CSIRO Yarralumla (Forestry Place)

Heritage Impact Assessment

18 March 2021

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The business of sustainability

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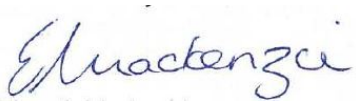

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Acronyms and Abbreviations

Name	Description
AA	Aboricultural Assessment
ACT	Australian Capital Territory
ALA	Atlas of Living Australia
ANU	Australian National University
Burra Charter	The Australian ICOMOS Charter for Places of Cultural Significance, 2013
CHL	Commonwealth Heritage List
CMP	Conservation Management Plan
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAWE	Department of Agriculture, Water and the Environment
EPBC	*Environmental Protection and Biodiversity Conservation Act 1999*
ERM	*Environmental Resources Management Pty Ltd*
FCC	Federal Capital Commission
HIA	Heritage Impact Assessment
HMP	Heritage Management Plan
HSMHC	Hall School Museum and Heritage Centre
LILO	'Left In Left Out' Intersection
RNE	Register of the National Estate
TCCS	Transport Canberra and City Services
TGLP	Tree Group Location Plan

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Oakstand Pty Ltd (Oakstand) on behalf of the Shepherd Foundation (the Client) (as a beneficiary for The Trustee for the Gunyar ACT Properties Trust) to prepare a Heritage Impact Assessment (HIA) for the (former) Commonwealth Scientific and Industrial Research Organisation (CSIRO) Commonwealth Heritage Listed (CHL) site 'The CSIRO Forestry Precinct' and 'Australian Forestry School (former)', Banks Street, Yarralumla, Australian Capital Territory (ACT) (known throughout this report as 'Forestry Place'/or the Site). CSIRO disposed of the property in 2002, however retained management control through a twenty-year lease. The property has therefore been required to be managed in accordance with the provisions of the Commonwealth legislation *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The property is recognised as being of Commonwealth heritage significance for its association with the CSIRO Forestry Precinct and as the site of the Former Australian Forestry School [CHL Place ID: 105426 and Place ID: 105595). Oakstand has been investigating the feasibility of development at the Site once the CSIRO lease expires in 2022. This investigation has included a Constraints Analysis (ERM 2019), Preliminary Master Plan Heritage Review (ERM 2019) and a detailed Heritage Assessment of the Site's Aboriginal, historic and natural heritage values (ERM 2020). Oakstand also explored a number of potential development options guided by detailed community consultation. After reviewing all the concept plans and community consultation feedback, it was determined that Option Five (the proposed action) was the most desirable outcome, and a masterplan was developed.

As such, this HIA has been prepared to assess the overall impact of the proposed action. This HIA has been prepared in accordance to the EPBC Act *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies for Commonwealth Heritage Places*.

The buildings with heritage values that have been ranked as either high or moderate significance, including the Australian Forestry School (9), the former Museum (10), Store (17), Tennis Courts (30) and Forestry House (2), will be retained and adaptively reused. These structures each represent important phases in the Site's history and their conservation will also allow for the Site to remain understood within the context of a forestry school. The proposed action also involves the removal of one area of moderate significance, eleven structures/sites of low significance, and some low to moderate significance individual plantings and plant groupings.

ERM has found that the permanent loss the elements above has the potential to alter the Site's setting as an important place of national forestry research and propagation, thereby resulting in significant impact to the Site's heritage values. The potential for significant impacts on matters protected under the EPBC Act is an indication for whether a referral or other permits for the proposed action are likely to be required. Overall, ERM has found that the proposed action will have a significant impact to the heritage values of Site. Oakstand has therefore engaged ERM to address these impacts in the whole-of-environment EPBC Referral which is currently underway.

In order to mitigate the significant impact of the proposed action, and conserve the heritage values of the Site, Oakstand has incorporated a series of heritage strategies in the masterplan for the Site. Strategies 1 – 7 as listed below, are presented in detail in *Section 8.3*.

Strategy 1: Heritage Advisory Role;

Strategy 2: Conservation Management Plan;

Strategy 3: Interpretation;

Strategy 4: Construction of Glasshouse;

Strategy 5: Tree Retention;

Strategy 6: Replacement Program; and

Strategy 7: Photographic Recording.

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by Oakstand Pty Ptd (Oakstand) on behalf of the Shepherd Foundation (the Client) (as a beneficiary for The Trustee for the Gunyar ACT Properties Trust) to prepare a Heritage Impact Assessment (HIA) for the Commonwealth Heritage Place 'The CSIRO Forestry Precinct' and 'Australian Forestry School (former)', Banks Street, Yarralumla, Australian Capital Territory (ACT) known throughout this report as 'Forestry Place'/or the Site. The Site is currently under consideration for future development.

1.1 Background

The Site was initially established as part of the nursery for Westbourne Woods in 1913, and then became the location for the establishment of the Australian Forestry School (AFS) in 1927. When the Australian National University took over the function of the school in 1965 and moved to the university campus in 1967, the Forestry and Timber Bureau continued to conduct research at the Site until 1975 when the Commonwealth Scientific and Industrial Research Organisation (CSIRO) was established and acquired the whole precinct, excluding the oval. CSIRO sold the Site in 2002 but maintained a twenty year lease which will expire in 2022 (for more detail on the history of the Site see *Section 4* and *Appendix B*). The Client is therefore preparing for decisions regarding the future use of the Site once the CSIRO lease expires.

The Site is currently National Land and is also a Designated Area under the National Capital Plan (NCP). As the Client is investigating potential future uses for the Site, which may require a lease variation or amendment to the NCP through submission to the National Capital Authority (NCA), a range of discipline studies were commissioned to assess the current status of the Site and guide future decisions regarding permissible use of the Site. This range of studies included a Heritage Assessment (HA), and an Aboriginal Cultural Heritage Assessment (ACHA) to assist the Client in a full understanding of the heritage values that may be present at the Site, so these values are considered and protected within the future development plans for the Site.

The Client has engaged Oakstand to manage the range of discipline studies and conduct an assessment of potential future uses for the Site. Uses such as continued scientific research, education, aged care, commercial, community, and residential have all been considered as part of this assessment, and have been presented to key stakeholders as part of a comprehensive community consultation process. The outcome of this assessment is a concept plan for a mixed use involving residential, commercial and community aspects. This concept plan is being considered the proposed action for the purpose of this HIA.

The Site's historic heritage values are recognised on the Commonwealth Heritage List (CHL), which describes the historic, aesthetic, technical, social and associative values of the place. The HA, prepared by ERM for Oakstand in April 2020, found the Site to meet an additional two CHL criteria, b) for rarity, and d) for its representative values. These attributes are represented through the historic buildings, assets, historic plantings, views and landscape design.

1.2 Purpose of this Assessment

The purpose of this HIA is to assess the potential impacts to the heritage values of the Site resulting from the proposed action. This HIA has been prepared to support the Client or future developer's compliance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) to assess actions on, or impacting upon, Commonwealth land and Matters of National Environmental Significance (MNES). This report:

- assesses impacts to heritage values from the proposed future works;
- assesses whether a referral in accordance with the EPBC Act is required; and

- provides recommendations to manage and mitigate potential impacts on recognised heritage values, as well as identifies any potential opportunities for enhancing the heritage values of the place.

To achieve this objective, the following tasks have been undertaken in the preparation of this report:

- review of the recent HA and ACHA for the Site (ERM 2020);
- a review of the preliminary concept plan of the proposed action; and
- preparation of a detailed site analysis of impact on the identified heritage values of the Site.

1.3 Site Location

The Site is a large 'U' shaped parcel of land situated in the suburban residential area of Yarralumla, ACT (Section 4 Block 7 Yarralumla) (*INSERT*

Figure 1.1). It is abutted by the Royal Canberra Golf Club to the west and north. It is bounded to the north by Banks Street, and its western cadastral boundary follows a general arc south towards Bentham Street. The Site comprises 10.93 hectares (ha) of land that includes groups of buildings mainly comprising the former AFS that are clustered around an oval, plant nursery and arboretum. The oval was originally part of the AFS, but no longer forms part of the Site and is now ACT Government land (and responsibility).

The Site is located approximately 1.4 km west of the Diplomatic precinct of Yarralumla, an area distinguished by grand properties and formal tree-lined vistas.

1.4 Methodology

This HIA evaluates the potential impacts of the proposed action on the heritage level values of the place. The HIA has been prepared in accordance with the EPBC Act *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies for Commonwealth Heritage Places*.[1] This self-assessment guideline assists a proponent undertaking a proposed action to determine whether or not an action is likely to have a significant impact on heritage values.

This HIA has been prepared with reference to the following guiding and best practice documents:

- Australian Heritage Council (2010) *Identifying Commonwealth Heritage values and Establishing a Heritage Register: A Guide for Commonwealth Agencies*;
- Commonwealth of Australia (2019) *Working Together: Managing Commonwealth Heritage Places: A guide for Commonwealth Agencies*;
- EPBC Act and Regulations, including:
  - *Commonwealth Heritage Management Principles*, set out in Regulation 10.03D, Schedule 7B, EPBC Regulations;
- *Heritage Act 2004* (ACT);
- NSW Heritage Office *Statements of Heritage Impact* (nd); and
- The Australia International Council for Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (2013) (the Burra Charter).

[1] Prepared by the former Department of Sustainability, Environment, Water, Population and Communities in 2013 (now the Department of Agriculture, Water and the Environment (DAWE))

Legend

CSIRO Forestry Precinct CHL Boundary

Source:
Nearmap Imagery Dec 2020
Inset: Esri OpenStreetMap 2019

Site Location

F1.1

Drawing No:	0502267m_YHIA_G001_R0.mxd		CSIRO Yarralumla Heritage Impact Assessment
Date:	16/12/2020	Drawing Size: A4	
Drawn By:	VN/KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

0 50 100m

N

ERM

Recommendations have been made in accordance with the EPBC Act and the principles of the Burra Charter, which sets out the guiding principles for heritage conservation in Australia. The Burra Charter provides specific guidance for physical and procedural actions that should occur in relation to significant places. As a non-statutory document, the Burra Charter does not place formal legal obligations on individuals or agencies responsible for heritage places. However, it is recognised in Australia as the best practice document to guide the conservation and management of places of cultural heritage significance, and is adopted by the NCA as a key guiding document for cultural heritage places within Designated Areas.

1.5 Heritage Status and Previous Reporting

The Site comprises two Commonwealth Heritage Places, which are listed on the CHL for historic, aesthetic, representative, technical, social and associative values, these are:

- The Australian Forestry School (former) (Place ID 105426); and
- The CSIRO Forestry Precinct (Place ID 105595).

The CHL listings for both of these Places are provided in *Appendix A*.

The Site is also located within the Commonwealth Heritage Place 'Yarralumla and Surrounds' (Place ID 105381) and approximately 500 m south of the Commonwealth Heritage Nominated Place 'Lake Burley Griffin and Adjacent Lands Historic precinct' (Place ID: 105230). The adjoining property of Westridge House & Grounds is also listed on the CHL (Place ID 105427). Westridge House was established as the residence for the principal of the AFS in 1927 and was later used by CSIRO until sold as a private residence in 2010. Other places in Yarralumla on the CHL include Stirling Park Precinct (Indicative Place ID 105301), Stirling Ridge (Indicative Place ID 105468), Australian Federal Police Cottage (Indicative Place ID 105626), Casey House and Garden (Place ID 105629), and Sewer Vent No. 1 (Indicative Place ID 105471).

Neither the Site nor any component of it is listed on the ACT Heritage Register. There are three ACT Heritage Register listed historic heritage sites in the surrounding blocks: Westbourne Woods, Yarralumla Brickworks and the Early Canberra Brickworks Housing Precinct. Two Aboriginal heritage sites have been nominated, but not yet assessed, in the Yarralumla area, neither of which are in the near vicinity of the Site. The first is Stirling Park (approximately 2.2 km north-east of the Site) and the other consists of three Aboriginal Scarred Trees (one in Stirling Park and the others in a block approximately 1.4 km east of the Site).

There are a number of previous heritage assessments that have been prepared for the Site. In 2001, Peter Freeman Pty Ltd Conservation Architects & Planners (Peter Freeman Pty Ltd) prepared a Conservation Management Plan (CMP) and in 2008 a Heritage Management Plan (HMP). In 2018, ERM finalised an updated HMP for the Site on behalf of the CSIRO that provided relevant updates and heritage advice pertaining to the future conservation of the Site and its policies in the event of divestment from Commonwealth management. In 2019, ERM prepared both a Constraints Analysis and a Preliminary Master Plan Heritage Review on behalf of Oakstand. In 2020, ERM also prepared a comprehensive Historic HA and an ACHA on behalf of Oakstand.

Arborist Report

Oakstand engaged Canopy Tree Experts to prepare an Arboricultural Assessment (AA) of the Site (May 2020). This report provides a health assessment of individual trees and tree groupings. Canopy Tree Experts assigned tree numbers and groupings to 1550 trees over 6m in height across the Site and provided this information to Oakstand in a formal tree schedule.

There were 24 Tree Groups that were divided up into species or groups of similar species. Each group was assigned an overall Tree Quality assessment of either Exceptional, High, Medium or Poor or Weed species. Oakstand used this AA to inform their master planning and landscape design, and to determine which trees would need to be removed due to poor health.

It is important to note that ERM referred to the AA and the Tree and Group Location Plan (TGLP) (*Appendix E*) provided by Canopy Experts to appropriately group trees for retention, partial removal and total removal. However, ERM has used different tree grouping numbers to the AA to ensure all areas of identified heritage significance have been appropriately assessed.

1.6 Authorship

This HIA has been prepared by ERM Senior Heritage Consultant Elspeth Mackenzie and Heritage Consultant Toyah Morath. Technical review was undertaken by ERM Principal Heritage Consultant Erin Finnegan and a quality control review was undertaken by ERM Partner Karie Bradfield.

1.7 Consultation

1.7.1 Community Consultation

Oakstand engaged Tania Parkes Consulting to run an extensive community consultation process as part of the development of the master plan for Site's redevelopment, branded as Forestry Place. This process has involved a series of targeted workshops throughout 2020, which ERM attended to address any questions regarding the Site's heritage values. Key stakeholders included:

- Yarralumla Residents Association;
- Inner South Canberra Community Council;
- Institute of Foresters (ACT);
- Friends of ACT Trees;
- Inner South Canberra Business Council;
- Royal Canberra Golf Club (neighbours); and
- Owners of Westridge House (neighbours).

Workshop One was an introduction to the project, site analysis for opportunities and constraints and discussion of possible future uses. Workshop Two was a collaboration with stakeholders to explore the relative merits of future uses in relation to their practicality and viability. Workshop Three involved a presentation of a draft master plan to work through various aspects of the proposal. Workshop Four involved further refining of the draft masterplan.

These workshops were followed by roundtable discussions to address the needs of immediate neighbours and other key stakeholders on specific aspects of the draft master plan. Finally, feedback was sought on the draft master plan from the broader Yarralumla and surrounding communities through drop-in sessions and an online forum.

Tania Parkes Consulting prepared a summary report of the consultation workshops which was provided to Oakstand (this report was developed separately to this HIA). The community consultation resulted in positive feedback and overwhelming support of the adaptive reuse of the heritage buildings at Forestry Place, which ensures the long term maintenance and conservation of these buildings.

1.7.2 Aboriginal Stakeholder Consultation

Under Section 14(7) of the *Heritage Act 2004*, the Minister for Territory and Municipal Services has declared four Aboriginal groups to be representatives of the Australian Capital Territory region. ACT Heritage provided a list of current Aboriginal stakeholders, and Aboriginal community consultation has been undertaken or attempted with each of the four Registered Aboriginal Organisations (RAOs) to determine the Aboriginal cultural heritage significance of the Site:

- Buru Ngunawal Aboriginal Corporation (BNAC);
- King Brown Tribal Group (KBTG);

- Mirrabee (formerly the Little Gudgenby River Tribal Council); and
- Ngarigu Currawong Clan (NCC).

As part of the development of the ACHA for the Site (ERM 2020), a letter was sent to each RAO, introducing the project and inviting them to participate in a site inspection. Copies of the letter were also sent via email to the two RAOs with a listed email address. A phone call was then made to each RAO contact to follow up on the letter and organise an appropriate day for the site inspection.

BNAC and Mirrabee both expressed a desire to attend the site inspection, while NCC advised that they were unavailable for fieldwork but would provide any input they may have if provided with a draft of the report. No response was provided by KBTG.

A site inspection with BNAC and Mirrabee was therefore conducted, and no Aboriginal heritage values were identified. Copies of the draft ACHA were supplied to all four RAOs for review and comment, however no responses were received.

As no Aboriginal heritage values were identified as part of the ACHA, further consultation with the RAOs was not required for the development of this HIA.

2. LEGISLATION

2.1 Commonwealth Legislation

2.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The primary objective of the EPBC Act and *Environment Protection and Biodiversity Conservation Regulations 2000* (Regulations 2000) is to provide for the protection of the environment, particularly those aspects that are MNES, which can include a place's natural and/or cultural heritage values. As a Commonwealth Heritage Place, any actions undertaken on the Site are subject to Commonwealth legislation, and therefore, the EPBC Act.

Actions might be direct impacts from physical disturbance or could also include secondary impacts in the event of activities that would impact on the visual aspect, cultural importance, landscaping and curtilage of an adjacent listed property (such as Westridge House).

Any actions which will, or are likely to significantly impact the environment need to be assessed. The key section of the EPBC Act that are of direct relevance to this HIA is:

- Section 26: Requirement for approval of activities involving Commonwealth land. A person must not take on Commonwealth land an action that has, will have or is likely to have a significant impact on the environment.

2.1.1.1 Section 26 – Commonwealth Land

Section 26 relates to actions undertaken on Commonwealth land which will or are likely to significantly impact the environment. The term 'environment' has a broad coverage and relates to environmental matters that are not necessarily formally listed. 'The environment' is defined as:

a) Ecosystems and their constituent parts, including people and communities

b) Natural and physical resources

c) The qualities and characteristics of locations, places and areas

d) Heritage values of places

e) The social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c).

For proposed actions situated on Commonwealth land or which may impact on Commonwealth land, the guidelines *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* (Department of Sustainability Environment Water Population and Communities 2013) (Significant Impact Guidelines 1.2) apply. The guidelines require the proponent to undertake a self-assessment process to decide whether or not the action is likely to have a significant impact on the environment, including the heritage value of places. If an action is likely to have a significant impact, an EPBC Act referral must be prepared and submitted to the Environment Minister for approval (refer to Part 3, Division 1 and Section 28 of the EPBC Act).

2.2 ACT Legislation

As noted, under Section 26 of the EPBC Act any redevelopment at the Site is required to avoid, minimise or manage potentially significant impacts on the environment. This provision takes in the broader suite of issues listed under the EPBC Act and can include ACT heritage listed species and heritage values. The relevant ACT heritage legislation and planning controls have been outlined in this section.

2.2.1 National Capital Authority

2.2.1.1 National Capital Plan

The NCP is the strategic plan for the ACT that is managed by the NCA. It ensures Canberra and the Territory are planned and developed in accordance with their national significance.

The NCA prepares development control plans (DCPs) to guide the future development of sites on National Land and assesses all development proposals. Where a DCP applies to land under control of the ACT Government, development proposals are assessed by the Environment and Planning Directorate and must be in accordance with the DCP.

The NCP includes Designated Areas, which are areas considered to be of national importance and include the central national area, national institutions, diplomatic areas, Lake Burley Griffin, approach routes to the city and hills, ridges, and buffers.

The NCA will consider heritage places in Designated Areas as Commonwealth Areas for the purposes of protecting the environment in the manner afforded under the EPBC Act. Within Designated Areas the NCA may require a HMP and an HIA to accompany development applications for a heritage place which should be prepared to meet requirements equivalent to those in the EPBC Act.

The NCA states that:

- Development should be consistent with the requirements of any relevant Heritage (or Conservation) Management Plan for that particular place.
- The management of heritage places should ensure that their use and presentation is consistent with their heritage values. Heritage places will be presented and interpreted to increase public awareness, understanding and enjoyment of the natural and cultural heritage of the National Capital and its conservation, subject to any reasonable requirements for privacy or confidentiality.

The Site is a heritage place in a Designated Area.

2.2.2 ACT Heritage Act 2004

The ACT Government has legislation to conserve significant heritage places and objects in the ACT. This legislation is in close alignment with those used in other states and territories. The Heritage Act 2004 protects the natural and cultural history of the ACT through protection provisions and the establishment of a Heritage Council.

The Heritage Act 2004 establishes twelve criteria for the identification and assessment of heritage values. The criteria are used to identify places with heritage significance. Places assessed against one or more criteria as being of Territory significance can be included on the ACT Heritage Register.

The Site was nominated to the ACT Heritage Register at the time of divestment from CSIRO, however the ACT Heritage Council decided not to enter it as it was within a Designated Area and the values were already protected in the CHL.

2.2.2.1 ACT Heritage (Representative Aboriginal Organisations) Declaration 2006 (No.1)

Under the *Heritage Act 2004* (Section 14), this instrument provides for the scope of consultation with Traditional Owners through the declared Representative Aboriginal Organisations (RAOs).

See Section 3 for more information on consultation with the RAOs regarding the Site.

2.3 Non-Statutory Considerations

2.3.1 The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013

The Burra Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance including owners, managers and custodians. The Burra Charter was first adopted in 1979 at the historic South Australian mining town of Burra. Minor revisions were made in 1981 and 1988, with more substantial changes in 2013. The Burra Charter provides specific guidance for physical and procedural actions that should occur in relation to significant places. A copy of the Burra Charter can be accessed online at http://icomos.org/australia.

The NCA states that it will adopt the Burra Charter as a key guiding document for cultural heritage places within Designated Areas.

2.3.2 Australian Natural Heritage Charter

The Australian Natural Heritage Charter is a distillation of 'best practice' conservation principles for Australia, based on the consensus of a broad range of experts. It aims to assist everyone with an interest in natural places to establish their natural heritage values and manage them. It can be applied to a wide range of places whether terrestrial, marine or freshwater. It offers a framework for making sound decisions for managing and restoring natural heritage places based on the ecological processes which occur in natural systems. It also provides a process that can be used to support and implement local, state and territory, national and international policies, agreements, strategies and plans. It does not replace statutory obligations.

The NCA states that it will adopt the Australian Natural Heritage Charter as a key guiding document for natural heritage places within Designated Areas.

2.3.3 The Archive of the Register of the National Estate

The Register of the National Estate (RNE) is now an archive of information about more than 13,000 places throughout Australia including many places of local or state significance. The RNE was closed in 2007 and is no longer a statutory list. The closure of the RNE does not diminish protection of Commonwealth heritage places.

The RNE is maintained on a non-statutory basis as a publicly available archive and educational resource. RNE places can be protected under the EPBC Act if they are also included in another Commonwealth statutory heritage list or are owned or leased by the Commonwealth. In addition, places in the RNE may be protected under appropriate state, territory or local government heritage legislation.

The Site has two listings on the RNE, identical to the CHL entries, being 'The CSIRO Forestry Precinct' (Place ID 103577) and 'Australian Forestry School (former)' (Place ID 13338).

2.3.4 National Trust of Australia (ACT)

The National Trust is a non-government organisation dedicated to the protection and conservation of places of heritage value. It has no statutory powers though is an advocate, enabling community input into sites of heritage value. The National Trust has been gathering information about heritage places in Australia for more than three decades, and has a list of heritage places including individual buildings, precincts, natural environment places or culturally significant places. These listings do not attached any legal protection, nor do they put the owner of a listed place under any legal obligation.

The Site is not listed on the National Trust (ACT) places list.

2.3.5 Yarralumla Residents Association

Established in 1988, The Yarralumla Residents Association (YRA) is an incorporated association formed to represent the views of residents of Yarralumla. The YRA has been active over many years in putting forward members' interests to Government. Priorities have been the desire to preserve the amenity of the suburb in the context of a desire by governments and developers for 'urban consolidation'. The YRA has a general list of significant sites associated with the history of Yarralumla and are active in ensuring the conservation of these sites.

The CSIRO Forestry Precinct is included in the YRA Significant Sites list.

2.3.6 Ask First: a Guide to Respecting Indigenous Heritage Places and Values

The Australian Heritage Commission document *Ask First: a Guide to Respecting Indigenous Heritage Places and Values* (2002) provides a practical guide to consultation and negotiation with Indigenous stakeholders regarding addressing Indigenous heritage issues and maintaining heritage values and places.

2.3.7 Engage Early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act

The guideline *Engage Early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act* was prepared by the former Department of Environment in 2016. The guideline aims to improve how proponents engage and consult with Aboriginal peoples during the environmental assessment process under the EPBC Act. DAWE's expectations on how engagement with Aboriginal people should occur are stepped out in the guideline. This guideline should be read in conjunction with the *Ask First* guideline.

3. HISTORICAL BACKGROUND

The following section is a brief historical summary and chronological timeline of events related to the Site. For a detailed history of the Site please refer to *Appendix B*.

Yarralumla was established as a sheep station by (Sir) Terence Murray in 1837 and a homestead known as Yarralumla House was soon constructed. Murray's brother-in-law, Augustus Gibbes purchased the property in 1859 and later sold it to his friend and neighbour Frederick Campbell in 1881. The Commonwealth Government purchased the property from Campbell in 1913 as a temporary residence for the Governor-General of Australia and the residence, which has been rebuilt several times, is now known as Government House or Yarralumla.

Canberra experienced its first major phase of development as the National Capital in the 1920s when there was a focus on the completion of the Provisional Parliament House and the relocation of the Parliament to Canberra. This phase also had the intention to relocate Commonwealth Government departments and some national institutions to the new city. One of the national institutions, created in 1925 by Commonwealth legislation, was the AFS. The AFS was established in the suburb of Westridge, now Yarralumla, then the western suburb of the Federal Capital, so as to be near the arboretum (Westbourne Woods) and the nursery established in 1913 by Charles Weston, Officer in Charge, Afforestation Branch, Department of Home Affairs (*Figure 3.1*). The modern suburb of Yarralumla was officially gazetted by the government in 1928.

Figure 3.1 1918 Capital City Plan showing Westbourne Woods (NAA #1145962)

3.1 Development of the Site

The sequential site uses of the Site are:

- Pre-1913 – 1920: Westbourne Woods (Nursery and Arboretum);
- 1927 – 1968: Australian Forestry School;
- 1968 – 1975: Forestry and Timber Bureau;
- 1975 – 2004: CSIRO Division of Forest Research/CSIRO Corporate; and
- 2004 – Current: CSIRO and sub-tenants.

The Site has heritage significance for its array of features from different phases of development linked to its scientific and educational purposes. Site development can be grouped into the following key phases:

- AFS establishment (1927 – 1938)
- Inter-war period (1938 – 1942)
- Post-war period (1948 – 1958)
- Administration Period (1969 – 1975)
- CSIRO period (1975 – 2004)

All of these key phases involved significant earthworks, construction and planting of exotic tree species. The scale of disturbance to the previous landscape is particularly evident in aerial photographs of the 1960s (*Photograph 3.1*) and 1970s (*Photograph 3.2*).

Photograph 3.1 Northern area of CSIRO Yarralumla, c.1960 (CSIRO Black Mountain)

In 1975 CSIRO acquired the whole Site as it exists now, apart from the oval and including Westridge House, and established a Division of Forest Research to carry out the functions of the Forest Research Institute and the harvesting and management groups of the Forestry and Timber Bureau (CSIRO 1976). The unit became the Division of Forestry and Forest Products in 1988, the Division of Forestry in 1991 and in 1996 the Division of Forestry and Forest Products. The Site was sold in 2002 and all but Westridge House (which was sold separately to a private owner in 2010) was leased back to CSIRO for another twenty years.

Photograph 3.2 CSIRO Yarralumla, 1970s (CSIRO Black Mountain)

3.2 Chronological Historic Timeline

Date	Event
1900	The region (now Canberra) was home to a number of pioneering families and a few small hamlets and communities
1908	Area known as Limestone Plains was chosen as the site for the new Federal Capital, later named Canberra.
1911	Walter Burley Griffin won the international design competition for the design of the new Capital and rapid progress was made towards the establishment of the new city. Thomas Charles George Weston [1866-1935] visited the new Capital to report on a site for a temporary nursery at Acton and later supervised its establishment.
1911	The inaugural Interstate Conference of the infant forest services of Australia was held in Sydney with the agenda ‘collective consideration in the interests of the whole Commonwealth’ in the area of educated and training future forest officers.
1912	The new Federal Government acquired a site Action in 1912 and then acquired Yarralumla Station in 1913 where the temporary Canberra brickworks were built that year. Federal buildings started to appear around the area, the landscape was otherwise sparse and treeless.

Date	Event
1913	Charles Weston takes up the permanent appointment of Officer-in-Charge, Afforestation Branch of the Department of Home Affairs, Canberra. Weston chose the site at Yarralumla [then Westridge] for a permanent nursery (the current location of the Site).
1913	The Administrator of the Department of Home Affairs Colonel David Miller selected Charles Weston to begin the task of testing and selecting the species of trees and plants suitable for the climate and soils of the Canberra region.
October 1913	Work began at Yarralumla Nursery
June 1914	Administrator formally approved the reafforestation of the reserve at Yarralumla
1 September 1914	The first batch of Stone Pines were planted at Yarralumla Nursery.
1918	Burley Griffin, as Director of Design and Construction, ordered Weston to plant Civic Square with native trees that were not climate appropriate. Weston was later given sole control of horticultural planting in Canberra.
1920	Charles Edward Lane-Poole (at the time Conservator of Forests in Western Australia) pushed for the Commonwealth to provide one sixth of the cost of a school, with each state to cover the rest of the cost.
January 1921	A decision was made to house the new school at Laurel Hill in NSW Bago State Forest. The school was not established as two states could not guarantee fixed student numbers.
1921	Yarralumla Nursery was connected to the Town's water supply after years of pumping water from the Molonglo River.
1925	Charles Lane-Poole appointed new Commonwealth Forestry Advisor and found little had been done towards the establishment of a national forestry school.
May 1925	Upon Lane-Poole's advice, Prime Minister Bruce wrote to the State Premiers regarding the proposal for a national forestry school in Canberra. The site of Weston's Nursery was chosen as ideal, as it was within close proximity to Weston's Arboretum and Westbourne Woods.
April 1926	The AFS was temporarily housed at the Adelaide University until the school building was completed in Canberra.
1926	Weston retired and was succeeded by Alexander Bruce who had worked as Weston's principal assistance in 1925.
July 1926	Construction of the AFS began at Yarralumla, the site for a residence 100 m north was also chosen at this time (Westridge House).
1927	Weston received a MBE for transforming Canberra into a garden city.
29 March 1927	Lane-Poole was appointed the Commonwealth Inspector-General of Forests and became Acting Principal of the AFS.
11 April 1927	The AFS opened, despite only two rooms being completed. There were sixteen students and three permanent lecturing staff. Students were to live off-site at the former Government Printery at Kingston, occupying staff quarters, catching the school bus each day.
20 June 1927	The AFS was completed at a cost of £22,022.4.5 and formally opened by the Governor-General Lord Stonehaven on 24 November 1927.

Date	Event
1927	Construction began on the AFS residence, Westridge House.
1930	The Board of Higher Forestry Education was established by the State university representatives to act as a link between the AFS and to advise on curriculum and exams.
1936	Only one student was nominated for the AFS. The school struggled through the Depression years. No buildings were constructed during this time, however two Tennis Courts were constructed in 1930.
1935 - 1940	The Seed Storage Building was constructed during this time (#17).
1938	The Industrial Museum was constructed.
1940	The research nursery was developed. Lane-Poole considered closing the AFS for the duration of the war. The Board of High Forestry Education agreed it was best of keep the AFS open despite small numbers enrolled.
1946	The Forestry and Timber Bureau Act was gazetted, meaning the AFS became the Division of Education of the new Bureau. During this year the Industrial Museum was converted into offices for use by the new Bureau.
1947	The Commonwealth Forestry Scholarship program began, obliging graduating scholarship students to serve the forestry industry in Australia for at least three years after graduation. During the 1940s, the AFS saw considerable growth and enrolment of international students.
1948 – 1952	A decision was made to construct permanent on-site student accommodation in 1948. The Student Accommodation Building (referred to as Forestry House from 1956) was designed by the Commonwealth Department of Works and construction commenced in 1949. The building was completed in early 1952.
1952	The Caretaker's Cottage was completed in 1952, the design similar to Forestry House.
1953	The large central oval was completed and utilised for football events and other games to occupy the students.
1955 - 1958	The Glasshouse complex was constructed, including a number of glasshouses.
1963	The former Nurses Quarters building at the Canberra Hospital was relocated to the Forestry Precinct at Yarralumla. It was used as temporary accommodation for an influx of students in the 1960s. It was only used for five years, then occupied by Greening Australia.
1963-1965	The Australian National University agreed to take over the function of the AFS in a Department of Forestry of the school of General Studies in the university. 1965 was the first academic year of the new Department.
1965-1967	Construction of the new Forest Research Institute began and the building was opened in May 1967.
1969	A Controlled Environment Laboratory was constructed within the south-west corner of the Site.
1973	Two timber-clad ex-army buildings were moved to the site. The Photography Hut was located beside Westridge House and the Recreation Hut behind Forestry House. These have since been removed/demolished.

Date	Event
1970s	Plans were prepared for the refurbishment of the AFS for its new use as offices. Internal changes were made. Forestry House also underwent alterations, creating offices and conference spaces.
1975	CSIRO was established to take over the research functions, staff and facilities of the Forest Research Institute and the Forest Research Development Branch of the Forestry and Timber Bureau. CSIRO acquired the entire AFS precinct, excluding the oval.
1975-1986	A library was added to the Forest Research Institute building. By 1975, a grouping of Industrial Facilities was completed – a complex of carpenter's and engineer's workshops, including several large storage sheds and offices to the north-west of the AFS. These buildings replaced a weatherboard carpenter's shop [1927], two classrooms [1948] and temporary garages.
1979	Two storage sheds were constructed.
1996	An addition to the eastern end of the Forest Research Institute building was constructed during refurbishments.
1998	A garage beside Caretaker's Cottage was constructed.
2002	A CMP was prepared for CSIRO Yarralumla in preparation for the sale and leasing of the precinct, which also occurred in 2002. Westridge House was separated from the Site as part of this sale.
June 2004	The CSIRO Forestry Precinct and the Australian Forestry School (former) were entered onto the CHL.
2008	The CMP for CSIRO Yarralumla was updated and converted to a HMP. The CSIRO Forest Biosciences Division (the successor to the CSIRO Forest Research Institute) was in the process of being disbanded and moved to the CSIRO Black Mountain and Gungahlin sites. CSIRO Yarralumla was occupied by CSIRO's Information Management and Technology (IM&T) Group. Other third party tenants also occupied the site from this time.
2010	Westridge House sold to private owner.
2011	The Nurses Quarters building was demolished.
2018	The HMP for CSIRO Yarralumla was updated.
2019	A Heritage Constraints Analysis and a Master Plan Heritage Review were prepared for the Client. CSIRO Yarralumla known as Forestry Place.
2020	A suite of technical assessment reports were prepared for the Client in anticipation of the expiration of the CSIRO lease in 2022.

4. SITE DESCRIPTION

The Site is a large 'U' shaped parcel of land situated in the suburban residential area of Yarralumla, ACT (refer to *Figure* 1.1). It comprises 10.93 ha that includes groups of buildings within the north, west and southern portions of the Site, clustered around the ACT Government-owned and managed oval. The Site can be divided into three zones: North Zone, West Zone, and South Zone (*Figure 4.1*).

The North Zone comprises key buildings and features from both the AFS phase, Inter-war period and later CSIRO period. That is, the AFS (9), the (former) Industrial Museum and Offices (10) and an early Seeds Store (17) and some of the earliest trees and landscape elements. The North Zone also comprises buildings from the later phase of construction when CSIRO took over management of the Site from 1975. These structures are within the former CSIRO Pyrotron Complex also known as the Service Yard Group (c.1980s/1990s).

