	The objective in managing Commonwealth Heritage places is to identify, protect, conserve, present and transmit, to all generations, their Commonwealth Heritage values.	Section 1.2

Regulation Reference	Management Principle	HMP Section
Schedule 7B (2)	The management of Commonwealth Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their Commonwealth Heritage values.	Sections 5.1, 5.2.1, 5.6, 6.3.2, 6.3.6, 6.3.8
Schedule 7B (3)	The management of Commonwealth Heritage places should respect all heritage values of the place and seek to integrate, where appropriate, any Commonwealth, State, Territory and local government responsibilities for those places.	Section 4, 5.1, 5.2, 6.3.1, 6.3.2
Schedule 7B (4)	The management of Commonwealth Heritage places should ensure that their use and presentation is consistent with the conservation of their Commonwealth Heritage values.	Section 5.4, 5.6, 5.7, 5.9, 6.3.2,6.3.3, 6.3.7
Schedule 7B (5)	The management of Commonwealth Heritage places should make timely and appropriate provision for community involvement, especially by people who: a) have a particular interest in, or associations with, the place; and b) may be affected by the management of the place.	Sections 5.7, 6.3.5
Schedule 7B (6)	Indigenous people are the primary source of information on the value of their heritage and that the active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.	Sections 1.5.4, 3.3, 4.2, 5.1.4, 5.2, 5.7, 5.8, 6.3.2, 6.3.4, 6.3.5
Schedule 5B (7)	The management of Commonwealth Heritage places should provide for regular monitoring, review and reporting on the conservation of Commonwealth Heritage values.	Sections 5.6, 6.3.6

Appendix C—Maintenance Dos and Don'ts

The following Dos and Don'ts guide provide general guidance on the types of maintenance activities that may arise at the CSIRO Black Mountain buildings and landscape plantings. The technical instruments at the site have not been addressed here as they should be guided by suitably qualified personnel.

Table C1: Table of dos and don'ts for maintenance tasks.

Category	Do	Do Not
General	Understand the heritage values of the site and elements when planning and before undertaking activities. When undertaking works to significant elements, use traditional techniques and materials, where appropriate. Appreciate the unique environment you are in. Always check the HMP. Ask if you are not sure. Do carefully piece in new work, respecting the original fabric.	Do not undertake activities in areas where there is uncertainty about heritage values. Do not undertake work that is unsympathetic because it is cheaper/easier/faster. Do not remove evidence of original or features such as paint colour schemes and brackets. Leave the evidence and work around it. Do not leave buildings vacant as this will accelerate their decay.
Maintenance	Respect the heritage values of the site. Facilitate conservation, restoration and reconstruction of heritage elements and, where possible, original functions to particular buildings or spaces. Retain all original building fabric as far as practicable. New or added fabric should be able to be identified as being new on close inspection. Remove intrusive fabric, where appropriate, as the opportunity arises. Where damage occurs, replace damaged elements with the same fabric or, at least, match the existing as closely as possible. Undertake photographic recordings or archival recordings for assets with heritage values prior to undertaking substantial maintenance or refurbishment works. Maintain records of maintenance works in Corrigo. Engage specialist tradespeople when undertaking works to significant built or landscape elements.	Do not replace or remove fabric without first having a thorough understanding of the impact on the heritage values. Do not replace fabric with dissimilar or metallurgically incompatible materials. Do not remove elements with heritage value unless considered essential for safety, structural or critical operational reasons. Do not make new penetrations in significant building fabric where an existing one can be used and/or adapted, or alternatives can be achieved. Do not paint surfaces that have not previously been painted. Do not disrupt and remove asbestos without a budget to restore and make good. Do not undertake archival recordings as an alternative to the conservation and maintenance of significant fabric.

