



Australia's National
Science Agency

CSIRO, Construction of the National Collections Building, Black Mountain Science and Innovation Park, ACT

Statement of Evidence and Supporting Material to the
Parliamentary Standing Committee on Public Works

Submission 1

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Introduction

1. The project presented in this submission to the Parliamentary Standing Committee on Public Works (PWC) is for the construction of a new National Collections Building, as well as minor alterations of the existing Herbarium Building, on the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Black Mountain Science and Innovation Park, Canberra, ACT.
2. The project will provide interactive spaces, office areas, laboratories, storage vaults and landscaped areas, and accommodation for 128 CSIRO staff and affiliates.
3. The project will enhance delivery of CSIRO-managed National Research Infrastructure, and the project is co-funded by the Department of Education, Skills, and Employment through the National Collaborative Research Infrastructure Strategy (NCRIS).
4. CSIRO is one of Australia's leading multidisciplinary research organisations, with more than 5,200 people working in more than 50 locations in Australia and internationally.
5. Since its inception in 1926, CSIRO has played a vital role in shaping Australia and generating wealth for the nation. The organisation and its scientists have established an international reputation for excellence and achievement in basic and applied research. CSIRO's work contributes to the ongoing prosperity of Australia's primary and secondary industries and to the creation of new technologies, products, and techniques.
6. The Black Mountain Science and Innovation Park is CSIRO's longest serving site and is central to CSIRO's research objectives and the organisation's national and international identity. The Black Mountain Science and Innovation Park occupies 37.3 hectares. The site includes laboratory buildings, office buildings and greenhouses. The site has undergone significant improvements over the past seven years through the CSIRO ACT Consolidation Project¹ and other site works.
7. CSIRO's National Research Collections Australia (NRCA) comprise over 15 million specimens in six collections, representing 240 years of data and approximately 20% of all biological collections in Australia.

¹ Statement of Evidence to The Parliamentary Standing Committee on Public Works Submission 1.0, CSIRO ACT Consolidation Project, Australian Capital Territory dated 10 December 2013

8. The NRCA is a world-class, 'science ready' biological collections research facility that represents the largest specimen-based, continent-wide sample of Australian biodiversity in the world. Services include:

- a. supporting the scientific exchange of specimens nationally and internationally;
- b. delivering continental-scale biodiversity data; and
- c. managing world-class research facilities.

9. The NRCA biological collections are used by researchers from all over the world. The collections themselves are significant research infrastructure and underpin research in agriculture, biosecurity, biodiversity, and climate change.

10. The NRCA's Canberra-based collections ('the Collections') include 13 million of NRCA's total 15 million specimens across the:

- a. the Australian National Insect Collection (ANIC);
- b. the Australian National Herbarium (ANH);
- c. the Australian National Wildlife Collection (ANWC);
- d. the Australian Tree Seed Centre (ATSC); and
- e. CSIRO's Dadswell Memorial Wood Collection (DMWC).

11. The ANIC has its origins in 1928 when CSIRO began collecting insects from across Australia to tackle national challenges. CSIRO's significant insect collection was officially named on 8 March 1962 when it was gazetted by the Commonwealth Government, who undertook to preserve this collection for future scientific study.²

12. The ANH was started in the 1930s. In 1975 the ANH (previously *Herbarium Australianse*) was acknowledged to be part of Australia's national heritage and was gazetted by the Commonwealth Government, who undertook to preserve the collection for scientific study and documentation of the Australian flora.³

13. The ANWC was started in the 1930s. In 1976 the ANWC was acknowledged to be part of Australia's national heritage and was gazetted by the Commonwealth Government, who

² Commonwealth of Australia Gazette 1962 No. 14, p806, Canberra, 8 March 1962

³ Australian Government Gazette 1975 No. G12, p26, Canberra, 5 March 1975

undertook to preserve and continue to develop the collection for scientific study and documentation.⁴

14. On behalf of the nation, CSIRO has been tasked as the custodians of these Collections to enable research.

15. The Collections are currently housed in disparate buildings across CSIRO's Black Mountain and Crace sites. The Collections are currently accommodated in outdated facilities which are no longer fit-for-purpose and present significant ongoing operational challenges.

Purpose of the works

Project objective

16. The project objective is to ensure the preservation of the Collections in a purpose-built facility that consolidates the existing national insect, wildlife and plant collections, while enhancing research access and use.

Main benefits

17. The main benefits expected to be realised by CSIRO through delivery of this project include to:
- a. co-locate all CSIRO-managed Canberra-based Collections into a precinct environment, removing duplicated work functions to standardise workflows and stimulate partnership in the delivery of collection management and science;
 - b. deliver state-of-the-art biodiversity research facilities that incorporate curation, technical, digitisation, science and interaction spaces that support and enhance access and use, thus enabling CSIRO and its national and international research collaborators to better deliver science for national benefit;
 - c. remove operational risk to specimens and guarantee long term preservation relating to CSIRO's ageing properties portfolio, mitigate any building operational risk to the collection specimens, and guarantee their long-term preservation and security; and

⁴ Australian Government Gazette 1976 No. G16, p9, Canberra, 20 April 1976

- d. attract, retain and develop talent through the provision of world class, national research infrastructure.

Project outcomes

18. The project will:
 - a. enhance operations and maintenance by reducing CSIRO's reliance on aging buildings and infrastructure and improve space utilisation;
 - b. deliver a cost effective, value for money property solution, consistent with Commonwealth and CSIRO property, accommodation, health safety and environment and human resources policies;
 - c. deliver world-class research infrastructure available to Australian Researchers on an open access merit-basis, in line with National Collaborative Research Infrastructure Strategy (NCRIS) principles;
 - d. support staff health, safety, and wellbeing by providing modern, safe, and fit-for-purpose world-class facilities;
 - e. increase collaboration through co-location;
 - f. better utilise existing infrastructure for compatible uses and deliver improvements in infrastructure;
 - g. deliver improvements in information and communication technology to meet future needs; and
 - h. Deliver efficient allocation of workspaces and other resources, with the ability to modify and adapt these spaces as CSIRO's needs change in the future.

Need for the works

Strategic alignment

19. One of the key objectives outlined in CSIRO's Portfolio Budget Statement (Objective 1: Program 2) is the provision of national research infrastructure. The CSIRO Corporate Plan reflects this at Objective 3 '*Manage national research infrastructure for the nation*'.
20. The project will achieve delivery of Objective 3 by:

- a. Delivering fit-for-purpose facilities for CSIRO's biological collections that will enhance digitisation and genomic studies as well as traditional studies of Australia's biodiversity to address some of Australia's greatest challenges, including:
 - i. resilient and valuable environments through new insights into our unique biodiversity;
 - ii. a secure Australia and region through improved identification of biosecurity threats; and
 - iii. food security and quality through identification of new food sources and improved management of pests through accurate identification.
- b. Enabling co-location of CSIRO's collections will support development of the CSIRO Collection Management System, which will revolutionise how we capture, store, and retrieve digital information about CSIRO's biological specimens.
- c. Removing potentially hazardous chemical protectants from ANIC. This supports one of CSIRO's key objectives to support the health, safety, and wellbeing of our people.
- d. Accelerating the digitisation of collections so the data can be shared globally via the Atlas of Living Australia, an NCRIS facility hosted by CSIRO.
- e. Accords with goals of the ACT Site Consolidation Project.
- f. Supports CSIRO's Property Plan goals of consolidating our property footprint, investing in maintaining key infrastructure, and environmental sustainability.