The West Zone comprises buildings from the post-war phase of development within the Site, which included the construction of the student accommodation building Forestry House (2) which began construction in 1949 and was completed in 1952, and the Glasshouses Complex (also known as Building 4 group) sometime between 1955 and 1958. The West Zone also comprises the Controlled Environment Building (3) which was constructed during the Administration Period (1969).

The South Zone comprises the Divisional Headquarters Building (also known as Building 1 Group) constructed during the Administration Period (1967) and also diverse groupings of mature pine species and an early (c.1913) grouping of Atlas Cedar that is a notable feature within the south-east corner of the Site along Banks Street.

Each Zone with its individual buildings, features and environmental context is described in detail in the Sections *5.3* (environmental) and *5.4* (built) below. The description of the environmental context lists a sample of natural and landscape elements that includes a detailed review of tree plantings.

4.1 The Setting

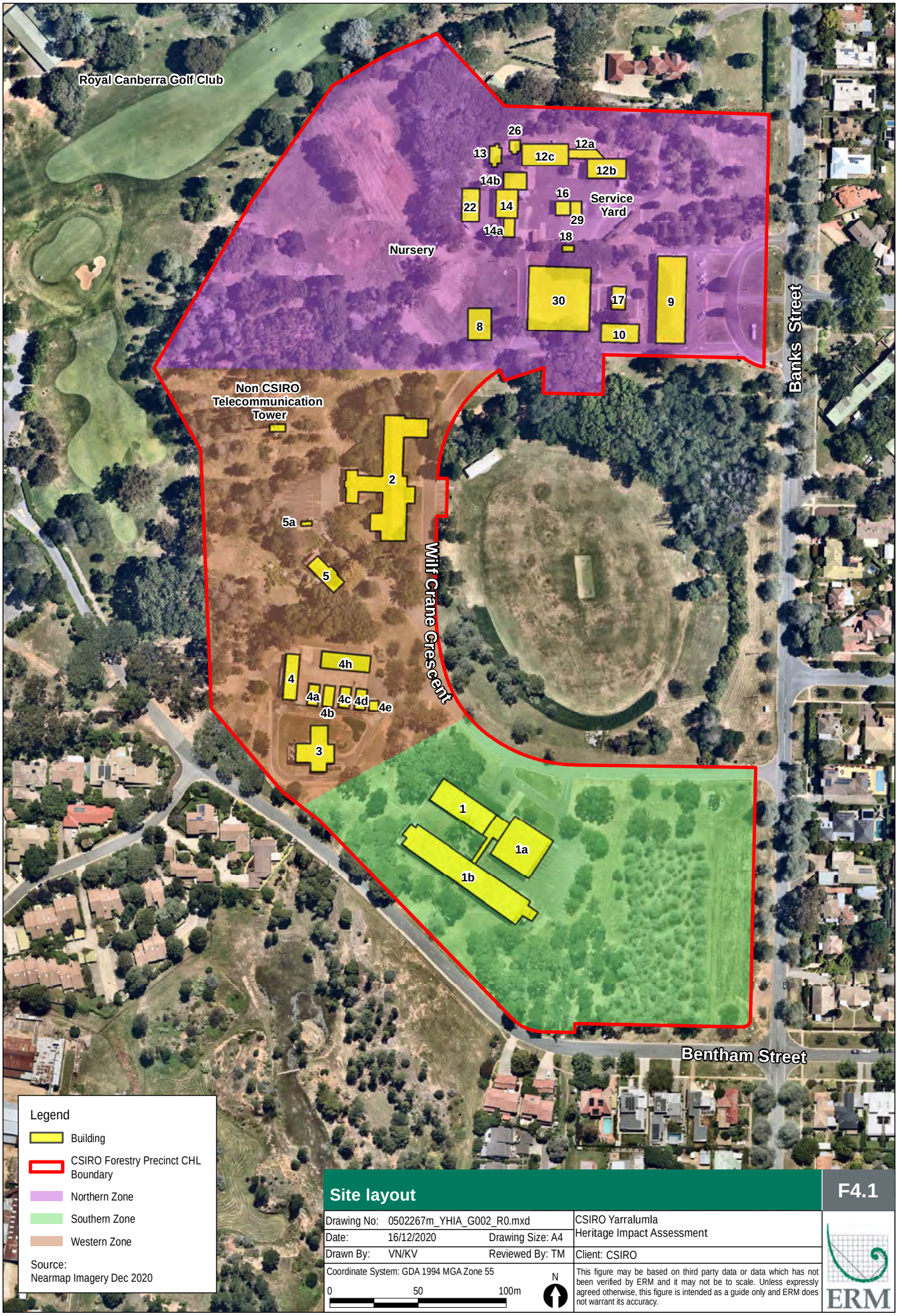
4.1.1 Lake Burley Griffin and Foreshores Precinct

The following section has been extracted from the National Capital Plan (NCA 2020). The key objectives for the conservation of the Precinct provides context as to the overall visual and landscape importance of the Site as part of the Lake Burley Griffin and Foreshores Precinct.

Lake Burley Griffin is an integral part of the design of Canberra and a vital and key element in the plan for the National Capital. The lake is not only one of the centrepieces of Canberra's plan in its own right but also forms the immediate foreground of the Parliamentary Zone.

The Lake Burley Griffin and Foreshores Precinct is part of the National Capital Open Space System. The key objectives for Lake Burley Griffin and Foreshores are as follows:

- Conserve and develop Lake Burley Griffin and Foreshores as the major landscape feature unifying the National Capital's central precincts and the surrounding inner hills and to provide for National Capital uses and a diversity of recreational opportunities.
- Lake Burley Griffin and Foreshores should remain predominantly as open space parklands while providing for existing and additional National Capital and community uses in a manner consistent with the areas' national symbolism and role as the city's key visual and landscape element.
- Lake Burley Griffin and Foreshores are intended to provide a range of recreational, educational and symbolic experiences of the National Capital in both formal and informal parkland settings with particular landscape characters or themes. These should be maintained and further developed to create a diversity of landscape and use zones which are integrated into the landscape form of the city and reflect the urban design principles for the National Capital.



Site layout

F4.1

Drawing No:	0502267m_YHIA_G002_R0.mxd		CSIRO Yarralumla Heritage Impact Assessment
Date:	16/12/2020	Drawing Size: A4	
Drawn By:	VN/KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

0 50 100m

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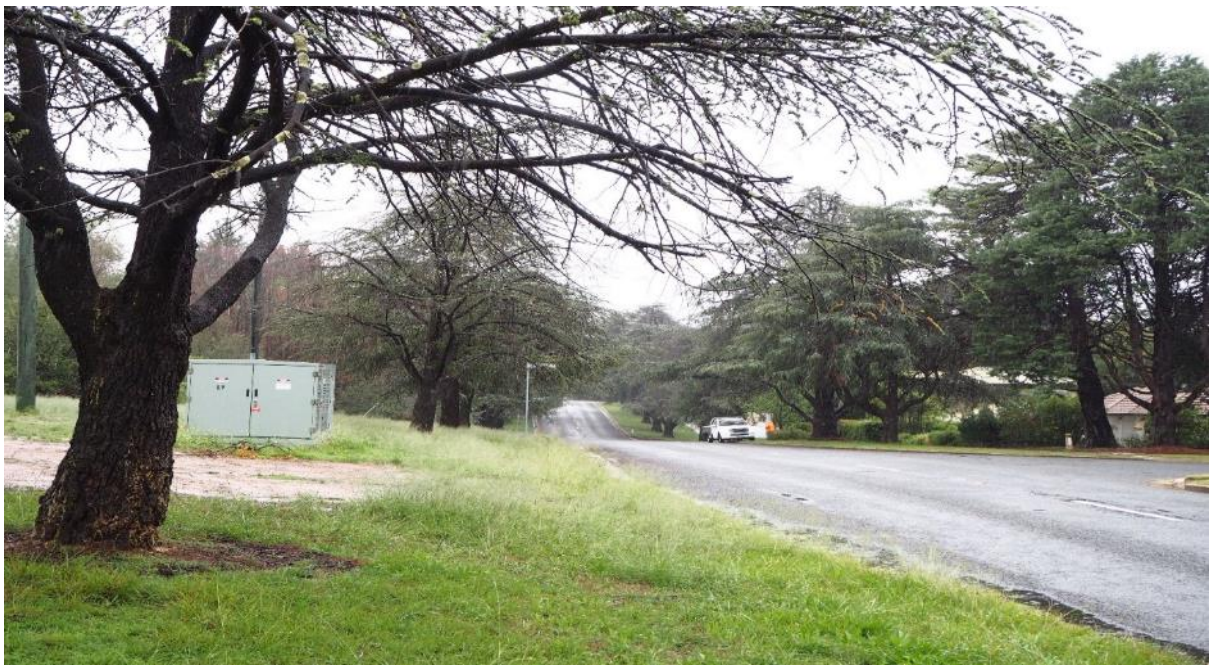
4.1.2 Yarralumla

The Site is situated on Banks Street in arguably one of the most striking residential suburbs in the ACT (*Photograph 4.1*). The AFS, having been constructed prior to the residential development of the suburb, has been part of the growth of the suburb since its establishment and has remained a significant landmark to the local community and the ACT. The following section will briefly describe this setting to assist in understanding the overall aesthetic and locational value of the Site.



Photograph 4.1 View north looking down Banks Street, AFS is approximately 100 m north on the left (all photographs ERM 2020 unless otherwise noted)

The modern suburb of Yarralumla was officially gazetted by the government in 1928 and according to the 2016 census, was home to approximately 2,890 people (Quickstats Census data 2016). More than half of the area of Yarralumla consists of striking open spaces, parklands, and non-residential development, including both Weston Park and Stirling Park, and the Royal Canberra Golf Club (located west of the Site). Yarralumla also includes the grounds of Government House, a Georgian style property constructed in 1891 around which the suburb of Yarralumla initially grew. The residents of Yarralumla are known for their proactive conservation and protection of historic places in the suburb. The AFS is recognised by the YRA as a place of historical significance (YRA 2020) (refer to *Section 2.1.5.3*). Other examples include Albert Hall, the Yarralumla Brickworks, Yarralumla Woolshed, Westbourne Woods, Weston Park and Yarralumla Nursery. Yarralumla's residential area has a high proportion of houses occupied by diplomatic missions and is highly desirable to the ACT's wealthy population for its wide and leafy tree-lined streets, lakeside setting and central location (being only 3 km from Canberra's City Centre).

4.2 The Site

4.2.1 Site Layout

The Site is located adjacent to a large manicured oval, which is currently owned and managed by the ACT Government. The Site can be understood from its various historical site phases, involving the establishment of the AFS (9) in 1927, located within the north-east of the Site along Banks Street and the former Industrial Museum and Offices (10) established in 1938, located behind the AFS along Wilf Crane Crescent, looking out onto the oval. Within this North Zone is also the early Seeds Store (17), located behind both the AFS and former Industrial Museum. These buildings have similar design characteristics and form a close spatial and visual relationship (*Photograph 4.2*).

To the west of Wilf Crane Crescent within the West Zone, is Forestry House (2), the Caretaker's Cottage (5), the Glasshouses Complex (Building 4 Group) and the Controlled Environment Laboratory (3). To the south of Wilf Crane Crescent in the South Zone is the former Divisional Headquarters Building (Building 1 Group).

Photograph 4.2 View facing south with AFS (9) (left) former Industrial Museum (10) (middle) and early Seeds Store (17) (foreground)

The Site also comprises large formal plantings and groupings of tree species throughout. The groupings of mature pine trees throughout the south and south-west of the Site are known as the Arboretum, which is considered by the current CHL listing for the Site (Place ID: 105595) to hold a 'significant genetic resource for Australia'. The tree-growing trials which constitute the arboretum identified trees suitable for the urban forests of Canberra and at the same time provided public park amenity for the Canberra community. Yarralumla Nursery to the north of the arboretum has supplied planting stock for Canberra's parks, streets and residential blocks since 1914.

There are large groupings of pine throughout the Site, these plantings are also associated with its former use as the AFS Precinct and the scientific uses by both the Forestry and Timber Bureau and later CSIRO as a forestry research site. The West and South Zones comprise the highest genetic variety of tree species associated with the international interest in forestry and is important for an array of scientific achievements, such as Monterey pine propagation and breeding and the Australian Tree Seed program (refer *Photograph 4.3*).

Photograph 4.3 A grouping of Canary Island pines west of Building 1 Group

4.2.2 Views and Sight Lines

Views and sight lines to and from a heritage place can be an important part of a places heritage significance and as such, are important to the place's conservation. There are a number of important aesthetic views and sight lines to and from, and within the Site. These views are short (between buildings) and medium distance views (outside of the Site looking in, and from the Site looking out) (refer to *Figure* 4.3). The most noteworthy of these sight lines is the axial alignment of the AFS building as the termination of Schlich Street, a wide tree-lined residential street. The symmetrical arrangement of the AFS and Schlich Street intersecting on east/west axes of symmetry is the principal view of the Site from outside. The two Roman Cypress trees framing the AFS east façade also contribute to this important sight line (*Photograph 4.4*). This feature is noted within the CHL entry for the Site (Place ID: 105426) that states:

> *The School building including its formal landscaped frontage, in its setting of mature pine forest plantings has aesthetic values for its historic character. As the terminal feature of the Schlich Street axial vista, it creates a major landmark feature in Yarralumla (Criterion E1).*

Photograph 4.4 View of AFS and two mature Roman Cypress trees framing the east Façade at the termination of Schlich Street

The AFS predates the construction of the surrounding residential blocks and street, though only by a few years (*Photograph 4.5*). Schlich Street first appears on a 1933 plan of Canberra, and it was included in the original 1918 Canberra Plan (though unnamed) as part of one of Walter Burley Griffin's geometric residential groupings alongside Westbourne Woods (*Figure 4.2*).

Photograph 4.5 View of AFS building from Solander Street (looking north-west) soon after construction, c.1929 (NAA #3174884)

Figure 4.2 1918 Capital City Plan, Schlich St designation (ERM outline) with Westbourne Woods to the west (NAA #1145962)

The central line of the AFS eastern façade was designed to align with the soon to be constructed Schlich Street (named after Sir William Schlich, a prominent Oxford professor of Forestry). This significant view is one of many in Canberra where buildings, roads and trees work together to make a picturesque and

liveable city. This view is a demonstration of Walter Burley Griffin's artistic grasp on town planning and the consideration of his plan in the design process for the AFS.

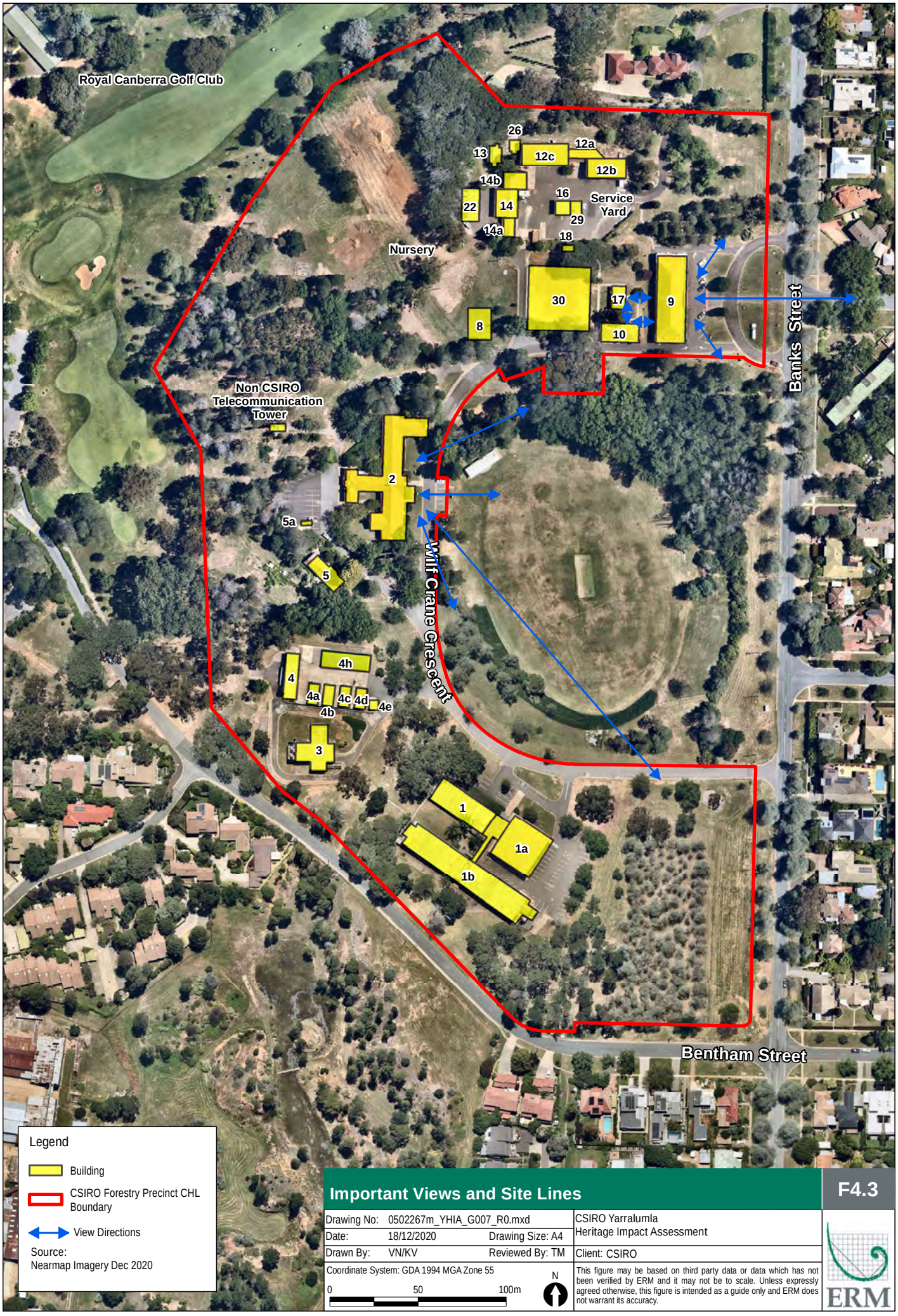
As noted within the CHL Statement of Significance above, the mature pine forest setting also contributes to the overall aesthetic attributes of the Site. These views remain as further evidence of use of the site as a forestry school and forestry research precinct (*Photograph 4.6* and *Photograph 4.7*).

Further, the view from the patio on the east elevation of Forestry House towards the large oval and mature plantings to both the north-east and south-east, and the view of Forestry House facing north-west from Wilf Crane Crescent both also contribute to the Site's setting and significant views (*Photograph 4.8*).

Photograph 4.6 View facing north-east of AFS, scattered mature Ponderosa and Stone Pines

Photograph 4.7 View facing south-east of AFS, cluster of mature Ponderosa Pines

Photograph 4.8 View facing west from Wilf Crane Crescent, oval in middle ground and Forestry House in background



Important Views and Site Lines

F4.3

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Date:	18/12/2020	Drawing Size: A4	
Drawn By:	VN/KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

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4.3 Environmental Context

The Site is located approximately 1 km south of Lake Burley Griffin, which traverses through the centre of the city of Canberra. Additionally, there is a small drainage line present at the eastern boundary of the Site, closest to Banks street. In terms of the Site's context with larger nature areas, it is found approximately 2 km south of Black Mountain. Black Mountain is protected from development as the Canberra Nature Park and contains native bushland which makes it suitable habitat for many native wildlife species. The Site is also within 5-10 km of many other protected areas which include Mount Ainslie (north-east), Red Hill Nature Park (south-east) and Jerrabomberra Wetlands Nature Reserve (east). Given the availability of larger, highly vegetated areas in close proximity, the habitat within the Site does not represent an important area for native flora and fauna species.

The Critically Endangered Golden Sun Moth (GSM) has been found to occur in open grassland within the Site, however this is a small estimated habitat that includes small patches of low-quality grassland and the GSM noted within the Site represents only a very minor portion of the GSM population overall (Capital Ecology 2020).

The Site contains numerous planned plantings, due to its past use for research and as a forestry school. The most significant plantings throughout the Site comprise pine species (including *Pinus radiata*), and a smaller number of eucalypt species can be found in the western section of the Site. There are also a number of aesthetic landscape plantings throughout the site that contribute to the visual amenity. These include oaks, elms, and cherry plum trees.

The Site comprises a large number of mature plantings and a number of significant early plantings. For a complete Arborists assessment of tree species within the Site, please refer to the Canopy Tree Experts Arboricultural Assessment prepared for Oakstand on behalf of the Shepherd Foundation (May 2020).

4.3.1 North Zone – Natural Elements

The following table is an example of the types of key species present within the North Zone of the Site. The North Zone comprises some of the earliest site plantings, associated with its establishment as an Arboretum and Nursery by Charles Weston, known as Westbourne Woods. The North Zone also comprises the landscape plantings associated with the AFS, which provide striking visual amenity. These plantings include the Roman Cypresses framing the AFS entrance, a mature Tasmanian Blue gum behind the AFS to the west, a mature Bunya Pine to the north of the former Industrial Museum and Offices and various groupings of Ponderosa Pines. The North Zone also comprises the former Nursery to the north-west of the AFS building. The Nursery was established in 1913 along with Westbourne Woods and contains mature plantings of Monterey pines, and groupings of eucalypts as well as Stone pines.

Table 4.1 Examples of plantings within the North Zone

Common Name	Species Name	Location and estimated planting area	Picture
Roman Cypress	*Cuppresses sempervirens*	Located outside the AFS east façade c.1930 (prior to 1948)	

Common Name	Species Name	Location and estimated planting area	Picture
Flowering Plum	*Prunus sp.*	West elevation of AFS	
Tasmanian Blue Gum	*Eucalyptus globulus*	West elevation of AFS 1920s to 1950s	
Bunya Pine	*Araucaria bidwillii*	Between north elevation of former Museum building and Store c.1920s to 1950s	
Ponderosa pine	*Pinus ponderosa*	South of AFS building across Wilf Crane Crescent	
Roman Cypress	*Cuppresses sempervirens*	Another two Roman Cypresses to the north of the AFS, likely associated with the original use of the Site as Westbourne Woods (c.1913)	
Ponderosa pine	*Pinus ponderosa* (in the background)	North of AFS across Wilf Crane Crescent	

Common Name	Species Name	Location and estimated planting area	Picture
Stone Pine	*Pinus pinea*	North of building 4 group near Westridge House, c.1920s to 1950s	
Ponderosa Pine	*Pinus ponderosa*	Either side of Building 9 c.1920s or earlier	
Ponderosa Pine	*Pinus ponderosa*	South of AFS across Wilf Crane Crescent	
Pin Oak	*Quercus palustris*	South of AFS between Wilf Crane Crescent and Oval	
Bunya pine	*Araucaria bidwillii*	Between Shed (22) and Store (13)	

Common Name	Species Name	Location and estimated planting area	Picture
Virginiana pine	Potential *Pinus virginiana*	South of Fire Wind Tunnel (in front of)	
Stone Pine	*Pinus pinea*	Cluster west of Store (13) within nursery	
Monterey Pine	*Pinus radiata*	North-west of Nursery	
Kurrajong	*Brachychiton populneus*	Within Eastern fence line of Meteorological Plot	

4.3.2 West Zone – Natural Elements

The West Zone contains a large number of trees and other plantings. The plantings identified below are largely associated with the establishment of Forestry House (landscape and garden plantings) and forestry research undertaken by the Forestry and Timber Bureau and later the CSIRO with groupings of Kurrajong, Eucalypts and various pine species. The remainder of trees within the West Zone have been identified as landscape amenity plantings.

Table 4.2 Examples of plantings within the West Zone

Common Name	Species Name	Location	Picture
Unknown	n/a	North elevation of Forestry House either side of staff carpark	
Unknown	n/a	Landscape planting along east façade of Forestry House	
Unknown	n/a	Landscape planting along west elevation and framing garden/picnic area	
Unknown	n/a	Within garden/picnic area south of Forestry House, landscape planting	
Unknown	n/a	West elevation of Forestry House, landscape planting	

Common Name	Species Name	Location	Picture
Eucalypt groupings	n/a	West of Forestry House	
Kurrajong	*Brachychiton populneus*	West of Building 4 Group c.1920s to 1950s	
Pin Oak	*Quercus palustris*	North of Building 4 Group, south of Caretaker's Residence	
Pin Oak	*Quercus palustris*	West façade of Caretaker's Residence	
River She oak	*Casuarina cunninghamiana*	West of the Caretaker's Residence	

Common Name	Species Name	Location	Picture
Cypress Pine	*Cuppresses sempervirens*	Cluster of x3 Cypress Pines south of Forestry House	
Kurrajong	*Brachychiton populneus*	East of Building Group 4, west of Wilf Crane Road	
Flooded gum or Rose gum	*Eucalyptus grandis*	West of Building 3, c.1979	
Italian stone pine	*Pinus pinea*	South-west of Building 3	
Chir pine	*Pinus roxburghi*	South of Building 3 c.1920s to 1950s	
Spotted gum	*Eucalyptus maculata*	South-east of Building 3 across access road c.1950s	

4.3.3 South Zone – Natural Elements

The South Zone has the largest and most diverse collection of tree species within the Site, including a large selection of pine species. A number of these groupings are associated with both Charles Weston's early plantings (prior to 1920) and later forestry research by the Forestry and Timber Bureau in the 1950s.

Table 4.3 Examples of plantings within the South Zone

Common Name	Species Name	Location	Picture
■ Shortleaf pine ■ Yunnan pine ■ Virginia pine ■ Coulter pine ■ Austrian pine	■ *Pinus Echinata* ■ *Pinus Yunnanensis* ■ *Pinus Virginiana* ■ *Pinus Coulteri* ■ *Pinus Nigra*	Clustered along southern site boundary along Bentham Street c.1950s	
Douglas pine	*Pinus douglasiana*	West of Building Group 1 scattered within larger planting groups c.1950s	
Calabrian pine	*Pinus brutia*	Planted around Building Group 1, scattered within larger groups, 1950s	

Common Name	Species Name	Location	Picture
Michocan pine	*Pinus michoacana*	West of Building 1 scattered within larger planting groups c.1950s	
Aleppo pine	*Pinus halepensis*	Around Building 1 Group, planted prior to 1920, some scattered plantings in the 1950s	
Canary Island pine	*Pinus canariensis*	North of Building 1 Group, planted prior to 1920	
Mexican Cypress	*Taxodium muchronatum*	Within the wings of Building 1, c.1960s	

Common Name	Species Name	Location	Picture
Giant Sequoia	*Sequoiadendron giganteum*	East façade of Building 1, c.1920s or earlier	
Coulter pine	*Pinus coulteri*	East of Building one across Wilf Crane Road	
Atlas cedar	*Cedrus atlantica*	South-east of Building 1 near Bentham Street, planted prior to 1920	
Ponderosa pine	*Pinus ponderosa*	East of Building 1, c.1920s or earlier (also planted either side of AFS building)	
Monterey pine	*Pinus radiata*	Planted around Building 1 Group, scattered within larger planting groups c.1920s – 1950s.	

4.4 Built Environment

The built environment of the Site comprises both individual buildings and groups of buildings that are associated with key phases of development starting with the establishment of the AFS.

A major phase of construction was also during the Administration Period of the 1960s and 1970s and again in the 1990s following the Site's takeover by CSIRO. Both buildings and features within the Site have been divided into North, West and South Zones for ease of reference. Key built features within each Zone are listed below, with more detailed descriptions provided in the following Sections.

North Zone

- AFS (9)
- Former Industrial Museum and Offices (10)
- Seeds Store (17)
- Nursery
- Tennis Courts (30)
- Meteorological Plot (8)
- CSIRO Pyrotron Complex/Service Yard Group

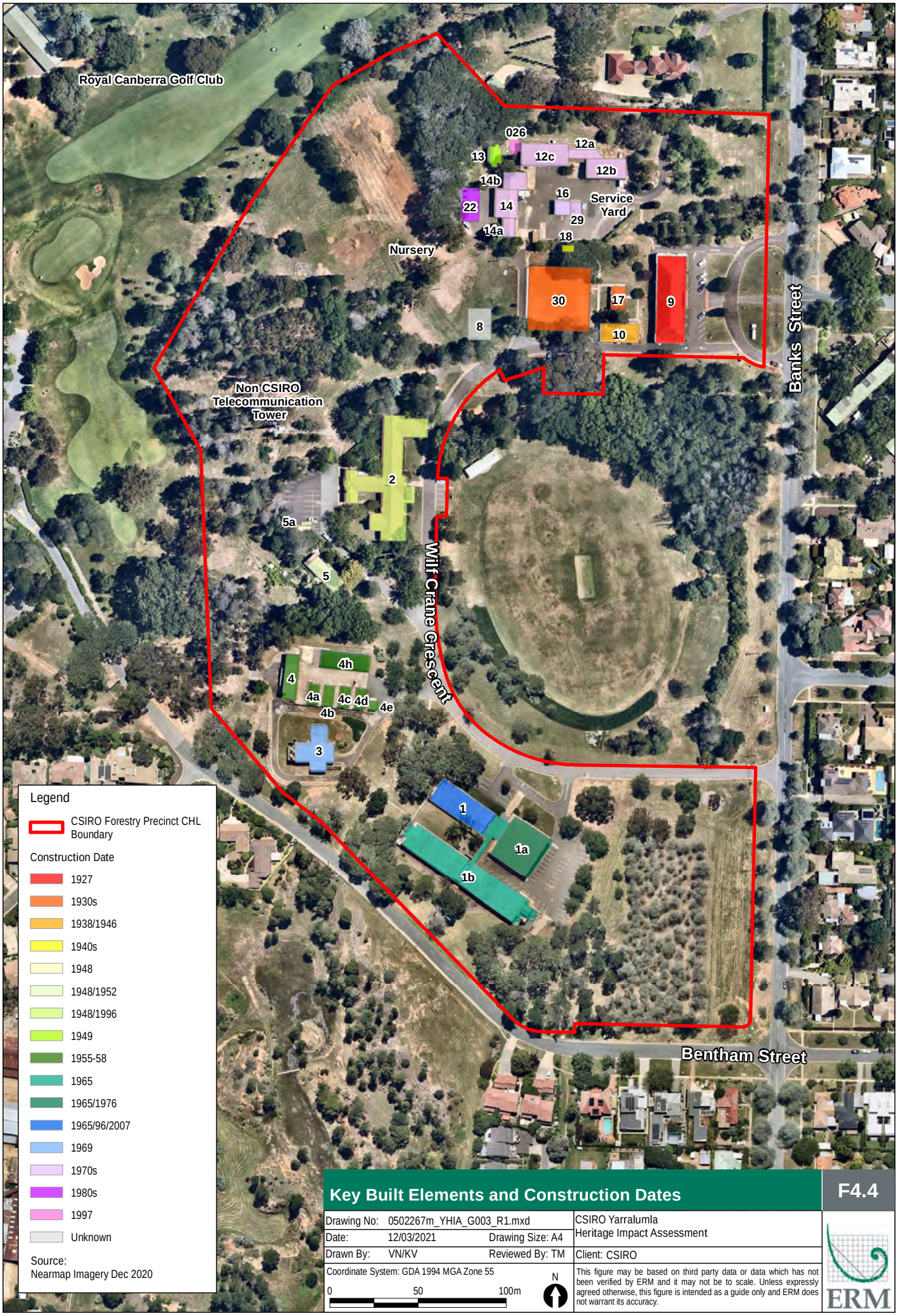
West Zone

- Forestry House (2)
- Caretaker's Cottage (5)
- Glasshouses Complex (Building 4 Group)
- Controlled Environment Building (3)

South Zone

- Divisional Headquarters Building (Building 1 Group)

A map of the Site's key built elements and construction dates has been provided in *Figure 4.4*.



Key Built Elements and Construction Dates

F4.4

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Date:	12/03/2021	Drawing Size: A4
Drawn By:	VN/KV	Reviewed By: TM

Coordinate System: GDA 1994 MGA Zone 55

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CSIRO Yarralumla
Heritage Impact Assessment

Client: CSIRO

ERM

4.4.1 North Zone – Built Elements

The North Zone of the Site comprises the eastern entrance along Banks Street to the northern fence line (abutting Westridge House) and to the western fence line that houses the Nursery adjacent to the Royal Canberra Golf Club grounds. The North Zone includes key built elements such as the AFS building (9), the former Industrial Museum/ Forestry and Timber Bureau Offices (10), Tennis Court (30), two early Store buildings (13 & 17) and the Changeroom/Lavatory (18) and a number of other assets, as outlined in *Table 4.4*. Each asset is discussed in more detail below.

Table 4.4 North Zone – key elements log

Asset number	Asset name	Key Dates	Photo
8	Meteorological Plot	1927	
9	Australian Forestry School (former)	1927	
10	Forestry and Timber Bureau Offices/ Industrial Museum (former)	1938/1946	
13	Store	1949	
14, 14a, 14b, 12c, 12a, 12b, 12c, 16, 29	CSIRO Pyrotron complex/Service Yard Group	c.1970s	

Asset number	Asset name	Key Dates	Photo
17	Store	c.1938	
18	Lavatory/Change Room	c.1940s	
22	Shed	c.1970s	
26	Fire Wind Tunnel	2008	
30	Tennis Court	1930	
-	Nursery	1914/1915	

4.4.1.1 Meteorological Plot (8)

The Meteorological Plot is a small fenced area within north-west of the AFS, between the Nursery (west) and Tennis Courts (east) (*Photograph 4.9*). The area was designated with fencing by the CSIRO some time during their occupation of the Site, it appears on aerial mapping to have been cleared prior to 1968 (*Photograph 4.10*). The Meteorological Plot is associated with the AFS as the remains of the meteorological station (1927-1981) and includes footings on which several metrological instruments were located. It was also the only meteorological station in Canberra from 1927 to 1939.

Photograph 4.9 Meteorological Plot, north-west of the AFS

Photograph 4.10 The Plot, designated by a metal fence

4.4.1.2 Australian Forestry School (9)

The AFS is located on an elevated site fronting the intersection of Banks and Schlich Streets in Yarralumla (*Photograph 4.11*). The elevation of the site is emphasised by the brick paved steps leading to the front portal from the middle semi-circular drive. The AFS was constructed in 1927 on a flat, excavated block in the south-east corner of Westbourne Woods. It is a single storey rendered masonry building, with a parapet and hipped roof clad with unglazed Marseilles tiles. The AFS was designed in the inter-war stripped classical style, and the key features of this style are the symmetrical façade, vertical bay fenestration, restrained wall treatment, horizontal banding, roundels suggesting classical entablature and an expressive entrance portal. The building mass is a rectangular block, with the corners emphasised by the use of projecting bays. The east-west axis is emphasised by the projecting front portal, where the parapet wall is stepped.

Photograph 4.11 View west towards AFS from Schlich Street

4.4.1.3 Industrial Museum; Forestry and Timber Bureau Offices (10)

The former Industrial Museum/Forestry and Timber Bureau Offices is located behind the AFS to the west and fronts onto Wilf Crane Crescent and the oval. The building was originally designed as an industrial museum for the collections held by the Forestry and Timber Bureau. The museum was to display seeds, papers, woods and soils, and included a carpenter's workshop.

The building was constructed in 1938 by the Department of the Interior with plans and specifications supplied by the Works & Services Brach in Acton, Canberra. It is a single storey rendered masonry building, with parapet walls and a terracotta tile hipped roof. It has key features of the same inter-war stripped classical style, such as the symmetrical façade, vertical bay fenestration, restrained wall treatment, horizontal banding of the base, roundels suggesting classical entablature, an expressive entrance portal, and the stepped parapet and corners (*Photograph 4.12*). These design features were chosen deliberately in order to match the existing AFS building, these features have remained intact.

Photograph 4.12 Former Industrial Museum southern façade with vertical bay fenestration and expressive entrance portal

4.4.1.4 Store (Building 13)

The Store building (13) was built in 1949 and is located at the rear of the Service Yard Group close to the Nursery, slightly east and nestled between a grouping of Nursery pines and the Fire and Wind Tunnel (26). The Store is a single storey weatherboard building, with a steep pitched corrugated iron gable roof (*Photograph 4.13*). The Store has a simple post and beam attachment with corrugated iron cladding sheltering the main timber slat double entrance doors. The Store has a set of timber framed casement windows on each elevation except its south façade entrance.