Category	Do	Do Not
	Maintain a record of original and early fixtures and fittings, and make it available when undertaking works.	
Brickwork	Re-point mortar joints, as required. Maintain the profile of the mortar joints (eg raked, flush, struck, beaded). Replace damaged bricks with similar bricks. Affix elements to mortar joints in preference to fixing into the bricks themselves. Replace failed fixtures with more durable metals, if required. Limit the size and number of plugs and anchors.	Do not use an abrasive method (eg sandblast or water blast) to clean bricks as this can damage the surface and mortar joints. Do not seal with water repellent or modern impervious paints as this prevents the bricks/building from 'breathing'.
Render	Do replace loose or cracked render. Defective render can be found by tapping it. If there is a hollow sound, it may be loose. These areas can be patched. Do use traditional, soft lime-based render. This material is permeable and will absorb rainwater and dry out naturally. Soft renders also allow for movement in the wall (such as expansion due to warm summer weather) without being damaged. Apply render in three coats in order to obtain the required cover. Do apply render to provide a smooth or lined finish to match the original wall appearance. Similarly, repair moulded profiles to match original detail. Use traditional and permeable lime wash finishes of rendered areas to retain permeability.	Do not ignore cracked or loose render. Defective render might be letting water into the brick of the wall, causing deterioration and damp. Do not use modern, hard cement-based render. As this material is impermeable and harder than the stone/brick behind it, any water entering the wall will be trapped behind the render, causing the deterioration of the brick and damp. Cement mortar is inflexible and will crack in cold or warm weather, letting moisture into the wall. Do not render features that were not previously rendered. Do not coat render with modern impermeable or 'long life' paints. These will damage the render and potentially the wall behind it by not allowing the render to 'breathe'. Do not remove render all together where it is an original feature of the building. This will have a negative impact on the character and appearance of the building.
Rainwater Goods	Inspect and clean gutters and rainwater disposal regularly, ensuring they are kept clear of leaf litter and debris. Always ensure the discharge of water away from buildings. Install gutter guard if necessary and appropriate. Ensure it is not visually prominent.	Do not paint previously unpainted surfaces. Do not replace materials with another material (eg PVC piping) or use different profiles.

Category	Do	Do Not
	Re-secure/connect rainwater goods if loose or sagging. Repair where rusted or damaged, or replace if beyond repair. Replace with complementary material with similar form, materiality and aesthetic, observing the like-for-like principle.	
Paint	Regularly maintain paintwork. Follow approved paint schedules. Prepare surfaces (clean and dust free) thoroughly before painting/repainting. Protect surrounding fabric before commencing painting. Consider the current colour scheme, setting, history and heritage values of the element before selecting a colour. Preference would be to repaint in a similar tonal colour. Choose appropriate external and internal paints that consider climatic and durability factors.	Do not use abrasive methods to remove paint (eg grit blasting, caustic baths), which can cause significant damage to fabric. Do not paint previously unpainted surfaces (eg face brick, timber, concrete, tile and sheet metal). Do not depart from existing paint schemes and approved paint schedules.
Windows and Glass	Repair in preference of replacing. Ensure replacement glass can be accommodated in existing frames. Replace broken glass, observing the like-for-like principle. Monitor seals and replace defective window putty, as required.	Do not alter window style, size or framing without assessing impact first. Do not replace decorative glass with plain glass. Such glass is often a historic detail and in many cases is an important decorative feature (ie skylights in Building 101).
Timber	Secure defective members pending repair. Repair in preference of replacement. Replace with complementary material with similar form, materiality and aesthetic, observing the like-for-like principle. Ensure termite protection is adequate on timber elements. Maintain paintwork on timber elements as basic protection. Seek advice from specialist tradespeople for repairs or replacement of timber in significant elements.	Do not paint previously unpainted surfaces. Do not make alterations that would compromise the effectiveness of termite barriers.

Category	Do	Do Not
Joinery and Carpentry	Maintain painted surfaces regularly. Monitor the condition of external timber work and joinery, and repair/reconstruct to match original where deteriorated. Patch joinery, where possible, rather than replacing, using matching profiles. Undertake major repairs in a workshop. Retain original hardware and use sympathetic hardware where missing.	Do not replace with other, dissimilar materials.
Metal Elements	Retain original metal elements and fixings. Refix metal sheeting where loose or lifting, using a prevalent fixing technique. Incrementally replace roof and wall sheeting when damaged or when it has reached the end of its serviceable life. Stabilise and conserve existing steel profiles by maintaining the condition of the paint finish and priming rebated surfaces. Use or retain original hardware, where possible. Replace with complementary materials with similar form, materiality and aesthetic, observing the like-for-like principle. Monitor for signs of corrosion of metal elements. Clean and remove rust carefully and with regard to significant fabric. Match metals to prevent galvanic corrosion.	Do not allow roof or walls to deteriorate causing water ingress and pest penetration and infestation. Do not replace with dissimilar materials (eg aluminium for galvanised steel). Do not mix dissimilar materials that will chemically react with each other (eg lead flashing with zincalume roof sheeting). Do not paint previously unpainted surfaces.
Services	Do remove redundant services to minimise any potential visual impact and install new services using existing cavities. Do ensure services are regularly inspected for damage and maintained. Do install appropriate drainage against buildings. Do ensure downpipes are connected to stormwater outlets. Do conceal services to minimise visual impact.	Do not run services in highly visible areas. Carefully consider the visual impact of the work you are proposing and conceal services and position new elements in the least obtrusive locations. Fixings may damage significant building fabric and the installation of new equipment may impact aesthetic values. Do not allow faulty services to continue to function as this may lead to further damage and increased repair costs. Do not have hard concrete surfaces abutting buildings.