21. In August 2019, CSIRO's Board endorsed CSIRO's 2019-2029 Property Strategy that set out five strategic property priorities. This project will support the delivery of the CSIRO Property Strategy by achieving these property priorities:

- a. **Align infrastructure with science** - Align CSIRO's infrastructure and facilities with the current and future needs of the Business Units.
- b. **Leverage strategic infrastructure opportunities** - Capitalise on planned strategic infrastructure investment by other parties, including within the Commonwealth, state/territory and higher education sectors.

- c. **Consolidate our property footprint** - Consolidate to sites and locations that align to CSIRO's future needs, improve the utilisation of properties, and optimise investment of limited funds in key sites.
- d. **Invest in maintaining key infrastructure** - Identify key infrastructure and maintain/upgrade these existing facilities to be fit-for-purpose.
- e. **Environmental Sustainability** - Invest where appropriate in minimising the environmental footprint of facilities and operations while supporting CSIRO's own agenda to support leading environmental practice.

22. National Research Infrastructure (NRI) includes the nationally significant assets, facilities and services that support cutting edge research and innovation. It is accessible to users across Australia, and internationally. It is a critical platform for the research sector which supports jobs, including in small business, across almost every sector of the economy. NRI enables research that supports improved health and wellbeing of Australians, the capacity to address critical national issues such as food security and support for a healthy environment, and policies relating to research and science and development.

23. The National Collaborative Research Infrastructure Strategy (NCRIS) program is a key enabler for NRI, by supporting a network of world-class NRI infrastructure projects.

24. The Department of Education, Skills and Employment, through the NCRIS program, identified this project as being high priority for the NRI system and provided co-funding through the 2018 Research Infrastructure Investment Plan.⁵

25. The 2016 National Research Infrastructure Roadmap⁶, developed by an Expert Working Group led by the previous Chief Scientist Dr Alan Finkel AO, outlines national research infrastructure required over the coming decade so that Australia's world class research system continues to improve productivity, create jobs, lift economic growth and support a healthy environment.

26. The 2016 Roadmap identifies nine focus areas that require ongoing support to ensure that Australia will be able to maintain its position as an emerging or established global leader. The project supports the following four focus areas:

⁵ The Department of Education, Skills and Employment 2018 Research Infrastructure Investment Plan.

⁶ <https://www.dese.gov.au/resources/2016-national-research-infrastructure-roadmap>

- Digital Data and eResearch Platforms
- Earth and Environmental Systems
- Biosecurity
- Complex Biology

Current deficiencies

27. The rationalisation and consolidation of sites across the country is an ongoing vision for CSIRO Business and Infrastructure Services (CBIS) as outlined in the CSIRO 2019-2029 Property Strategy. The Property Strategy seeks to consolidate CSIRO's property footprint to sites and locations that align to the future needs of the organisation, improve utilisation of properties, increase utilisation of core infrastructure, enhance site vibrancy and maximise investment of limited funds in key sites.

28. The Australian National Insect Collection (ANIC), the Australian National Herbarium (ANH) and the Australian Tree Seed Collection (ATSC) are currently housed in disparate buildings across CSIRO's Black Mountain site. These collections are accommodated in outdated facilities which are no longer fit-for-purpose and present significant ongoing operational challenges. These challenges include:

- a. Due to the age, condition, and inability to adequately secure the ANIC building, chemical protectants are currently used for pest control. The chemicals only act as deterrents and do not kill the pests (such as dermestid carpet beetles), leaving the collection vulnerable to continued pest attack that causes damage to the specimens.
- b. The ANIC and ANH offices and laboratories are co-located with, rather than isolated from, collections (storage) halls. This outdated mode of accommodation compromises the physical security of the valuable collections by preventing appropriate temperature and humidity control and exposes the specimens to excessive human activities.
- c. All Canberra-based collections are at or near capacity, with limited ability to accommodate continuing growth. The collections are compromised due to the overcrowding of shelves and cabinets.

29. The Dadswell Memorial Wood Collection (DMWC) is currently stored offsite, due to inadequate appropriate space onsite at CSIRO. As a result, the collection is currently inaccessible

for research. The new facility will provide space, appropriate storage and support increased accessibility.

30. The Australian National Wildlife Collection (ANWC) is located at a leased facility in Crace, ACT. The lease will expire in December 2023. A permanent, fit-for-purpose solution for accommodating this significant collection is required.

31. The project will rectify these deficiencies through providing facilities that:

- a. combine collection halls, molecular laboratories and digitisation suites designed to be globally innovative, safe, efficient, and highly configurable;
- b. provide improved protection against the environment, weather, vermin and other pests, enabling the long-term physical security of the 13 million specimens held in the Canberra collections;
- c. provide adaptable storage that allows for future growth over the next 20 years; and
- d. optimises construction and ongoing operation costs while maximising efficiencies in the acquisition and use of equipment and facilities (e.g. digitisation and genomic activities).

Options considered

32. The project, through detailed business case development, has considered multiple options to achieve the project objective. This includes doing nothing, refurbishment of existing buildings, new builds, and multiple precinct variations on the CSIRO Black Mountain site. Different location, scale and commercial options have been considered.

Location

33. Locating the facility in Canberra was identified as critical to achieving the project objectives and benefits, whilst reducing risk of damage to the Collections. The NRCA relies on access to an integrated suite of science facilities, formal research partnerships, operational and strategic relationships, and staffing arrangements in Canberra.

34. The Centre for Australian National Biodiversity Research (CANBR), a joint venture between CSIRO and the Department of Agriculture, Water and the Environment (DAWE) brings research and curatorial staff from NRCA and the adjacent Australian National Botanic Gardens

(ANBG) together to jointly deliver the research activities of the ANH. A portion of the ANH collection is also housed at the ANBG, with staff moving between the two adjacent sites.

35. The Centre for Biodiversity Analysis is a joint research centre between CSIRO, the Australian National University's Research School of Biology, and the University of Canberra. This strategic partnership focuses on delivery of science-based biodiversity management outcomes and translational research leading to policy development.

36. The NRCA provides public education and outreach activities through the CSIRO Discovery Centre and by collaborative development of public exhibitions with the National Museum of Australia and Questacon in Canberra. In addition, NRCA staff contribute to undergraduate teaching in taxonomy and graduate training in biodiversity science at the Australian National University – exposing the next generation of scientists to the value and use of research collections.

37. The NRCA uses the collections to deliver professional training in species identification to biosecurity personnel in the Department Agriculture Water and Environment,

38. Maintaining the Collections in Canberra, also reduces significant risks associated with relocating approximately 13 million specimens. Relocating the collections is a challenging logistical task and reducing distance significantly reduces risk of damage to the collections.

Commercial

39. The project considered the option to lease premises, including undertaking a Private Public Partnership.

40. The leased premises option provides several disadvantages. These include:

- a. an additional premise will create an additional location for CSIRO to manage and operate;
- b. spatial requirement will increase to allow for otherwise centralised services, including goods stores, chemical storage, and shared meeting spaces; and
- c. loss of control of space to ensure facilities remain adaptable and flexible for future requirements.

41. A leased premise is not affordable due to no operating expenditure funding being identified.

Scale

42. The detailed business case compared the benefit of physical co-location versus maintaining discrete operations. Importantly, the efficiencies of bringing the Collections together has a net economic benefit to the operational and maintenance cost of the facilities, and completion of science and research activities.