Photograph 4.13 Store (013) southern façade, timber slat double doors

4.4.1.5 CSIRO Pyrotron Complex/Service Yard Group

The Service Yard Group includes buildings 12c, 12a, 12b, 14, 14a, 14b, 15, 16 and 29 within a large fenced area north-west of the AFS and was most recently utilised by CSIRO's Pyrotron research group. The complex was constructed during the 1970s and included carpenter's and engineer's workshops along with several storage sheds and offices. The Service Yard group replaced an original c.1927 carpentry shop, and a lecture room and drafting room that were added in 1948. Building 12c, 12a and 12b are single storey low brick buildings with metal deck roofing, metal framed windows and roller doors (*Photograph 4.14* to *Photograph 4.17*).

Photograph 4.14 Building 12a

Photograph 4.15 Building 12b

Photograph 4.16 Double door modern shed (29) south of Building 12b

Photograph 4.17 Building 12c with metal roller doors in the background (left) and open shed (16) in foreground

To the south of this group is a simple open steel post and beam shed with klip-loc Colorbond roof and west wall (building number 16) which sits next to a modern two-door garage (building 29) (*Photograph 4.16*). Building 14, 14a and 14b are single storey face brick buildings. 14a has an open verandah with terracotta tile skillion roof. Each building has metal framed windows (*Photograph 4.18*).

Photograph 4.18 Building 14a, 14 and 14b (left)

4.4.1.6 Former Seeds Store (Building 17)

Store building 17 is located behind the former Museum building (010) to the north and was constructed prior to 1938 as a carpenter's workshop. Store building 17 is a single storey building that is divided into

two separate sections, each with separate entrances. The building is clad in horizontal weatherboards and has a terracotta tile hipped roof. The building is composed of timber double hung sash windows and timber doors with fixed glazed panels. The windows are generally located along the top of plate of the timber stud walls (*Photograph 4.19*).

Photograph 4.19 Building 17, former Seeds Store

4.4.1.7 Lavatory/Change Room (Building 18)

The Lavatory building (18) was constructed sometime during the 1940s, likely at the same time as other onsite developments in the 1940s such as a Lecture Room and Drafting Room that were constructed within the now Service Yard Group in 1948 (directly adjacent to this lavatory). The Lavatory/Change Room sits on a large concrete base that extends as a path leading towards to Service Yard Group. The building is a single storey vertical weatherboard clad building with a flat slanted roof (*Photograph 4.20*). There are two doorways which have steel mesh doors and highlight glazed louvre windows. The original timber 'Ladies' and 'Gents' signage remains on the building.

Photograph 4.20 Lavatory/Change Room (18)

4.4.1.8 Shed (Building 22)

Shed 22 is the former Forest Research Institute Garage and was erected during the 1970s along with the series of Carpenter's and engineer's workshops and storage sheds and offices constructed north of the AFS within the new Service Yard Group. Building 22 is a moderately sized prefabricated steel structure, clad with vertical klip-loc wall sheeting and corrugated iron gable roof (*Photograph 4.21*). The Shed has a large double door way along its south façade, and another set of double garage doors along its eastern elevation (*Photograph 4.22*).

Photograph 4.21 Shed (22) with gable roof and large double doors along south façade

Photograph 4.22 Additional double garage doors along east elevation

4.4.1.9 Fire Wind Tunnel (26)

The Fire Wind Tunnel or 'Pyrotron' was constructed by the CSIRO in 2008, designed by the CSIRO Pyrotron research group[2]. The structure was the first of its kind in the state. The bushfire wind tunnel was used to research how bushfires spread and to improve the safety and firefighting capabilities of Australian Communities. The Pyrotron is a 25 metre long aluminium wind tunnel with a five metre-long fuel bed and a viewing section lined with toughened glass.

Photograph 4.23 Fire Wind Tunnel (26)

Photograph 4.24 View of the Fire Wind Tunnel from the north-east corner of Westridge House yard

[2] It is unclear whether this structure is indeed the 'Pyrotron' the previous assessment notes the wind tunnel to have been constructed in 1997. However a description of the 2008 Pyrotron is similar to this structure, information was found in this article: https://theconversation.com/profiles/andrew-sullivan-22618

4.4.1.10 Tennis Courts (30)

Two Tennis Courts (30) were established for the staff and students of the AFS in 1930. Principal of the AFS, Charles Lane-Poole, had recognised the need for students to have a recreational facility available to them, and requested two tennis courts be constructed for use by staff and students. With a limited budget, much of the work was carried out by the students themselves. The Tennis Courts are located west of the AFS and behind the former Industrial Museum building (10) and early Seed Store (17). The Tennis Courts are contained within a large mesh fence (*Photograph 4.25*).

The surface of the courts is clay (Paddys River gravel). The modern net equipment has been removed. Located between the courts is a timber seat with a klip-loc metal sheet roof, erected by CSIRO staff in memory of a colleague, Jeanette Thomas, who died in 1988.

Photograph 4.25 Tennis Court, located east of the AFS

4.4.1.11 Nursery

The Nursery encompasses the north-west corner of the Site and contains large groupings of mature pine plantings, some of which were planted as early as 1914/1915 during the establishment of Charles Weston's Westbourne Woods (*Photograph 4.26*). While there are no remaining built structures within the Nursery, the foundations of an early plant house with brick base on concrete platform remains (*Photograph 4.27*). To the west of the Nursery area is a group of Kurrajong (*Brachychiton populneus*) and to the north-west of the Nursery is a large grouping of Monterey Pine (*Pinus radiata*), a group known as the 'Tower Plot'. To the north of the Nursery is a large group of Ponderosa Pine (*Pinus ponderosa*). The Nursery also includes groupings of eucalypts.

Photograph 4.26 Grouping of unknown species

Photograph 4.27 Remains of early plant house with brick base

4.4.2 West Zone – Built Elements

The West Zone of the Site comprises a number of key built elements associated with the post-war development of the Site, such as Forestry House (2), the Caretaker's Residence (5), a collection of four Glasshouses and Workshop (Building 4 Group) and the Controlled Environment Building (3). Each element is listed below in *Table 4.5* and described in more detail in the following sections.

Table 4.5 Western section – key elements log

Asset Number	Asset Name	Key Dates	Photo
2	Forestry House	1949-1952/1996	
3	Controlled Environment Building	1969	
4	Glasshouses Workshop	1955-1958	
4a, 4b, 4c, 4d	Glasshouses	1955-1958	
4h	Shade house	nd	

Asset Number	Asset Name	Key Dates	Photo
4e	Soil Preparation Shed	1955-1958	
5	Caretaker's Residence	1948-1952	
5a	Shed	nd	
24	Shed	nd	

4.4.2.1 Forestry House (Building 2)

Forestry House sits adjacent to the Oval to the south-west of the AFS (*Photograph 4.28*). It is a rendered masonry building with stucco walls and hipped roof clad in terracotta tiles in the same style as both the AFS and former Industrial Museum building. Forestry House is composed of three wings arranged about an east-north-south axis. Each wing centres on the front vestibule which also acts as the main entrance, flanked by manicured hedges and landscaped gardens. The east-west wing and the south wing of the building are single storey with timber-framed sash windows, a high-pitched tiled gabled roof and features a bronze and timber turret at its apex. The design of Forestry House reflects the post-war American colonial style, a key feature being the bronze and timber turret roof, and exposed ceiling timbers in the former Lounge room.

Since being vacated by students in the late 1960s, the building has undergone several rounds of alterations to convert the student accommodation into offices and laboratories.

Photograph 4.28 Forestry House east façade

4.4.2.2 Controlled Environment Building (Building 3)

The Controlled Environment Laboratory was built in 1969 beside the existing glasshouse complex (Building 4 group), and used for tissue culture and for growing plants. The Laboratory is located on an elevated site overlooking the Glasshouses Complex. It has a stone-faced retaining wall circling the building and a timber framed wall set onto the brick face that wraps around the west wall and acts as the balustrading for a set of steel steps (*Photograph 4.29*). It is a double storey building of face brick with concrete floors, a flat roof and aluminium windows. A glasshouse wing extends from the masonry mass to the north (*Photograph 4.29*). The main entrance access is from the eastern side of the building, noted by a distinctive set of concrete steps flaked by brick face wall and aluminium framed entrance doors that open outwards, extended by tall aluminium framed transom windows. There is access also via the rear of the building, which is extenuated by its thin rectangular first and second floor aluminium framed windows which are set into the wall and framed above with aluminium detailing. The building has been described as distinctly bold in form and composition.

Photograph 4.29 North façade of the Controlled Environment Laboratory

4.4.2.3 Caretaker's Residence (Building 5)

The Caretaker's Residence was built between 1948 and 1952 and was used for approximately ten years as offices, however its original function was for use as a private residence. The Caretaker's Residence is located on an elevated site, largely hidden by dense vegetation along the east and west elevations, which provides privacy for residents. The Residence is a single storey rendered masonry building, with a stepped terracotta tile gabled roof. The Residence reflects similar design characteristics to Forestry House (*Photograph 4.30*).

Photograph 4.30 Caretaker's Residence, east façade with terracotta tiled roof and rendered masonry finish

4.4.2.4 Glasshouses Complex - Building 4 Group

The Site underwent major development during the early post-WWII years, with the construction of Forestry House and the Caretaker's Residence. While the Glasshouse complex is noted in previous assessments and the CHL listing to have been constructed in 1949, it has been revealed through aerial imagery that they were in fact constructed sometime between 1955 and 1958. The Glasshouse complex consists of a number of glasshouses and small structures situated on a concrete pad within the south-western portion of the Site. The complex includes the Glasshouse Workshop (Building 4), which is a single storey red brick workshop with flat roof and highlight windows located to the western end of the complex (*Photograph 4.31*). Within the complex is also a Soil Preparation Shed, a single storey structure located next to Glasshouse 4c to the west. The Shed has horizontal hardiplank or vinyl cladding and skillion roof. This Soil Preparation Shed is accessed via a short concrete ramp, the entrance doors are aluminium with large transom window above them (*Photograph 4.32*). A long, flat rectangular Shade house (4h) is located directly adjacent to the Glasshouses (*Photograph 4.33*).

The set of four Glasshouses (4a, 4b, 4c, 4d) were constructed sometime between 1955 and 1958 and are all connected via a large steel beam which supplied water to each Glasshouse (*Photograph 4.34*). The Glasshouses are composed of a single volume space, with glazed and steel upper portion supported by a face brick lower wall. Each Glasshouse has a set of small square concrete platforms with associated square steel plating adhered to each north façade. These platforms were pad for holding tanks, as they have a fall-line directing liquid (likely water) to a drainage point, part of an earlier

system of irrigation. Interally the Glasshouses are filled with metal framed plant holders, some of these are located between each Glasshouse. The Glasshouse design appears to be typical for the era, though this exact design could not be found elseware through online and archival research, or via site visits to CSIRO Black Mountain and Yarralumla Nursery.

Photograph 4.31 Rear of the Glasshouse Workshop (west façade)

Photograph 4.32 Soil Preparation Shed (4e)

Photograph 4.33 Shade house (4h)

Photograph 4.34 Glasshouses 4a, 4b. 4c. 4d (facing north-east)

4.4.3 South Zone – Built Elements

The South Zone comprises a cluster of buildings around Building 1, formerly the Forest Research Institute Divisional Headquarters. The majority of this section comprises early and mature plantings and areas of tree-growing trials. Built elements within the Southern section are listed below in *Table 4.6*.

Table 4.6 South Zone – key built elements log

Asset Number	Asset Name	Key Dates	Photo
1	Formerly the Forest Research Institute Divisional Headquarters	1965/1996/2007	
1a	Formerly the Forest Research Institute Divisional Headquarters	1965/1976	
1b	Formerly the Forest Research Institute Divisional Headquarters	1965	

4.4.3.1 Building 1 Group

Building 1 Group was constructed in 1967 and would become the Forest Research Institute Divisional Headquarters. The entire complex comprises three buildings linked together with enclosed walkways and is situated within an excavated site. The front section is in part double storeys (buildings 1 and 1a) and the rear building (1b) is triple storeys (*Photograph 4.35*). The functional design of the complex has enabled substantial internal modification when required. The buildings comprise rectangular large split-level brick buildings with reinforced concrete columns and slabs, with brick curtain walls. The buildings have corrugated metal flat roofs. The Headquarters building is citing in the CHL listing (Place ID105595) for the Site as a contributory element, however due to its substantial internal modifications and common modern design characteristics, the HMP (ERM 2018) has given this building Nil significance.

Photograph 4.35 Building 1 Group north-east façade

4.5 Movable Heritage

The Site contains a number of movable heritage items of significance, these have been noted in the CHL Listing for the CSIRO Forestry Precinct (Place ID 105595). While a number of these items were seen during the site visit in 2020, some of objects described below were not sighted and may have been removed or relocated from their original locations. The following list was extracted from the CHL Listing for the CSIRO Forestry Precinct, augmented with additional information by ERM.

Significant furniture within the AFS include:

- several original notice boards
- an original timber light fitting
- built in timber cupboards, timber desk, table and chairs, blackboards and clock
- A mountain ash coffer decorated with scrolls and acanthus leaves
- a mountain ash refectory table and bench (believed to have been purchased for the School from C F Rojo & Sons Pty Ltd, Melbourne in September 1928)
- original meteorological equipment

Significant moveable heritage within Forestry House include:

- two kidney shaped coffee tables
- a log table
- two mounted propeller blades
- several chairs (part of a set designed by Derek Wrigley)
- a museum table from the AFS museum
- an original Forestry House student's chair
- conference table from the Max Jacobs collection
- a display cabinet

- a red cedar lectern with light; and
- a large table originally from the Forestry School Reading Room.

A collection of historic timber hauling vehicles from different parts of Australia has also been set up as an outdoor exhibit beside Forestry House.

Table 4.7 Moveable Heritage items identified at the Site

Item	Location	Photograph
Original notice board	Front vestibule of AFS	
Original meteorological notice board	Rear (west) vestibule of AFS	
Original meteorological equipment	Rear (west) vestibule of AFS	
Mountain ash decorated coffer	Central dome of AFS	
Mountain ash refectory table	Central dome of AFS	

Item	Location	Photograph
Mountain ash bench	Central dome of AFS	
Max Jacobs collection table	Dining Hall of Forestry House	
A log buggy used at Koondrook Victoria	Fenced display south of Forestry House	
Two tandem axle bogie from Victoria	Fenced display south of Forestry House	

5. ASSESSMENT OF HERITAGE SIGNIFICANCE

The following section provides an overall assessment of the Aboriginal, natural and historic heritage values at the Site against the CHL criteria. The Statement of Significance for the ACT heritage register has been extracted from the Australian Heritage Database. Any additions recommended by ERM have been provided in **bold** and any suggested text to be removed has been struck through.

Statement of Heritage Significance

The CSIRO Forestry Precinct, located within the larger Forestry Precinct (RNE No. 102273), is the Commonwealth's centre for forestry and timber research. It is a complex of buildings, arboretum, nursery, and tennis courts forming an important national scientific institution, established as a response to Federation to provide a national forestry school and national forest research centre. It demonstrates both the Commonwealth's interest in scientific endeavour and a vision for Canberra as the location for science as well as general government administration. **The Australian Forestry School and associated precinct is rare as the first and only national forestry school in the country**. **The Site, with its purpose built forestry structures, extensive plantings and associated scientific research was integral in establishing plantings and afforestation throughout Canberra since 1913 and ensured the training of some of Australia's most notable Foresters. The closing of the two schools of forestry in New Zealand (Auckland and Canterbury) during the 1930s also left the AFS as the only school in the Southern Hemisphere at the time engaged in training foresters of professional status.**

The AFS building and its former classrooms, former Industrial Museum and Seeds Store, workshops, glasshouses student housing (Forestry House) and groupings of various scientific tree plantings demonstrate the Site's national importance as a place of forestry training and clearly demonstrates its former use as a forestry school.

The precinct is associated with the international interest in forestry and is important for an array of scientific achievements, such as *Pinus radiata* propagation and breeding and the Australian Tree Seed program. **The Site is also significant for scientific research that was shared internationally, such as the work undertaken by Dr Jacobs who in 1968 was invited by the then Emperor of Ethiopia to visit that country and report on the situation with respect to eucalypt planting, which resulted in aid from Australia to Ethiopia, for example the supply of eucalypt seeds.**

The precinct is important as a component of the arboretum and nursery landscape of Yarralumla. The tree-growing trials which constitute the arboretum, identified trees suitable for the urban forests of Canberra and at the same time provided public park amenity for the Canberra community.

~~Yarralumla Nursery to the north of the arboretum has supplied planting stock for Canberra's parks, streets and residential blocks since 1914~~. Within the precinct, the former Australian Forestry School reflects the successful outcome of efforts to establish a national forestry school in the new National Capital to produce professional foresters for Federal and State services, and forestry research workers. **During the post-war years, large numbers of students were being trained in forestry at the AFS, not only from Australia but from New Zealand, Asia and Africa. Schooling of international students continued throughout the post-war years up until the 1970s with students and teachers sharing their knowledge internationally. Ongoing research also continued at CSIRO Yarralumla throughout the 1970s and 1980s and into the 1990s with CSIRO's research into bushfire behaviour through the Pyrotron.**

The CSIRO Forestry Precinct is important for its array of features from different phases of development linked to the scientific and educational purpose of the site. These features include the former Australian Forestry School (9) the former Offices of the Forestry and Timber Bureau (10), the former Seed Storage Building (17) and early Lavatory/Changeroom (18) and former Forestry School Store (13) Forestry House (2) and Caretakers Cottage (5), the CSIRO Divisional Headquarters (1), Controlled Environment Laboratory (3), the Glasshouse complex (including glasshouses 4a, 4b, 4c, 4d and Workshop 4) tennis courts (30), arboretum plantings and moveable objects of furniture, collections and historic timber hauling vehicles.

The arboretum is an important reference site containing experimental plantings and a significant genetic resource for Australia. The precinct has aesthetic quality based on the historic character of the former Australian Forestry School building, the former Office of the Forestry and Timber Bureau, Forestry House and the modern Headquarters building all set in the mature forest plantings of Westbourne Woods arboretum. **The School building with its classical symmetrical design and subtle entablature forms a striking termination to Schlich Street and is a landmark feature of Yarralumla. This significant view is one of many in Canberra where buildings, roads and trees work together to make a picturesque and liveable city. This view is a demonstration of Walter Burley Griffin's artistic grasp on town planning and the consideration of his plan in the design process for the Australian Forestry School. The timbers used in the panelling, flooring and joinery of School, including all concealed timbers, were carefully selected for each room in order to demonstrate the varied uses and aesthetic values of Australian hardwood and softwoods and are evidence a high degree of creative and artistic achievement. The School, with its 'dignity of architectural design' (Lane-Poole 1927) was thought to challenge the comparison with any other buildings in Canberra at the time. It was also said to be the first building to be erected in the new Capital of Australia in which the structural and joinery timbers were purely Australian grown.**

The landscaped frontage of both the Australian Forestry School with its neatly manicured façade gardens and Roman Cypress Pines framing the entrance from Schlich Street and the landscaped frontage of Forestry House also contribute to the CSIRO Yarralumla's overall aesthetic value.

The precinct, as a complete small-scale research and learning institution with classical style architecture and recreation grounds, reflects the design concepts that were held in the early 20th century for such places. Within the precinct, the former Australian Forestry School is significant as a fine example of early twentieth-century architecture.

It is likely that CSIRO Yarralumla holds social importance to former students and forestry scientists who conducted research there, and also the wider national forestry community for the Site's overall contribution to forestry research in Australia. The Australian Forestry School has a strong association with pioneers of forestry research in Australia, Charles E. Lane Poole and Dr Maxwell R. Jacobs. The arboretum is important for its association with T.C.G. Weston who directed the major plantings in the 1910s and 1920s.

It should also be noted that CSIRO Yarralumla is also important as the site of three memorials, though these would likely only be significant to immediate friends and family rather than a particular community or group. On 5 May 1960, the ashes of A.B. (Brian) Patton, a forester who died following a tree fall accident at Jervis Bay, were scattered under the Pin Oaks on the southern side of the AFS. The Tennis Courts include a timber seat, erected by CSIRO staff in memory of a colleague, Jeanette Thomas, who died in 1988. Wilf Crane Crescent was also named after Senior Research Scientist for CSIRO's Forestry Division, who died in 1991 of a heart attack.

5.1 Previous Heritage Assessments

5.1.1 Aboriginal Heritage Assessment

The development of the ACHA (ERM 2020) was informed by the EPBC Act and Regulations requirements and heritage industry best practice guidelines:

- *Ask First: A Guide to Respecting Indigenous Heritage Places and Values*; and
- *ACT Heritage Act 2004*.

The ACHA concluded that the Site contained no Aboriginal heritage values, tangible or intangible, and that the Site does not hold any cultural significance to Aboriginal people other than being part of the wider cultural landscape.

5.1.2 Natural Heritage Assessment

The HA (ERM 2020) concluded that the Site does not possess natural heritage values as defined by the Australian Natural Heritage Charter, although it does have limited scientific values as it contains 'experimental plantings and a significant genetic resource for Australia'. It is noted that the various tree species within the Site are not rare and it is uncertain on the degree to which the Site could contribute further substantial information. It is also noted to have some aesthetic values through its mature pine forest setting, however it does not provide a sensory perception or the form, scale, colour, texture or landscape that is considered of natural aesthetic value.

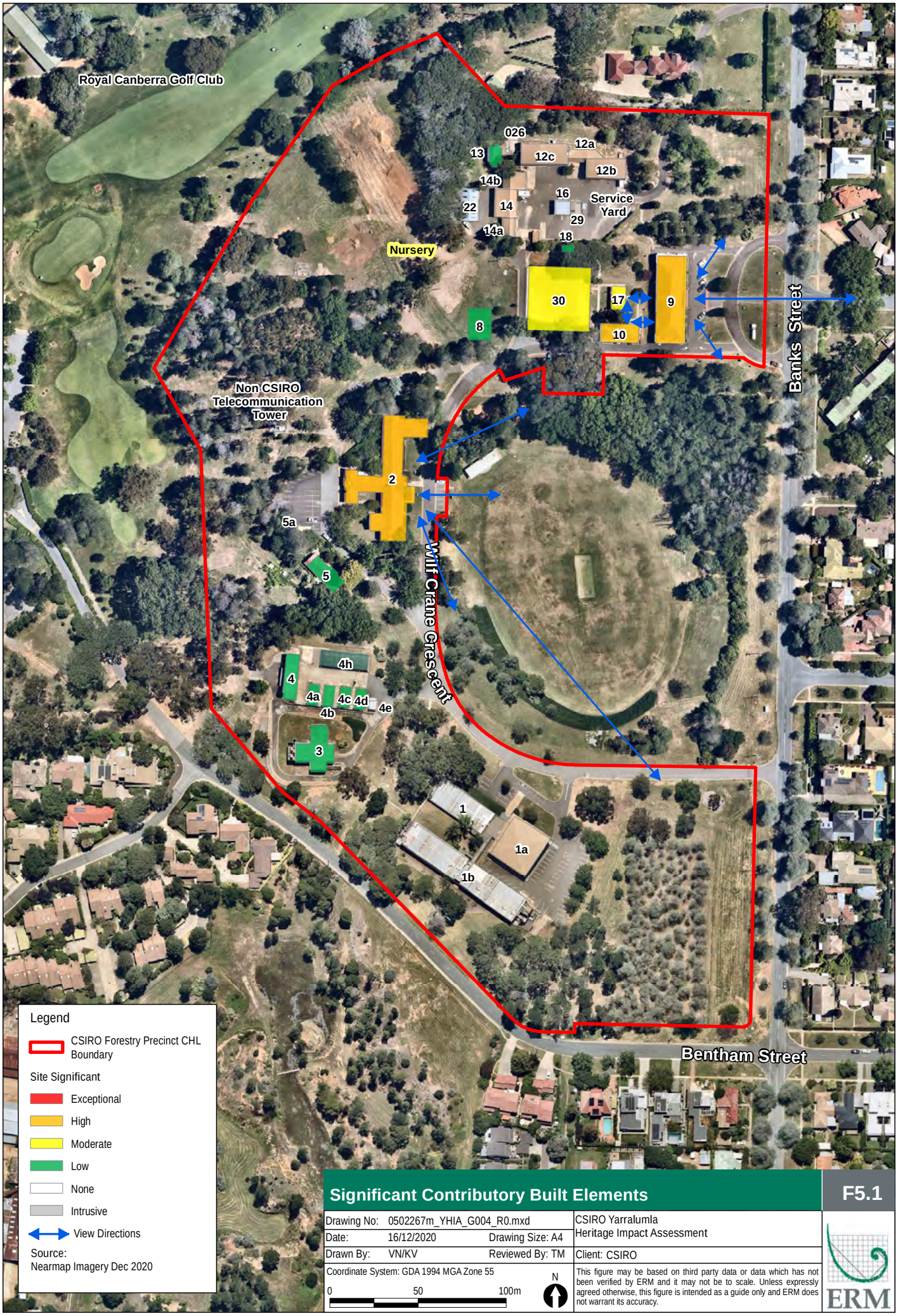
5.1.3 Historic Heritage Assessment

The HA (ERM 2020) validated the previous historic heritage assessment and identified that the Site meets an additional two CHL criteria: b) for rarity as the first and only national forestry school in the country and its importance in establishing plantings and afforestation throughout Canberra since 1913; and d) for its representative values, as the AFS building and its former classrooms, former Industrial Museum and Seeds Store, workshops, Glasshouses, student housing (Forestry House) and groupings of various scientific tree plantings demonstrate the Site's national importance as a place of forestry training and clearly demonstrates its former use as a forestry school. The Site has therefore been found to now meet criteria a), b), c), d), e), f), g) h) of the CHL – notably all of the available criteria with the exception of Indigenous values.

The HA also found the Site to have a number of significant views and sight lines, with the most notable being the AFS eastern façade and landscaped frontage as the termination of Schlich Street. Important view lines also include the spatial and visual relationship between buildings 9, 10 and 17, the view from Wilf Crane Crescent overlooking the oval and Forestry House and from Forestry House looking onto the landscaped frontage, mature trees and manicured oval.

The HA was also able to validate the strong associations with two pioneers of forestry research and policy; Charles Edward Lane-Poole and Dr Maxwell Ralph Jacobs. Further information on these individuals has been provided in the Historical Background (*Appendix B*), to provide further context on their association with the Site and their standing in the forestry community. The Site has also been found likely to hold social significance to the former students and scientists associated with the site and is also the site of three memorials.

The HA provided a detailed assessment of contributory elements with significance rankings of built assets, features and plantings within the Site. Significant fabric mapping was provided for the high significance buildings (2, 9 and 10) to provide a detailed understanding of original and early fabric and uses in order to inform acceptable adaptive reuse proposals for these buildings. The assessment of significant historic trees resulted in defined areas of trees with low, moderate and high heritage significance.



Significant Contributory Built Elements

F5.1

Drawing No:	0502267m_YHIA_G004_R0.mxd		CSIRO Yarralumla Heritage Impact Assessment
Date:	16/12/2020	Drawing Size: A4	
Drawn By:	VN/KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

0 50 100m

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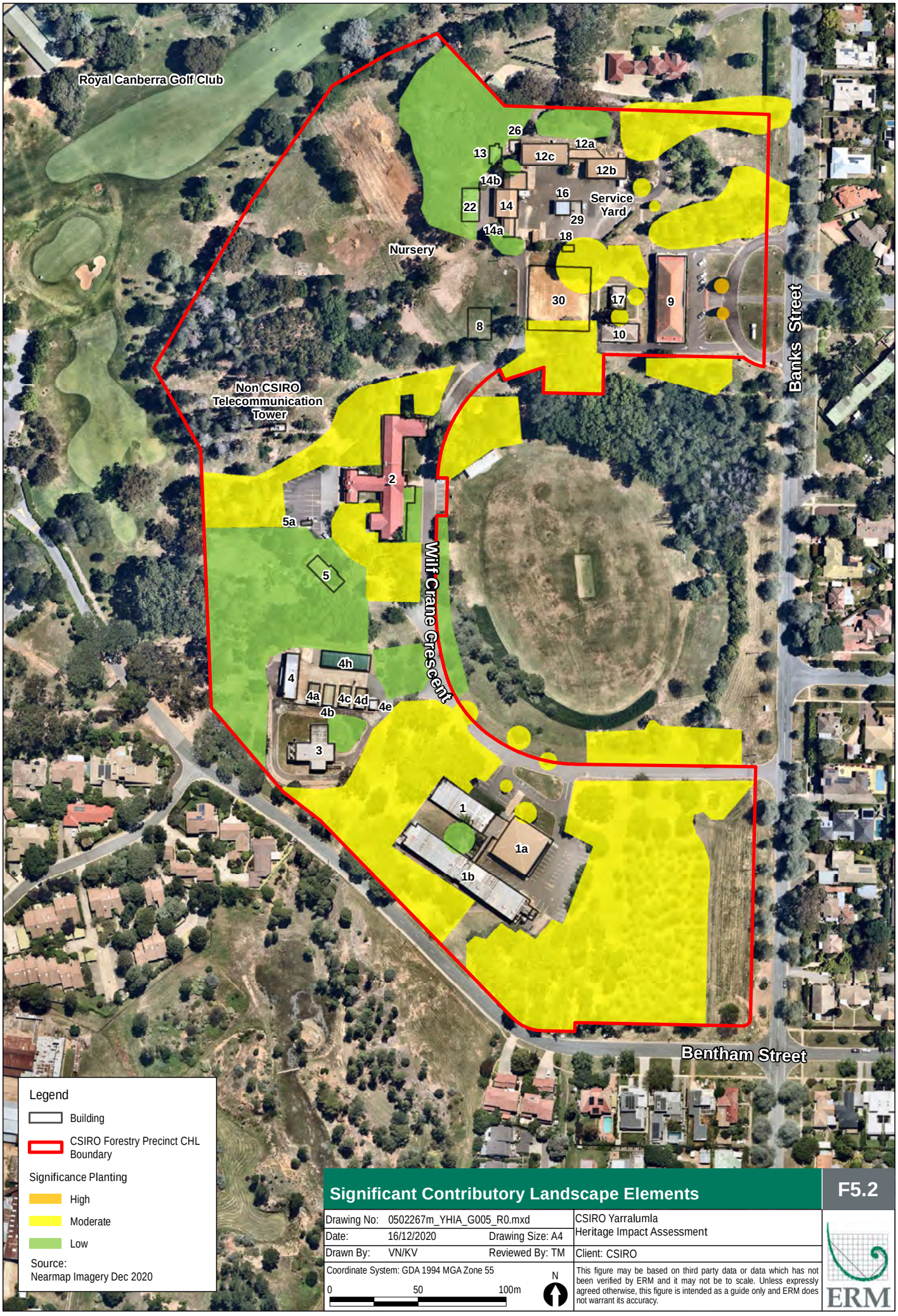
ERM



Significant Contributory Landscape Elements

F5.2

Drawing No:	0502267m_YHIA_G005_R0.mxd		CSIRO Yarralumla Heritage Impact Assessment
Date:	16/12/2020	Drawing Size: A4	
Drawn By:	VN/KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

0 50 100m

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This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

6. DESCRIPTION OF PROPOSED ACTION AND OPTIONS ANALYSIS

6.1 Options Analysis

Oakstand began a future use options analysis by establishing a number of key considerations unique to the Site. These key considerations included:

- Public ownership of Forestry Oval, around which the site is located.
- Existing heritage buildings.
- Existing trees worthy of retention.
- Retaining the important views and sight lines to and from heritage buildings.
- The Site topography, with the ground rising away from Banks Street and the oval particularly towards the west boundary.

Recent consultation activities in the area including an Inner South Community Council survey published in May 2020, the relevant local community issues appear to be:

- Preserving open space and a high quality environment.
- Retaining the current suburban context of an established quiet leafy suburb with low density housing, trees and parks.
- Impact of increased population on car parking at the Yarralumla shops.
- Traffic congestion and safety particularly increased traffic generation resulting from development at the Old Canberra Brickworks and more broadly the Molonglo Valley. Upgrades to the Royal Canberra Golf Course and expansion of the Deakin employment hub are seen to attract more out of suburb traffic.
- Protection of heritage buildings and treescape.
- Impact on water quality entering the Lake.
- Continued public access across the site for dog walking and other recreational activities.
- Climate and urban forest decline particularly the loss of large tree canopies.

Following on from the consultation process an approximate ‘developable’ area of the Site was mapped by the Forestry Place team which avoided buildings and trees ranked as having moderate or high heritage or ecological significance. A complete survey of the Site was also completed which not only mapped the topography of the ground surface, but also the height and cover of every tree and building.

This data was then used to create concept plans for the requirements of a variety of future uses, including a new scientific research facility, an education facility, and two variants of a combined residential and commercial estate:

- **Option One – Renewed Lease by CSIRO**. The twenty year lease currently held by CSIRO is due to expire in 2022, however contains an option for renewal for another twenty years.
- **Option Two – New Scientific Research Use**. The Site is located on National Land and its Crown lease is administered by the NCA. The current Crown lease is for scientific research, and any other type of use of the Site would require a lease variation to be approved by the NCA. There would therefore be advantages to the Client in lower costs and a lower risk to the development approval in redeveloping the Site as a new scientific research facility. Under the current lease, the Client could have up to 17,400 m^2 of gross floor area (GFA), currently there is only approximately 9,000 m^2 built on the Site.
- **Option Three – Educational Use**. A lease variation from scientific research to education would be a simpler and lower cost option than a variation to commercial or residential purposes, therefore making construction of a school or university on the Site an attractive option for the Client.

- **Option Four – Combined Residential and Other Uses (01)**. Retention of Australian Forestry School as a community or commercial lease building. Adaptive reuse of Forestry House as a two storey hotel. Residential across the 'developable area' where all buildings are taken to 12.5 m (three levels) in height. Adaptive reuse of the Museum Building, Seed Store and Tennis Courts as a resident and community recreation area.
- **Option Five – Combined Residential and Other Uses (02)**. Retention of Australian Forestry School as a community or commercial lease building. Adaptive reuse of Forestry House as a two storey hotel. Residential across the 'developable area' where buildings are taken to differing heights ranging from two to five levels depending on the topography of the precinct in which they are located. Adaptive reuse of the Museum Building, Seed Store and Tennis Courts as a resident and community recreation area.

A further two options have been explored by ERM to ensure all feasible and prudent options have been considered. These options include moth-balling of the Site, and to do Do-nothing.

Mothballing or 'Do-Nothing'

When all means of finding a productive use for a historic building have been exhausted or when funds are not currently available to put a deteriorating structure into a useable condition, it may be necessary to close up, or de-activate the asset/building temporarily to protect it from the weather as well as to secure it from vandalism. This process, known as mothballing, can be a necessary and effective means of protecting the building while planning the property's future, or raising money for a preservation, rehabilitation or restoration project.

Following CSIRO's withdrawal from the Site and eventual vacation, the large majority of buildings have been left empty and unoccupied, essentially mothballed until the future use of the Site was determined. Mothballing would be feasible in the short-term (and would continue the status quo), so long as the buildings are stabilised, secured and maintained to a minimum maintenance standard. This alternative is deemed to be a feasible and prudent course of action. CSIRO's mothballing of the Site has protected the significant buildings in the short term, however once their maintenance program has ended with their lease there is a risk of decay if a less rigorous maintenance program is put in place.

Long-term mothballing or 'do-nothing' alternatives both represent a risk of degraded assets falling into further disrepair, ultimately diminishing heritage values and increasing localised safety risk. As such, the mothballing and do-nothing alternatives are not deemed to be prudent or feasible long-term options for the Site, in terms of positive heritage outcomes.

6.1.2 Discussion of Options

While a renewed lease with CSIRO would be the preferred option for both the Client and the community, CSIRO have already vacated the Site and have indicated that the chance of a request for a renewal is virtually nil. The existing buildings at the Site would likely not be fit for the purpose of a new CSIRO research facility, which is the key reason for CSIRO's vacation of the Site. The changes required to the Site for the purposes of a developing a new 'at standard' scientific research facility run an unacceptable risk of direct impact to significant fabric of the existing buildings. Further, concept designs based on requirements identified in other newly constructed scientific research facilities resulted in a bulk and scale of new buildings that dominated the setting of the Site and would be considered inappropriate for a heritage place and for the Yarralumla community.