Category	Do	Do Not
		Do not allow downpipes or overflows from plant and equipment to fall on the ground around a building or structure. Unobtrusively connect to the nearest underground stormwater reticulation system. Dampness is a major contributor to the deterioration of historic building fabric. Do ensure drains are cleared of debris Do not locate new services along main elevations.

Appendix D—Unanticipated Finds Protocol

Unanticipated Finds Protocol

Protocol to be followed in the event that previously unrecorded or unanticipated archaeological material (objects, artefacts, deposits or relics) are encountered.

If the finds are suspected Aboriginal artefacts:

1 All ground surface disturbance in the area of the finds should cease immediately when unanticipated archaeological material is uncovered. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted.

2 All work in the vicinity of the discovery will cease.

3 Contact the project archaeologist to assess the nature of the finds.

4 The project archaeologist will attend the site and view the finds. If the project archaeologist determines that the finds are Aboriginal artefacts, the archaeologist will contact the Representative Aboriginal Organisations (RAOs) and ACT Heritage.

5 The project archaeologist will meet on site with the RAOs and the site project manager, to determine a strategy for managing the artefacts and the site area.

6 After a strategy is determined, the project archaeologist will record the artefacts and their site context. This will include a significance assessment and the lodgement of site information for all new recordings with ACT Heritage.

7 Work can recommence once management strategies have been enacted, and once sites have been recorded as per standard practice.

If the finds are suspected historical archaeological artefacts:

1 All ground surface disturbance in the area of the finds should cease immediately when unanticipated archaeological material is uncovered. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted.

2 All work in the vicinity of the discovery will cease.

3 Contact the project archaeologist to assess the nature of the finds.

4 The project archaeologist will attend the site and view the artefacts. They will assess the nature, extent and significance of the finds and their context.

5 The project archaeologist will discuss management options with the site project manager.

6 After a strategy is determined, the project archaeologist will record the finds. This will include a significance assessment and the lodgement of relevant site information with ACT Heritage.

7 Work can recommence once management strategies have been enacted for all finds, and once sites have been recorded as per standard practice.

Protocol to be followed in the event that suspected human remains are encountered.

1 All ground surface disturbance in the area of the finds should cease immediately when the finds are uncovered.

   a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted.

   b. The site supervisor will be informed of the find(s). If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context as possible (be aware that the site may be considered a crime scene containing forensic evidence). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

2 Immediately notify the following people of the discovery:

   a. the local police (this is required by law);

   b. ACT Heritage;

   c. representatives from the RAOs (where appropriate); and

   d. the project archaeologist (if not already present).

3 Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the police and/or coroner.

4 Construction related works in the area of the find(s) may not resume until the Project manager receives written approval from the relevant statutory authority: from the police or coroner in the event of an investigation; and/or from ACT Heritage in the case of human remains outside of the jurisdiction of the police or coroner. ACT Heritage may seek input from the RAOs and the project archaeologist.

5 Facilitate, in cooperation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

6 If the specialist identifies the bone as non-human then, where appropriate, the protocol for the discovery of historical or Aboriginal artefacts (above) should be followed.