43. The project has identified two Collections that would not benefit in any meaningful way by being geographically co-located, as their current location supports their research use due to proximity to the coast and other partners. These Collections, located in Hobart, include:

- a. Australian National Algae Culture Collection; and
- b. Australian National Fish Collection.

44. The Project Team developed a range of scale options considering the potential benefits, feasibility of co-locating and regenerating facilities. These options include:

0. **Status quo** – Baseline option whereby ANWC maintains offsite leased premises, and other Collections' facilities are maintained in situ.
1. **Dispersed campus** – ANWC is relocated to new facilities on the Black Mountain Science and Innovation Park and other Collections' facilities are maintained and regenerated in situ.
2. **Precinct model** – Co-locate ANWC, ANIC, ANH and DMWC into fit-for-purpose facilities at the Black Mountain Science and Innovation Park, and regenerate ATSC and existing Herbarium Building elements in situ.
3. **New integrated building** - Co-locate all Canberra Collection into a single new centralised fit-for-purpose facility.

Comparison of options

Option 0 – Status quo

Description

45. The status quo option seeks to confirm the consequences and risks that are likely to impact CSIRO and the Commonwealth by maintaining the current course of action. The status quo option provides minimal increased benefits to the CSIRO and does not align to the objectives described above.

46. The status quo option is a 'Do Minimum' option. The status quo option would deliver suitable property outcomes, as per the CSIRO's 2019-2029 Property Strategy. The option considers the expiry of leased facilities and would provide alternate leased facilities off site.

47. The status quo option considers maintaining facilities in their current configuration, as per the assets' current lifecycle and CSIRO's 2019-2029 Property Strategy.

Benefits

48. The status quo option will have the following key anticipated benefits compared to other options.

- a. Limited change and personnel management required due to no relocation of personnel.
- b. Geographical disbursement of Collections provides some resilience in the occurrence of a significant adverse event.

Solution risk

49. The status quo option has the following solution risks.

- a. Any regeneration of facilities will only be realised over a prolonged period of decades.
- b. The ability to deliver science capabilities is compromised through the high risk of assets failing to continue to meet requirements or provide for modern science outcomes.
- c. The quality and efficiency of science will degrade as legacy assets are made to work through compromise and 'making do'.
- d. The reputation of the CSIRO will degrade as the service and facility expectations of staff, affiliates and visitors are not met.
- e. The option will continue to limit the extent to which Collections staff are able to operate in an integrated manner.

Implementation risk

50. The status quo option has the following implementation risks.

- a. Implementation will require continuous regeneration or replacement works, impacting science operations and innovation through staggered, prolonged, and disruptive delivery lasting decades.
- b. In situ regeneration works inherently come with risks of dealing with latent conditions, contamination and other issues expected to be found in aging infrastructure, which will burden capability, impact the delivery of other projects, and increase costs.
- c. In situ regeneration works are likely to impact operations, as they require either staged construction phases or relocation of Collections into temporary facilities whilst works are undertaken.

Option 1 – Dispersed campus

Description

51. Under the dispersed campus option, the project will deliver new facilities for ANWC on the Black Mountain Science and Innovation Park. Generally, elements which are not relocated will continue to operate as they currently do.

52. Under the dispersed campus option, 17% of the Collections' current facilities will be relocated, and 83% of current facilities will remain in situ.

53. Implementation of facilities for ANWC will occur through a single delivery phase, with regeneration of other elements being staggered as per their respective assets' lifecycle replacement plan.

Solution Risk

54. The dispersed campus option has the following solution risks.

- a. The ability for Collections that remain in situ to deliver science capability is compromised. There is a high risk of assets failing to continue to meet requirements and being able to provide enhanced and modern science outcomes. The quality and efficiency of elements not co-located will degrade as legacy assets are made to work through compromise and 'making do'.
- b. The option will provide only some opportunity to enable joint operations, limiting the extent to which the Collections are able to operate in an integrated manner.

- c. The reputation of the CSIRO will degrade as the service and facility expectations of staff, affiliate and visitors are not fully met.

Implementation Risk

55. The dispersed campus option has the following implementation risks.

- a. Implementation will require continuous regeneration or replacement works for elements not co-located, impacting operations and science through staggered and prolonged delivery periods lasting decades.
- b. In situ regeneration works inherently come with risks of dealing with latent conditions, contamination and other issues expected to be found in aging infrastructure, which would burden capability, delivery of other projects, and increase cost.
- c. In situ regeneration works are likely to impact science, as they require either staged construction phases or relocation of Collections into temporary facilities whilst works are undertaken.

Option 2 – Precinct model

Description

56. The precinct model option co-locates ANWC, ANIC, ANH and DMWC into fit-for-purpose facilities at the Black Mountain Science and Innovation Park and will regenerate the existing Herbarium Building and ATSC facilities in situ.

Benefits

57. Co-location of elements under the precinct model will have the following benefits.

- a. Operation and maintenance efficiencies through consolidation of assets and services. These efficiencies include:
 - i. facilities management;
 - ii. cost of utilities (electricity, water, gas, trade waste, etc);
 - iii. development contribution and approval costs;
 - iv. capital infrastructure savings from consolidation of assets; and
 - v. maximise the utilisation of CSIRO's existing footprint at Black Mountain.
- b. Inclusion of ANWC and DMWC reduces the dependency of CSIRO on leased off-site infrastructure.

Implementation risk

58. The precinct model option has the following implementation risks:

- a. In situ regeneration works of the existing Herbarium Building and ATSC facilities come with latent conditions, contamination and other risks expected to be found in aging infrastructure.

Option 3 – New integrated building

Description

59. The new integrated building option co-locates all Canberra Collections into new fit-for-purpose facilities at the Black Mountain Science and Innovation Park.

Benefits

60. Co-location of elements under the new integrated building option will have the following additional benefits.

- a. Operation and maintenance efficiencies through consolidation of assets and services are expected. These efficiencies include:
 - i. facilities management;
 - ii. cost of utilities (electricity, water, gas, trade waste, etc);
 - iii. development contribution and approval costs;
 - iv. capital infrastructure savings from consolidation of assets; and
 - v. maximise the utilisation of CSIRO's existing footprint at Black Mountain.
- b. Inclusion of ANWC and DMWC reduces the dependency of CSIRO on leased off-site infrastructure.

Option evaluation

Cost benefit analysis

61. The cost benefit analysis compares options against the status quo and determines whether the expected costs provide net benefit to CSIRO and the Commonwealth.

62. The analysis identified the Precinct model (Option 2) and new integrated building (Option 3) as having beneficial impact to the CSIRO, due to the extent of co-location in modern, fit-for-purpose facilities that enhances the Collections.

63. The analysis identified the Disperse Campus model (Option 1) as having negligible benefit to the organisation.

Affordability

64. Table 1 outlines the project's capital expenditure funding sources.

Table 1: Capital Expenditure Funding Source

Funding source	% of budget	Confirmed capex
New policy proposal (NPP)	0%	\$0m
CSIRO Capital Budget	39%	\$27m
National Collaborative Research Infrastructure Strategy (NCRIS) Grant	61%	\$43m
Partners or external sources	0%	\$0m
Total	0%	\$70m

65. Table 2 outlines the capital expenditure required for the options that meet the project objectives and have high likelihood of benefits being realised.

Table 2: Capital Expenditure of Options

2 - Precinct Model	3 – New Integrated Building
\$70m	\$160m

66. The Precinct Model option is the only affordable option, that provides significant benefit to CSIRO and the Commonwealth.