Similarly, concept designs based on requirements identified in other newly constructed educational facilities resulted in a larger developed footprint than had been identified as the 'developable area' in the key considerations assessment. The scale, form and proximity of required buildings was not sympathetic to the heritage setting, and when allowing for a consistent height of 12.5 m for new buildings would also have an impact on the sight lines across the Site which could be considered too great. Community consultation also identified concerns regarding the increased traffic pressure a school in this location would put on the local road network. Modern school security restrictions would also likely

result in the exclusion of community members from general access to the Site for recreational purposes (e.g. dog walking) which they have come to enjoy and expect.

Concept designs for a mixed use of the site with a residential development where all buildings are taken to 12.5 m in height also resulted in an impact on the sightlines across the Site which could be considered too great. Community consultation with neighbours on Bentham Street also identified that buildings of this height would impact their existing views.

After reviewing all the concept plans and community consultation feedback, it was determined that Option Five was the most desirable outcome, and a masterplan was accordingly developed.

6.2 Proposed Action

The Client's concept plan (refer to *Figure 6.4* to *Figure 6.7* for artistic rendering) for the redevelopment of the Site was guided by the following core design tenets:

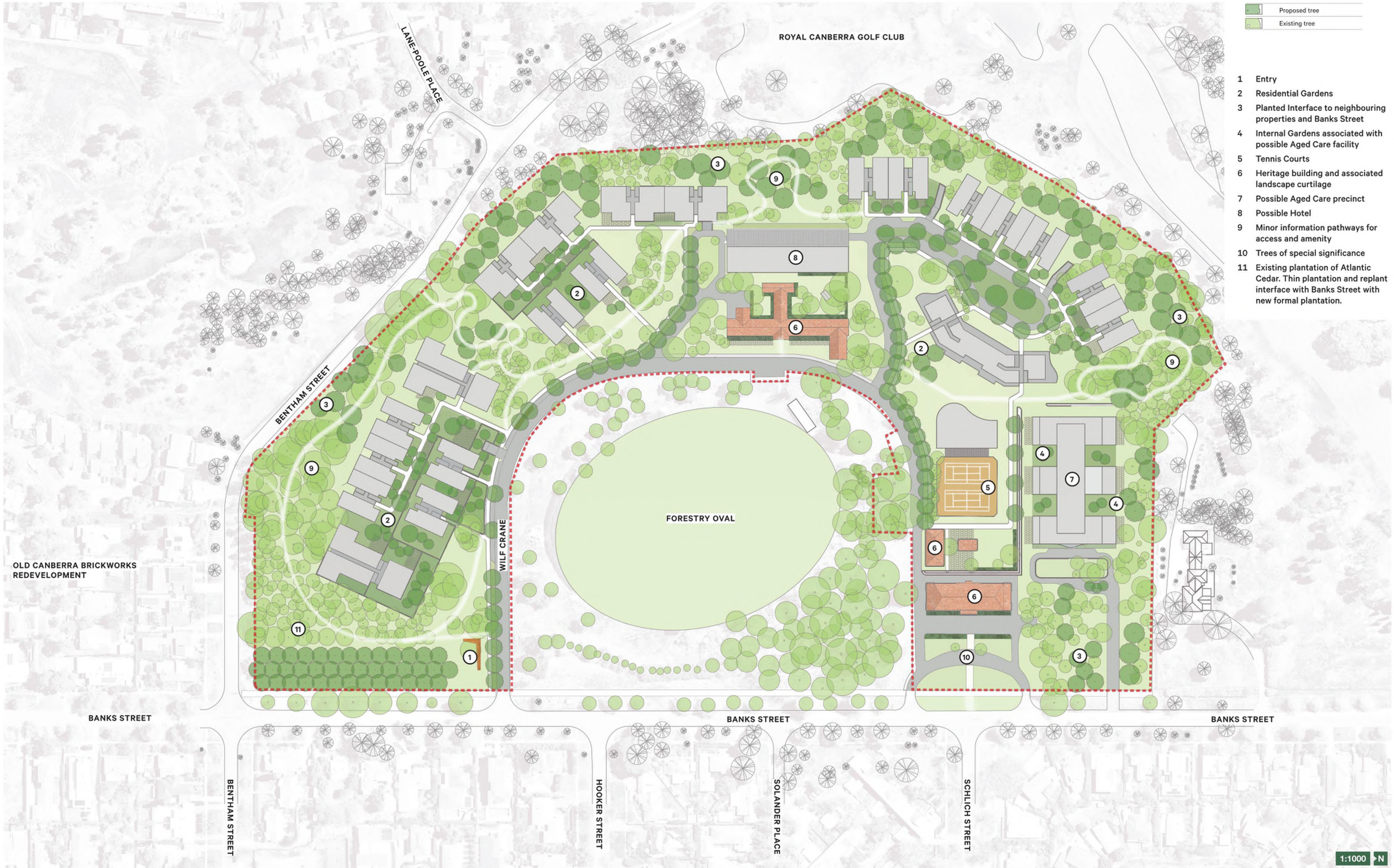
- be sympathetic to the local context, the history of Canberra, and the existing tranquillity and natural setting of the Site;
- preserve the natural landscape integrating with the Site's natural topography;
- incorporate landscaping that will respect the Site's history and the significant trees;
- preserve views into and out of the site and minimize the impact of the built form on the Site's natural features;
- have architecture tiered, stepping up and away from the oval, reducing the view impact and integrating the buildings into the landscape in a harmonious way;
- include textures and materials referenced from the surrounding area and combine and incorporate these rich cultural influences;
- respond to the physical features of the Site creating an integration between the built form and the landscape;
- respect the existing heritage fabric and retain this within the greater functionality of the Site; and
- fit within the cultural and economic character of Yarralumla.

The proposed action, as defined by the masterplan (*Figure 6.1*), will involve the retention of the Australian Forestry School, Museum, Seed Store, Tennis Courts, and Forestry House. These buildings will have a minimum 20 m curtilage placed around them where no residential development will be permitted. All other existing buildings on the Site will be demolished and be replaced by an aged care facility and 250 to 300 apartments in two to five storey buildings clustered in precincts around the existing building footprints and other disturbed areas of the Site. The majority of existing trees will be retained, however trees that have been identified as reaching the end of their life-span, poor quality, or weed species will be removed. The landscape management plan (*Figure 6.2*) includes a renewal program for trees or copses that have been identified as high quality or having moderate to high heritage significance, and a large number of new trees will also be planted across the Site.

The proposed action also involves the necessary removal of contributory site elements to make way for this residential development (*Figure 6.3*). The removal of these contributory site elements will be mitigated through the retention and adaptive reuse of the high and moderate significance buildings, along with both the retention and replanting program of significant tree groupings. The contributory site elements for removal include:

- Caretaker's Cottage (5);
- Glasshouses (4a, 4b, 4c, 4d);
- Pin Oak grouping (south); and
- Kurrajong grouping (west).

KANNFINCH oakstand oxigen TANIA PARKES ERM FORESTRY PLACE YARRALUMLA



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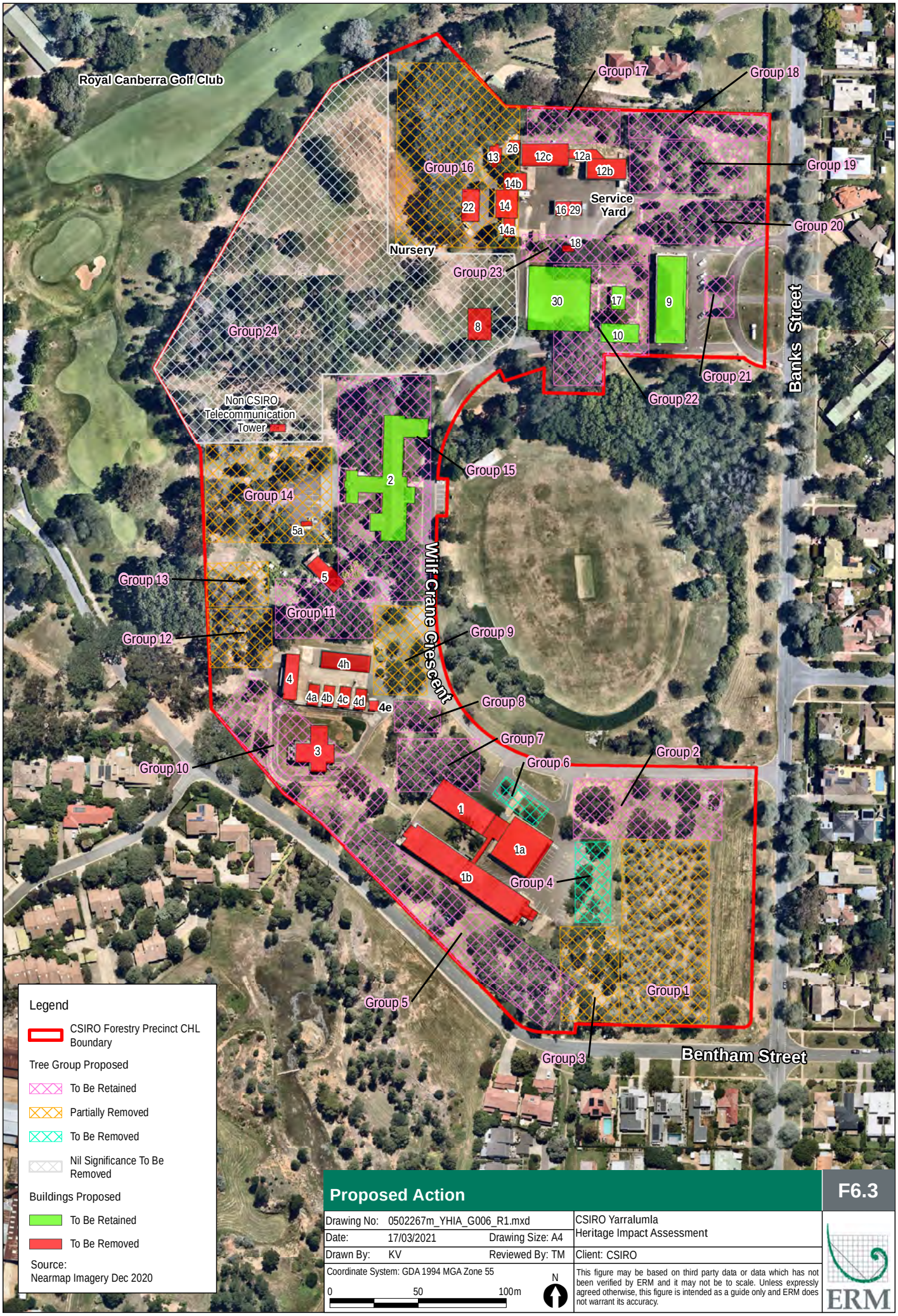
FORESTRY PLACE YARRALUMLA



Proposed Action

F6.3

Drawing No:	0502267m_YHIA_G006_R1.mxd		CSIRO Yarralumla Heritage Impact Assessment
Date:	17/03/2021	Drawing Size: A4	
Drawn By:	KV	Reviewed By: TM	Client: CSIRO

Coordinate System: GDA 1994 MGA Zone 55

0 50 100m

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ERM

Figure 6.4 Concept design with view looking across oval towards Bentham Street (Kann Finch)

Figure 6.5 Concept design with view looking from Wilf Crescent to rear of Site (Kann Finch)

Figure 6.6 Concept design with view looking from Westridge House to rear of Site (Kann Finch)

Figure 6.7 Concept design looking past Tennis Courts and AFS to Banks Street (Kann Finch)

7. IMPACT ASSESSMENT

This HIA has been prepared to provide an understanding of the potential impacts of the proposed action on the identified heritage values of the Site.

7.1 Significant Impact Criteria – Commonwealth

Under section 26 of the EPBC Act, activities with the potential to have a significant impact on the environment of Commonwealth Land, require approval from the Minister for the Environment. The EPBC Act Policy Statement 1.2 *Significant Impact Guidelines (SIG) – Actions on, or impacting on, Commonwealth land, and actions by Commonwealth agencies* (see *Appendix D*) which has been prepared by DAWE (formerly DoEE) provides guidance on determining the extent of heritage impacts for Commonwealth agencies. Avoiding and minimising environment and heritage impacts are a key focus for ensuring compliance with the EPBC Act.

SIG 1.2 states that an action is likely to have a significant impact on the Commonwealth Heritage values of a Place if there is a real chance or possibility that it will cause:

- one or more of the Commonwealth Heritage values to be lost;
- one or more of the Commonwealth Heritage values to be degraded or damaged; or
- one or more of the Commonwealth Heritage values to be notably altered, modified, obscured or diminished.

SIG 1.2 states:

> *A key question to consider is whether an action will affect the significance or value that the place holds for people, as well as simply the physical impacts on its fabric.*
>
> *In order to determine whether or not an action is likely to have a significant impact on the environment it is necessary to consider the total adverse impact of the action in the context of the environment which will be impacted, particularly those elements which are sensitive or valuable.*
>
> *If you answer 'yes' to one or more of the questions below, then it would be expected that your action is likely to have a significant impact on the environment.*

Is there 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 erection of buildings or structures adjacent to, or within important sight lines of a heritage place which are inconsistent with the heritage values If the place;*
- *Substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place; or*
- *Substantially restrict or inhibit the existing use of a heritage place as a cultural or ceremonial site?*

These Guidelines have been used to assist with the analysis of potential heritage impacts of the Proposed Action and associated actions, and will assist in the identification of appropriate mitigation measures.

7.1.1 Levels of Impact

In order to judge the severity of potential impacts, it is necessary to consider the likely scale, intensity, duration and frequency of impacts collectively. To assist in distinguishing between different relative levels of severity of potential heritage impacts, the SIG 1.2 provide the following scale:

i) **Severe** – Impacts generally have two or more of the following characteristics: permanent/irreversible; medium to large scale; and/or moderate-high intensity.

ii) **Moderate** – Impacts generally have two or more of the following characteristics: medium-long term; small to medium scale; and/or moderate intensity.

iii) **Minor** – Impacts generally have two or more of the following characteristics: short term/reversible; small scale/localised; and/or low intensity.

The potential impacts, or cumulative impacts of the action must also be considered in the context of the environment of the place in which the action would take place. The severity of impacts alone does not necessarily indicate an adverse or significant impact on the overall heritage values of the place. A 'significant impact' is defined as:

> *an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.*

7.2 Assessment of Heritage Impact

The potential for significant impacts on matters protected under the EPBC Act is an indicator for whether a referral or other permits for the proposed action are likely to be required. An assessment of the impacts to the identified heritage values at the Site with regards to the proposed action is provided below. The tables below provide a breakdown discussion of potential impacts to the following key heritage values:

- built elements (including High, Moderate and Low ranked buildings) (*Table 7.1*);
- important plantings & landscape elements (as identified within North Zone, West Zone and South Zone and grouped in *Figure 6.3*) (*Table 7.2*); and
- important views and sight lines (*Table 7.3*).

7.2.1.1 Assessment of Heritage Impact – Built Elements

Table 7.1 Assessment of Heritage Impact – Built Elements

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
Retention/Adaptive Reuse	Australian Forestry School (AFS) (9)			The AFS building (9) will be retained and utilised for community/commercial lease. No residential development will be permitted within a minimum 20 m curtilage of the building. Low impact community infrastructure such as a glasshouse may be built within the grassed area at the rear of the building. Utilising the AFS building for community/commercial lease is in keeping with its current use and is a soft impact approach that is both sympathetic to its heritage values and compatible with its original use. The AFS building is a highly significant building with fabric of technical excellence, some of which is ranked of exceptional significance. The AFS also has a number of moveable furniture items of significance that must remain with the building. These factors will need to be carefully considered in any future use of the building and factored into the adaptive reuse design. Any future use would also need to consider ongoing impacts to the heritage fabric through increased use of the building by the public/community tenants. Significant fabric for this consideration includes; ■ Any features of the Inter-War Stripped Classical style; ■ Roof fabric (terracotta tile cladding) & roofline ■ Window fabric/ vertical bay fenestration	**Minor**	■ Engage a Heritage Consultant/Heritage Architect of suitable experience in a Heritage Advisory role during detailed design and through construction (refurbishment works) phase. A Heritage Consultant can field questions, provide fine grained heritage conservation and specification advice and provide reviews of concept plans through to detailed design phases. ■ Develop a Conservation Management Plan which includes details on conservation dos and don'ts for the AFS and a 'plain language' user manual (including maintenance requirements) which should be provided to any future tenants of the AFS. ■ Develop interpretive signage for display in the AFS that shares and celebrates its rich social history of the building and the unique features of its design of exceptional significance. ■ Moveable heritage items related to the history of the AFS should be catalogued and removed from the

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				■ expressive entrance portal/stepped parapet wall ■ Cast iron rainwater heads/downpipes/fascia/guttering ■ Internal layout ■ Internal timber detailing including wall skirting/panelling/architraves ■ Central foyer timber parquetry flooring and wall/ceiling details (of exceptional significance)		building to protect them prior to adaptive reuse. These elements should returned and be retained with the building.
	Industrial Museum/Forestry and Timber Bureau Offices (10)			The former Museum building (10) will be adaptively reused to form a resident/community recreation area alongside the Tennis Courts (30) and former Seed Store (17). The Museum building is of the same Inter-War stripped classical design as the AFS and has a high degree of integrity. The Museum also forms a key element of the spatial and visual relationship between the AFS and the former Seeds Store. Like the AFS, there will be no residential development encroaching the Museum building with a minimum 20 m protection curtilage. The approach to adaptively reuse the Museum building as part of resident/community recreation area is a soft impact approach which is sympathetic with the heritage values of the building. This use will not substantially alter the fabric of the building and ensure the visual and spatial relationship between 9, 10 & 17 is conserved. The Museum was established in 1938, and converted into offices in 1946. This conversion altered the internal layout somewhat, however the original flooring, walls and detailing was retained, along with original elements of the 1938 museum display rooms. These features should be	**Minor**	■ Engage a Heritage Consultant/Heritage Architect of suitable experience in a Heritage Advisory role during detailed design and through construction (refurbishment works) phase. A Heritage Consultant can field questions, provide fine grained heritage conservation and specification advice and provide reviews of concept plans through to detailed design phases. ■ Develop a Conservation Management Plan which includes details on conservation dos and don'ts for the Museum building and a 'plain language' user manual (including maintenance requirements) which should be provided to any future tenants of the building. ■ Develop interpretive signage for display within the Museum building to share its original use and layout/early images of the Museum with future residents/community members.

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				carefully factored into the adaptive reuse of the building. Features include; ■ Any features of the Inter-War Stripped Classical style ■ symmetrical façade/restrained wall treatment; ■ Roof fabric (terracotta tile cladding) & roofline ■ Window fabric/ vertical bay fenestration/face bricks ■ Cast iron rainwater heads/downpipes/fascia/guttering ■ Formal landscape garden beds ■ Timber skirting and picture railing ■ Original internal layout.		
	Forestry House (2)			Forestry House (2) will be converted into a 2 storey hotel. There will be no residential development within a minimum 20 m curtilage of Forestry House. The development will involve the establishment of additional two-story hotel facilities behind Forestry House to the west at the location of the current carpark. This new building will be set back from the west façade of Forestry House and match the roofline, ensuring the protection of setting and views to and from the building from its prominent east façade. The building is an example of a modern post-war American Colonial style residential building. It was originally established as a residential building for AFS students and utilised as a conference space and later converted for use as a CSIRO office and research facility. Later conversions have altered the internal fabric of Forestry House somewhat, though it has retained a high degree of integrity externally, and a moderate degree of integrity internally, particularly within the south portion of level 1.	**Minor**	■ Engage a Heritage Consultant/Heritage Architect of suitable experience in a Heritage Advisory role during detailed design and through construction (refurbishment works) phase. A Heritage Consultant can field questions, provide fine grained heritage conservation and specification advice and provide reviews of concept plans through to detailed design phases. ■ Develop a Conservation Management Plan which includes details on conservation dos and don'ts for Forestry House and a 'plain language' user manual (including maintenance requirements) which should be provided to any future tenants of the building. ■ Develop interpretive signage for display within Forestry House that

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				Forestry House also contains a number of moveable heritage items which will need to be considered for cataloguing. The adaptive reuse of Forestry House as a two-storey hotel is an ideal use for the continued conservation and maintenance of the building. It is also compatible with the original use of the building and sympathetic to its heritage values. The adaptive reuse design should prioritise the careful conservation of the significant fabric both externally, and internally. Significant fabric includes: ■ Building form and general layout ■ Roofline and terracotta tile cladding ■ Bronze and timber roof turret ■ Timber window fabric and brick sills ■ Internal timber skirting and picture railing ■ Original timber doors and flooring in dining hall ■ Timber framed doors and transom windows ■ Exposed timber trusses in main conference room.		shares the unique history of the building and connection to the wider forestry site as a whole. ■ Moveable heritage items relating to the history of Forestry House should be catalogued and removed from building to protect them prior to adaptive reuse. These elements should returned and be retained with the building.
	Former Seeds Store (17)			The former Seeds Store (17) will be adaptively reused to form a resident/community recreation area alongside the Tennis Courts (30) and former Museum building (10). The former Seeds Store was constructed prior to 1938 as a carpenter's workshop, and later converted for use as a laboratory and seed store. The building holds similar design elements to the AFS and former Museum building, with hipped terracotta tile clad roof and timber framed double hung sash windows. Like the AFS, former Museum and Forestry House, the former Seeds Store will not be impacted by encroaching residential development, as all new	**Minor**	■ Engage a Heritage Consultant/Heritage Architect of suitable experience in a Heritage Advisory role during detailed design and through construction (refurbishment works) phase. A Heritage Consultant can field questions, provide fine grained heritage conservation and specification advice and provide reviews of concept plans through to detailed design phases.

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				builds will be set back some distance from this building. This will again ensure the visual and spatial relationship between 9, 10 and 17 is conserved. The adaptive reuse of the former Seeds Store as part of a recreation area is a soft impact approach, and will ensure the ongoing conservation and maintenance of the building. The building has retained a high degree of integrity, being largely unchanged since its conversion into a Seeds Store in the 1930s/40s. The original/early fabric will need to be carefully considered into the adaptive reuse of the building. This fabric includes: ■ General form and layout ■ Roofline and fabric (terracotta tiles) ■ Timber cladding/internal timber flooring/joinery/framing etc. ■ Window fabric		■ Develop a Conservation Management Plan which includes details on conservation dos and don'ts for former Seeds Store and a 'plain language' user manual (including maintenance requirements) which should be provided to any future tenants of the building and its residential visitors. ■ Develop interpretation signage to place outside the former Seeds Store that highlights its connection to the AFS and Museum building.
	Tennis Courts (30)			The Tennis Courts (30) will be refurbished to form a resident/community recreation area alongside the former Museum building (10) and former Seeds Store (17). The Tennis Courts were constructed by the students of the AFS in the 1930s when Charles Lane Poole recognised the need for a recreational facility. The continued use of the Courts will provide a continuity of use that is important to the conservation of heritage values. Ideally the tennis courts will be used by residents and the wider community. The Tennis Courts also include a timber seat erected by CSIRO staff in 1988 as a	**Minor**	■ Retain original use as Tennis Courts if feasible; ■ Develop interpretation signage to be placed outside the Tennis Court area that highlights the connection to the AFS and as the first recreation facility on the site built by AFS students.

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				memorial to Jeanette Thomas. This memorial seat is believed to have been relocated by CSIRO.		
Demolition/removal	Nursery (former) (no ID)			The open area of the (former) Nursery will be replaced with residential apartment buildings. The Nursery was established 1914/1915 by Charles Weston, though today is mostly cleared of these early plantings and the significance of the area is largely intangible. The remnants of the Nursery are located in the north-west corner of the Site, with large groupings of pine plantings (Stone Pine), later studied by the AFS students. The Stone Pine grouping has been assessed by a qualified arborist as being of poor quality, this grouping is discussed in *Table 7.2*. Utilising the (former) Nursery is considered to have a minor impact on the overall heritage values of the Site which can be mitigated through interpretation and a replanting program.	**Minor**	■ Develop interpretation signage for the area of the former Nursery. This signage would ideally share the history of Charles Weston's Westbourne Woods and the early propagation/afforestation of Canberra that Weston was responsible for. ■ Consider the replanting of a pine grouping in 'nursery layout', providing context for the interpretive signage noted above.
	Lavatory/Change Room (18)			The Lavatory/Change Room (18) will be removed. This building was constructed sometime during the 1940s and demonstrates typical design characteristics of that era. The Lavatory/Change Room is ranked of low significance as it is an element of early development phases at the Site. Its demolition is considered to have a minor impact on the heritage values of the Site overall.	**Minor**	■ According to Burra Charter principles, it is important to 'keep a record'. As such, undertake a Photographic Recording of the Lavatory/Changeroom and its features prior to its removal. ■ Develop interpretation signage that includes a map of the Site, highlighting both remnant and removed structures that provides a brief narrative on the history of the Site for residents and visitors.

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
	Meteorological Plot (8)			Option 5 involves the establishment of two to five-storey residential apartments on the location of the current Meteorological Plot (8). The Meteorological Plot is the site of the former AFS Meteorological Station established in 1927 and utilised up until 1981. The area has a low degree of integrity, with remnants of concrete footings for instruments remaining and can only be understood through interpretation. The Meteorological Plot is ranked of low significance as it is one of the remnants of the early scientific use of the Site. Its demolition is considered to have a minor impact on the heritage values of the Site overall.	**Minor**	■ Undertake a Photographic Recording of the Meteorological Plot and its features prior to its removal. ■ Develop interpretation signage that includes a map of the Site, highlighting both remnant and removed structures that provides a brief narrative on the history of the Site for residents and visitors.
	Store (13)			The former AFS Store (13) will be removed. The Store was established in 1949 and is typical of simple post-war design. The Store is ranked of low significance as it is an element of early development phases at the Site. Its demolition is considered to have a minor impact on the heritage values of the Site overall.	**Minor**	■ Undertake a Photographic Recording of the Store and its features prior to its removal. ■ Develop interpretation signage that includes a map of the Site, highlighting both remnant and removed structures that provides a brief narrative on the history of the Site for residents and visitors.
	Caretaker's Cottage (5)			The Caretaker's Cottage (5) adjacent to Forestry House in the West Zone will be removed to make way for a new access road for the proposed hotel located west (behind) Forestry House. The Caretaker's residence was constructed concurrently with Forestry House and follows similar design characteristics being a brick masonry structure with hipped terracotta tiled roof, rendered masonry walls and brick face dado. The Caretaker's Cottage appears to have retained its early/original fabric though	**Severe**	■ Undertake a Photographic Recording of the Caretaker's Residence (both internal and external features) prior to its demolition. ■ Develop interpretation signage that includes a map of the Site, highlighting both remnant and removed structures that provides a brief narrative on the

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				its internal features are unknown due its current use as a private residence. The Caretaker's Cottage contributes to the overall heritage significance of the Site for its association with the establishment of Forestry House and the expansion of the AFS precinct following WWII. It is the only building which is ranked as low significance, but is closely connected to a high significance building due to is concurrent construction and its matching design characteristics. The demolition of the building is considered to have a severe impact to the Site's heritage values overall as the building is intrinsically connected to Forestry House and contributes to its early history. The building is also of some aesthetic significance for its visual relationship with Forestry house.		history of the Site for residents and visitors. ■ Interpretation signage developed for Forestry House should include information about the Caretaker's Residence and its connection to Forestry House and the AFS.
	Glasshouses Complex (4, 4a, 4b, 4c, 4d)			The remnant buildings within the Glasshouses Complex (West Zone) will be removed prior to this proposed action as part of the CSIRO end of lease agreement. CSIRO has commissioned a separate HIA for the removal of these Glasshouses and as such the impact of their removal is not assessed in this HIA. The Glasshouses Complex includes a Workshop (4) and series of Glasshouses (4a, 4b, 4c, 4d). This complex was established between 1955 and 1958. The Glasshouses appear to be typical of this era of plant house design. This complex demonstrates the large-scale horticultural research undertaken by the AFS post WWII and contributes to the overall understanding of the Site as a horticultural and forestry research facility.	**Not part of this assessment (CSIRO has prepared a separate HIA not undertaken by ERM)**	■ A Photographic Recording of the in-situ glasshouses and workshop prior to demolition has been undertaken. ■ Re-construct one of the Glasshouses using modern materials (and any useable original fabric). This new glasshouse should be sympathetic in design to the originals and be utilised for integration into shared residential gardening program. ■ Develop interpretation signage that highlights the Glasshouses Complex and its significance to the overall values of the Site. This could be placed in front of a retained Glasshouse or incorporated into the

Scope Type	Heritage Value/Ranking			Assessment of Impact (direct or indirect)/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Built Elements (including High, Moderate and Low ranked buildings)						
				CSIRO has engaged a consultant to undertake an archival recording of the Glasshouses prior to removal. The location of the Glasshouses is not necessarily key to their significance, rather it's their early design and use, and association with the AFS. As such, a new glasshouse is proposed to be constructed utilising the same design and materials of the removed glasshouses. This new glasshouse could be used for integration into a residential shared gardening program.		overall site map showing extant and removed structures.
	Controlled Environment Building (3)			The Controlled Environment Building within the West Zone will be removed. The Controlled Environment Building was established in 1969 by the CSIRO as a purpose built laboratory for tissue culture experiments and growing plants. The building is of low significance as it is demonstrative of the later phases of CSIRO development on the site and an intact example of an early CSIRO scientific building. The removal of this building is considered to have a minor impact to the overall heritage values of the Site.	**Minor**	■ Undertake photographic recording of the Controlled Environment Building prior to its removal. ■ Develop interpretation signage that includes a map of the Site, highlighting both remnant and removed structures that provides a brief narrative on the history of the Site for residents and visitors.
	Fire Wind Tunnel 'Pyrotron' (26)			The Fire Wind Tunnel 'Pyroton' within the North Zone will be relocated by CSIRO prior to redevelopment of the Site. Designed by the Pyrotron Research Group in and established by the CSIRO in 2008, the Pyrotron is a rare example of new bushfire research technology and is associated with the 21st century scientific uses of the Site. The removal of the Pyrotron is considered to have a minor impact to the heritage values of the Site overall.	**Minor**	■ Nil – The Fire Wind Tunnel is being relocated by CSIRO.

7.2.1.2 Assessment of Heritage Impact – Important Plantings/Landscape elements

The following table assesses the individual impact to important plantings and landscape elements at Forestry Place. The groups referred to in this table have been provided in *Figure 6.3 Proposed Action*. ERM referred to the Arboricultural Assessment (AA) and the Tree and Group Location Plan (TGLP) (*Appendix E*) provided by Canopy Experts to appropriately group trees for retention, partial removal and total removal. However, ERM has used different tree grouping numbers to the AA to ensure all areas of identified heritage significance have been appropriately assessed. Where appropriate, ERM has provided the associated Tree and Group Location Plan (TGLP) group or individual tree numbers from the AA where they overlap, (these numbers begin with TGLP).