7 If the specialist determines that the bone material is human, then the proceeding course of action may be of three types:

a. The bone(s) are of an Aboriginal and non-Aboriginal person who died less than 100 years ago and where traumatic death is suspected. Such remains come under the jurisdiction of the ACT Coroner's Act 1997. All further decisions and responsibilities regarding the remains and find location rest with the ACT Police, and/or the ACT Coroner.

b. The bone(s) are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the police have indicated that they have no interest in the find(s), the finds should be managed as historical archaeological objects. Possible strategies could include one or more of the following:

    i. avoiding further disturbance to the find and conserving the remains in situ (this option may require relocating the development and this may not be possible in some contexts);

    ii. conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

    iii. scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

    iv. recovering samples for dating and other analyses; and/or

    v. subsequent reburial at another place and in an appropriate manner determined in consultation with other relevant stakeholders.

c. The bone(s) are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

    i. Ascertain the requirements of the local RAOs, the project archaeologist, and ACT Heritage;

    ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

1. avoiding further disturbance to the find and conserving the remains in situ (this option may require relocating the development and this may not be possible in some contexts);
2. conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;
3. scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;
4. recovering samples for dating and other analyses; and/or
5. subsequent reburial at another place and in an appropriate manner determined by the RAOs and in consultation with other stakeholders.

Appendix E—CHL Citations

CSIRO Main Entomology Building, Clunies Ross St, Acton, ACT, Australia

Place ID: 105348

Listed Date: 22 June 2004

Location: Clunies Ross Street, Acton.

Criterion		Values
(a)	the place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history.	The Main Entomology building is significant for its association with the history of Commonwealth scientific research, particularly the scientific work of the Division of Entomology and the Division of Plant Industry. It is associated with basic entomological scientific work including taxonomic work and the Australian National Insect Collection, which are of international standing, as well as applied work on veterinary entomology and the biological control of weeds. The building is associated with early scientific endeavor in Canberra and the earliest phase of the development of the then CSIR (now the CSIRO). It is also significant as the first purpose built laboratory complex for the CSIR and is one of at least five scientific buildings established in the Australian Capital Territory by the Commonwealth up to 1950. Attributes The whole building, particularly the original parts associated with the Council of Scientific and Industrial Research (CSIR).
(d)	the place has significant heritage value because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments	The Main Entomology Building is a good example and one of nine examples in Canberra of the Inter-War Stripped Classical Style. The 1956 central block, while later than the 1929-30 wings, generally continues and is sympathetic to the style of the wings. Attributes The architectural style and detail of the whole building, particularly the 1929 - 30 wings.

Phytotron, Julius St, Acton, ACT, Australia

Place ID: 105560

Listed Date: 22 June 2004

Location: Clunies Ross Street, Acton.

Criterion		Values
(a)	the place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history.	The CSIRO Phytotron has been associated with the specific scientific work of the Division of Plant Industry that included the study of pasture development diseases in tobacco and other crops, the analysis of the control of flowering plants, and the nature and improvement of yield potential. Some of this work is considered to be of international standing. The phytotron demonstrates a major step in the development of the scientific study of plant adaptation to climate and other environmental variables with all previous studies conducted 'in the field'. The Phytotron is of importance as one of a group of major expensive scientific facilities of the post-war Commonwealth Government scientific endeavour that include the Parkes Radio Telescope, Homopolar Generator at ANU and the Lucas Heights reactor. Attributes The whole of the building that has enabled research and scientific study to be undertaken.
(b)	the place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history	The CSIRO Phytotron, a building in which plants can be grown in controlled climatic conditions, was built in 1962, and was the third major phytotron in the world. As no further major phytotrons were developed after the 1970s, due to a change in the study of plant adaptation, and with several other phytotrons now demolished, the CSIRO Phytotron is a rare, early surviving example of a large scale phytotron which combines glasshouses and controlled environment cabinets. Attributes The original form and fabric of the Phytotron including its large scale and glasshouses in combination with controlled environment cabinets.
(f)	the place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.	Although influenced by the two preceding phytotrons located in Pasadena, USA and Paris, France, the CSIRO design was the first to use large controlled temperature glass houses in combination with control environment cabinets. It has technical importance for its early use of solar panels. Attributes Its use of controlled temperature glasshouses in combination with control environment cabinets. Also, its early use of solar panels.
(h)	the place has significant heritage value because of the	The Phytotron is important for its association with the designer Roy Grounds. Although not a major example of the Post-War modern architectural styles or Grounds' architectural work, it

Criterion	Values
place's special association with the life or works, or group of persons, of importance in Australia's natural or cultural history.	well demonstrates Grounds' design skills with its innovative laboratory functional features and the modern style architectural expression of the building with its smooth wall surfaces and cubiform patterning in the sunhoods. Attributes The innovative laboratory functional features and the modern style architectural expression of the building with its smooth wall surfaces and cubiform patterning in the sunhoods.