Preferred option

67. The preferred option is to co-locate the Collections in a Precinct Model (Option 2), whilst being scalable to allow a future integrated expansion to be delivered.

68. The Precinct Model option:

- a. achieves the project objective and project outcomes;
- b. ensures main benefits are realised;
- c. significantly reduces risks compared with maintaining the status quo; and

d. is affordable.

69. The risks identified for the option can be mitigated. Mitigations have been costed for consideration as part of the cost benefit analysis and budget.

Scope of works

70. The scope of the project under the preferred option is to construct new fit-for-purpose facilities at the Black Mountain Science and Innovation Park, and regenerate the existing Herbarium Building and ATSC facilities in situ.

71. The new construction works will provide:

- a. a greenfield facility, adjacent to the existing Herbarium Building, to accommodate ANWC and ANIC; and
- b. encompass interaction spaces, office areas, laboratories, storage vaults and landscaped areas.

72. The alteration works will encompass:

- a. minor works within the existing Herbarium Building to accommodate the DMWC; and
- b. minor works to the nearby ATSC's current facilities to improve safety, compliance, and reduce risks that may adversely impact the collections, operations and science outcomes.

Relocations

73. Relocations are estimated to cost in the order of \$2.2 million. The budget allocation for relocations is sufficient to cover the anticipated cost of the project over the planned three years.

Carparking

74. A recently constructed carpark approximately 100m from the new facility will provide carparking for existing site staff and 7 staff who will relocate from Crace.

Child-care provisions

75. A childcare facility currently operates at the western end of the site and is accessible to staff relocating to the site.

Site selection

76. The new building is proposed to be sited adjacent to the existing ANH Building, which allows for NRCA to develop its science capability sustainably within a research and collections precinct.

77. Siting of the project in the Black Mountain Science and Innovation Park provides an efficient and cost-effective operational model that eliminates the duplication of services that would be required if NRCA were to be sited elsewhere. This model includes shared use of greenhouses, controlled growth facilities, insect rearing facilities, molecular biology laboratories, electron microscopy services, field storage, quarantine services, library services, and facilities management.

78. The Black Mountain Science and Innovation Park gives staff access to additional facilities that provide a holistic work environment that promotes diversity and inclusion. Facilities include childcare, gym and staff fitness programs and parking.

Decanting

79. ANWC will relocate from the CSIRO's Crace site before the expiry of the lease in December 2023. CSIRO's Crace site is 10 km north of Black Mountain.

80. DMWC will relocate out of leased warehouse storage, currently located in Hume ACT. This lease is managed on a monthly basis and is planned to be vacated by December 2023.

81. ANIC will vacate Building 150 at Black Mountain, which will be repurposed for operational purposes as part of a future project.

Zoning and approvals

82. All design documentation will comply with the applicable occupational health and safety and environmental legislation and the requirements of the National Capital Authority, as well as specific CSIRO requirements.

83. Works Approval will be obtained from the National Capital Authority to ensure alignment with the National Capital Plan and the *Australian Capital Territory (Planning and Land Management) Act 1988*.

84. A suitably qualified design contractor has been appointed to carry out inspections during the construction phase to confirm the building work is being undertaken in accordance with the National Capital Authority's Works Approval.

Details of applicable codes and standards

85. The project will comply with all relevant statutory requirements including the National Construction Code (NCC) and relevant Australian Standards. In addition, CSIRO has several standards and guidelines that must be met. These include:

- a. CSIRO Accommodation Guidelines
- b. CSIRO Structured Cabling Specification
- c. CSIRO Basic Video Conference Room
- d. CSIRO Submetering Strategy 2020

86. A building certifier has been appointed for the project and will provide a certificate confirming the design documents meet the National Construction Code 2019 (NCC) and relevant Australian standards prior to occupation.

Details of land acquisition

87. This project does not involve the acquisition or sale of land by the Commonwealth.

Planning and design concepts

88. The general design philosophy for the proposed facilities incorporates the following considerations. It will:

- a. be in accordance with CSIRO accommodation guidelines
- b. provide a contemporary, versatile and flexible operating environment
- c. provide a safe and secure environment for staff and operational requirements
- d. provide a people-centred work environment in terms of space standards, access to natural light, amenities, and ventilation
- e. provide an environment conducive to staff collaboration, interaction and collegiality.

89. Design drawings, including key elevations and typical floor layouts, are provided at Attachment A to this submission.

Functional spaces

Work spaces

90. Accommodation will be provided for 93 work points, in accordance with the CSIRO Accommodation Guidelines and include:

- a. collaborative desk-based work areas
- b. activity-based workspaces
- c. photocopy, printing, and utility spaces
- d. small administration stores
- e. support spaces such as meeting rooms, training rooms, collaborative spaces, quiet rooms.

91. The density target associated with desk-based work areas and associated support spaces in the CSIRO Accommodation Guidelines is consistent with the Government's Property Data Collection (PRODAC) Guideline target.

Laboratories facilities

92. CSIRO's laboratory strategy is to ensure they are maintainable, accessible and safe.

93. Laboratories delivered as part of the project will conform to numerous Australian Standards including, but not limited to:

- a. AS/NZS 1940 The storage and handling of flammable and combustible liquids.
- b. AS/NZS 2243 Safety in laboratories.
- c. AS/NZS 2982 Laboratory design and construction.
- d. AS/NZS 3833 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers.
- e. AS 4332 The storage and handling of gases in cylinders.
- f. AS/NZS 4745 Code of practice for handling combustible dusts.
- g. AS/NZS 4761 Competencies for working with electrical equipment for hazardous areas.
- h. AS/NZS 60079 Explosive atmospheres.

94. Efficiencies and synergies gained by sharing facilities are being targeted where feasible, practical, and safe to do so. Shared laboratory facilities include:

- a. Digitisation laboratories;
- b. Molecular laboratories; and
- c. Trace DNA laboratories.

Storage vaults

95. Collection specimens will be stored in fit-for-purpose storage vaults. These storage vaults will be fully sealed and will provide appropriate temperature and humidity conditions to ensure the long-term security of these irreplaceable collections.

96. Within the storage vaults, specimens will be stored in specimen-specific containers within integrated, mechanically assisted, anti-vibration compactus units.

Receivals and preparation

97. The facilities will include a centralised processing area to provide operational efficiencies to all Collections. The area includes decontamination, preparation, packaging, storage, and loading dock.

Materials and finishes

General

98. Materials and finishes used will be selected for quality, durability, functionality, ease of maintenance and cleaning, availability of local support, supply and replacement.

99. Typical materials and finishes will include glass for meeting room partitions, plasterboard painted with washable acrylic paint, fabric panels on workstation screens, timber veneer or laminate finishes to workstations and meeting tables, feature colours on selected painted walls and plasterboard and feature ceilings in key areas. Where possible, the design team will implement the use of recycled materials.

Laboratories

100. Materials and finishes for laboratories will be compliant with AS/NZS 2982 laboratory design and construction:

- a. Construction materials and finishes shall be chosen to address the risks of contaminant exposure applicable to laboratory areas.