Table 7.2 Assessment of Heritage Impact – Important Plantings/Landscape elements

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
Retention	Roman Cypresses (east façade of AFS building (Group 21/TGLP Tree 305 & 306))			The two Roman Cypresses flanking the stepped entrance to the AFS will be retained and included within the 20 m protection curtilage. These plantings are ranked for high heritage significance for their contribution to the significant view of the AFS as the termination of Schlich Street. These trees were planted during the original landscaping of the AFS and contribute strongly to its historic landscape. The potential impact to these important plantings is expected to be Nil.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
	Roman Cypresses (north of AFS building (Group 20/TGLP Group 20))			The two Roman Cypresses located to the north of the AFS are to be retained. These plantings are likely to be early plantings associated with Charles Weston's Westbourne Woods and contribute to the historic landscape of the Site. The plantings are in close proximity to the development of a new access road and the location of the proposed aged care facility and may be temporarily impacted by these works. Construction activities that may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).		
	Tasmanian Blue Gum (West elevation AFS building (within Group 22))			The Tasmanian Blue Gum will be retained. This striking mature eucalypt contributes to the overall historic landscape value of the AFS and will be included within the 20 m protection curtilage. The potential impact to this important planting is expected to be Nil.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
	Bunya Pine (between north elevation of building 10 and building 17 (within Group 22/TGLP Tree 581))			The mature Bunya Pine will be retained. The Bunya Pine contributes to the overall historic landscape value of the AFS and will be included within the 20 m protection curtilage. The potential impact to this important planting is expected to be Nil.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
	Claret Ash (west elevation (behind) building 9 (within Group 22))			The Claret Ash along the west elevation of the AFS will be retained. This planting is associated with the early landscaping of the AFS and forms part of its historic landscape. This tree will be within the 20 m protection curtilage and the potential impact is expected to be nil.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
	Chir Pine (north-east of building 3 (Group 8/TGLP Group 6))			The grouping of Chir Pines will be retained. This grouping contributes to the overall historic landscape value of the Site as a group of early plantings associated with AFS research into various exotic and native pine species. This grouping is within close proximity to a series of proposed residential apartment buildings and may be temporarily impacted by these works.	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				Construction activities that may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).		signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.
	Spotted Gum (south-east of building 3 across access road (within Group 10))			The Spotted Gum will be retained. The Spotted Gum was planted by the Research Division of the Forestry and Timber Bureau in the 1950s and contributes to the overall historic landscape of the Site. This grouping has been assessed by a qualified arborist as being of high quality. This grouping is within close proximity to a proposed residential apartment building and may be temporarily impacted by these works. Construction activities that may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.
	Canary Island Palm (planted around building group 1 (Group 7/TGLP Group 5))			The grouping of Canary Island Palm will be retained. This grouping has been assessed by a qualified arborist as being of high quality. This grouping of Canary Island Palm is significant for its association with Charles Weston and Westbourne Woods, likely planted prior to 1920. The grouping was utilised for scientific research in the early years of the AFS and has been assessed as being a significant genetic resource. This grouping is within close proximity to a proposed residential apartment building within the southern corner of the Site and may be temporarily impacted by these works. Construction activities that	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).		■ Develop interpretation signage to be placed in front of this grouping along Wilf Crane Crescent that provides information about the significance of the trees and their importance to early forestry research.
	Pine species including: Aleppo Pine/ Calabrian Pine/Michocan Pine/Douglas Pine (Group 5/TGLP Group 4) (planted around building group 1)			A series of pine species within the South Zone were planted prior to 1920, with some further plantings in the 1950s. This entire grouping of various mature pine species will be retained. This unique grouping is highly representative of the early forestry research being undertaken at the Site including research into various exotic and native pine species and as a significant genetic resource. This grouping is within close proximity to a proposed residential apartment building within the southern corner of the Site and may be temporarily impacted by these works. Construction activities that may impact a significant tree or trees should involve a well-qualified and experienced arborist to assess the health of the tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).	**Minor**	■ Engage a well-qualified and experience arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring. ■ Develop interpretation signage to be placed in front of this grouping that provides information about the significance of the pine trees, the purpose of the grouping and their importance to early forestry research.
	Ponderosa Pine (Group 17 & Group 20/TGLP Group 19 & 20) (either side of AFS building and north of Service Yard Group)			There are a small number of mature Ponderosa Pine within the Site. These plantings have been assessed by a qualified arborist as being of high quality and will be retained. These groupings are associated with Charles Weston and Westbourne Woods, and likely to have been planted prior to the establishment of the AFS. There is a single Ponderosa Pine adjacent to the south	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				elevation of the AFS, this planting will not be impacted by works. Group 17 is located north of the current CSIRO Pyrotron Complex/Service Yard Group which is proposed for removal to make way for a new aged care facility. Group 20 is clustered together with various pine species and located north of the AFS. Each grouping of the Ponderosa Pine and the individual planting has been assessed by a qualified arborist as being of high quality. Group 17 is within close proximity to the north elevation of the proposed aged care facility, similarly, Group 20 is located within close proximity to the proposed new access road to this facility and both groups may be temporarily impacted by these works. The poor quality pine species within Group 20 (of nil significance) will be removed to make way for this access road. Construction activities that may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the tree/trees and provide mitigation measures such as Tree Protection Zones (TPZ).		signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.
	Stone Pine (Group 23/TGLP Group 22) (north boundary of Tennis Court (30))			The Stone Pine grouping will be retained. This Stone Pine Grouping has been assessed by a qualified arborist as being of exceptional quality. This grouping is an early planting associated with the scientific research by AFS students and contributes to the heritage landscape. Group 23 is located south of the proposed new aged care facility and may be temporarily impacted by these works. Construction activities that may impact a significant tree or trees should involve a well-qualified and experience arborist to assess the health of the tree/trees and	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				provide mitigation measures such as Tree Protection Zones (TPZ).		■ Develop interpretation signage to be placed in front of this grouping that provides information about the significance of the pine trees, the purpose of the grouping and their importance to early forestry research.
	Pine Oaks/Pine species (along southern end of Wilf Crane Crescent (Group 2))			The Pin Oak/Pine species along southern verge of Wilf Crane Crescent will be retained. The Pine Oak species is scattered in areas across the AFS and is significant as an early scientific planting. The plantings along Wilf Crane Crescent are likely to have been planted for landscape value rather than for scientific purposes. There will be no works within close proximity of this groups and the impact is expected to be nil.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
	Pine Oak (Group 11/TGLP Group 8) (north of Glasshouses Complex)			The Pine Oak grouping will be retained. The Pine Oak species is scattered in areas across the AFS and is significant as an early scientific planting. This grouping was likely planted during the 1950s tree growing trials on the Site. It has been assessed by a qualified arborist as being of medium quality with deadwood present. This grouping is within close proximity to the proposed new access road to the hotel west of Forestry House and may be temporarily impacted by these road works. As these plantings have been assessed as having deadwood present, arboricultural work will be required by a suitably qualified arborist prior to works occurring. TPZ should also be employed where necessary.	**Minor**	■ Engage a well-qualified and experienced arborist as Project Arborist to assess the health of potentially impacted significant trees prior to works occurring. ■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring. ■ Develop interpretation signage to be placed in front of this grouping that provides information about the significance of the pine trees, the purpose of the grouping and their importance to early forestry research.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
	Flooded Gum or Rose Gum (East of building 3 (Group 10))			The Rose Gum located east of building 3 will be retained. This gum species was planted in 1979 by the Research Institute to showcase the species of eucalypt. This planting is located along the west boundary and is not expected to be impacted by construction works.	**Nil**	■ Significant trees should be protected from work activities through the use of signage and temporary fencing where required.
Removal	Atlas Cedar (Group 1) (east of building group 1 near Bentham Street)			The grouping of Atlas Cedar along Banks Street is proposed for partial removal. This grouping is associated with Charles Weston and Westbourne Woods, and is believed to have been planted prior to the establishment of the AFS. The Atlas Cedar has been assessed by a qualified arborist as a medium quality group with a significant number of deadwood trees. This area has been assessed as having moderate heritage significance due to both the age of the plantings, and also the fact that they are one of the two remaining areas on the site which have a formal and distinct 'nursery' planting layout, which demonstrates this particular aspect of the history of the site as a place of propagation as well as research. Thinning this area and removing a portion of the trees would have only moderate impact if the 'nursery' planting layout is retained.	**Moderate**	■ Retain 20-30 Atlas Cedars and maintain the 'nursery' planting layout when deciding on individual tree removal. ■ The remaining significant trees should be protected from work activities through the use of signage and temporary fencing where required. ■ Employ the use of TPZs prior to any construction occurring. ■ Develop interpretation signage to be placed in front of this grouping that provides information about the significance of the trees, the purpose of the grouping and their importance to early forestry research.
	Monterey Pine groupings scattered throughout (Group 3, Group 13, Group 14/TGLP Group 3 & 10)			The groupings of Monterey Pine across the Site are proposed for partial removal due to poor quality. The partial removal of Monterey pine will have a minor/low intensity impact to the Site overall. These groupings of Monterey pine are ranked as being of moderate significance for their	**Minor**	■ Develop interpretation content on the history of Monterey pine species in relation to its association with and significance to the Site. ■ The Monterey pine is one of the most popular timber construction materials. In keeping with the intention of the

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				association with Charles Weston during the establishment of Westbourne Woods. The species was also key to the research of prominent Forester Dr Maxwell Jacobs who began his early propagation experiments on the species from 1939. The Nursery was also in continued use for propagating Monterey pine from the 1940s – 1980s and as such, the Monterey Pine remains a significant contributory element to the Site overall. While it is generally recommended that an offsetting strategy be implemented to mitigate the removal of trees with individual contributory value (such as replanting saplings of the same species), the Monterey pine is today considered an invasive weed species and its removal is therefore an acceptable outcome. As such, the removal of these groupings is considered to have a minor impact to Site's CHL values overall.		AFS to illustrate uses of timber in technical construction, the removed trees could be used in the construction of future on-site builds (e.g. framing, moulding, doors, shelves, joinery, decorative panelling, and furniture construction). ■ Replace some of the Monterey pine groupings with native alternatives to retain the overall forestry setting.
				Giant Sequoia (east façade of building 1 (Group 6))	The two mature Giant Sequoia located along the east façade of Building 1 group are proposed for removal. The plantings are located on the site of a new residential complex within the South Zone. These plantings are believed to be associated with Charles Weston and Westbourne Woods, and may have been planted prior to 1920 due to their size. The plantings contribute to the overall historic landscape of the Site, however they are not individually representative of the scientific uses of the Site for forestry research. As such, the removal of these plantings will have a minor impact to its overall heritage values due to the loss of a mature planted element of its historic landscape.	**Minor**	■ Undertake a replanting program including a mixture of appropriate exotic and native species in areas deemed appropriate across the Site and consider the Giant Sequoia species for this program.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				The Giant Sequoia does not make for good lumber, as it is a brittle wood with little strength. As such, mitigation through use of the timber may not be appropriate. The broader replanting program will largely mitigate the impact of the loss of these trees.		
	Kurrajong (large planting group located west of building 4) (Group 12/TGLP Group 9)			A section within the large group of Kurrajong located west of the Glasshouses Complex is proposed for partial removal to make way for a residential apartment building. This grouping has been assessed by a qualified arborist as a medium quality group. These trees are native to Australia and are believed to have been planted between the 1920s and 1950s. They are associated with both the early forestry research by AFS students and later research by the Forest Research Institute tree growing trials. This grouping is significant as part of the historic landscape of the Site, and as a significant genetic native resource. It is also one of the last remaining groupings that demonstrate the 'nursery' planting layout. The partial removal of this grouping will have an impact on the overall heritage values of the Site due to the alteration of the Site's setting as a place of national forestry research and propagation. However, the small row of Kurrajong that will be retained, together with an appropriate replanting program and an interpretive approach, will result in the impact being considered moderate.	**Moderate**	■ Develop interpretation content on the history of the Kurrajong species in relation to its association with and significance to the Site. ■ Undertake a replanting program including a mixture of appropriate exotic and native species in areas deemed appropriate across the Site.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
	Pine Oak (scattered south-east of building 1 group (Group 4))			The Pine Oak plantings scattered south-east of building 1 group are proposed for removal to make way for residential apartment buildings in the South Zone. These trees have been assessed by a qualified arborist as being healthy, and the retention of these trees was investigated. However, significant changes were required to the Masterplan in order to save a limited number of trees which would have in turn resulted in greater losses else ware on the Site. The Pine Oak species is scattered in areas across the AFS and is significant as an early scientific planting as well as an early landscape planting. The Pine Oak's in Group 4 however are not representative of forestry research and were more likely to have been planted as a landscape element, in comparison to the Pine Oaks that make up Group 11 (TGLP Group 8) that are demonstrative of a scientific grouping and will be retained. The removal of the Group 4 Pine Oaks is considered to have a minor impact to the overall heritage values of the Site.	**Minor**	■ The Pin Oak species is one of the most commonly used landscaping oaks in its native range due to its ease of transplant, relatively fast growth, and pollution tolerance. It would be ideal to include this species as part of a replanting program.
	She-Oak (*Casuarina*) x3 (located between Groups 12 & 13)			There are x3 She-Oak plantings within a larger Monterey Pine Grouping (Group 13) proposed for partial removal. The She Oak is native to Australia and usually grows on the south coast of south-west Western Australia. It is not specifically listed as a contributory element in the Heritage Assessment for Site as it was not identified as a scientific planting, however it has been mapped as low significance for its forestry landscape values.	**Minor**	■ The She-Oak species is a rare hardwood timber. In keeping with the with the intention of the AFS to illustrate uses of timber in technical construction, the removed trees could be used in the construction of future on-site builds (e.g. framing, moulding, doors, shelves, joinery, decorative panelling, furniture construction) or be provided as seating in park areas following treatment

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				The partial removal of these trees is expected to have a minor impact on the heritage values of the Site overall.		■ Undertake a replanting program including a mixture of appropriate exotic and native species in areas deemed appropriate across the Site.
	Stone Pine (Group 16/ TGLP Group 18) (east of building 13)			The large circular Stone Pine grouping in the North Zone of the Site is proposed for gradual removal, with the exception of the remaining healthy examples. A staged replanting program is proposed to retain 20-30 Stone Pines in this grouping. This Stone Pine grouping was likely to have formed part of the early Charles Weston Nursery at the Site with plantings utilised by AFS students in later years. It has been assessed as having heritage significance due to both the age of grouping, and also the fact that it is one of only two remaining areas on the site which have a formal 'nursery' planting layout, which demonstrates this particular aspect of the history of the site as a place of propagation as well as research.	**Moderate**	■ Undertake a replanting program of the Stone Pine species within the same area in a formal nursery layout in recognition of the early nursery planting. ■ Retain a total of 20-30 Stone Pines (existing and new) as a distinct grouping, to maintain the heritage significance of the cluster. ■ Develop interpretation content on the history of the Stone Pine species in relation to its association with and significance to the Site.
	English Oak (Group 9/TGLP Group 7) (east of Glasshouses Complex)			The grouping of English Oak (Group 7) east of the Glasshouses Complex is proposed for partial removal. The grouping has been assessed by a qualified arborist as being of poor quality, in advanced decline and in poor form. The English Oak is not specifically listed as a contributory element in the Heritage Assessment for Site as it was not identified as a scientific planting, however it has been mapped as low significance for its landscape values. The partial removal of these trees is an	**Minor**	■ Undertake a replanting program including a mixture of appropriate exotic and native species in areas deemed appropriate across the Site.

Scope Type	Heritage Value/Ranking (where relevant)			Assessment of Impact/Comment	Potential Impact Severity on CHL Values: Severe/Moderate/Minor	Mitigation Measure
	High	Mod	Low			
Important Plantings and Landscape Elements						
				acceptable outcome and will have a minor impact on the overall heritage values of the Site.		
	Mexican Cypress (within the wings of building 1 (TGLP Tree 1478/1479)			The two mature Mexican Cypress within the wings of building 1 are proposed for removal. Building I will be demolished and replaced with a residential apartment complex. These two trees were planted in the late 1960s during the establishment of building 1 and have been assessed as low significance for their contribution to the Site's overall historic landscape. The removal of these trees is an acceptable outcome and will have a minor impact on the overall heritage values of the Site.	**Minor**	■ Undertake a replanting program including a mixture of appropriate exotic and native species in areas deemed appropriate across the Site.

7.2.1.3 Assessment of Heritage Impact – Important Views and Sight Lines

Table 7.3 Assessment of Heritage Impact – Important Views and Sight Lines

Scope Type	View/Site Line	Assessment of Impact/Comment	Potential Impact Severity on CHL values: Severe/Moderate/Minor	Mitigation Measure
Important Views and Sight Lines				
Establishment of aged care facility and 250 to 300 apartments in two to five storey buildings clustered in precincts around the existing building footprints and other developed areas of the Site.	Views to and from the AFS and its formal landscaped frontage	The proposed action will not have an impact on the significant views to and from the AFS and its formal landscaped frontage. There will be a 20 m protection curtilage around the AFS where no residential development will be permitted. The proposed aged care facility will be largely hidden from view through tree screening along its east boundary and its location to the north-west of the AFS building will not be seen when looking to or from the AFS from its east façade.	**Nil**	**Nil**
	The AFS as the termination of the Schlich Street vista	The proposed action will not have an impact on the significant view of the AFS as the termination of the Schlich Street vista. There will be no development within 20 m of the AFS, the closest proposed structure being the aged care facility to the north-west of the AFS.	**Nil**	**Nil**
	The spatial and visual relationship between buildings 9, 10 and 17	The proposed action will not have an impact on the spatial and visual relationship between 9, 10 and 17. There will be a 20 m protection curtilage around each of these significant structures to ensure this relationship continues to be understood. Further, there will be no external alterations to the fabric of each building that will in any way obscure this visual relationship.	**Nil**	**Nil**
	view from Wilf Crane Crescent overlooking	The proposed action will not have an impact on the view from Wilf Crane Crescent overlooking Forestry House. There will be no development occurring on the publicly owned oval, and no development within 20 m of Forestry House. Forestry House itself is proposed for adaptive reuse as a	**Nil**	■ Ensure height and setback of new hotel building does not exceed the height of

Scope Type	View/Site Line	Assessment of Impact/Comment	Potential Impact Severity on CHL values: Severe/Moderate/Minor	Mitigation Measure
Important Views and Sight Lines				
	the oval and Forestry House	hotel complex, however the adaptive reuse will remain within its current two-stories and will not alter the external fabric. The development includes a proposed new hotel complex located behind Forestry House to the west, however the design of this new building has carefully considered the height and setback of Forestry House and also the available tree screening and will not be seen from Wilf Crane Crescent looking towards Forestry House.		Forestry House to protect this view.
	view from Forestry House to the manicured oval and landscaped frontage	The proposed action will not impact the view from Forestry House to the manicured oval and landscaped frontage. There will be no development within 20 m of Forestry House and no development on the publicly owned oval.	**Nil**	**Nil**

7.2.1.4 Overall Cumulative Impacts to Site

The proposed action involves the establishment of an aged care facility within the North Zone and 250 to 300 apartments in two to five storey buildings clustered in precincts around the existing building footprints and other disturbed areas of the Site (North, West and South Zones). The proposed action will increase the current Site's built footprint and alter its forestry research setting, which in itself poses a severe risk of significant impact to the Site's identified heritage values. However, it is ERM's opinion that the masterplan has retained the key heritage buildings of the Site, carefully considered the appropriate height and setback of new structures, and has incorporated landscaping that will respect the Site's history and the significant trees, protecting as many of the significant trees and tree groupings as possible. The architecture will also be tiered, stepping up and away from the oval, reducing the view impact and integrating the buildings into the landscape in a harmonious way.

The buildings with high heritage significance (9, 10, 2) will be retained and adaptively reused, as will the two structures of moderate significance (17 & 30). These buildings each represent important phases in the Site's history, and are highly significant to the overall heritage value of the Site. Any adaptive reuse of these buildings will need to be informed by a Conservation Management Plan and guided by ongoing specialist heritage advice. The soft impact approach to the adaptive reuse of the AFS (9) is considered to have only minor impacts to the CHL values of the individual CHL listing for the AFS and indirect minor impact on the CHL values for the CSIRO Forestry Precinct as a whole. The soft impact approach to the adaptive reuse of the former Museum building (10), Tennis Courts (30) and former Seeds Store (17) is also considered to have a minor impact on the CHL values of the Site overall. The conversion of Forestry House (2) to a two storey hotel is considered to have a minor impact to CHL values to the Site overall. This use is compatible with the original use of the building, and hotel design should allow any changes to be sympathetic to its significant fabric.

The proposed action will also involve the total removal of one (1) area of moderate significance along with eleven (11) structures/areas of low significance which will result in a significant cumulative impact to the Site's overall CHL values. The total removal of the Caretaker's Cottage (5) is considered to have a severe impact on the Site's overall CHL values. The partial removal of the West Zone Kurrajong grouping (Group 12), and the partial removal of the North Zone Stone Pine group (Group 16), as well as the South Zone Atlas Cedar (Group 1) is also considered to have a moderate impact to the Site's overall heritage values.

A number of additional buildings will also be removed, however these buildings are of Nil contributory significance and their removal will not result in any impacts to the CHL values of the Site. They include:

- Building 1 Group (nil significance) (building 1, 1a, 1b);
- Series of Sheds (nil significance) (4e, 4h, 5a, 22, 24); and
- CSIRO Pyrotron Complex/Service Yard Group (nil significance) (Buildings 14, 14a, 14b, 12c, 12a, 12b, 12c, 16, 29).

Overall, the proposed removal of significant contributory elements within the Site over the development of the proposed action will result in a significant cumulative impact to the Site's overall CHL values. However, it is important to acknowledge that the remaining buildings (all those ranked as high or moderate significance) would continue to represent the key phases and uses of the Site. Their continued and sympathetic use also allows for their ongoing maintenance and conservation. It is also important to acknowledge that most of the trees with identified heritage values are approaching an end-of-life scenario and many have been assessed as unhealthy or dying. The landscape planning of the proposed action not only retains most of the healthy examples of significant trees, but also incorporates a replanting approach which will retain species and groupings which are the main contributors to the heritage significance of the treescape, and increase the overall number of trees on the Site. The replanting program will also aim to continue the theme of forestry research throughout the Site.

In summary, it is ERM's opinion that the Client has incorporated and prioritised a series of strategies to appropriately mitigate the significant impact to the CHL values of the Site. The proposed action also

presents a unique opportunity for the history and significance of the Site to be further explored and shared with a wider audience through increased access and enhanced interpretation.

7.3 Summary of Heritage Impacts

The below section summarises the heritage impacts of the proposed action as identified in *Section 6.2* by answering the relevant SIG 1.2 questions discussed in *Section 7.1*. Only three possibilities are relevant to the proposed action.

SIG 1.2 Questions

If the answer is 'yes' to one or more of the questions below, then it would be expected that the action is likely to have a significant impact on the environment. Is there 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

Yes, the proposed action will permanently remove a number of buildings of contributory value to the overall heritage significance of the Site. The proposed action will also remove some significant individual plantings and partially remove some significant planting groups.

Oakstand has proposed one (1) area of moderate significance for removal along with eleven (11) structures/areas of low significance. Some low to moderate significance individual plantings and plant groupings are also proposed for removal. These structures/areas and plantings contribute to the overall historic, scientific, social, aesthetic and representative values of the Site. These elements also contribute to the understanding of the Site as a former place of propagation as well as national forestry research.

Oakstand has also proposed adaptive reuse of the three (3) high significance buildings, and the two (2) moderate significance structures. However the adaptive reuse of these buildings is considered to have a minor impact on their heritage values as the continued or adaptive reuse of these buildings is considered to be compatible with, and sympathetic to the heritage significance of each building. The significant heritage fabric of each building will be conserved. The adaptive reuse of each building will not substantially alter the fabric of these highly significant buildings.

While the removal of these structures and plantings will result in the permanent loss of their associated contributory values, the carefully considered mitigation strategies ensure the overall heritage values of the Site will be both retained and enhanced through the Site's reinvigoration. The only permanent loss of severe impact will be the removal of the Caretaker's Cottage, as it is the only contributory element directly connected to a high significance building (Forestry House) through its concurrent construction, support role and design characteristics.

Involve extension, renovation, or substantial alteration of a heritage place in a manner which is inconsistent with the heritage values of the place

Yes, the proposed action involves the establishment of a new aged care facility, a new hotel and 250 to 300 apartments in two to five story buildings across the site which is inconsistent with the Site's setting of national forestry research and propagation. The proposed action will involve the removal of plantings, buildings/structures of contributory significance. These elements each represent a phase of development at the Site and demonstrate its early uses, ensuring the Site can still be understood from the important forestry research context, as such, their removal will substantially alter the Site as a place of forestry research and propagation. Further to this, the proposed new apartment buildings will also extend on the current built footprint of the Site which will further alter the forestry setting.

However, the proposed action includes careful consideration of the Site's overall heritage values, and has conserved each building of high heritage significance, two structures of moderate heritage significance and some significant individual and grouped plantings. The retention of these significant buildings and plantings will offset the inconsistency of the proposed action on the heritage values of the Site and dilute the overall impact. The proposed action will also preserve views into and out of the site and minimize the impact of the built form on the site's natural features and have tiered architecture that

further reduces any visual impact. Further, the built coverage of the Site will still remain 40% or less, and the increase on the current built footprint is only minor, ensuring the forestry setting can still be interpreted as such.

Substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place

Yes, the proposed action will alter the setting of the Site in a manner which is inconsistent with the heritage values of the place.

The overall Site is significant as the first and only national forestry school in the country, and for its importance in establishing plantings and afforestation throughout Canberra since 1913. The importance and history of the Site is largely understood through its forestry research setting, with large patches of nursery style plantings and groupings of pine species that contributed to the earliest national forestry research in Australia. As such, the removal of significant planting groups, along with the removal of a number of buildings of contributory significance across the Site, will have a significant impact to the overall heritage values of the Site through the substantial alteration of its setting.

However, as discussed above, the proposed action includes the careful and sympathetic adaptive reuse of the Site's high significance buildings, and has incorporated landscaping that will respect the Site's history and many of the significant trees. The landscaping also includes a replanting program, which will reinvigorate the 'forestry setting' of the Site and seek to continue the theme of forestry research. Further to this, the use of the Site as combined residential/other uses presents a unique opportunity for interpretation, and will provide opportunity the Site's heritage values are understood by a broader audience.

SIG 1.2 Likelihood of Significant Impact

SIG 1.2 states that an action is likely to have a significant impact on the Commonwealth Heritage values of a Place if there is a real chance or possibility that it will cause one or more of the heritage values to be lost, degraded or damaged, notably altered, modified, obscured or diminished. ERM has considered the likelihood of impact below.

Will one or more of the Commonwealth Heritage values be lost?

No. The proposed action will not result in one or more of the CHL values to be lost. The proposed action involves the removal of one (1) area of moderate significance along with eleven (11) structures/sites of low significance and removal of some low to moderate significance individual plantings and plant groupings. The CHL values of the Site are not imbued directly into these elements.

Together these elements are contributory to the Site's overall CHL values and their removal will not result in the total loss of the Site's historic, rarity, research value, representativeness, aesthetic, technical, social or associational values.

Will one or more of the Commonwealth Heritage values to be degraded or damaged?

Yes. The removal of buildings/structures of contributory values, along with the removal of some of the significant plantings across the Site would potentially result in the Site's overall heritage values to be degraded.

The Caretaker's Cottage (5) was established concurrently with Forestry House and is both intrinsically and visually connected. The total removal of the Caretaker's Cottage will result in the a) historic and e) aesthetic CHL values of the Site to be degraded.

Will one or more of the Commonwealth Heritage values to be notably altered, modified, obscured or diminished

Yes. The proposed action involves the establishment of 250 to 300 apartment buildings, hotel and an aged care facility that will increase the built footprint within the Site, alter its forestry setting and diminish the evidence of both CSIRO use of the Site. The importance and history of the Site is largely understood through its forestry research setting, with large patches of nursery style plantings and groupings of pine

species that contributed to the earliest national forestry research in Australia. The proposed action will result in the a) historic and d) representativeness of the Site to be notably altered.

The total removal of the Caretaker's Cottage (5) will result in a) historic and e) aesthetic CHL values of the Site to also be further obscured.

The elements proposed for removal are together demonstrative of the phases of development of the Site and contribute greatly to the understanding of the Site as a former place of propagation as well as national forestry research. These elements contribute to the overall historic, representative, scientific, aesthetic and representative values of the Site and their loss will result in the Commonwealth Heritage values to be notably altered.

However, the proposed action includes a series of carefully considered mitigation measures and offset strategies to ensure the heritage values of the Site overall can continue to be understood, including an extensive replanting program which aims to continue the experimental and forestry theme.

8. CONCLUSIONS AND RECOMMENDATIONS

This HIA has been prepared to assess the impact of the proposed action (option 5) Combined Residential and Other Uses (02) against the Commonwealth heritage values of the (former) CSIRO Forestry Precinct, Yarralumla. An options analysis has been provided, as well as details of the community consultation which explored each proposed option. ERM has assessed the impacts of the proposed action against the identified heritage values of the Site, including a detailed breakdown of individual elements of built heritage, important plantings, important views and sight lines and the overall impact of the proposed action against the Site.

8.1 Statement of Cumulative Impact

Overall, this HIA has found that the removal of significant contributory elements within the Site over the life of the proposed action will result in a significant cumulative impact to the Site's overall CHL values. The proposed action will result in the permanent alteration of the Site's forestry research setting, through which the importance and history of the Site is largely understood. Further, the total removal of the Caretaker's Cottage (5), and the partial removal of the Kurrajong (Group 12) and Slash Pine (Group 16) and Atlas Cedar (Group 1) will result in the following CHL values to be notably altered:

- a) historic;
- d) representativeness; and
- e) aesthetic.

8.2 Next Steps

The potential for significant impacts on matters protected under the EPBC Act is an indication for whether a referral or other permits for the proposed action are likely to be required. ERM has found that the proposed action will have a significant impact to the heritage values of Site. As such, and EPBC Referral to DAWE will be required. In anticipation of this requirement, Oakstand has engaged ERM to contribute to a whole-of-environment EPBC Referral which is currently underway.

8.3 Impact Minimisation

The Site is listed on the CHL for its historic, research, aesthetic, representative, technical, social and associative values and each of these values has been carefully considered in the master planning of the Site. The high significance buildings, including the AFS (9), the former Museum (10), Store (17) and Tennis Courts (30) and Forestry House (2) will be retained and have continued or adaptive reuse. The proposed adaptive reuse is considered sympathetic and compatible to each building, and will provide for the ongoing protection and conservation of these buildings, and the preservation of their spatial and visual relationship. These structures each represent the key phases in the Site's history and their conservation will also ensure the Site can still be understood within the context of a forestry school.

The significant impact to the overall CH values of Site can be largely softened and mitigated. This is due to the careful consideration of the Site's most significant elements in the master planning, the retention of important plantings and the sympathetic way in which the proposed residential apartments have been designed to integrate into the landscape in a harmonious way. Further to this, despite the loss of some contributory elements, the proposed action involves a replanting program which reinvigorates the 'forestry setting' of the place and results in a net increase of trees across the Site. The replanting program will also seek to continue the theme of forestry research. The proposed action also presents a unique opportunity for increased access and enhanced interpretation that can broaden the understanding of the values of the place and provide further context as to its national importance as the site of a former forestry school and research facility.

Following this impact assessment, ERM has provided below a series of management mitigation strategies. These strategies aim to ensure the significant impact of the proposed action against the heritage values of the Site is appropriately mitigated, and presents opportunities to enhance the setting and understanding of the Site.

8.3.1 Guidelines for Impact Minimisation

8.3.1.1 Burra Charter Principles

The Site is a place of cultural significance, and is important to the history of the ACT and the history of forestry in Australia and the broader region. Places of cultural significance should be conserved for present and future generations in accordance with the principal of inter-generational equity (Burra Charter 2013). In general, any changes to the Site that may diminish the heritage values should consider how to both minimise those impacts and reflect on ways to enhance the significance and understanding of the Site. The conservation of heritage values and associated contributory elements should be guided by the Australia ICOMOS Burra Charter Conservation Principals (2013).

Future Use Considerations

Heritage places can be used to enhance the appeal of neighbourhoods by giving these places a new lease of life through adaptation. Many communities and urban developers in Canberra and across the country are seizing opportunities to extend the life of heritage places by ensuring they have new and productive ongoing use. Any new uses for the Project Site should be guided by the following Burra Charter Principles:

Article 3: Cautious Approach

- Conservation is based on respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible.

Article 7: Use

- Where the use of a place is of cultural significance it should be retained
- A place should have a compatible use

Article 21: Adaptation

- Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place.
- Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives.

Article 25: Interpretation

- The cultural significance of many places is not readily apparent, and should be explain by interpretation. Interpretation should enhance understanding and engagement, and be culturally appropriate.

Article 27: Managing Change

- Existing fabric, use, associations and meanings should be adequately recorded before and after any changes are made to the place.

8.3.2 Next Steps – Management and Mitigation Strategies

The following strategies have been provided in consideration of the assessment of impact against each individual site element in *Section 7.2*. The application of these strategies will ensure the heritage values of the Site are carefully conserved, enhanced and understood through the proposed action.

Strategy 1: Heritage Advisory Role

The Client should consider engaging a suitably qualified heritage consultant or heritage architect as an ‘on call’ Heritage Advisor for the detailed design and development phases of the proposed action. The Heritage Advisor can provide invaluable ongoing advice through each stage of the master planning process up until final design phases. A Heritage Advisor can review design documents and architectural plans for heritage approval and field questions from contractors regarding specific heritage fabric. This

advice can prove crucial throughout the design and construction process and will ensure the proactive protection of heritage fabric across the Site.

Strategy 1 Recommendation

Engage an appropriately qualified heritage consultant or heritage architect as an 'on-call' ad-hoc Heritage Advisor for the detailed design and development phases of the proposed action.

Strategy 2: Conservation Management Plan (CMP)

A CMP should be developed for the site as a whole, with details on the buildings that have been proposed for adaptive reuse. The AFS (9) is highly significant, and contributes to the overall heritage significance of the Site through its historic, rarity, aesthetic, representative, technical, associational and social values and is also entered on the CHL separately for these values. The building is also highly intact, maintaining much of its original layout and fabric. It is important that the adaptive reuse of this building considers each of these values and each element of its significant internal and external original fabric, as well as its landscaped frontage. Of particular importance is the central dome and octagonal parquetry flooring, assessed as being an element of exceptional significance to the AFS. Similarly, the former Museum building (10), the Store (17) and Forestry House each have a high degree of integrity and have retained much of their original fabric (with the exception of Forestry House west wing). As such, it is important that each of these buildings is included in a detailed CMP. This CMP would identify the original/early fabric of each building and provide conservation guidelines for this heritage fabric, up-to-date conservation dos and don'ts and valuable maintenance advice for contractors. A CMP would also look more broadly at the Site as a whole and provide conservation advice for the remaining significant plantings and recommendations for any future replanting programs.

Strategy 2 Recommendation

Prepare a CMP for the whole Site with particular emphasis on buildings 9, 10, 17 and 30 prior to the adaptive reuse of these buildings.

Strategy 3: Interpretation

The purpose of interpretation of heritage places is to reveal and explain their significance and to enable that significance to be understood by the people that manage the place and if it is a public site, the public that access and/or have interested in the site. Interpretation contributes to recognising and retaining the cultural significance of a place through building understanding, awareness and engagement (ICOMOS 2013). The scope of interpretation can vary greatly depending on the site and depends on both the intended audience, and the best approach for communicating a place's cultural significance.

The proposed action provides a unique opportunity for preparation of the whole site Interpretation Plan. Additional interpretation panels (signage) could be installed across the Site that provides interesting historical facts about the site and its significance and connection to both the history of the ACT and importance to the early years of national forestry research in Australia (*Photograph 8.1*).

Photograph 8.1 Example of interpretative signage (Canberra Tracks 2019/Lookear 2020)

There are a number of opportunities for enhanced interpretation across the Site that can be developed simultaneously with the adaptive reuse of building 9, 10, 17 and 30. Opportunities include:

- Additional interpretive signage;
- Integration with Canberra Tracks initiative;
- Website/walking tour development;
- Use of felled trees for on-site builds.

There are also opportunities to enhance the significance of the retained significant planting groups by providing contextual information about the importance of these plantings and connection to the Site overall. A number of these interpretive opportunities have been provided against the mitigation measures in *Section 7.2*.

Interpretive measures would ideally be further explored in a whole-of-site Interpretation Plan which includes an understanding of audience, design and implementation.

Strategy 3 Recommendation

Develop a whole-of-site Interpretation Plan that considers the feasibility of the interpretive measures above, as well as design, audience and implementation.

Strategy 4: Reconstruction of Glasshouse

The demolition of the Glasshouses by CSIRO prior to this proposed action is likely to have been determined as having an impact to the heritage values of the Site overall as these Glasshouses are particularly representative of this type of building, and the only remaining Glasshouses within the Site. CSIRO has engaged a consultant to undertake an archival recording of the Glasshouses prior to their removal. Oakstand proposes to reconstruct a glasshouse in the same style and materials as part of the new development.

The location of the Glasshouses is not necessarily key to their significance, rather it's their early design and use, and association with the AFS. As such, an ideal approach to mitigate the impact of total removal would be to reconstruct one of the Glasshouses (preferably utilising the existing base bricks) to recreate a new glasshouse sympathetic to the original. This new glasshouse could be used for integration into a residential shared gardening program. This is a unique opportunity to reconstruct an important element of the Site's history and to utilise this element to capture the true essence and meaning behind the site overall, for learning about horticulture and propagation.

Strategy 4 Recommendation

Reconstruct a Glasshouse of similar design in an appropriate location within the Site to be used for integration into shared gardening program or other identified resident or community use.

Strategy 5: Tree Retention

The master planning of the Site has taken into consideration the significant plantings across the Site and has included these plantings wherever possible in the overall landscape design. The proposed action still involves the necessary removal of some significant plantings across the site. As such, retention of significant trees should be considered wherever viable. For instance, the grouping of Atlas Cedar in the South Zone along Bentham Street is a significant contributory element for the age of the trees, and as one of the only remaining groups in 'nursery style' layout. Similarly, the Stone pines in the North Zone are of similar age and importance. Where there are groupings of the same species, these groupings should be retained wherever possible to ensure the Site's ability to continue to be understood as a place of propagation and forestry research. Where there is no prudent or reasonable alternative to removal, efforts should be made to retain a sample of the healthiest trees and replant the species in a similar pattern so as to not lose this important context to the Site's heritage values. Retaining as many trees as possible will also help to meet community expectations about a high quality environment, and ensure the retention of the treescape which is of importance to Yarralumla residents.

Strategy 5 Recommendation

Retain as many groups of singular species as possible. Where removal of these groups is necessary, retain the healthiest trees and replant the species in a similar pattern.

Strategy 6: Replanting Program

A replanting program is a positive way to enhance the values of the Site and to ensure it continues to be understood through its forestry setting. Replanting should prioritise the individual species and groups of species that are proposed for removal and be planted in a way that demonstrates the history of tree propagation and research at the Site.

Strategy 6 Recommendation

Any future replanting programs should prioritise individual species and groups of species that are proposed for removal and planted in a way that demonstrates the history of tree propagation and research at the Site.

Strategy 7: Photographic Recording

Making a photographic record of a heritage place or object documents it for the future, before it is lost or changed. Photographic records are often required by Federal or State authorities, or local councils as part of a conditional approval for work to be carried out on a heritage place. A photographic recording is an archival record of a heritage place of object. Its purpose is to document a heritage item for future generations.

Prior to the demolition of structures at the Site, a photographic recording should be undertaken. This recording can be fairly simple, including the elevations/details of the structures and internals where required. The photographic recording should be submitted to CSIRO for storage in the CSIRO Black Mountain Heritage Library. The photographic recording should be prepared following the best practice guidelines below:

- NSW Heritage Office (2006) Heritage Information Series: Photographic Recording of Heritage Items Using Film or Digital Camera [online] available: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Heritage/photographic-recording-of-heritage-items-using-film-or-digital-capture.pdf
- Department of Environment and Heritage Protection (former) now DES) (2013) Archival Recording of Heritage Places Guideline [online] available: https://www.qld.gov.au/__data/assets/pdf_file/0024/68226/archival-recording-heritage-places.pdf

Strategy 7 Recommendation

Prepare photographic recordings of all buildings prior to their demolition, and the treescape prior to tree removal.

REFERENCES

Bickford, A. and S. Sullivan (1984) 'Assessing the Research Significance of Historic Sites' in Sullivan, S. and S. Bowdler (eds) *Site Surveys and Significance Assessment in Australian Archaeology* (Proceedings of the 1981 Springwood Conference on Australian Prehistory). Department of Prehistory, The Australian National University, Canberra pp 23-24.

ERM (2020) (former) CSIRO Forestry Precinct Yarralumla – Heritage Assessment, report prepared on behalf of Oakstand.

Kerr, J (2013) The Conservation Plan 7th Edition, National Trust of Australia, NSW.

APPENDIX A CHL ENTRIES

Place Details

Send Feedback

The CSIRO Forestry Precinct, Banks St, Yarralumla, ACT, Australia

Photographs	None
List	Commonwealth Heritage List
Class	Historic
Legal Status	Listed place (22/06/2004)
Place ID	105595
Place File No	8/01/000/0115

Summary Statement of Significance

The CSIRO Forestry Precinct, located within the larger Forestry Precinct (RNE No. 102273), is the Commonwealth's centre for forestry and timber research. It is a complex of buildings, arboretum, nursery, and tennis courts forming an important national scientific institution, established as a response to Federation to provide a national forestry school and national forest research centre. It demonstrates both the Commonwealth's interest in scientific endeavour and a vision for Canberra as the location for science as well as general government administration.

The precinct is associated with the international interest in forestry and is important for an array of scientific achievements, such as PINUS RADIATA propagation and breeding and the Australian Tree Seed program.

The precinct is important as a component of the arboretum and nursery landscape of Yarralumla. The tree-growing trials which constitute the arboretum, identified trees suitable for the urban forests of Canberra and at the same time provided public park amenity for the Canberra community. Yarralumla Nursery to the north of the arboretum has supplied planting stock for Canberra's parks, streets and residential blocks since 1914.

Within the precinct, the former Australian Forestry School (RNE: 013338) reflects the successful outcome of efforts to establish a national forestry school in the new National Capital to produce professional foresters for Federal and State services, and forestry research workers. (Criterion A 4, Australian Historic Theme 8.10: Pursuing excellence in the arts and sciences, advancing knowledge in science and technology)

The precinct is important for its array of features from different phases of development linked to the scientific and educational purpose of the site. These features include the former Australian Forestry School, the former Offices of the Forestry and Timber Bureau, the former Seed Storage Building, Forestry House and Caretakers Cottage, the CSIRO Divisional Headquarters, Controlled Environment Laboratory, tennis courts, arboretum plantings and moveable objects of furniture, collections and historic timber hauling vehicles. (Criterion A3)

The arboretum is an important reference site containing experimental plantings and a significant genetic resource for Australia. (Criterion C2)

The precinct has aesthetic quality based on the historic character of the former Australian Forestry School building, the former Office of the Forestry and Timber Bureau, Forestry House and the modern Headquarters building all set in the mature forest plantings of Westbourne Woods arboretum. The School, including its formal landscaped frontage and with its arboretum setting, is the terminal feature of the Schlich Street axial vista, and a major landmark feature of Yarralumla. (Criterion E1)

The precinct, as a complete small-scale research and learning institution with classical style architecture and recreation grounds, reflects the design concepts that were held in the early 20th century for such places. Within the precinct, the former Australian Forestry School is significant as a fine example of early twentieth-century architecture. The timbers used in panelling, flooring and joinery of the School, particularly the octagonal entrance foyer, evidence a high degree of creative and artistic achievement. (Criterion F1)

The precinct has social importance to the former students educated at the place and the forestry scientists who have conducted research there. (Criterion G)

The Australian Forestry School has a strong association with pioneers of forestry research in Australia, Charles E. Lane Poole and Dr Maxwell R. Jacobs. The arboretum is important for its association with T.C.G. Weston who directed the major plantings in the 1910s and 1920s. (Criterion H)

Official Values

Criterion A Processes

The CSIRO Forestry Precinct, located within the larger Forestry Precinct, is the Commonwealth's centre for forestry and timber research. It is a complex of buildings, arboretum, nursery, and tennis courts forming an important national scientific institution, established as a response to Federation to provide a national forestry school and national forest research centre. It demonstrates both the Commonwealth's interest in scientific endeavour and a vision for Canberra as the location for science as well as general government administration.

The precinct is associated with the international interest in forestry and is important for an array of scientific achievements, such as PINUS RADIATA propagation and breeding and the Australian Tree Seed program.

The precinct is important as a component of the arboretum and nursery landscape of Yarralumla. The tree-growing trials which constitute the arboretum, identified trees suitable for the urban forests of Canberra and at the same time provided public park amenity for the Canberra community. Yarralumla Nursery to the north of the arboretum has supplied planting stock for Canberra's parks, streets and residential blocks since 1914.

Within the precinct, the former Australian Forestry School reflects the successful outcome of efforts to establish a national forestry school in the new National Capital to produce professional foresters for Federal and State services, and forestry research workers.

The precinct is important for its array of features from different phases of development linked to the scientific and educational purpose of the site. These features include the former Australian Forestry School, the former Offices of the Forestry and Timber Bureau, the former Seed Storage Building, Forestry House and Caretakers Cottage, the CSIRO Divisional Headquarters, Controlled Environment Laboratory, tennis courts, arboretum plantings and moveable objects of furniture, collections and historic timber hauling vehicles.

Attributes
The whole precinct including the former Australian Forestry School, the former Offices of the Forestry and Timber Bureau, the former Seed Storage Building, Forestry House and Caretaker's Cottage, the CSIRO Divisional Headquarters, Controlled Environment Laboratory, tennis courts, arboretum plantings and moveable objects of furniture, collections and historic timber hauling vehicles.

Criterion C Research

The arboretum is an important reference site containing experimental plantings and a significant genetic resource for Australia.

Attributes
Experimental plantings and genetic resources held within the arboretum.

Criterion E Aesthetic characteristics

The precinct has aesthetic quality based on the historic character of the former Australian Forestry School building, the former Office of the Forestry and Timber Bureau, Forestry House and the modern Headquarters building all set in the mature forest plantings of Westbourne Woods arboretum. The School, including its formal landscaped frontage and with its arboretum setting, is the terminal feature of the Schlich Street axial vista, and a major landmark feature of Yarralumla.

Attributes
The buildings and their setting within the mature forest plantings of the Westbourne Woods arboretum, plus the School, its landscaped frontage and its prominence at the end of the Schlich Street vista.

Criterion F Technical achievement

The precinct, as a complete small-scale research and learning institution with classical style architecture and recreation grounds, reflects the design concepts that were held in the early 20th century for such places. Within the precinct, the former Australian Forestry School is significant as a fine example of early twentieth-century architecture. The timbers used in panelling, flooring and joinery of the School, particularly the octagonal entrance foyer, evidence a high degree of creative and artistic achievement.

Attributes
The classically styled buildings set within designed landscape, integrated with recreation areas, plus the school, its octagonal foyer and the timbers used in its paneling, flooring and joinery.

Criterion G Social value

The precinct has social importance to the former students educated at the place and the forestry scientists who have conducted research there.

Attributes
Not clarified

Criterion H Significant people

The Australian Forestry School has a strong association with pioneers of forestry research in Australia, Charles E. Lane Poole and Dr Maxwell R. Jacobs. The arboretum is important for its association with T.C.G. Weston who directed the major plantings in the 1910s and 1920s.

Attributes
The Australian Forestry School and the arboretum.

Description

History

Federal Capital to World War II

Canberra experienced its first major phase of development as the National Capital in the 1920s when there was a focus on the completion of the Provisional Parliament House and the relocation of the Parliament to Canberra. This phase also had the intention to relocate Commonwealth Government departments and some national institutions to the new city. One of the national institutions, created in 1925 by Commonwealth legislation, was the Australian Forestry School.

A single forestry school for Australia had been proposed in November 1911 at the first Interstate Forestry Conference, attended by heads of forest services of NSW, Victoria, South Australia and Queensland and the Government Botanist of Tasmania. Charles Edward Lane Poole, Conservator of Forests of Western Australia from 1916 until 1921, advocated the establishment of a Commonwealth forestry research organisation together with the school to research forest entomology, botany, silviculture and forest management (CSIRO 1976).

Plans for a 'Federal Forestry Bureau' were submitted to the Bruce-Page Government in 1924, and staff were appointed before the Forestry Bureau Act of 1930 was passed (Jacobs 1961). In 1925, when Lane Poole returned from a three-year assignment in Papua New Guinea, he was appointed forestry adviser to the Commonwealth Government and persuaded Prime Minister Bruce to include a commitment to establish a national forestry school in Canberra in his election policy speech of 1925 (Boden 1993). The Minister for Home and Territories, the Right Honourable Sir George F. Pearce, approached the States with an offer that the Commonwealth would build, equip, staff and maintain the school if the States would send the students. All States agreed, except for South Australia, which had been running its own forestry course in association with the University of Adelaide since 1910.

The Australian School of Forestry was temporarily housed at the University of Adelaide in March 1926, with Professor Norman W. Jolly as Principal, while a suitable building was constructed in Canberra. At the end of that year Jolly was appointed Chief Commissioner of Forests of New South Wales and Lane Poole, then Inspector-General of Forests for the Commonwealth, was appointed acting Principal of the Forestry School as well as Inspector-General of Forests (CSIRO 1976).

The establishment of the School was followed by the creation of the Commonwealth Forestry Bureau in 1927. Lane Poole saw the Forestry School as a branch of the Commonwealth Forestry Bureau, the main task of the latter being to develop a national forest policy and to bring Australia's forest resources under national control. Although the School had gone ahead, the Forestry Bureau existed in name only for many years and in this period most of the research undertaken, other than that of Lane-Poole, was done by the staff of the School.

The School was established in the suburb of Westridge, now Yarralumla, then the western suburb of the Federal Capital, so as to be near the arboretum (Westbourne Woods) and the nursery established in 1913 by Charles Weston, Officer in Charge, Afforestation Branch, Department of Home Affairs. The School building was designed as part of the Federal Capital Commission's (FCC's) building program by J.H. Kirkpatrick, working with H.M. Rolland, Principal Architect of the FCC. The FCC's building program was essentially to provide accommodation and office space for the transfer of the Federal Government from Melbourne to the new Capital, and the School, being an institution, was included in this program. Other institutions supported by the Commonwealth at this time were the Commonwealth Solar Observatory, the Australian War Memorial and the Museum of Zoology (later the Institute of Anatomy). The school was officially opened on 11 April 1927, with 16 students and three permanent lecturing staff, as well as Lane Poole. The staff members were Messrs C.E. Carter, H.R. Gray and A. Rule.

The School building incorporated hardwoods and softwoods from all States. Tasmania, Victoria and New South Wales donated floor timber and South Australia donated timber for internal fittings. New South Wales and Queensland refused to give any timber without payment. Although the School had opened in April 1927, the building was not completed until June that year. The formal opening was held on 24 November 1927. The only rooms completed when school work commenced were the Principal's room and the drafting room.

A carpenter's shop, requested by Lane Poole, was built apart from the main educational block as he had specified, in August 1927. He also requested a stove house and frames (a heated glasshouse), to be used for raising seedlings, and this was completed in March 1929. T.R. Casboulte, an architect of the FCC, drew the plan of the approach to the Forestry School building in August 1927.

A residence for the Principal, 'Westridge House' (RNE 8/01/000/370) (not included within this record), later known as 'Tudor House', designed by the Melbourne architect Harold Desbrowe Annear, was built next to the school in 1928. Students initially had no accommodation and had to occupy the old printers' quarters at Kingston and a camp on the site. In 1928, 27 spruce cubicles were built at the rear of three houses in Solander Place, near the school, for the student accommodation. Each student had his own cubicle, supplied with electric light, wardrobe, table and chair. Of the houses, one was used for amenities, one for dining/kitchen and the third for ablutions. Student occupancy of the cubicles ceased at the end of 1951, and students were subsequently located elsewhere.

Shortly before WWII, the Government funded a building for an industrial museum and the work of the research sections of the Bureau. After the war the museum was temporarily abandoned and the building used for other purposes. The collected exhibits were stored in a wooden building which was later destroyed by fire, along with most of the exhibits (Jacobs 1961).

A meteorological station located near the tennis courts was run by the Forestry Bureau. Facilities included wind vanes, anemometers, a Stevenson screen and a pit to house thermometers for measuring air and soil temperature. A second station with a tall wooden tower and pit was located in a plot of radiata pine (the 'Tower Plot') to the west of the precinct. An anemometer was also installed on a tall mast above the Forestry School. Weather recordings were taken every day from 1927 to 1981. It was the only meterological station in Canberra from 1927 to 1939. (Eldridge 2000).

During the Depression years, the numbers of students decreased to around four a year. In 1936 Lane Poole put the staff on half-time lecturing to the four second-year students, and half-time on research. This action stimulated the States to provide more students and the situation improved during the late 1930s. Numbers went down again during the Second World War, as many potential students enlisted.

In the years before and after World War II, the Forestry students and Duntroon cadets vied for social honours, holding dances and other functions. The Forestry students emptied the museum at the Forestry School and turned it into a ballroom. These functions were supported by Lane Poole and his wife. Lane Poole was also a founding member of the Alpine Club at Mount Franklin in the Brindabella Mountains, and became its president. Every student who attended the Forestry School was required to make himself a set of wooden skis under the instruction of Lane Poole.

Research was conducted at the site by the School staff and students on behalf of the Commonwealth. Early research concentrated on growth rates and the effects of thinning (CSIRO 1976). Westbourne Woods, established by T.C.G. Weston, was the first arboretum established in the ACT (1914-18). The Commonwealth Forestry Bureau established Laurel Camp at Pierces Creek in 1928. Dr Maxwell Ralph Jacobs was appointed research officer in the Bureau, in 1937, and undertook research on growth stresses in eucalypt stems and genetic variation in PINUS RADIATA for plantation improvement.

Lane Poole held the two positions of Principal of the Australian Forestry School and Inspector-General of Forests, Commonwealth Forestry Bureau until his retirement in 1944.

Post-War Phase

Dr Jacobs was the next Principal of the School, and held the position from 1945 to the end of 1959 when he became Director-General of the Forestry and Timber Bureau.

After the War the number of students increased to 80 in 1950 before declining in the 1950s and rising again to 60 in 1961. From 1949, students from New Zealand, Asia (including Malaysia and Burma) and Ethiopia, attended the school. In the immediate post-war years, a number of Army disposal buildings were acquired to supplement the original spruce cubes in Solander Place (Jacobs 1961). Not long after Jacob's appointment as Principal, plans were made to build a permanent residence for the students, and thus Forestry House, designed by the Commonwealth Department of Works and Housing, was constructed and occupied at the commencement of the 1952 academic year.

Better accommodation was also required after the War for the Research and Administrative Sections of the Bureau, and many proposals were considered. These were outlined for the National Capital Development Commission by Jacobs (Jacobs 1961). The building at the rear of the Forestry School, originally built for the industrial museum, was occupied by the Director General and his staff as the office of the Forestry and Timber Bureau (re-designated by the Forestry and Timber Bureau Act of 1946) from 1946 until 1961.

Kelvin P. McGrath became Acting Principal of the Forestry School when Jacobs was appointed Director-General of the Forestry and Timber Bureau (1959). McGrath retained that position until the responsibility for forestry education was transferred to the Australian National University early in 1965, when a Department of Forestry was established within the School of General Studies. The Duke of Edinburgh opened a new building for the Forestry Department of the ANU on 15 May 1968. Until then, the Department had continued to function in the Forestry School buildings at Yarralumla.

When the Forestry School building was vacated, senior officers of the Forestry and Timber Bureau moved in from Westridge House, to where they had moved in 1961 when Jacobs was confirmed in the position of Director General and transferred his residence to Forrest. The former industrial museum building was used by the School staff from 1961 until 1968.

After a hesitant start in the 1930s, research at the site expanded after the war. In 1946 the Commonwealth Timber Control and Commonwealth Forestry Bureau were amalgamated to form the Forestry and Timber Bureau with the Central Research Station at Canberra concentrating on silviculture (CSIRO 1976). Over twenty-five arboreta were established in rural locations at various altitudes between 1929 and 1954 (Chapman 1984). A nursery for propagating PINUS RADIATA was expanded at Yarralumla in the 1940s, following earlier use of a nursery at Pierces Creek for raising the first pines from cuttings in Australia. Later work in the nursery included important investigations of pollination and seed production of EUCALYPTUS GRANDIS, E. NITENS and E. GLOBULUS (Eldridge 2000).

In the 1950s, research was expanded into fire behaviour and effects of wildfire and control burning in native forests; and into forest resources, botany and nutrition. In the 1960s work started on entomology, pathology, watershed management and logging. In 1961 Jacobs established the nucleus of the Australian Tree Seed Centre as a contribution to the United Nation's Freedom from Hunger Campaign (Vercoe 2000).

In 1963 research was given significant impetus with the formation of the Forest Research Institute within the Bureau. In 1964 the Forestry and Timber Bureau was transferred from the Department of the Interior to the Department of National Development, and in 1972 to the Department of Primary Industry. In 1970, Jacobs retired and was succeeded by Dr D.A.N. (Neil) Cromer as Director-General, a role he held until retiring in 1975. Alan McArthur directed the Forest Research Institute in those five years.

In 1975 the CSIRO acquired the whole site as it exists now, apart from the oval, and established a Division of Forest Research to carry out the functions of the Forest Research Institute and the harvesting and management groups of the Forestry and Timber Bureau (CSIRO 1976). The unit became the Division of Forestry and Forest Products in 1988, the Division of Forestry in 1991 and in 1996 the Division of Forestry and Forest Products.

CSIRO Forestry and Forest Products currently (in 2000) carries out collaborative research with State and other institutions and the headquarters of the Division are located at Yarralumla. The research includes tree improvement and genetic resources, native forest management, plantations and farm forestry, wood processing and products, and pulp and paper products.

One example of current activity is provided by the Australian Tree Seed Centre, which supplies authenticated representative seed samples and advice on species selection, silviculture, and tree improvement strategies. The Centre has made a unique contribution to world forestry and agriculture by providing effective access to Australian forest genetic resources. It supplies seedlots to growers and researchers both overseas and within Australia, and advice to over one hundred countries. The Centre maintains the national collection of tree seed from 1300 species (CSIRO 1997).

The site was sold and leased back to the CSIRO in 2002.

(History notes have been compiled from the sources cited and from the National Trust citation for the Australian Forestry School).

Description

The CSIRO Forestry Precinct is a research centre and former campus, located in Yarraluma within the heritage-listed

Westbourne Woods (RNE No. 13337). The heritage place covers Block 7 of Section 4; it includes groups of buildings clustered around the adjacent oval, nursery, arboretum, and tennis courts. It also includes the former Australian Forestry School (RNE No. 13338).

The Australian Forestry School

The School was designed in the Inter-War Stripped Classical Style by J.H. Kirkpatrick, of the Federal Capital Commission (FCC), assisted by H.M. Rolland, principal architect of the FCC, and the building was completed in 1927. It is a single-storey rendered brick building with a parapet and a hipped tiled roof. The front or eastern entrance leads through a short hallway into a large octagonal domed hall, approximately 8 metres high, located in the centre of the building and panelled in Australian timbers. At the centre of the hall is a parquetry floor, with a central circular design patterned with of jarrah, mountain ash and tallowwood. A laboratory at the north-western corner of the building is still close to its original condition, including its blackboards with stained timber edging. At the southern end of the building, the area formerly used for the museum retains built-in timber cupboards used for herbarium specimens. This area was being occupied by the National Aeronautical and Space Adminstration (NASA) in 2000. A kitchen occupies the space of the former cloakroom, which was later a darkroom. (Refer to RNE 13338 for detailed information on the School)

Offices of the Forestry and Timber Bureau

A small rendered brick building located behind the main School building, initially used as an industrial museum and later as offices for the Forestry and Timber Bureau, was constructed around 1938 in a style similar to that of the main school but with subtle differences in details such as in the roundels, rainwater heads and downpipes. The building has a tallowwood floor. It is now used for storage by AMSAT (Australian Marine Science and Technology).

Former Seed Storage Building

A small timber-framed and clad building with a hipped tiled roof, located behind the Forestry School was constructed around 1935 -40, next to the former Forestry and Timber Bureau offices. It was used as a laboratory and store for seeds. It is now used for storage by AMSAT.

Tennis Courts

Two tennis courts, established for staff and students, are located to the west of the main school building.

Meteorological Station

Associated with the school at the eastern edge of the nursery are the remains of the meteorological station (1927 -1981) with footings on which several meteorological instruments were located.

Nursery

West of the tennis courts is the research nursery used among other things for propagating PINUS RADIATA from cuttings from the 1940s-80s. A small weatherboard potting shed was removed c 1998. Currently a shade house and plots of pines and eucalypts remain.

Forestry House

The precinct underwent major development during the early post-war years, with the construction of Forestry House, the Caretakers Residence and later the glass houses and potting shed complex.

Forestry House is a two-storeyed rendered brick building, designed by the Commonwealth Department of Works and Housing and completed at the end of 1951. The long axis facing the oval contains the former lounge, billiard, library and dining rooms and is single storey with timber-framed windows and a high-pitched tiled gabled roof. The design reflects the Post-War American Colonial style. A feature of the roof is the bronze and timber turret. The building was designed to provide accommodation for students. The lounge room, now converted to a conference room, is large with timber ceilings, exposed timber trusses, timber framed doors and windows. The lounge room was used as the site library for some years prior to 1976. Since being vacated by students in the late 1960s, the building has undergone several rounds of alterations to convert accommodation into offices and laboratories.

The caretaker's cottage was constructed at the same time as Forestry House and although of a modest scale the building reflects the design style of Forestry House. The building is a single storey rendered masonry building with a stepped

terracotta tile gabled roof. The cottage has a small garden area with mixed species including agaves. After completion in 1951, it was used for around 10 years as offices.

Glasshouses and Workshop

The glasshouses were built in 1949, and the complex consists of a number of glasshouses and small structures as well as a single-storey red brick building with flat roof and highlight windows located to the western end of the complex. The glasshouses have a single space with a glazed and steel upper portion supported by a face brick lower wall.

The Divisional Headquarters

During the 1960s-80s period, development was focused on establishing modern research facilities. In 1967 a new headquarters for the Forest Research Institute (Building No. 1) was completed, a large split-level brick building of reinforced concrete columns and slabs, with brick curtain walls. The functional design has enabled substantial internal modification when needed. The library was added in 1975-76. A refurbishment c 1996 included an addition on the east end. The various sections are linked by enclosed walkways.

Controlled Environment Laboratory

In 1969 the controlled environment laboratory used for tissue culture and growing plants was constructed beside the existing glasshouse complex.
The building is located on an elevated site overlooking the Glasshouse complex. It is two stories, of face brick with concrete floors, a flat roof and aluminium framed windows. A glasshouse wing extends from the masonry mass to the north.

Industrial Facilities

During the 1970s a complex of new carpenter's and engineer's workshops, several storage sheds and offices was constructed to the north-west of the Forestry School. To enable this work to proceed the original carpentry shop, and a lecture room and a drafting room added in 1948, were demolished.

Recycled Buildings

A number of buildings have been relocated to the site and utilised. The former Nurses Home, now occupied by Greening Australia, was brought to the site from Acton Peninsula in 1963 to augment the student accommodation in Forestry House. In 1973 two timber-clad buildings were brought to the site, the Photography Hut located beside Westridge House and the Recreation Hut behind Forestry House. The latter contains the original billiard table from Forestry House.

Arboretum

A significant part of the site contains trees planted by TC Weston in the development of Westbourne Woods before 1920. Other plantings on the site are linked with the establishment of the Australian Forestry School opened in 1927. In about 1945-55 other plantings were made by Dr Lindsay Pryor as part of the landscaping around Forestry House, the residential accommodation for AFS students. A small number of trees were planted when the CSIRO forest research laboratories were built in 1975. The most recent plantings were established in 1998 either side of Wilf Crane Drive near its junction with Banks Street. These are rare and threatened acacias and eucalypts. Throughout the site there are small experimental plantings resulting from research trials. (Peter Freeman 2001)

Around the Divisional Headquarters Building (Building No.1) are large groups of PINUS CANARIENSIS, P. RADIATA and P. HALEPENSIS planted before 1920. Interspersed with these are scattered plantings from the 1950s: PINUS YUNNANENSIS, P. HALEPENSIS V. BRUTIA, P. ECHINATA and P. VIRGINIANA, and within the wings of Building No.1 are two TAXODIUM MUCRONATUM. Towards Bentham Street is a group of PINUS RADIATA also from 1953 and a large plantation of CEDRUS ATLANTICA before 1920. In front of the headquarters building are four SEQUOIADENDRON GIGANTEUM. Closer to the oval are a PINUS COULTERI, P. PONDEROSA and rows of PINUS NIGRA all from around the 1920s or earlier.

Near the Controlled Environment Laboratory is a small group of PINUS ROXBURGHII from the original plantings, a group of EUCALYPTUS GRANDIS, planted in 1979, the product of the early tissue-culture experiments and three E. MACULATA. To the west of the nursery area is a group of BRACHYCHITON POPULNEUS. To the north-west of the nursery area is the large PINUS RADIATA group known as the Tower Plot. To the north of the nursery is a large group of P. PINEA. On either side of the former Forestry School are groups of PINUS PONDEROSA. Around Westridge House is a group of PINUS PONDEROSA and a group of PINUS PINEA.

Throughout these groups are numerous other landscape plantings including pin oaks, elms, poplars and cherry plums. Flanking the main entrance to the former Forestry School and also the drive from the school to Westridge House are two large CUPPRESSUS SEMPERVIRENS. Behind the former Forestry School are single specimens of ARAUCARIA BIDWILLII, EUCALYPTUS GRANDIS, E. GLOBULUS and a single A. CUNNINGHAMII is located near the industrial area.

Movable Objects

There are numerous objects of heritage significance within the complex. In the former Forestry School is a Dines Anemograph, used to record wind velocity. Records of rainfall, relative humidity, temperature, wind velocity and hours of sunshine are pinned to a board on the wall nearby. Significant furniture within the School are several original notice boards, an original timber light fitting, built in timber cupboards, timber desk, table and chairs, blackboards and clock. A mountain ash coffer decorated with scrolls and acanthus leaves, a mountain ash settle, and a refectory table are believed to have been purchased for the School from C F Rojo & Sons Pty Ltd, Melbourne in September 1928.

Within the recreation hut is a full size snooker table.

Forestry House contains two kidney shaped coffee tables, a log table, two mounted propeller blades, several chairs (part of a set designed by Derek Wrigley), a museum table from the AFS museum, an original Forestry House student's chair, a display cabinet, a red cedar lectern with light, and a large table originally from the Forestry School Reading Room.

A collection of historic timber hauling vehicles from different parts of Australia has been set up as an outdoor exhibit beside Forestry House. These consist of two tandem axle bogies from the Erica district of Victoria, a log buggy used at Koondrook Victoria and a logging whim donated by George Smith of George Smith Lumber Co. Greenbushes, WA.

Within the library of Divisional Headquarters Building are several leather chairs originally from the AFS library, a lectern, a secretaire, several student desks from Forestry House, and a polished table with fluted decoration. The Max Jacobs Room has heritage furniture pieces consisting of a conference table, two Queensland timber chairs, Max Jacob's office chair and the Max Jacobs historical collection of books, along with other memorabilia.

Valuable books are located in the library collection, and located within the complex is the Australian Tree Seed Centre's scientific collection.

The precinct has aesthetic quality based on the historic character of the former Australian Forestry School building, the former Office of the Forestry and Timber Bureau and to a lesser degree, Forestry House, all set in the mature forest plantings of Westbourne Woods arboretum. The School building, as a terminal feature of the Schlich Street axial vista, is a major landmark feature of Yarralumla.

History Not Available

Condition and Integrity

June 2002:
Well maintained.

Location

About 11ha, Banks and Bentham Streets, Yarralumla, comprising Block 7 of Section 4.

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Place Details

Send Feedback

Australian Forestry School (former), Banks St, Yarralumla, ACT, Australia

Photographs





List	Commonwealth Heritage List
Class	Historic
Legal Status	Listed place (22/06/2004)
Place ID	105426
Place File No	8/01/000/0369

Summary Statement of Significance

The Australian Forestry School, consisting of the former School building, the former Museum building and the formal landscaping surrounds, has strong associations with the early development of the Federal Capital. It was designed and built as part of the Federal Capital Commission's building program, and was one of a few institutions established by the Commonwealth. It reflects the Commonwealth's effort to establish a national forestry school in the new National Capital to produce professional foresters for Federal and State services and forestry research workers. The establishment of a national forestry school was part of the national approach to many issues that followed Federation in 1901 and the international growth of forestry and forest industry. (Criterion A 4, Australian Historic Theme 8.10: Pursuing excellence in the arts and sciences, advancing knowledge in science and technology)

The Australian Forestry School is a fine example of the Inter-War Stripped Classical style of architecture, being symmetrically composed, divided into vertical bays, with a central entrance and roundels suggestive of classical entablature. Other features are stepped parapets, round arched openings at the entrance and projecting bay ends, and a hipped tiled roof. (Criterion D)

The School including its formal landscaped frontage, in its setting of mature pine forest plantings has aesthetic value for its historic character. As the terminal feature of the Schlich Street axial vista, it creates a major landmark feature in Yarralumla (Criterion E1)

Central to the building is a magnificent domed hall which features the use of superbly crafted Australian timbers from various States of Australia in panelling, flooring, ribs for the dome and light fittings.
(Criterion F1)

The School has social importance to the former students educated at the place (Criterion G).

The School has a strong association with its principals who were also pioneers of forestry research in Australian, Charles T Lane Poole and Dr Maxwell Jacobs (Criterion H)

Official Values

Criterion A Processes

The Australian Forestry School, consisting of the former School building, the former Museum building and the formal landscaping surrounds, has strong associations with the early development of the Federal Capital. It was designed and built as part of the Federal Capital Commission's building program, and was one of a few institutions established by the Commonwealth. It reflects the Commonwealth's effort to establish a national forestry school in the new National Capital to produce professional foresters for Federal and State services and forestry research workers. The establishment of a national forestry school was part of the national approach to many issues that followed Federation in 1901 and the international growth of forestry and forest industry.

Attributes
The former School building, the former Museum building and the formal landscaped surrounds.

Criterion D Characteristic values

The Australian Forestry School is a fine example of the Inter-War Stripped Classical style of architecture, being symmetrically composed, divided into vertical bays, with a central entrance and roundels suggestive of classical entablature. Other features are stepped parapets, round arched openings at the entrance and projecting bay ends, and a hipped tiled roof.

Attributes
The building's Inter-War Stripped Classical style of architecture demonstrated by the features noted above.

Criterion E Aesthetic characteristics

The School including its formal landscaped frontage, in its setting of mature pine forest plantings has aesthetic value for its historic character. As the terminal feature of the Schlich Street axial vista, it creates a major landmark feature in Yarralumla.

Attributes
The School, including its formal landscaped frontage, plus its setting of mature pine forest, plus the building as the termination of the Schlich Street vista.

Criterion F Technical achievement

Central to the building is a magnificent domed hall which features the use of superbly crafted Australian timbers from various States of Australia in panelling, flooring, ribs for the dome and light fittings.

Attributes
The domed entry hall in the school building, with all of the features noted above.

Criterion G Social value

The School has social importance to the former students educated at the place.

Attributes
The whole of the school.

Criterion H Significant people

The School has a strong association with its principals who were also pioneers of forestry research in Australian, Charles T Lane Poole and Dr Maxwell Jacobs.

Attributes
Not clarified.

Description

History

The first Interstate Forestry Conference, held in November 1911 and attended by heads of State forestry services of NSW, Victoria, South Australia and Queensland and the government botanist of Tasmania, resolved that a single forestry school be established to fulfil the urgent need for well-trained foresters. However, there was no further action until in 1920 a Premier's Conference agreed to establish the school in NSW. The site of the proposed school was in the Bago State Forest, in the Tumut-Tumbarumba District. The Commonwealth would provide one-sixth of the cost of the school, with the States to pay the remainder, the amount payable by each State to be computed according to its relative population. This agreement was due largely to the efforts of Charles Edward Lane Poole, Conservator of Forests of Western Australia from

1916 until 1921.

When Lane Poole returned from a three-year assignment in Papua New Guinea and was appointed forestry adviser to the Commonwealth Government in 1925, he found little had been done to implement the 1920 resolution. He persuaded Prime Minister Bruce to include a commitment to establish a national forestry school in Canberra in his election policy speech of 1925. Although Bruce won the election, there were differences of opinion among the States as to the location of the school and their agreement to provide students was necessary for implementation of the proposal. The Minister for Home and Territories, the Right Honourable Sir George F. Pearce, approached the States with an offer that the Commonwealth would build, equip, staff and maintain the school if the States would send the students. All States agreed, except for South Australia, which had been running its own forestry course in association with the University of Adelaide since 1910.

Adelaide University offered to forego its school and to house the new national School until a suitable building was constructed in Canberra. The School was established at the University of Adelaide in March 1926, with Professor Norman Jolly as Principal. At the end of that year Jolly was appointed Chief Commissioner of Forests of New south Wales and Lane Poole, then Inspector General of Forests for the Commonwealth, was appointed acting Principal of the Forestry School (Lane-Poole, 1927-28, 202, Boden, 1993).

Lane Poole saw the Forestry School as a branch of the Federal Forestry Bureau, the establishment of which had been agreed by the Federal Government. The Bureau's main task was to develop a national forest policy, which he believed was necessary to bring Australia's forest resources under national control. He was not keen to become principal of the School, as he was not a teacher and found teaching distasteful (Carron, 1985, 251). However, he was persuaded by the government to accept the position, along with the role of Inspector General of the proposed Forestry Bureau. Although the School had gone ahead, the Bureau existed in name only for many years and in its early years much of the research, other than that of Lane Poole, was done by the staff of the School (Carron, 1985, 253).

The School building was designed as part of the Federal Capital Commission's (FCC's) building program by J.H. Kirkpatrick, working with HM Rolland, Principal Architect of the FCC. The FCC's building program was essentially to provide accommodation and office space for the transfer of the Federal Government from Melbourne to the new Capital, and the School, being an institution, was included in this program. Construction of the school commenced in July 1926 and it was officially opened on 11 April 1927, with 16 students and three permanent lecturing staff, as well as Lane Poole. The staff members were Messrs C.E Carter, H.R Gray and A. Rule. The School was situated in the suburb of Westridge, now Yarralumla, then the western suburb of the Federal Capital, so as to be near the arboretum (Westbourne Woods) and the nursery established by Charles Weston in 1913.

Although the School had opened in April 1927, the building was not completed until June that year and the formal opening was not until 24 November 1927. The only rooms completed when school work commenced were the Principal's room and the drafting room (AA Series A1/15, Item 1929/1875).

Tasmania, Victoria and NSW donated floor timber and South Australia donated timber for internal fittings. NSW and Queensland refused to give any timber without payment. A carpenter's shop, requested by Lane Poole was built apart from the main educational block in August 1927 (Australian Archives, Series A1/15, Item 1929/1875). He also requested a stove house and frames (a heated glasshouse), to be used for raising seedlings, and this was completed in March 1929 (AA Series A1/15, Item 1929/1875). The plan of the approach to the Forestry School building was drawn in August 1927 by T.R. Casboulte, an architect of the FCC.

A residence for the Principal, 'Westridge House', later known as 'Tudor House', was built next to the school in 1928. Although Lane Poole also planned to house his students nearby, the tightened financial circumstances occurring in late 1927 meant that the students initially had to occupy the old printers quarters at Kingston and a camp on the site. In 1928, 27 spruce cubicles, of a style widely used on construction sites in the city, were built near the school for the students. Each student had their own cubicle, supplied with electric light, wardrobe, table and chair (Gugler, 1994, 106-107). They were located at the rear of three houses in Solander Street, one of which was used for amenities, one for dining/kitchen and the third for ablutions. The cubicles have since been located elsewhere.

The School had difficulty maintaining the number of students during the Depression years, as the States could not afford to pay the living costs for the students they were to send. The numbers were only around four students a year. In 1936 only one student enrolled; he was not accepted by Lane Poole, who put the staff on half-time lecturing to the four second year students and half-time on research (Carron, 1977, 103). This action stimulated the States to provide more students and the situation improved during the late 1930s. Numbers went down again during the Second World War, as many potential students enlisted. After the War the number of students increased to 80 in 1950 before declining in the 1950s and rising again to 60 in 1961. From 1949 students from New Zealand attended the School, until a forestry school opened in Christchurch. Many Asian students also attended the School.