- b. Floors in laboratories shall be finished with materials that are easy to clean, smooth, impervious, slip resistant, resistant to chemicals used in the laboratory, compatible with the nature of the laboratory operations and operator comfort. Where there is a risk of spillage of hazardous, potentially infectious or unsealed radioactive material, the intersection of floors with walls and exposed plinths shall be coved to facilitate cleaning.
- c. All walls in laboratory work areas shall be finished with materials that are easy to clean, smooth, impervious, and resistant to chemicals used in the laboratory.
- d. Ceilings in laboratory areas shall be constructed of a rigid material in continuous or tiled systems and may include fibrous plaster, plasterboard, fibrous cement, cement render or other suitable material. Smooth faced, non-friable, impervious, washable ceilings shall be provided where contamination of the ceiling can occur, decontamination is required, very clean conditions are required or fumes, dust or vapours are generated.

Electrical and communications services

101. Overall building power supply will consist of highly reliable Low Voltage (LV) power network infrastructure, supplied by a nearby substation to be installed as part of the project.

102. Critical assets, including freezer storage and critical laboratory services, will be provided with a generator to allow continued operation through unplanned outages.

103. For planned outages or longer outages, the facility's specimen vaults will be supplied through a generator link to a portable, truck mounted generator, which can maintain conditions if required.

Mechanical services

104. The central chilled water and heating hot water plant will consist of an all-electric, air-cooled heat pump system that is capable of simultaneously supplying chilled water and heating hot water.

105. The all-electric plant will consist of high-efficiency cooling-only chillers to provide chilled water, along with high-efficiency reversible heat pumps capable of providing either chilled water or heating hot water. This arrangement provides redundancy and assists with managing low-load conditions.

106. The chilled water and heating hot water will be distributed through the building by a primary-secondary pumping system with variable speed pumping and pressure-independent control valves.

107. The central thermal plant will be designed for redundancy such that the loss of a single item of equipment (chiller, heat pump or pump) through failure or routine maintenance does not reduce the capacity of the system below 100%.

Fire protection

108. The fire protection installation will meet requirements of the Australian Standards, with inclusion of additional features, such as aspirating smoke detection, to further protect the collections from critical fire events.

109. Fire protection provided under this project includes fire detection and alarm system (FDAS), emergency warning and intercom system (EWIS), automatic fire suppression systems (AFSS) and portable fire extinguishers.

110. The specimens will be further protected from external threats by being housed within 4-hour fire rated storage vaults.

Hydraulic services

111. Hydraulic services will include a rainwater harvesting system, roof water drainage, sanitary drainage and hot and cold water systems, and solar boosted hot water heating.

112. To reduce water consumption, the building design includes provision for waterless urinals and treated grey water dual flush pans. The base building hydraulics services will be designed in compliance with the National Australian Built Environment Rating System (NABERS) energy requirements.

Security

113. The physical and electronic security systems will comply with the Australian Government Protective Security Policy Framework (PSPF).

114. The security services include physical commercial grade intruder detection system, keying systems, electronic access control system, closed circuit television (CCTV), and security alarm systems.

115. The existing site security systems will be expanded to integrate with the facility.

Provisions for people with disabilities

116. The National Collections Building will be designed to comply with the latest edition of AS1428.1 Design for access and mobility and the National Construction Code.

Other issues

Work health and safety

117. Safety in design workshops have been convened with stakeholder engagement to identify, mitigate, and assign risk management responsibilities as appropriate throughout the design, construction, operation, and end of life demolition processes.

118. Construction of the new building will enable CSIRO to cease using naphthalene, a chemical used as a pest deterrent in the insect collection.

119. The facility will ensure the 12,000 litres of ethanol used to preserve specimens in ANIC, ANWC and ANH are stored in appropriately constructed premises compliant with Australian standards for the safe storage and handling of flammable and combustible liquids.

Environment

120. Three threatened terrestrial bird species listed under the *Environment Protection and Biodiversity Conservation Regulations Act* (EPBC Act) may occasionally occur within the proposed action area, however the area does not contain habitat of any importance and the project will not have a significant impact upon any of these species. No flora species or ecological communities listed under the EPBC Act are likely to occur within the area.⁷

Heritage

121. There are two Commonwealth Heritage places within the CSIRO Black Mountain site, however they are located outside of the boundary of the project area. They are:

- a. CSIRO Main Entomology Building Clunies Ross St; and
- b. Phytotron Julius St.

⁷ Biosis Pty Ltd, 'Ecological Assessment for CSIRO Masterplan, Canberra. Project no 16768,' 2014

122. The impact area is located within a totally disturbed, constructed and landscaped built precinct.⁸ There is no identified or expected indigenous heritage or early European heritage values within the action area, however CSIRO will monitor excavation with the assistance of an indigenous heritage consultant and archaeologist.

Australian Industry Participation

123. The project's Australian Industry Participation (AIP) Plan was submitted and approved by the Department of Industry in April 2020. The AIP Plan ensures the project will:

- a. provide information to Australian industry;
- b. provide full, fair and reasonable opportunities to Australian industry; and
- c. assist longer-term participation by Australian industry.

124. The project has completed or will complete all actions as per the AIP Plan.

Public transport

125. The site is serviced by numerous bus routes along Barry Drive, arriving at least every 5 minutes during peak times, providing direct connections to Canberra City and Belconnen Town Centre.

126. The ACT Government is currently considering options for Clunies Ross Street and Barry Drive, which may be impacted by future extensions to the Canberra Light Rail network. These extensions are expected to be beneficial to staff access.

External consultation

127. Letters outlining the project's impact, expected benefits and timeframes have been sent to the following identified external stakeholders:

- a. Federal Government:
 - i. Treasurer Hon Josh Frydenberg MP
 - ii. Minister for Industry, Science and Technology the Hon Karen Andrews MP
 - iii. Minister for Education the Hon Alan Tudge MP
 - iv. Minister for Employment, Skills, Small and Family Business Senator the Hon Michaelia Cash

⁸ Biosis Pty Ltd, 'Cultural heritage values letter of advice' 8 December 2013

- v. Minister for International Development and the Pacific Senator Zed Seselja
- vi. Mrs Katy Gallagher MP – Senator for Australian Capital Territory
- vii. Ms Alicia Payne MP – member for Canberra
- viii. Mr David Smith MP – member for Bean
- b. Local Government Representative (Kurrajong)
 - i. Chief Minister Mr Andrew Barr
 - ii. Ms Elizabeth Lee MLA
 - iii. Mr Shane Rattenbury MLA
 - iv. Ms Rebecca Vassarotti MLA
- c. Office of the Federal Safety Commissioner
 - i. Branch Manager and Federal Safety Commissioner Mr David Denney
- d. Other Organisations
 - i. National Capital Authority
 - ii. Australian National University
 - iii. Australian National Botanic Gardens
 - iv. Friends of Black Mountain Association
 - v. United Ngunnawal Elders Council
- e. Residents local to the site.

128. CSIRO continues regular meetings with the CSIRO Staff Association (a section of the Community and Public Section Union) to provide project updates and receive their feedback.

129. Challenges and opportunities identified through external consultation are outlined below.

Afterhours noise and vibration

130. CSIRO has been in discussion with residents about noise and vibration at night. CSIRO has confirmed that:

- a. all construction works will take place during standard hours and within the site boundaries;
- b. noise and vibration generated will dissipate at the Black Mountain site boundaries; and
- c. construction traffic will be limited to exiting and entering via the main arterial route Barry Drive and Frith Road, and not utilise local streets.

Heavy vehicles and contractor parking

131. CSIRO has been working to ensure the project:

- a. appropriately provides for Contractor parking and access, and
- b. heavy vehicles do not *wait* on public roads.

132. CSIRO has been able to achieve these objectives by managing parking and vehicle access wholly within the CSIRO site.

Internal consultation

133. An ongoing information and consultation process with CSIRO staff has continued from project inception.

134. An internal website, monthly newsletters and town hall updates have been established to provide regular information about the project for impacted and interested staff.

135. The project team have sought confirmation on user requirements and feedback on the design from users through each design phase and incorporated the feedback into design documentation. Information obtained from users has informed the development of options and has ultimately led to the proposed solution.

136. Challenges and opportunities identified through internal consultation include:

- a. ensuring a successful transition to safer, compliant, and best-practice activities in a new fit-for-purpose facility;
- b. managing the workload associated with preparing the 12 million specimens ready for relocation into the new building; and
- c. co-locating to shared work environments for receivals, digitisation and molecular research to achieve operational synergies.

Change management strategy

137. The project is supported by a change management strategy, that has been established by CSIRO and considers the impact on staff relocating to a new site, staff relocating within the site, and staff who may be impacted by the works.

138. The change management strategy is managed by a CSIRO Change Manager, who is supported by dedicated change leaders' team from impacted Collection groups. This promotes two-way communication between staff and the project and maximises collaborative support and the adoption of change. The Change Manager reports directly to the Project Board.

Pandemic event

139. The facility's design considers features to improve safety and reduce operational impacts during a pandemic event, including;

- a. providing automatic fittings, including automatic doors, sanitiser stations and motion-sensor faucets;
- b. ensuring surfaces are bacteria resistance and are easily cleanable; and
- c. providing circulation space to allow distances to be maintained.

140. In a pandemic event, CSIRO's response plan will be enacted, which aims to protect staff through additional management and operational controls. CSIRO's information technology solutions allow staff to work from home, and further digitisation of the Collections will allow staff to engage remotely with specimens.

Cost effectiveness and public value

Outline of total project costs

141. The cost estimate for the project confirms an estimated project cost of \$70 million (excluding GST) and includes internal staffing costs, contingency, project management, design, documentation and escalation to December 2024.

142. The cost estimate is based on the preferred option (Option 2) and has been prepared by the CSIRO's quantity surveyor.

Funding

143. The project will be funded through:

- a. National Collaborative Research Infrastructure Strategy Grant (\$43 million), and
- b. CSIRO internal capital for planning and construction (\$27 million).

144. The budget allocation is sufficient to cover the anticipated cost of the project.

Delivery methodology

145. To deliver the construction works, CSIRO will procure a contractor via an open request for tender process advertised on the AusTender procurement website. The construction contractor will be engaged under a head contract for delivery of the construction works.

146. CSIRO has engaged a suitable qualified design contractor to design, document and ensure the project is delivered to CSIRO's quality, and budget expectations. The design contractor has designed several similar projects with fit-out, storage and laboratory spaces for the Commonwealth in Canberra.

147. CSIRO has engaged a suitably qualified quantity surveyor, who has prepared the cost estimate and the project cost plan based on the design documentation.

148. CSIRO has engaged a client-side project manager, to ensure project objectives are achieved, main benefits are realised, and the cost, quality and time risks are mitigated.

149. CSIRO has engaged a relocation manager, to ensure the specimens are safely and securely relocated and stored within the facility.

Delivery program

150. The key milestones for the project are:

National Capital Authority Works Approval	October 2021
Finalise Design (100%)	October 2021
Construction Commence	January 2022
Construction Complete	August 2023
Relocations Complete	February 2024

Public value

151. The public value associated with the project includes:

- provision of safe, fit for purpose facilities to provide science, operations and collaboration;
- efficiencies associated with reduced property footprint;
- providing sustainable outcomes associated with efficient building design and engineering systems; and

- d. ensuring the national biological collections are secured and maintained as science-ready research capability for Australia.

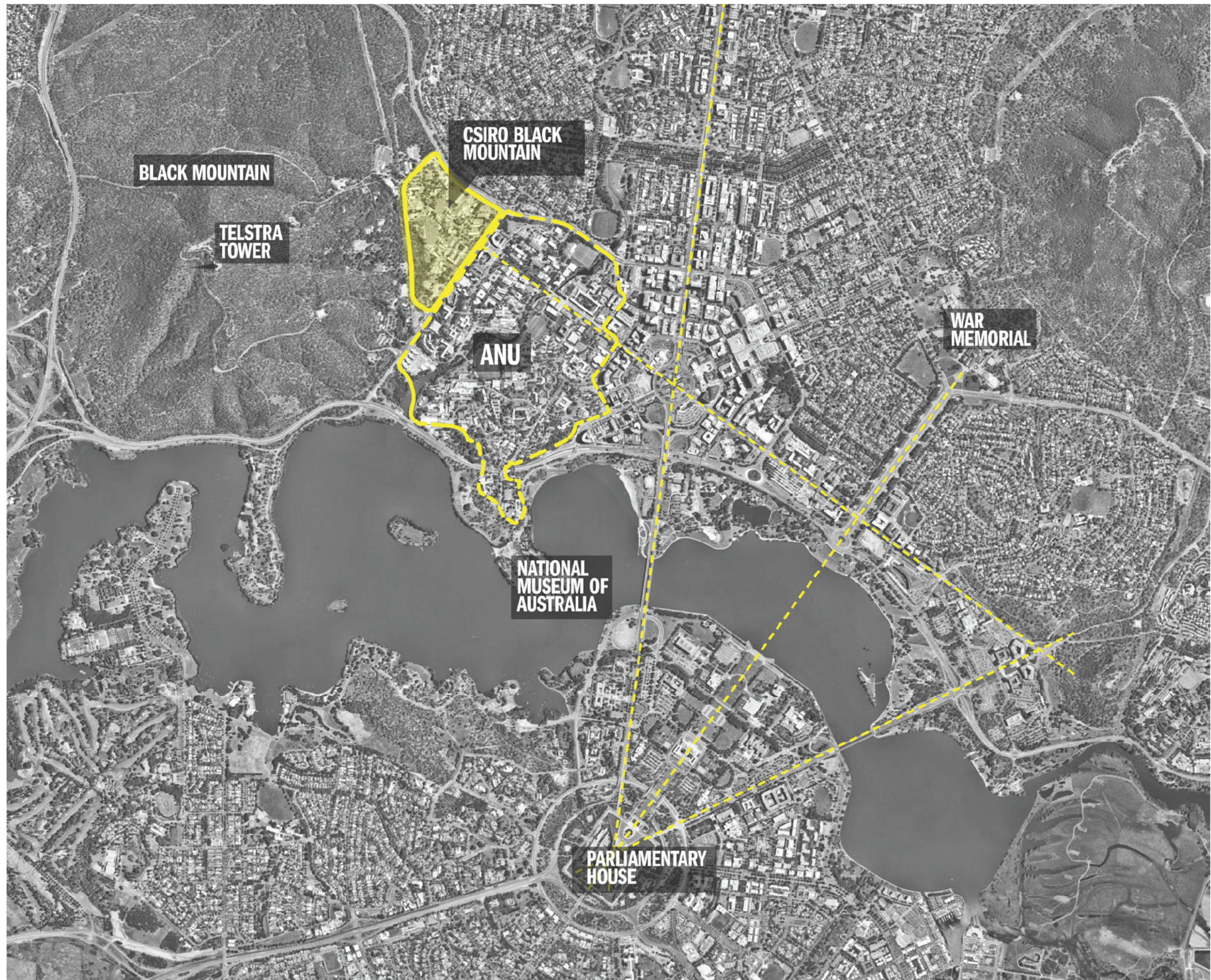
Value for money

152. In assessing the options available, CSIRO undertook a whole-of-life cost assessment and determined that the proposed project provides a good value for money property solution.