Shortly before WWII, the Government funded a building for an industrial museum and the work of the research sections of the Bureau. After the war the museum was temporarily abandoned and the building used for other purposes. The collected exhibits were stored in a wooden building which was later destroyed by fire, along with most of the exhibits (Jacobs 1961).

In the years before and after World War 2, the Forestry students and Duntroon cadets vied for social honours, holding dances and other functions. At that time the Albert Hall was considered to be the only venue for functions. However, the Forestry students emptied the museum at the Forestry School and turned it into a ballroom. The museum contained artefacts from around the world as well as local items (mainly timber), including local birds and a complete section of local eucalypt timbers, cut into specimen size. Moving the heavy timber artefacts from the museum for these social occasions was an arduous task (Carron, pers. comm. 1999). The dances were supported by Lane Poole and his wife. Lane Poole was also a founding member of the Alpine Club at Mount Franklin in the Brindabella Mountains, and became its president. Every student who attended the Forestry School was required to make himself a set of (wooden) skis. This work was carried out on the premises (Carron, pers. comm., 1999).

Lane Poole held the position of Principal of the School until his retirement in 1944. Dr Maxwell Ralph Jacobs was the next Principal of the School and held the position from 1945 to the end of 1959. Jacobs was one of three students who had been on overseas scholarships in 1928-29 to become future research officers of the Forestry Bureau. Jacobs was followed by K.P. McGrath as acting Principal until responsibility for forestry education was transferred to the Australian National University early in 1965 (Boden, 1993). There are several reasons for the move, one of which was the need to provide more opportunities for postgraduate training such as the MSc and PhD available at the University.

The new building for the Forestry Department of the ANU was opened in May 1968 by the Duke of Edinburgh. Until then, the Department had continued to function in the Forestry School buildings at Yarralumla (Carron, 1977, 106). When the main building was vacated, the senior officers of the Forestry and Timber Bureau moved in from Westridge House, to which they had moved in 1961 when Max Jacobs was confirmed in the position of Director General and transferred his residence to Forrest. The smaller rendered brick building at the rear of the Forestry School was occupied by the Director General and his staff from 1946 until 1961; it was used again by the School staff from 1961 until 1968. In 1975 the CSIRO acquired the whole site as it exists now and the new CSIRO Division of Forest Research, incorporating much of the former Bureau, came into operation. Currently NASA (National Aeronautical and Space Administration) is occupying the southern end of the Forestry School building and the northern end is vacant. CSIRO has plans to occupy the northern end of the building.

The site was sold and leased back to CSIRO in 2002.

The ashes of A.B. (Brian) Patton, a forester who died following a tree fall accident at Jervis Bay, were scattered under the Pin Oaks on the southern side of the School on 5 May 1960. A reunion of former students of the School was held in April 2000.

Description

The Australian School of Forestry is located at Banks Street, Yarralumla, where it intersects with Schlich Street. The School was designed in the Inter-War Stripped Classical Style by J.H. Kirkpatrick, of the Federal Capital Commission (FCC), assisted by HM Rolland, Principal Architect of the FCC, and the building was completed in 1927. It is a single storey rendered brick building with a parapet and a hipped tiled roof. Key features of the style displayed by the building include a symmetrical facade, division into vertical bays, simple wall surfaces, roundels suggesting classical entablature.

Paved steps lead up to the entrance, which is formed by round arched openings.Paved steps lead up to the entrance, which is formed by round arched openings. Mature CUPPRESSUS SEMPERVIRENS (Roman Cypresses) flank the steps leading to the main entrance. The parapet over the entrance, encompassing projecting bays with vertical openings, diagonally patterned in wrought iron. Plain roundels decorate the exterior walls of the building and the two roundels on either side of the arched entrance display a floral design. Above the entrance doorway is the School crest of a veteran eucalypt above the motto 'Mihi Cura Futuri' ('I serve posterity'). The doors at the front and rear entrances, as well as all the interior doors throughout the building, are of Queensland maple.

The walls of the hall are panelled in wood to a height of approximately two and a half metres, interrupted by engaged columns at each of the eight corners. There are wide ribs of Queensland maple in the ceiling dome and the light fitting, suspended some distance below the centre of the dome by four heavy brass chains, is of Blackwood. The brass chains hang from a bronze ceiling panel. Australian timbers from various States, including Queensland Maple and Walnut, Red Cedar, Red Mahogany, Hoop Pine and Mountain Ash, are used throughout the building in floors, doors, wall panelling, ceilings and trimmings. Originally, the interior included the octagonal hall, a museum, a library, two lecture rooms, a laboratory, a

drafting room, principal's room and lecturers' rooms, offices, a cloak room and toilets. Another lecture room was created near the library by the 1950s. Some structural changes were made in the late 1960s when some of the larger rooms were partitioned for office accommodation. Further alterations occurred in 1983 when the CSIRO refurbished the building.

The original boiler room is located under the main building on the southwestern side and is still in operation. Water, originally heated by coal fire, is now heated by natural gas.

Three pieces of furniture in the hall, a rug chest, a table and a settee, all made of mountain ash, were purchased for the School from C F Rojo & Sons Pty Ltd, Melbourne in September 1928.

The two lecture rooms were on the north eastern side of the building. The room on the north western end of the building was the laboratory and is still close to its original condition, including its blackboards with stained timber edging. The room at the opposite (southern) end of the building was the museum and still retains built-in timber cupboards, used for herbarium specimens. A shower recess has been added to the toilets, which have been separated into male and female (originally all male), and the tiles have been replaced. A kitchen now occupies the space where the cloakroom (later a darkroom) was located.

A small rendered brick building located behind the main School building, previously used as a museum and later as offices for the Forestry and Timber Bureau, was built in a similar style. However, there are differences such as the design of the roundels, the downpipes on the small building are of steel while the Forestry School building has cast iron downpipes, and the rain water heads are a different design. Next to the former museum, is a timber, framed timber clad building used as a laboratory and for storing seeds and tools. It is now used as an archive store for the CSIRO.

Both the main building and the two smaller buildings at the rear were repainted in 1998 and are in very good condition. The terracotta tiles on the main building have been replaced. The former museum building was refurbished in 1991 in a manner sympathetic to the main building and is leased to AMSAT (Australian Marine Science and Technology) by the CSIRO.

The School with its formal landscaped frontage is on a rise within a setting mature pine forest plantings and has aesthetic value for its historic character. As the terminal vista feature of the Schlich Street axis, it creates a major landmark feature in Yarralumla

History Not Available

Condition and Integrity

The building is generally intact and in fair to good condition. Both buildings have been internally modified by the introduction of some new walls to create new rooms. The external paint finish on the main building is very deteriorated. (September 1995)

June 1999
Both the main building and the two smaller buildings at the rear were repainted in 1998 and are in very good condition. The terracotta tiles on the main building have been replaced. The small rendered brick building was refurbished in 1991 in a sympathetic manner to the main building and is leased to AMSAT (Australian Marine Science and Technology) by the CSIRO.

Location

Banks Street, Yarralumla.

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National Trust of Australia (ACT), 'Australian Forestry School' file

Interview with Dr Leslie Carron, former student of the School, and acting principal in the absence of K.P. McGrath, 7 April 1999; notes on National Trust file.

Information provided by Alan Brown, former Division Chief of CSIRO Forestry and former Australian Forestry School student.

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Australian Archives, Series A1/15, Item 1929/1875, Australian Forestry School Canberra, Construction of Buildings; includes original plans of main Forestry School Building (a copy is now on the National Trust files).

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Australian Archives, Series A6269/1, Item E1/27/2495, Forestry School - donated timber.

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APPENDIX B HISTORICAL BACKGROUND

B1. HISTORICAL BACKGROUND

The following section provides a detailed contextual history of CSIRO Yarralumla. The section includes brief summary of Aboriginal history surrounding CSIRO Yarralumla (to be expanded within the ACHA prepared concurrently by ERM with this HA). A contextual history has been prepared previously by Peter Freeman Pty Ltd and was reproduced in the most current HMP (ERM 2018). As such, this section is also based on, and largely extracts this previous history. To supplement this history and provide additional historical data, ERM undertook a detailed analysis of previous historical information and archival research at the National Archives, CSIRO Black Mountain Library, the ACT Heritage Library and Trove (National Library of Australia). Additional information has been referenced accordingly.

B1.1 Application of the Australian Historic Themes Framework

The Australian Historic Themes Framework was developed by the Australian Heritage Commission in 2001. The framework provides a research tool for developing a wider recognition of nuanced heritage values. The application of historic themes (ATHs) can be used at national, state or local level to ensure that heritage objects, sites and events can be understood, assessed and presented within the context of a broad theme, rather than as singular items of interest. AHTs relevant to the site and its history have been identified and are used to guide the summary of history in this section. A copy of the AHT is located in *Appendix E*.

B1.1.1 Pre European Ethno History

AHT 2.1 Peopling Australia - Living as Australia's earliest inhabitants

Aboriginal people have been visiting the Canberra region for at least 21,000 years, as evidenced through the archaeological recordings of hundreds of sites associated with Aboriginal cultural in the Canberra region. The vast majority of these represent campsites, many of which have been destroyed by the development of Canberra's city and suburbs since the early 20th century.

As far as can be ascertained, the Aboriginal groups living permanently in the Canberra region spoke different, but related languages (all most likely associated with the dominant Ngarigo) (Cooke 1988; Flood 1980) (*Figure B1.1*).The local Aboriginal people were referred to by early white writers as the 'Kamberra', 'Kghambury', 'Nganbra' and 'Gnabra', all of which share some resemblance to 'Canberra' – the name of the capital announced at the Foundation Stone Ceremony by Lady Denman on 12 March 1913.The name 'Canberra' is believed to be an anglicised version of the Aboriginal words, meaning 'meeting place' (Gillespie 1991). Aboriginal people in the broader Canberra district are associated collectively within the Ngunawal boundaries. The Ngunawal people are thought to have lived in small, highly mobile, kin-based groups. Individual groups came together regularly to participate in trade, marriage and ceremonial gatherings. An early ethnographic account from Bennett (1834) records their diet as including flying squirrel, kangaroo, wallaby, wombat, koala, possum, emu, duck, swan, snake, goanna, platypus, any eggs, insects, fish, mussels, yabbies, plant tubers, berries and seeds.

Currently, four Aboriginal groups are representative of the Australian Capital Territory region. These groups are:

- Buru Ngunawal Aboriginal Corporation;
- King Brown Tribal Group;
- Mirrabee; and
- Ngarigu Currawong Clan.

Figure B1.1 Tribal boundaries of Canberra and wider region, Canberra region indicated by ERM in red (Tindale 1974)

B1.1.2 European Settlement

The following section on the history of Canberra has been extracted from the Australian Government's National Capital Authority website (NCA, 2020) and supplemented by additional archival research undertaken by ERM.

The first documented report of Europeans visiting the Canberra/Queanbeyan region is from 1820, when Charles Throsby passed through the area in search of the Murrumbidgee River. In locating the Murrumbidgee River, Throsby and his party followed the river to the Queanbeyan River and further into the eastern part of the Canberra region. The first European settlement of the area, later known as the Limestone Plains (or 'Manarro' as it was called by the local Aboriginal people), occurred when Joshua John Moore established a station at what is now Acton in 1823 (current site of the National Museum of Australia, 2.4 km from Yarralumla). When he sought to purchase the land in December 1826, he referred to the location as 'Canbery', a name later used with various spellings for all the surrounding areas.

Robert Campbell's Station was the second to be established in the Canberra district. Campbell, a wealthy Scottish merchant, was promised a 4000-acres (1618 hectares) grant as compensation for the loss of one of his ships. A site was chosen at Pialligo, where Campbell eventually had a substantial residence erected, which he named Duntroon. Duntroon became an important grazing property and remained with the Campbell family until it was taken over by the Commonwealth in 1910 as the site of the Royal Military College. Blundells Cottage, built in the 1860s, is one of the few remaining stone worker's dwellings, part of the Duntroon estate.

Further settlement occurred near the Murrumbidgee River in 1834 on a property named Lanyon, after John Lanyon the joint owner. His partner James Wright ran sheep and cattle, relying mainly on convict labour. Financial difficulties forced Wright to sell Lanyon to Andrew Cunningham in 1848 and move to Cuppacumbalong across the Murrumbidgee River. Andrew Cunningham erected a large, new residence at Lanyon and continued to develop the property, adding to it with the purchase of other grants, including Tuggeranong. Today, Lanyon is still a working property. Both Lanyon and Tuggeranong Homesteads are open to the public.

Early settlers in the region were met with open grassy plains and woodland which were useful for their flocks, though disliked the hunting fires of the local Aboriginal people as the fires destroyed grass too early in the dry season, endangering their flocks (Jacobs 1963:2). The earliest European settlers did not at first appear to heavily deplete or abuse the surrounding woodland. However, in the middle of the 19th century, similar to the rest of the country, settlers found grazing and prospecting easer in burnt-out forests. In Canberra, as large amount of woodland trees were also ringbarked by the settlers to provide more room for grass. The ringbarked trees then served a useful purpose, providing a major source of dry firewood during winter. The earlier settlers also made use of the native forests for much of their needs, such as durable poles for farm structures and later telephone lines. They utilised black cypress pine found along the Murrumbidge Gorge and Black Mountain and cypress pine (Jacobs 1963:2).

Around this period, in the same area, William Farrer engaged in the experimental development of strains of rustproof wheat at Lambrigg station. Farrer made a singular contribution to the Australian wheat industry and is recognised worldwide. He and his wife are buried on a hill behind Lambrigg, their graves being marked by a monument. Another station which contributed greatly to the development of the district was Yarralumla. Frederick Campbell (a relative of the Campbell family at Duntroon) purchased the property in 1881 and had a new residence built, which has since become Government House, residence of the Governor-General of Australia.

The 1860s and 1870s witnessed a new wave of European settlement. The Robertson Land Act of 1861 allowed Crown land to be purchased in much smaller lots. This heralded a rush by poorer settlers to purchase small areas, where they often eked out an existence in difficult circumstances.

Opportunities for recreation and sport had been very limited in the early years of settlement but, as the population increased, woolshed dances, balls, concerts, athletic sports and cricket were organised. The best cricketer in the area in the 1850s-60s was an Aboriginal man, Johnny Taylor. By the 1870s itinerant entertainers and circuses began to visit the district.

By the turn of the century, the district which is now the Australian Capital Territory was an established wool and grain producing area, with some stations well known for breeding horses and cattle.

B1.1.3 Canberra: The Nation's Capital

AHT 3.2 Constructing capital city economies

In 1908, the Yass-Canberra district was selected as the site of the future capital of Australia. The government declared that the new capital would be 'the finest capital city in the world' and announced an international competition for the design of the city. More than 130 architects and town planners from Australia, North America and Europe submitted plans. In May 1912, the government announced that Walter Burley Griffin, a young American architect and landscape architect, had prepared the winning design. Griffin was born in Chicago on 24 November 1876. He studied architecture at the University of Illinois and worked for some time in the office of Frank Lloyd Wright, America's most famous architect of the time. In 1911, soon after he started work on his plans for Canberra, Griffin married Marion Mahony, another architect and a gifted artist in Wright's office. Marion worked with Walter on the design of Canberra and presented his designs in a series of vivid drawings showing a capital city nestled into the hills and valleys of Canberra.

Griffin's winning design showed a chain of lakes along the Molonglo Valley and a triangular framework for a central national area laid out along major vistas from Mount Ainslie and Black Mountain. On the southern side of the central lake, Griffin proposed a terraced group of government offices leading to the 'Capitol', his place of the people (now the site of Parliament House). Lower hills in the valley were reserved for other government and national institutions, a university, military college and municipal buildings, including a city hall.

Griffin came to Australia in 1913. He was appointed as Federal Capital Director of Design and Construction in order to supervise the detailed planning of his modern city (*Figure B1.2*). But lack of money, the intervention of the First World War and bureaucratic obstacles made it difficult to realise his plan. Many of his main avenues and parks were laid out on the ground at that time but there are no buildings in Canberra designed by Griffin. Due to many differences with the administration and his own uncompromising vision, Griffin left Canberra at the end of 1920 to work as an architect in Melbourne.

Figure B1.2 Walter Burley Griffin's plan for Canberra (1918) with Westbourne Woods (current site of AFS) indicated by ERM (NAA #1145962)

After WWI, and under the guidance of the Federal Capital Advisory Committee, the construction of Canberra progressed. Road and sewerage development continued, tree plantings were carried out, and a temporary Parliament House was constructed. Shops were built at Civic, Manuka and Kingston, and offices, hostels, and houses were completed for 1,100 public servants (Lambert 2019). The temporary Parliament House (now old Parliament house, the Museum of Australian Democracy) was completed in 1926.

In 1924 the government gazetted the Griffin plan for Canberra so that no changes could be made without the approval of the Commonwealth Parliament. This protection has ensured that Canberra remains essentially as Griffin intended it to be — a logical expression of the site, and a city which fulfils a national capital's primary function as the Seat of Government.

The strength of Griffin's design is also shown by the ability of the plan to adapt to growth and change without the loss of its character and meaning (*Figure B1.3*

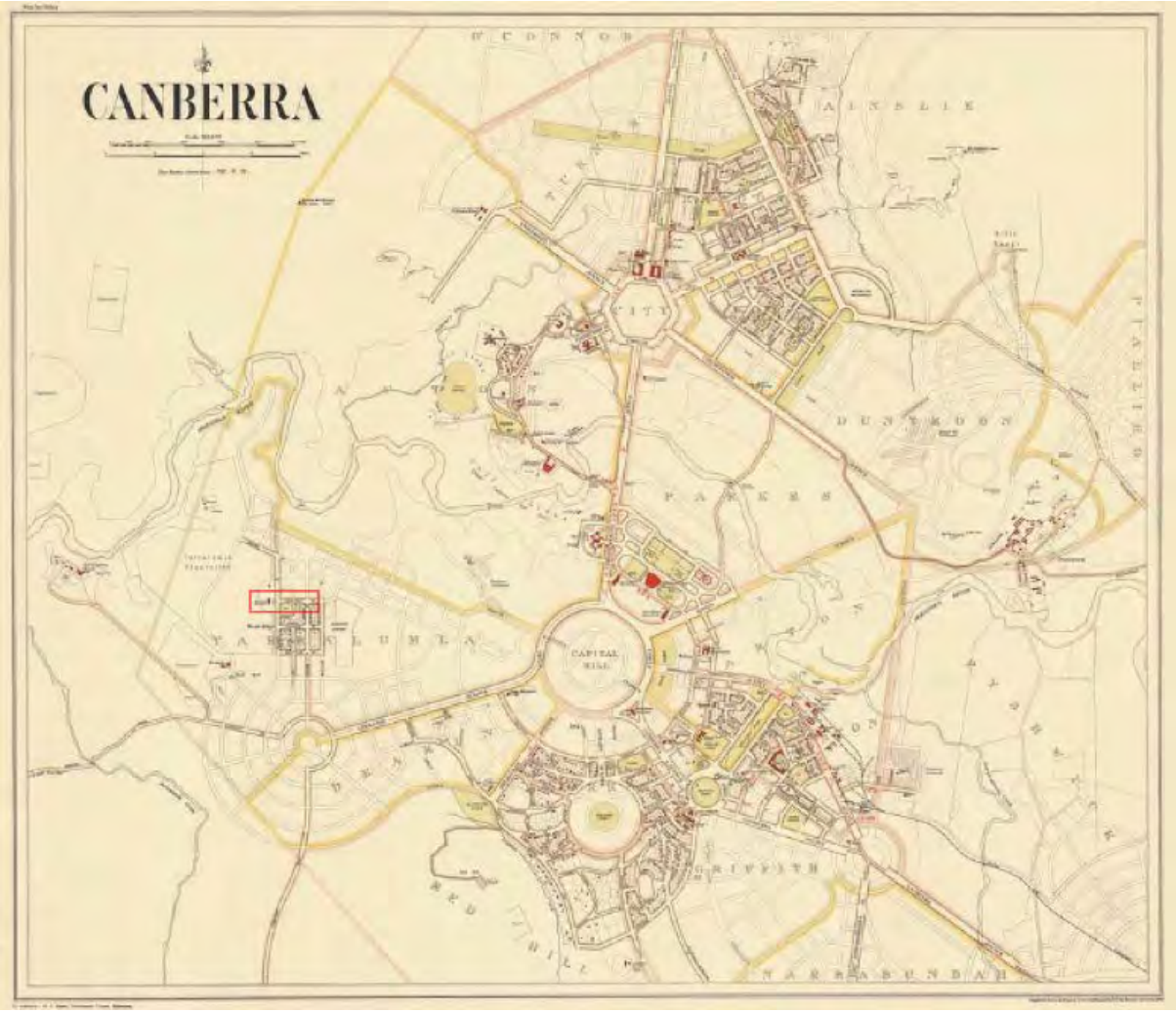


Figure B1.3 Plan of Canberra 1933 (based on Walter Burley Griffin's original plan) AFS site and Schlich Street indicated by ERM (https://pixels.com/featured/plan-of-canberra-1933-walter-burley-griffin.html)

B1.1.4 Early Forestry in Australia

AHT 3.4.4 Making forests into a saleable resource

In the early history of forestry in Australia, forests were generally seen as an inexhaustible source of wood for local or export needs. Successive governors and governments during the 19th century produced a series of orders, rules and regulations regarding the cutting of trees and on crown lands. It is unknown how much forest cover was removed during this period. Understandably, by 1870 the was sufficient concern in some influential circles that the poorly controlled cutting of trees on crown lands and the indiscriminate removal of forests on crown lands would soon leave no land for permanent production of wood. Moves were then made in Parliament towards the establishment of permanent reservations in states across the country, with M.R Jacobs stating 'forestry can be said to start in a country when the people make a deliberate effort to conserve, regenerate or plant forests' (Carron 1985: 5). During the mid-19th century state governments began to pass regulations that included the start of the system of licences, permits and concessions which was to become a feature of forestry across the country (Carron 1985:64).

It was South Australia that steered the way for forestry in Australia, with Surveyor-General G.W. Goyder playing a large role in the conservation of forests in the state in the latter half of the 19th century. Reacting to the alarming rate at which the already limited tree cover was being removed, Goyder was instrumental in having member of the South Australian House of Assembly F.E.H.W. Krickauff move a Return to Order in the House of Assembly in September 1870:

> *[…] as to what is the best size of reserves for forest purposes, and where they are to be made, to recommend the best and most economical means of preserving the native timber theron, and of planting or replanting the reserves as permanent state forests'* (Carron 1985:232 via Lewis 1975:14)

Under this order, one report was presented by Goyder with recommendations on the size and location of reserves, and another report was presented by Dr. R. Schomburgk, Director of the Adelaide Botanic Gardens, which included recommendations on species and planting locations, on a scheme to encourage landholders to plant trees, on the establishment of forest reserves and the appointment of two or three men 'who have a knowledge of forest culture' (Carron 1985:232 via Lewis 1975:14). As a result, the government passed the *Forest Trees Act No. 26* which was then followed by *Forest Board Act No. 8* in November 1875 following recommendations from Goyder pressing the necessity for reserves and recommending the establishment of nurseries, nominated planting regimes and the appointment of 'Conservator of Forests'. The Act provided for the appointment of a Forest Board, the establishment of reserves, and the appointment of a Conservator.

At the time, the State forest services in four states were administered by other departments, and personnel were generally forest rangers. Senior men held positions by Conservators or Directors of Forests, assisted by botanists. These people were continually urging the need for a specialised training for foresters. At the Interstate Forestry Conference in 1911 the Conservator of Forests of Victoria announced that his State had founded a Forest School at Creswick. However, due to the difficulty of getting teachers and the necessity of keeping down expenses, the Conservator utilised the services of lecturers 10 miles away at the Ballarat School of Mines. The Conservator of South Australia described at the same conference how it was proposed to train probationers in South Australia. Boys of age 18, with Senior Public examinations for their credit, would be accepted in February 1911 by South Australia's University of Forestry course. Those who pursued the study at the University and underwent a practical course of works in the State Forest Reserve, and who finally satisfied examiners, would be grated a diploma. The Conservator of Forests of New South Wales and the Government Botanist of Tasmania noted how there was no training of foresters in their states, but NSW had, under a committee of the Public Service Board, gone into the question and advised the appointment of a technical and experience forester to lecture on the subject at the Sydney University.

An important figure of this conference was Queensland's Director of Forests, Mr N.W. Jolly, though he did not attend in person. Jolly had been South Australia's first Rhodes Scholar, and had studied forestry under Sir William Schlich at Oxford (whom Schlich Street, Yarralumla is named after). His advice to the Conference was of such weight, Charles Edward Lane-Poole (Conservator of Forests for Western Australia 1916-1921) later repeated it in full in his paper on the History of the AFS (1934) stating 'here we have the genesis of one forestry school for all Australia':

> *I consider that the training of students for the State Forestry Department is a matter of very great importance, to which we should turn our attention first of all. Especially in connection with the treatment and regeneration of our natural forests, and their systematic management on a conservative basis, is a high standard of training essential […] I consider that no new Forest School should be established except in close proximity to a natural forest in which all the various operations and systems in vogue could be practised and studied* (N.W Jolly via C.E Lane-Poole 1934)

The University of Adelaide started training in Forestry to graduate level in 1911, with Mr N.W. Jolly as the first lecturer. As the need for a sound forest policy developed through Australia the need for trained foresters was recognised, but the number considered essential was very limited.

Because of the small number of graduates likely to be required, the Vice Chancellors of the Australian Universities resolved that the School of Forestry at the University of Adelaide should be the Australian centre of training in Forestry to graduate level. However, this view was not accepted by the State Forest Services, and most of the forests of Australia were owned by State Governments. Interstate Forestry Conferences agreed that there should be only one School of University standard in Australia, but there was a difference in opinion as to its location and its relationship to universities. There was a unanimous desire that the School should have the support of the Commonwealth Government (Jacobs via AFS History CSIRO Black Mountain Library).

Another Interstate Conference was held in 1912, though no reference was made to education and the next one was held in 1916, when the Minister for Forests of New South Wales read a paper on "The establishment of a Forest Training School", and the Minister of Forests of South Australia read another on "Provision by all states of facilities for students to attend the existing Forestry School". These papers, including one read by the Minister of Forests Victoria "Forestry Education and Training" 'raised some lively discussions' (C.E Lane Poole 1934). At the 1917 the Interstate Forestry Conference met in Perth, and Mr. Jolly read a paper on "Forestry Education and Forestry Research" in which he advocated that the Commonwealth Government establish both branches under one organisation. Despite this recommendation and resolution by the Conference attendees, it was not until 1920 that action was again taken to establish a national Forestry School.

B1.1.5 Charles Weston in Canberra

AHT 2.2 Adapting to diverse environments

It is well known that the trees which give Canberra much of its character and make it a garden city were due to the hard work and dedication of horticulture by T.C.G (Charles) Weston, Canberra's first Officer-in-Charge, Afforestation Branch and first Superintendent, Parks and Gardens. Weston was heavily involved in the conservation and afforestation of the Territory's natural resources and, from 1921, the landscape planting of the city itself.

After 1911, when Walter Burley Griffin won the international design competition for the design of the new Capital, rapid progress was made towards establishment of the new city. The new Federal Government acquired a site at Acton in 1912 and then acquired Yarralumla Station in 1913 where the temporary Canberra Brickworks was constructed that year. The Government building works were soon under way and before long, imposing public buildings were erected.

Griffin's vision for the Federal Capital included specific landscape designs. Whilst he studied architecture at the University of Illinois at Urbana, Griffin chose electives in horticulture, forestry and landscape gardening (Gillespie 1991). Colonial David Miller, the Administrator of the Department of Home Affairs selected Thomas Charles George Weston (1866-1935) to begin the task of testing and selecting the species of trees and plants suitable for the climate and soils of the Canberra region.

Weston was a well-educated and respected horticulturalist who had been trained in his native England though had worked for some time in Australia (*Photograph B1.1*). Weston worked for two years on a private garden in Pymble and in 1898, became head gardener at Admiralty House, Kirribilli. Weston's immediate supervisor Joseph Maiden, who was head of the Sydney Botanic Gardens. Prior to moving to Canberra, Weston became head gardener of Government House in Macquarie Street, then still under Maiden. Government House was then the Sydney residence of the Governor-General, which seemingly meant that, Weston for the Commonwealth (Gillespie 1991).

Photograph B1.1 Thomas Charles George Weston c.1926 (National Trust of Australia 1999)

Weston arrived in Canberra on 5 May 1913 to take up the permanent appointment of Officer-in-Charge Afforestation Branch of the Department of Home Affairs, Canberra. One of his first responsibilities was the grounds of the Yarralumla Homestead (Government House), taken over by his offices on 14 May 1913 (National Trust 1999).

Weston tending the gardens with the help of John Hobday whilst the Homestead was used as a guest house and under close public eye, the grounds continued this pattern until the 1920s when decisions on the permanent use of the building as Government house were taken. The Major refurbishment of the gardens, consistent with the new role of the old homestead as Government House, was designed by Weston, utilising his experience at Kirribilli House (*Photograph B1.2)*.

Photograph B1.2 Weston's design for Government House Garden, including the formal circular lawn c.1950 (National Trust via Government House 1999)

At the time of Weston's arrival, Canberra was a largely a treeless landscape, and Weston soon set about his task of transforming it. Within a few days he was inspecting potential sites for a permanent nursery (*Photograph B1.3*).

Charles Weston in Yarralumla

Weston chose the suburb of Yarralumla for the site of permanent nursery. A site known as 'Sheedy's paddock in Yarralumla' (originally called Westridge) was chosen to establish his tree and shrub nursery. Walter Burley Griffin probably named the area, as the same town plan shows his proposed names for the major roads, one of which was to be Westbourne Circuit (Canberra Historical Journal No.5 1980: 25).

Weston preferred the Yarralumla site as it was of sufficient size to facilitate extensions for testing and experimentation, its soil was 'on the whole good in quality' (National Trust 1999 via T.C.G Weston). The site was sheltered, and the water supply from Molonglo River was permanent and capable of being reticulated. The areas chosen for Weston's afforestation plan, both Shale ridge and the slopes of Mount Stromlo and '[…] elevated points on both sides of the Molonglo [River] (Canberra Historical Journal No.5 1980: 12) was to provide both soil retention and wind protection, with a view to reducing 'the force of westerly gales' (1980:12).

In addition, the Shale ridge site was on the fringe of the future city and fronting a main avenue envisaged in the then adopted Departmental Board plan for Canberra. Weston saw the site as the point from which the city's parks and gardens 'could be easily worked and superintended'. In addition, it was on value to the public, and those technically interested, as a place of 'beauty, interest [and] instruction' (National Trust 1999 via T.C.G Weston). The only critic of Weston's choice was Walter Burley Griffin, who saw the nursery site as inconsistent with his own plan for Canberra (National Trust 1999).

Photograph B1.3 View from Shale Hill looking north towards Black Mountain before 1914, looking across the present Westbourne Woods area (Canberra Historical Journal No. 5 1980)

Weston's design for the 160 hectare area was completed within a month and submitted to the Administrator on 10 June 1913. In the design, Weston laid down his approach to site development, which divided the land into four parts of equal size – Division A for the nursery (a 40 ha nursery/experimental area), Division B for Australian trees and shrubs. Weston was determined to redress a perceived lack of interest in Australian trees, particularly eucalypts of which Burley Griffin and Government botanist J H Maiden were also captivated, calling them a 'poets tree' (National Trust 1999). Division C was designated for an arboretum devoted exclusively to exotic trees species, and Division D for a pinetum (Canberra Historical Journal No.5 1980: 25 & Gray 1999). Weston envisaged Division B becoming 'an exclusive area to the cultivation of our Australian trees etc. and to demonstrate the tractability of such to cultivation' (Murphy 1963). Division C seemed to reflect Weston's English upbringing and also suggest that it was his background which would strongly influence his choice of trees for Canberra for he stated the Division should contain:

> *' […] trees that create the glorious Spring and Autumn effects for which the cool temperate countries of the world are justly noted and I predict that the chief ornamental charms of the future Federal City's surroundings will be in these same Spring and Autumn features'* (Weston, 1913 via Murphy 1963).

Division D was designed to 'bring together a magnificent collection of trees which are included under the name of conifers or cone bearers' (Murphy 1963). Weston's proposal received Ministerial approval in the same month, and with no alterations (Canberra Historical Journal No. 5 1980: 27). The south-eastern corner of this block was called Shale Hill Reserve and is now the site of CSIRO Yarralumla.

Work at the nursery began on the 20 October 1913, prior to Ministerial approval, with the removal of stumps. On 23 June 1914, the administrator formally approved:

> *'[…] the reafforestation of the reserve at Yarralumla embracing the western Slopes and the summit of the ridge at the brickworks including the shale Trig station, at a cost not exceeding 530 pounds'* (Gray 1999).

On 13 July 1914, Weston remarked that 'shooting of holes commenced' referring to the use of gelignite to blast planting holes (Canberra Historical Journal No. 5 1980). Over 12,400 planting positions were prepared on Shale Hill with the first trees planted 1 September. Planting then continued for the next three weeks when Weston noted in his diary that 'plans at Shale Hill for the present complete' (Murphy 1963). Half of the forty-one plots planted on Shale Hill contained four species which were already proven shade and shelter trees in the region – *Pinus radiata* (then called *P.insignis*), *P. pinea*, *P. halepensis*, *P. nigra* (then called *P. laricio*) (Murphy 1963). Weston also planted a number of Cypress pines (two of which remain and are located north of the AFS). These first plantings occupy what is now the CSIRO Yarralumla site, and the grounds of the entrance club house of the Royal Canberra Golf Club (Canberra Historical Journal No.5 1980). By 1917, the following plants were known to be growing on the grounds of what is now CSIRO Yarralumla:

- *Pinus canariensis;*
- *Pinus radiate;*
- *Pinus halepensis;*
- *Sequoadendron giganteum;*
- *Acacia baileyana;*
- *Quercus robur;*
- *Quercus palustris;* and
- *Pinus pinea* (Canberra Historical Journal No.5 1980:25).

Weston was an established and competent horticulturist and his achievements in Canberra are testimony to this. In 1918, Burley Griffin, as Director of Design and Construction, ordered Weston to plant Civic Square with native trees that were not appropriate for the climate and conditions despite their decorative qualities. It is documented that Weston knew the trees were incredibly susceptible to frost and appealed to the secretary of the department who sought a second opinion from Joseph Maiden. Weston's judgement was correct. The secretary was aware of Griffin's failing career and therefore deferred a final decision until the Federal Capital Advisory Committee had been created without him, and subsequently gave Weston sole control of horticultural planting (Gibbney 1986).

Charles Weston's nursery facilities successfully serviced the ever increasing demand for plants in Canberra. Between 1912 and 1920, 820,000 trees and shrubs were planted under Weston's expert direction (Gray 1999). By 1919, Weston had developed such a productive propagation facility that he was able to plant out approximately 193,000 plants per season (Gibbney 1988). Some 44,900 trees had been planted in Westbourne Woods in one decade of planting; 1914 to 1924 including a wide variety of eucalypts, acacias and conifers (*Photograph B1.4* to *Photograph B1.7*).

At the time, Weston reported 'present condition highly satisfactory' (National Trust 1999). In July 1921, the nursery was connected to the town's water supply after many years of pumping water from the Molonglo River, creating a much more efficient working environment.

Photograph B1.4 *Eucalyptus cinerea* Westbourne Woods (NAA #11658723)

Photograph B1.5 False Acacia Westbourne Woods (NAA:11658726)

Photograph B1.6 Red Stringy Bark Westbourne Woods (NAA 11658732)

Photograph B1.7 Single Seed Juniper Westbourne Woods (NAA 11658729)

Weston established the area as a trial ground and used a wide range of species, some of which have grown better than others over the years. Little to Weston's knowledge, Westbourne Woods provided the ideal setting and study area for the AFS, with C.E Lane Poole (key to the establishment of the AFS and first Principal) commending Weston for his dedication. Westbourne Woods Arboretum was placed on the Register of the National Estate (RNE) in 1987 as a historically important arboretum. Today many of Weston's plantings survive, including extensive radiata pine areas. Weston's Nursery would also play an important role in the next 86 years in creating and maintaining the city landscape of Canberra, and Westbourne Woods was to play a fundamental role in the establishment of the Australian Forestry School, Canberra, and become an essential tool for educating Australia's future foresters.