Revenue

153. There is no expected revenue from the project.

Attachment A – Design Drawings



DRAWING TITLE

SITE LOCATION

CLIENT



CSIRO
Science and Innovation Park
Clunies Ross Street
Acton ACT 2601

CONSULTANT



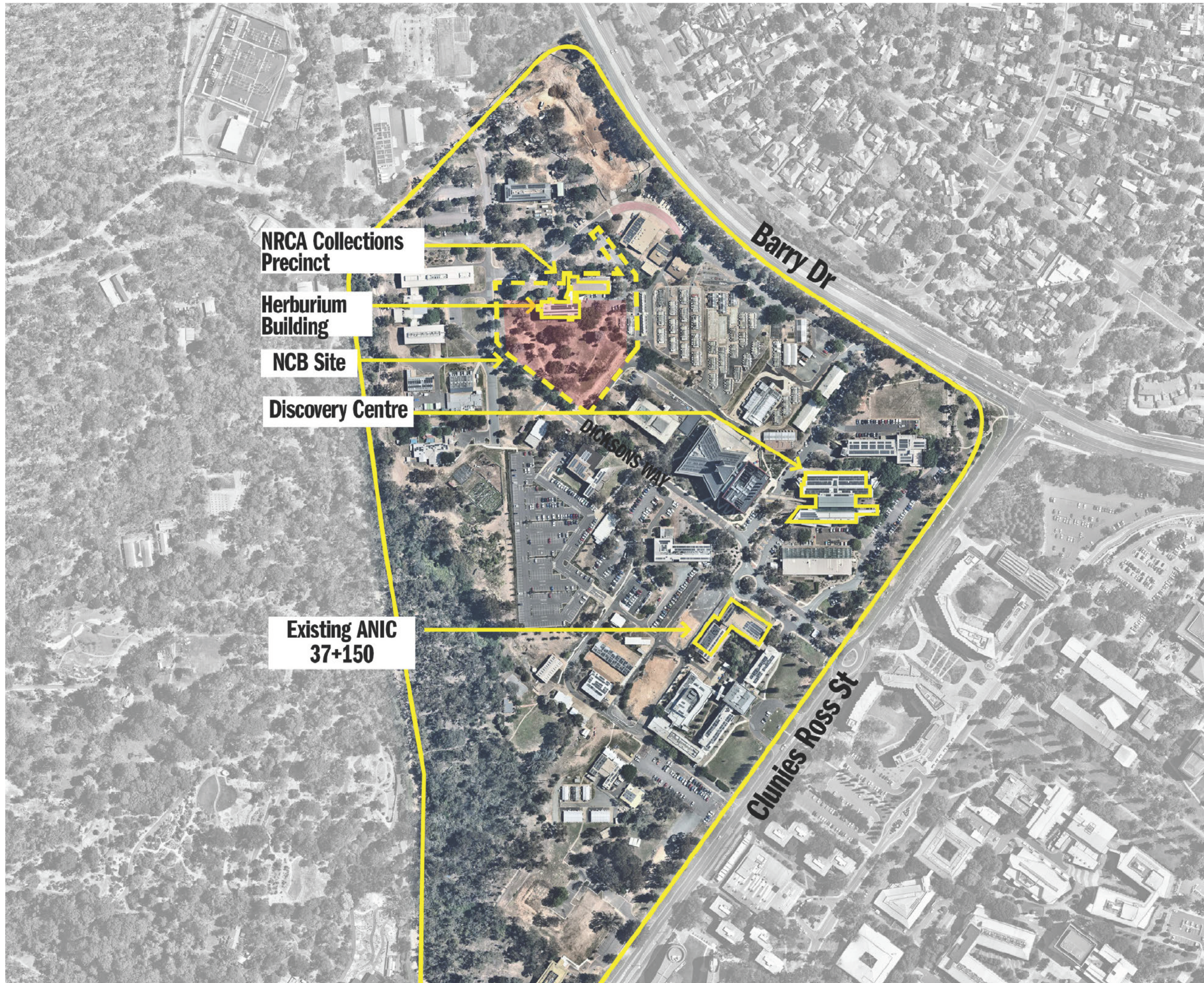
Hassell LTD ABN 24 007 711 435
Level 2, Pier 8/9,23 Hickson Rd
Sydney NSW 2000 Australia
T +61 2 9101 2000 F +61 2 9101 2100
sydney@hassellstudio.com
Nominated Architects NSW
Tony Grief 5350
Glenn Scott 6542
Ross de la Motte 7398

PROJECT MANAGER



Conscia.

Conscia Pty Ltd
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KINGSTON ACT 2604



DRAWING TITLE

MASTER PLAN

CLIENT



CSIRO
Science and Innovation Park
Clunies Ross Street
Acton ACT 2601

CONSULTANT



Hassell LTD ABN 24 007 711 435
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DRAWING TITLE

SITE PLAN

CLIENT



CSIRO
Science and Innovation Park
Clunies Ross Street
Acton ACT 2601

CONSULTANT

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KINGSTON ACT 2604



DRAWING TITLE
AERIAL VIEW

CLIENT



CSIRO
Science and Innovation Park
Clunies Ross Street
Acton ACT 2601

CONSULTANT



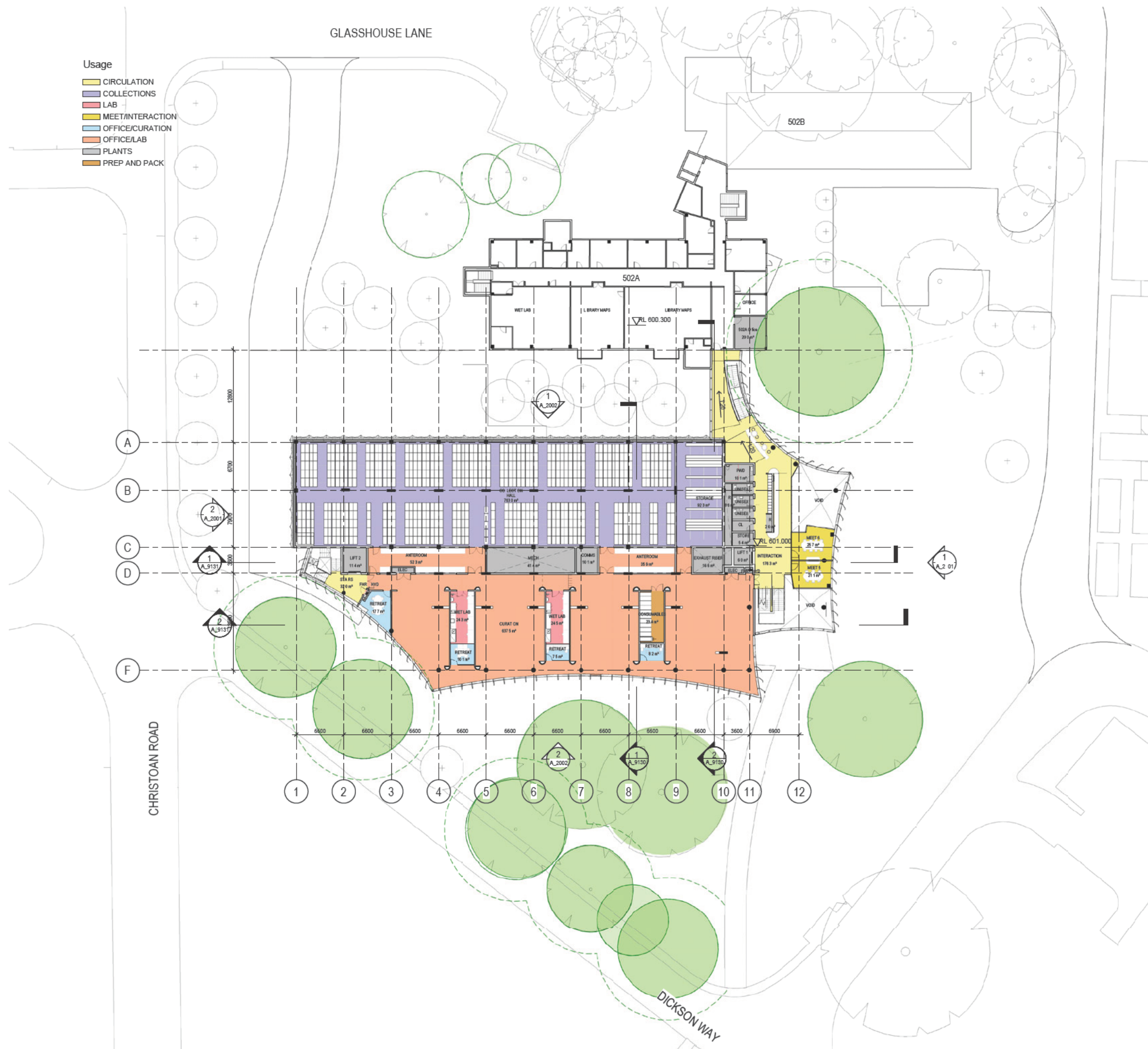
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DRAWING TITLE

TYPICAL FLOOR LAYOUT

CLIENT



CSIRO
Science and Innovation Park
Clunies Ross Street
Acton ACT 2601

CONSULTANT



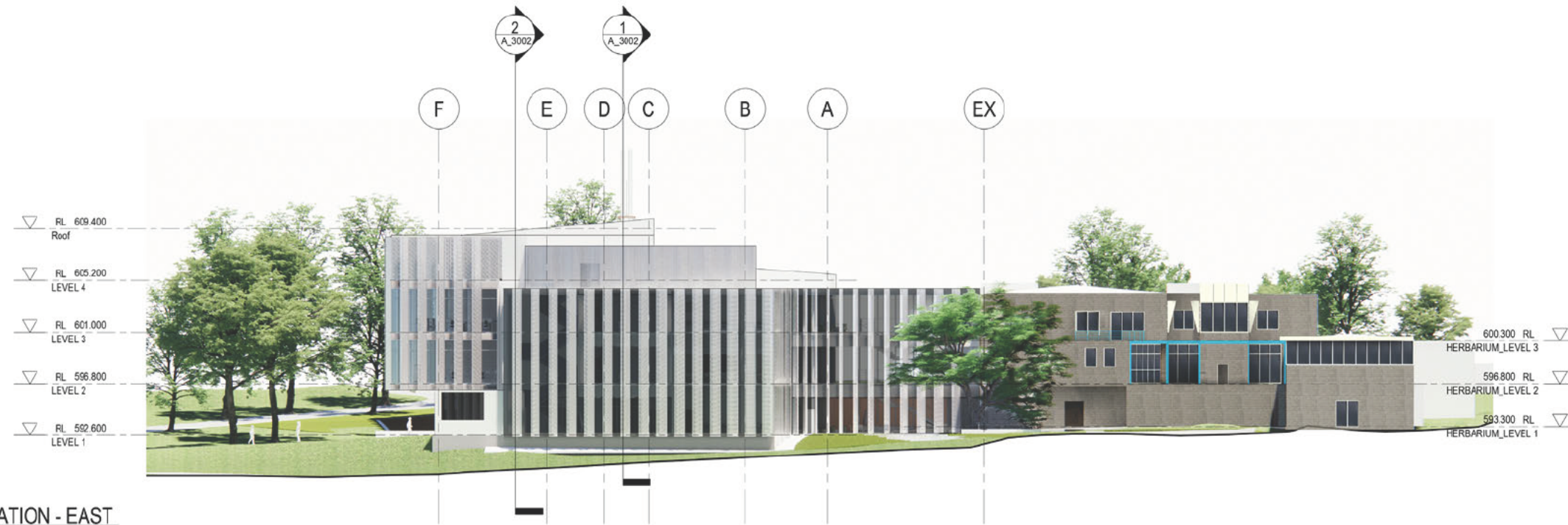
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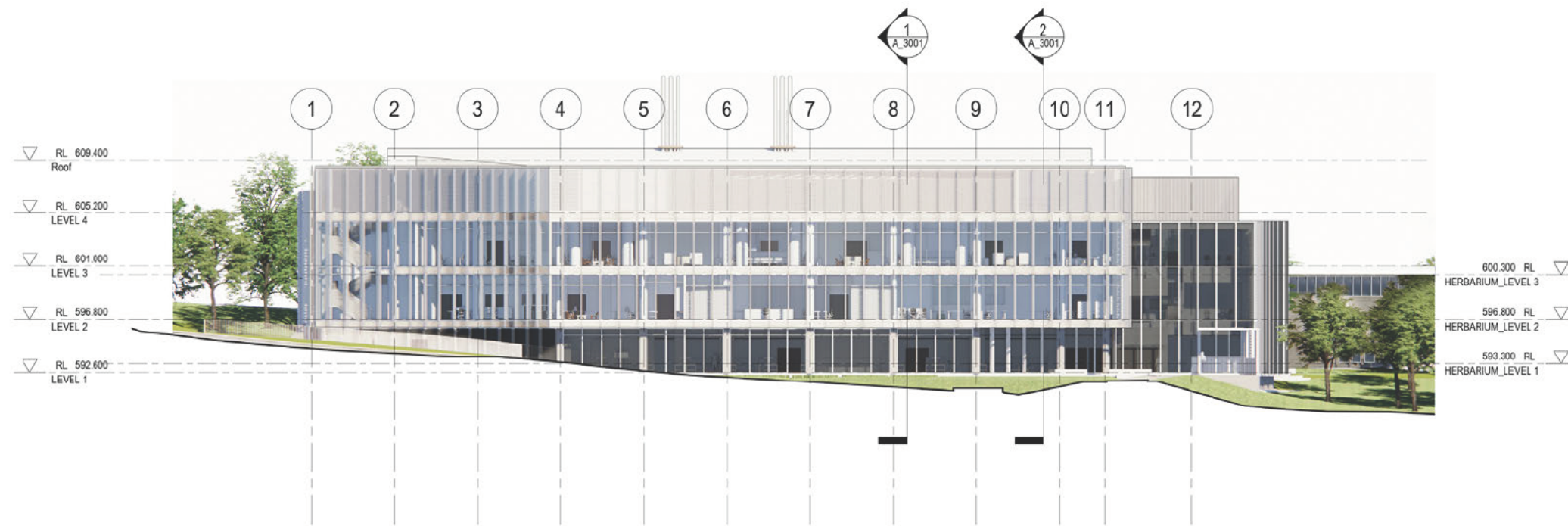


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1 ELEVATION - EAST
A_1011 1:250



2 ELEVATION - SOUTH
A_1011 1:250

CLIENT



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