Weston retired in 1926 and was succeeded by Alexander Bruce who had worked as Weston's principal assistant since 1925. Weston received an MBE in 1927, notably for transforming Canberra into the garden city it is today. Weston died in 1935. Thirty species of pine; twenty-six species of conifers; sixty-three exotic hardwoods; fifty-one eucalypts; and ten other Australian trees have been recorded in the arboretum (Gray 1999). Most of Westbourne Woods is now occupied by the Royal Canberra Golf Club, which has greatly developed the pre-existing rudiments of a course since the old Club course was removed in 1962, during the construction of Lake Burley Griffin.

B1.1.6 C.E. Lane-Poole and the Australian Forestry School

AHT 6.2 Establishing schools

AHT 6.4 Building a system of higher education

AHT 8.10 Pursuing excellence in the arts and sciences – 8.10.5 Advancing knowledge in science and technology

When C.E Lane-Poole first arrived in Western Australia in 1916 to take up the position of Conservator of Forests, he was faced with the problem of Forestry Education (*Photograph B1.8*). At the time in Australia, there was only one technically qualified and professionally experienced forester, one Bachelor of Science teaching forestry, while there were four young men, recently qualified, serving during WWI. Despite the 1917 Interstate Conference resolution to establish a national Forestry School, by 1920 nothing had been done. Lane-Poole was getting increasingly frustrated at the lack of motivation and commitment to the establishment of national school, stating:

> '*I, in Western Australia, was in a desperate plight, and, faute de mieux, I was sending men to the Adelaide School […] South Australia is unfortunately situated as regards to forestry, for her area of indigenous forest is very limited […] the course is inadequate and the site a bad one* (C.E Lane-Poole 1934)

Lane-Poole presented at the 1920 Interstate Conference in Hobart. He stated at least 400 highly trained men were required in Australia, while at the time there appeared to be only four (excluding the heads of departments), all Adelaide men. In his paper, Lane-Poole outlined the syllabus of the school required and emphasised the advantage of a forest site away from a University. Lane-Poole recommended that the 1917 findings be adhered to, and that New South Wales be chosen and proposed the States should contribute to the maintenance cost of the School, and the Commonwealth Government should find the capital cost of buildings and equipment. The following resolutions were passed by the Premier's Conference in May 1920:

1. *That there shall be established an Australian School of Forestry for the training of officers in the profession of forestry; and that this school will be established in New South Wales.*
2. *That the control of the school be vested in a Council constituted by the appointment of an equal number of representatives of each State and the Commonwealth provided that the cost of the establishment be met by contributions from the States on a population basis, and a subsidy from the Commonwealth on the basis of one-sixth of the gross total contributions from the States* (C.E Lane-Poole 1934).

Photograph B1.8 Charles Lane-Poole c.1926 (NAA # 4994313)

The Council of Control, consisting of representatives of each of the States (except Tasmania) and the Commonwealth, was subsequently appointed, and met in Sydney on the 27th and 28th January 1921. It was agreed during these meetings that the success of the school relied on a guarantee by each state on a fixed number of nominated students bi-annually. Each state was able to provided nominated students, except for South Australia and Victoria.

While these recommendations were agreed to, and a resolution made, it was again a slow process with no state department or the Commonwealth taking up the challenge. Various states expressed concerns and proposed alternate ideas for forestry education, halting the process for a central school. In 1924, at the last Interstate Forestry Conference held in Sydney, a resolution was made that called for a central forestry school to be associated with a university within the Commonwealth. Lane-Poole commented on this resolution 'so was killed, for the time being, the idea of a central school' (Lane-Poole 1934).

When Lane-Poole returned to Australia in 1925 after a three-year assignment in Papua New Guinea, he was appointed forestry advisor to the Commonwealth Government and found that again, little had been done to progress the establishment of a national forestry school. In his new position, he was able to be more actively involved in the push for establishing an AFS. Lane-Poole brought the ACT Territory's afforestation issue to a head in April 1925. In a report to the Federal Parliament, he canvassed the possibilities for afforestation in various parts of the Territory including '[…] 1500 acres per year within the [Cotter] catchment' (Lane-Poole 1925:6). Lane-Poole was also clearly impressed with Weston's pioneering afforestation works in Canberra.

In August 1925, Lane-Poole wrote to the Commonwealth Government, urging them to actively work towards obtaining the co-operation of all States for the establishment of a school, and that the school should be a branch of a Federal Forestry Bureau and also emphasised the advantages that Canberra possessed as the ideal site for the AFS stating:

> *'[…] the Federal Capital Territory has a sufficiently wide range of forestry conditions to make a satisfactory site for the proposed school' and that '… students can acquire from Mr Weston's work much valuable knowledge […]*' (Gray 1999).

Lane-Poole also advised that the whole of the revenue of the forests should be reinvested in the forests and that a Commonwealth Forestry Products Laboratory should be established. A report in The Courier of 1 May 1925 was strongly supportive of Lane-Poole's proposals, claiming that they: '…should have been adopted years ago. One really efficient forestry school would be preferable to half a dozen inefficient schools' (The Courier, 1 May 1925).

The Commonwealth Government was now prepared not only to co-operate with the states, but to lead them. Lane-Poole credits the Commonwealth Government's sudden active participation to Western Australian Politian Sir George Pearce, who realised the national importance of the School. As a result of Lane-Poole's advice and the Pearce's encouragement, Prime Minister Bruce addressed a memorandum to the State Premiers informing them that the Federal Government proposed to establish a forestry school in Canberra, providing funds for equipment maintenance, staff salaries and incidental expenses, and to cover student fees, on the condition the States would nominate a certain number of students who would finance their own board and residence.

> *[…] This government proposed, provided the State Governments are agreeable to co-operate on the lines set out hereunder, to now establish a National Forestry School. The School will be situated in the Federal Capital Territory, in which area, the Government is advised by Mr Lane-Poole, the conditions are quite satisfactory […]* (Lane-Poole 1934).

The Vice-Chancellors of all the Universities were also advised of the proposal. While the University of Adelaide and the University in Western Australia were happy to provide students, New South Wales and Victoria were not as enthusiastic believing the new school would encroach on their existing schools.

Prime Minister Bruce was obliged to explain the nature of the new school; it was to be an institution of higher forestry training, as distinct from the lower schools that would accept youths whose education was not as high and could enrol after completing thorough schooling. The lower schools would simply train the students for the general work of the forests. It was documented that the higher school was to be in:

> '[…] *the nature of a post-graduate course, and students must be well-educated before they could gain admittance to this school […]. The school the Federal Ministry proposed to establish at Canberra would supply this training. It would not, however, do away with the necessity of the lower training. On the contrary, it was hoped that as a result of its establishment the other States would see the importance of setting up institutions of the Creswick (a lower training school) type*' (The Argus, 16 June 1925).

N.W. Jolly was suggested as the School's first principal, having been one of the Commissioners of Forests of New South Wales and was considered an acceptable appointment. Support of the School was secured with the undertaking to nominate three students annually for ten years. By this time, August 1925, the estimates for the School were closed and sketches and plans were being prepared.

It seemed unlikely that the School could be started by 1926 as only two of the six States were in agreement with Victoria calling for another Interstate Conference. Enthusiastic support was received by Queensland University, South Australia was urged to decide and while it agreed to the proposal, would not nominate students. The disapproval of remaining states was a serious problem, as the School could not function without the support of each State. Sir George Pearce decided to force the States to comply, deciding the establish the School without all initial State agreements and so forcing the States to send students, as there was nowhere else imparting higher forestry training in the country.

In March 1926 Prime Minister Bruce commented that the absence of Victorian students was an intentional response by the Victorian Government which, although previously agreeing to nominate three students annually, was dissatisfied with the temporary location of the school at the university of a sister State. Prime Minister Bruce appealed to the Victorian Government when he stated that:

> *'[…] it was hoped that better counsels would prevail, and that no question of State jealousy would be allowed to bar the road when the question at issue was the education of Australia's future foresters'* (The Age, 26 March 1926).

All States agreed to the proposal except for South Australia, which finally relented and also offered to house the national school until the building planned for Canberra could be constructed (Carron 1977). The Australian Forestry School began its operations at Adelaide University in April 1926, with N.W. Jolly as Professor. By the start of the school year, the AFS had the following sixteen students attending the school:

- 4 freelance students;
- 2 nominated by Western Australian Government;
- 3 nominated by New South Wales Government;
- 5 nominated by Queensland Government;
- 1 nominated by South Australian Government; and
- 1 Departmental Officer from South Australia.

Although Victoria had yet to nominate any students, the Prime Minister wrote to the Premier of Victoria, noting that the State had decided to send two students to the Adelaide School and asked when it proposed to nominate them officially to the AFS (NAA: Letter to the Victorian Premier from the Prime Minster 28 May 1926). These two Victorian students soon joined the original sixteen (*Photograph B1.9*).

Photograph B1.9 The first AFS class, Adelaide University c.1926 (LT Carron 2000)

The Establishment of the Australian Forestry School, Yarralumla

The AFS operated at the Adelaide University for one full school year whilst the school building at Yarralumla was designed and constructed. N.W. Jolly, took the role of principal of the AFS at the Adelaide University while the school was being constructed.

A major factor in the 1925 decision to locate the forestry school at the Westridge site was the proximity to Thomas Weston's arboretum, Westbourne Woods, providing an epicentre for training and forest experimentation. In Lane-Poole's 1925 report to the Commonwealth he praised Weston's work:

> *'…His arboreta to-day represent the labour of many years, and in them may be seen specimens of all the trees that can possibly be grown in that climate. His pinetum is of particular value, containing as it does a fine collection of conifers. This alone will save the forester who starts planting for timber ten years of tiresome and, with many species, disappointing experimental work'* (Gray 1999).

An article in The Australian Forestry Journal of 15 May 1927 also praised the benefits of the Canberra location, claiming that Westbourne Woods:

> *'[…] will prove invaluable for field demonstration in conjunction with lectures. Students therefore […] will be able to study the growth and habits of the various timber species represented in the arboreta'* (The Australian Forestry Journal, 15 May 1927).

The Australian Forestry School building was designed by architect J.H. Kirkpatrick, assisted by Principal Architect of the FCC, H.M. Rolland (*Figure B1.4*). The Federal Capital Commission (FCC) had been established as the body responsible for providing accommodation and office space for the transfer of Federal Government from Melbourne to the new capital.

The Australian Forestry School, however, was one of only two institutions (the other being the Commonwealth Solar Observatory at Mount Stromlo) provided by the FCC that were not related to the transfer of government (Charlton et. al 1984).

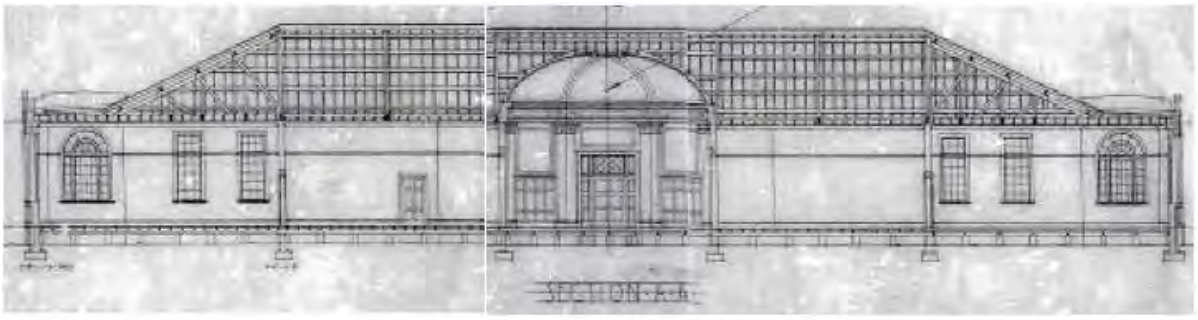


Figure B1.4 Amended section of the AFS building (NAA via 2018 HMP)

The plan of the building included an entrance opening into an octagonal domed hall and also allowed for a vestibule with two offices on either side, two lecture rooms, a laboratory, typist's room, office, drafting room, a large museum, library, store, cloak room, switch room and lavatory (*Figure B1.5*)

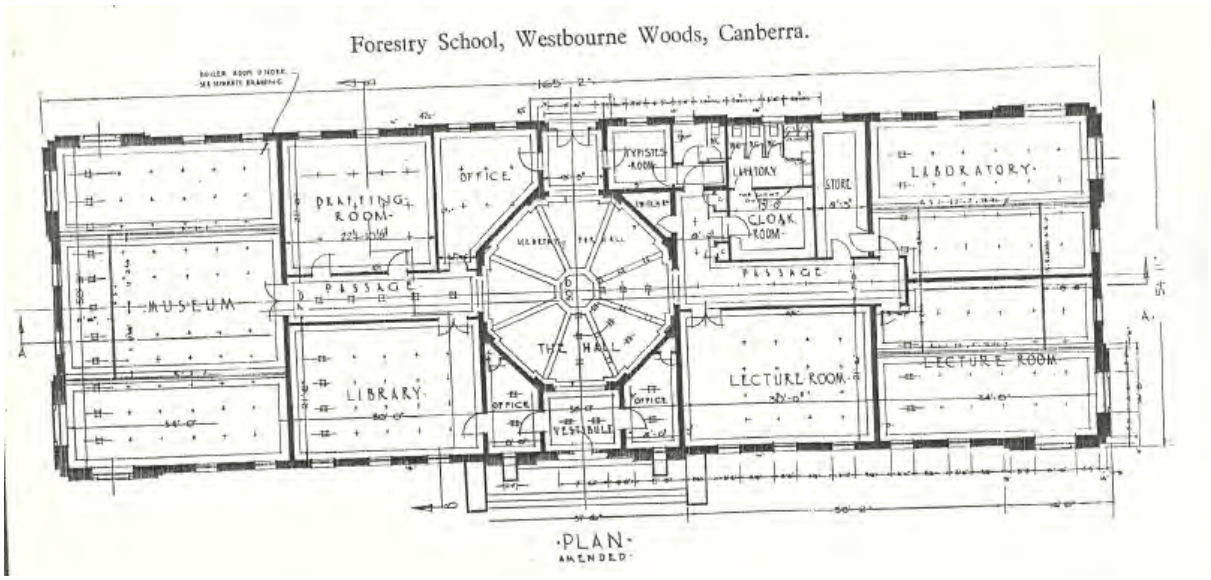


Figure B1.5 Amended floor plan of the AFS building (CSIRO Black Mountain Library)

Charles Lane-Poole suggested it would be fitting for a national forestry school to be constructed entirely of Australian timbers and requested donations from the various States. Construction commenced on the 1 July 1926, with the building to be completed by 11 April 1927, in time for the start of the teaching term. While the AFS was being constructed, the workers were put in pre-fabricated Worker's Huts. These huts were demolished when the building was completed (ERM 2018) (*Photograph B1.10*).

Photograph B1.10 The worker's huts, 1927, these were demolished when the AFS was completed (ANU archive via 2018 HMP)

At the same time the AFS was being constructed, a residence for the Acting Principal Lane-Poole was also being constructed. The house, called Westridge House, was completed in January 1928 at a considerable cost of £4880 (*Photograph B1.11*). The house was constructed close to the AFS, within a short walk 100 metres to the north and along Banks Street. Lane-Poole had gained permission from the Commonwealth to engage an architect of his choosing, for a total of £3000. Lane-Poole's wife Ruth was an interior designer engaged to redecorate the suite at Yarralumla (Government House) to be used by the Duke and Dutches of York in 1927, and is believed to have influenced the choice of the artistic architect Harold Desbrowe Annear to design Westridge House (Boden 1983).

Photograph B1.11 Westridge House c.1930s (NAA #3167296)

Charles Lane-Poole visited the site on 7 October 1926 and wrote to the Secretary of the Home and Territories Department to report on the progress of the School buildings. He was very impressed with the location of the buildings writing:

> *'[…] The eastern or front walls are about six feet high now. At the rate of progress that has been shown, the building should easily be completed before March'*.
>
> *'[…] The school buildings situated as they are on the Eastern fall of Westridge, and within the arboretum, have a very fine outlook to the East over the plain towards the civic centre… The fact that there are clumps of pine trees behind both sites [Australian Forestry School and Westridge House] makes the situation a very desirable one both educationally and aesthetically […]*'

Lane-Poole was particularly proud of the use of Australian timber within the main Forestry School building:

> *'[…] I think this is the first building to be erected in the new Capital of Australia in which the structural and joinery timbers are purely Australian grown.'*

By October 1926, Tasmania had donated a myrtle floor, Victoria a mountain ash floor, Western Australia a jarrah floor and South Australia 3000 feet of Insignis pine wood for internal fittings. Lane-Poole documented that both New South Wales and Queensland 'refuse to give us any', demanding payment for their timbers. Timbers which had been purchased included:

> '*Spotted gum for the floor of the laboratory, and one lecture room; black butt for the drafting room; cypress pine for the cloak room, and small offices; forest mahogany for one of the front offices; Queensland walnut for the Principal's Office. This office will be half panelled in cedar. The museum, which is a very large room will be floored in tallow wood. Six of the doors will be Queensland maple. The panelling of the octagon hall will be in Blackwood and Queensland walnut. All the structural timbers are also Australian, New South Wales hardwoods being the principal ones used for joists, etc. The rafters are of hoop pine.*'

Lane-Poole commented on the building in the CSIR Journal:

> '*The building itself, both as regards site and dignity of architectural design, may well challenge comparison with any others in Australia's capital. In the interior construction, Australian timbers have been used throughout, and the handsome effect obtained should provide a most salutary object lesson to a public mind, which is obsessed with the idea that only exotic timbers are suitable for building construction*.' (Lane-Poole 1927- 28).

Completion of the building by March 1927 was not as easily achieved as Lane-Poole had envisaged in October 1926 (*Photograph B1.12*). Distressed on the works still remaining to be undertaken three weeks before its scheduled opening, Lane-Poole wrote to the Federal Capital Commission on 14 March 1927:

> '… *I visited Canberra […] and saw the secretary. It is fortunate I made the visit for I found that the progress of the school is so slow that I have grave doubts as to the completion of the building by (31 March) the date promised by Mr Butters* (Chief Commissioner of FCC)' (Lane-Poole 1927).

Photograph B1.12 The AFS during construction prior to landscaping, 1927 (NAA #3050165)

Despite being behind schedule, the AFS opened on the intended date, 11 April 1927 with its first students also beginning the first school term (*Photograph B1.13*). Although only two rooms were completed at this time; the Principal's Room and the Drafting Room. Lane-Poole, as newly appointed Commonwealth Inspector-General of Forests, wrote to the Secretary of the Home and Territories Department expressing his disappointment with the state of the building and the absence of furniture, which was to have arrived in time for the commencement of the school. He claimed lectures were being delivered, however, 'in a partly finished lecture room, with borrowed furniture' and that he could make no estimate of the date the workmen would be out of the building, 'Nor do I place any reliance on the Commission's promises in this matter' (Lane-Poole 1927). Although the AFS had not yet completed construction, it was an eye-catching element in the landscape, surrounded by Weston's mature pine forests (*Photograph B1.14* and *Photograph B1.15*).

Photograph B1.13 First AFS class at the new School, Yarralumla (NAA # 3086146)

Photograph B1.14 AFS facing north, soon after construction (NAA #1991225)

Photograph B1.15 The AFS soon after construction and landscaping, c.1927 (NAA # A3560, 6626)

When the School opened its doors on 11 April 1927, it was the first tertiary institution in the Federal Capital. There were sixteen students, representing all the Australian States, and three permanent lecturing staff: C.E. Carter, H.R. Gray, and A. Rule. Charles Lane- Poole, who was appointed the Commonwealth Inspector-General of Forests on 29 March 1927, became Acting Principal until a permanent principal could be engaged (The Melbourne Sun, 30 March 1927).

N.W. Jolly, the principal at the Adelaide University (hosting the AFS at the time) had retired late in 1926 to become the Chief Commissioner of the New South Wales Forestry Service (Carron 1977). Following Jolly's retirement from teaching, Lane-Poole then took over as Principal of the AFS. The official AFS building was completed on 20 June 1927 at a cost of £22,022 and formally opened by the Governor-General Lord Stonehaven on 24 November 1927, in the presence of the Prime Minister, Stanley Bruce; Mr Marr, Minister for Home and Territories; Sir George Pearce, Vice President of the Executive Council; Members of Parliament and Canberra residents (Sydney Mail, 30 November 1927).

The completion of the AFS required a large amount of additional expenditure. The layout plan and a large portion of the external detail was altered considerably from the original plan, on which only an estimate was based. Also, the final internal finishes were generally more expensive than anticipated. The additional cost was attributed to the lack of time the architect had to prepare the drawings before the Commission. A further contributing factor was that, prior to construction, the site had also not been defined, leaving excavation costs out of the original estimate. It was also noted that the use of all Australian timbers from every state increased the expenditure:

> *The fact that sample timbers were used in almost every room, and were obtained from practically all over the Commonwealth added considerably to the expenditure and to the labour* ('A. Bancroft' Superintendent Building Construction Department memo to the Federal Capital Commission 16 Aug 1927).

The Forestry School building is a Stripped Classical design, rectangular in shape and measuring 50 metres by 17 metres, without excessive ornamentation. Round arched openings form the entrance and accentuate the projecting end bays, whilst the parapet rises in subtle steps over the entrance, encompassing projecting bays with vertical openings. The entrance opens into an octagonal domed hall, panelled in Australian timbers and featuring a remarkable parquetry floor (*Photograph B1.16)* providing:

> '… *A perfect demonstration of the handsome pattern effect obtainable with our different coloured hardwoods*' (Sydney Mail, 30 November 1927)

Photograph B1.16 Main entrance hall to AFS (facing north) c.1927 (NAA #3097919)

A crest, with the school motto, 'Mihi Cura Futuri', translated as 'to us is entrusted the future' (devised by N.W. Jolly, first Principal of the School) is located above the front entrance (*Photograph B1.17* and *Figure B1.6)*. The flagpole, also above the main entrance, flew the Australian Forestry School flag.

Photograph B1.17 AFS emblem above main entrance door (ERM 2020)

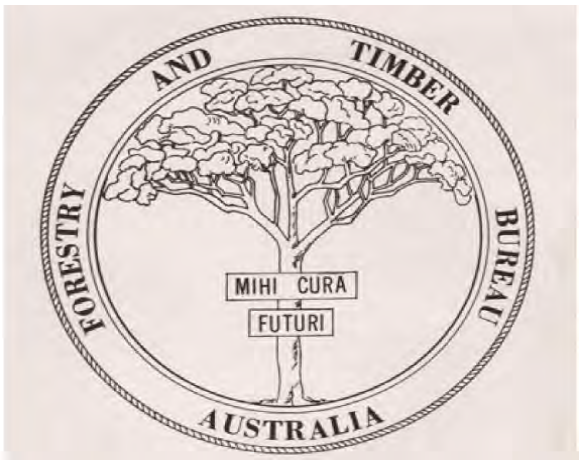


Figure B1.6 AFS Emblem (NAA #7827675)

The roof of the AFS cost a considerable amount more than anticipated, due to the use of Hoop Pine roofing timbers throughout in lieu of the more generic hardwood, including exclusive ribs to the domed ceiling and groined ceilings. This cost an additional £356. The front entrance was framed in Maple and glazed with Luxfer in lieu of a steel frame and specified glazed muffled glass. The panelling in the Principals Office was of Cedar, also not included in the original specifications. Additional hall and vestibule panelling was of Walnut panels with Blackwood framing in lieu of the allowed Maple. Additional costs were also involved in the firring[1] and plastering of Oregon timber joists and encased with metal lathing over the Laboratory and Museum (A. Bancroft' Superintendent Building Construction Department memo to the Federal Capital Commission 16 Aug 1927).

The hardwood flooring of the AFS was also carefully selected by Lane-Poole as noted above, with some minor changes to the final construction details. In the Museum, the flooring was of Tallowood and the corridor Ash (*Photograph B1.18* and *Photograph B1.19*). The Typists was also Ash (donated) and the Lecture Room A was Victorian Ash, Lecture Room B, Spotted Gum, and Lecture Room C, Blackbutt (*Photograph B1.20*). The Offices and entrance was Red Mahogany and the Principals Office; Crows Ash (with Cedar wall panelling). The Cloak Room and Switchery; Remarkable Pine and the Library; donated Tasmanian Myrtle (*Photograph B1.21*). The Laboratory flooring; Jarrah (a portion of which was donated). The ceilings in each room were painted 'Stag White'.

[1] "**Firring**" is a U.K. term for wood strips which are usually 50 mm wide, tapered and fixed above wood roof joists to provide drainage falls below roof boarding

Photograph B1.18 AFS Museum c.1927 (NAA #3097920)

Photograph B1.19 AFS Museum (NAA via 2018 HMP)

Photograph B1.20 Lecture Room, AFS, c.1927 (NAA #3097921)

Photograph B1.21 AFS Library c,1927 (NAA #3097918)

By the end of 1927 and early 1928, the landscaping was completed. Key plantings included the Ponderosa Pine and Roman Cypress. On either side of the east façade of the School's front entrance driveway, even groupings of *Pinus ponderosa* were planted, on the south-east side, a row of *Betula pendula* or silver birch (then called *Betula alba*) was planted to frame the Ponderosa (*Photograph B1.22*) (Federal Capital Commission map c.1928 via ACT Heritage Library). A number of Pinus nigra, likely part Weston's plantings, were saved from excavation and can be seen to the north of the AFS (*Photograph B1.23*).

Photograph B1.22 The AFS following completion, the first trees are established c.1928 (NAA #11777550)

Photograph B1.23 AFS c.1927 (NAA #3155231)

In November 1927, the Public Service Board approved the advertisement for vacancy at the AFS, calling for suitable applications for role of the School's Principal to take over from the acting Principal Lane-Poole. While five candidates applied for the position, only one was deemed suitable and came with a recommendation from Lane-Poole. Dr J.M. Cowan, then living in England, was considered by both N.W. Jolly (NSW Forestry Service) and Lane-Poole to be the most suitable candidate. A yearly salary of £1,100 was negotiated, which at the time was the maximum salary for a position by the Public Service Board, £320 was also required to cover Dr. Cowan's relocation from England (Department of Home Affairs letter to the Treasury 13 Sep 1929). Despite this correspondence and Lane-Poole's recommendation, Mr. Cowan was never appointed Principal. Lane-Poole remained Principal of the AFS up until 1944, when Dr. Maxwell Ralph Jacobs was appointed Principal and Lecturer in Silviculture in December that year (AFS Journal Vol 42 No. 3 pp: 138-141).

B1.1.7 The Depression and World War 11

The school is documented to have struggled throughout the Depression, barely surviving due to the obvious financial difficulties of the period and a lack of support from the States. Victoria for instance, which had previously expressed jealously over the decision to locate the national school in Canberra, did not send students after 1932, preferring to send its nominees to the forestry school at Creswick, leaving a small remaining number of staff and students. In 1932, the AFS was low on numbers. With only 22 staff and students attending the school (*Photograph B1.24*.

Photograph B1.24 The Staff and students of the AFS, 1932 (AFS History Files ANU via 2018 HMP)

The only recorded changes to the AFS in the early years of the Depression was the installation of a Stove House. The installation of a Stove House was first requested by the Inspector General of Forests in 1928, however in each instance of tenders being released, the applications each came back too costly. The Federal Capital Commission decided instead to undertake the work by Departmental labour (Letter to respective tender application, Federal Capital Commission 23 November 1928).

The Stove was designed as a series of frames fastened to the AFS in the fashion of a lean-to (*Figure B1.7*). The total cost for the Stove House was to be £75. Work was requested by the Department of Home Affairs 17 April 1930, with requests made for the work to be completed before 30 June 1931 (Letter, Department of Home Affairs to the Federal Capital Commission 17 April 1930).

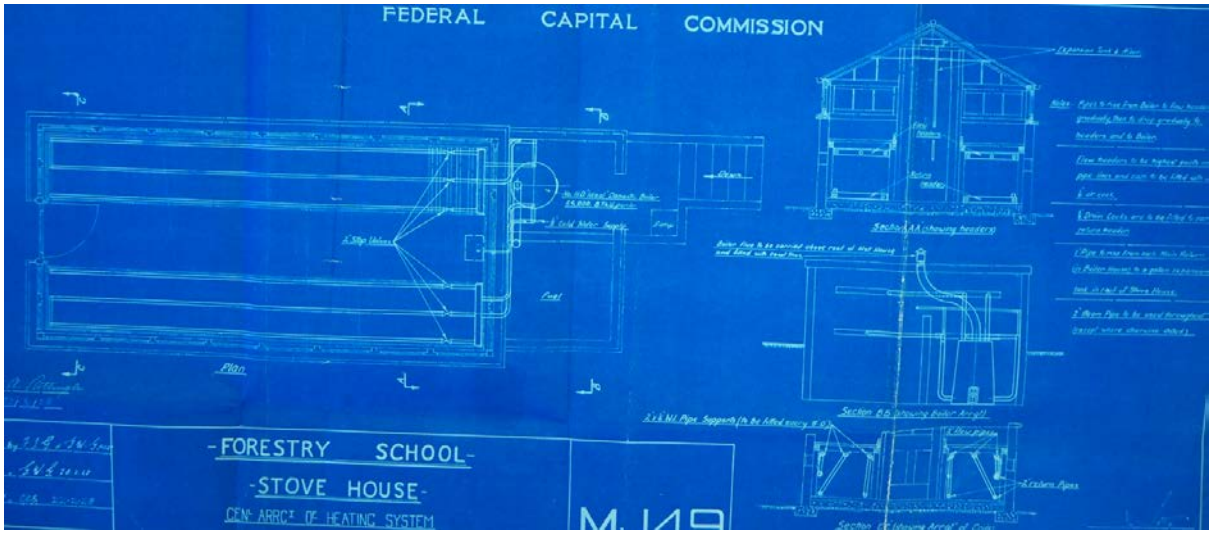


Figure B1.7 Forestry School Stove House plans, 1928 (NAA series A292/1 #329312)

In 1931, both Victoria and South Australia made concerted effort to have the AFS closed. W.F. Dunn, Minister for Forests, wrote to Premier and Colonial Treasurer J.T. Lang on 18 June 1931 arguing for the protection of the AFS by the Commonwealth:

> *I hope therefore, that you will make a very strong protest to the Prime Minister against the proposed closing of the School* (Letter to J.T. Lang by W.F. Dunn 18 June 1931).

During this tumultuous time for the AFS in 1934 the national importance of the School was recognised by the Commonwealth Forestry Bureau through an application to the Department of Interior to use the prefix 'Royal' in conjunction with the AFS (NAA #1030489). The Secretary of the Commonwealth Forestry Bureau R.G. Kappler argued that the closing of the two schools of forestry in New Zealand (Auckland and Canterbury) left the AFS as the only school in the Southern Hemisphere engaged in training foresters of professional status (NAA #1030489) and that the educational standard of the AFS was deserving of the 'Royal' prefix. While it was noted that the AFS was indeed the only remaining forestry school of higher education, the Prime Minister decided the school, in the short period since its establishment, had 'not yet reached a standing sufficiently high to justify the Government in asking that the distinction, mentioned above, be granted by His Majesty (Letter from Secretary H.C. Brown 18 Dec 1934).

It was from 1934 that Dr Maxwell Ralph Jacobs began to work under Lane-Poole (as Inspector General of Forests) as a Research Officer for the Forestry Bureau and a lecturer at the Australian Forestry School (*Photograph B1.25* and *Photograph B1.26*). Dr Jacobs had previously been the Chief Forester of the Federal Territory and having received the Australian Scholarship in Forest Management he finished his post-graduate studies at the Imperial Forestry Institute, Oxford and the Forestry School at Tharandt in Saxony where he received his Doctorate. At this time, the AFS was limited to the area around the School and Westridge House (*Figure B1.8)*.

Photograph B1.25 Dr. Jacobs and officials at the AFS, c.1955 (NAA #5281163)

Photograph B1.26 Dr. Jacobs at the AFS, c.1955 (NAA #5281164)

In 1936, only one student was nominated for the School, and as a consequence, Charles Lane-Poole accepted none for that year; second year numbers were down to four. The school continued to function, as a result of lobbying by the newly formed Institute of Foresters, but the lecturers and research staff were put on 'half-time', teaching those students who were already enrolled and completing second-year studies (Carron 2000; Meyer 1985).

Figure B1.8 Plan of Canberra, 1933 with the AFS indicated by red outline (Government Printer Plan/NAA via 2018 HMP)

The AFS, desperately suffering from a lack of support, and not being attended by a sufficient number of students, was facing the possibility of closure. The Prime Minister announced that, if sufficient student numbers were presented the AFS would open as usual the following years, however if this did not happen, the AFS would close and the Government would accept a proposal to develop a research side for the Commonwealth Forestry Bureau (House of Representatives response to enquiry re: AFS closure 1 May 1936).

The lack of students and Commonwealth funding resulted in there being no requirement to construct additional buildings. The only addition to the site during the Depression was the commissioning of two tennis courts, completed in 1930 and located to the west of school. It is documented that Charles Lane-Poole had recognised the need for students to have a recreational facility available to them, and requested two tennis courts be constructed for use by staff and students. Approval was given, but with a limited budget much of the work was carried out by the students themselves (AFS 1929).

The school experienced some relief during the last four years of the 1930s. Student numbers improved slightly and money became available for construction following the Annual General Meeting of the Institute of Foresters of Australia held in Perth in June 1937. The central discussion of the General Meeting was the national importance of the AFS and great need for maintenance:

> '*Members of the Institute are unanimously of the opinion that the maintenance in the Commonwealth of adequate facilities for high training in Forestry is a national question of major importance*' (Letter to the Prime Minister 7 June 1937).

Support and further funding soon became available from the Commonwealth, guided largely by Senator Sir George Pearce:

> '*I frequently discuss the Forestry School with the Minister for Interior (Mr. Paterson) and my recollection of the last conversation is that the outlook is much more hopeful than it was previously, and that one or two states, which previously had indicated they did not intend to send students to the school, had altered that decision. The Government […] believes that the school plays a very valuable part in our national economy*' (Extract from Hansard – Senate, 30 June 1937)

A continuing small student intake and the developing World War II situation prompted Lane-Poole to consider closing the school in 1940 for the duration of the war. Lane-Poole was hoping to join up himself to command an Australian Army Forestry Company but was unsuccessful, the command going to another forester, Cyril Cole (Meyer 1985). During this time, despite uncertainty, the research Nursery was developed. Dr. Jacobs began his early experiments on *Pinus radiata* around this time from 1939, releasing his first paper on the topic 'Experiments with cuttings of *Pinus radiata* (Bureau Bulletin No. 25 1939). The Nursery was in continued use from the 1940s to the 1980s for propagating *Pinus radiata* (AFS 1929).

In early September 1942, the Vice-Chancellor of the Melbourne University (Mr. JGD Medley) moved that the University withdraw from the arrangement to recognise the AFS as the only school of higher forestry education and proposed to set up a course for the Bachelor of Science in Forestry at Melbourne University, based on the Diploma at the Forestry School at Creswick, Victoria (NAA #B346/1/3 Part 2 Series A461). This caused further tensions between states, and again between the AFS and Melbourne University as they had still failed to send any students since 1932. The Premier of Victoria was reminded on 17 September 1942 that the State of Victoria gave support to a series of resolutions on the 1928 British Empire Forestry Conference, the principal one being:

> '*That the higher training of Australian forest officers be recognised as a matter for the Canberra school only and that the training of overseers, foreman and similar grades is a matter for each state*' (Letter to the Premier of Victoria 17 Sep 1942).

In September 1942, the Minister for the Interior announced the decision to close to AFS upon the completion of the academic year, and not to accept new students until after the termination of the war. At the time, seven students were attending the school who were to finish out the school year. In addition, seven new students had been nominated, six from NSW and one from Tasmania though these numbers had been reduced due to enlistment of four students in the Australian Infantry Forces (AIF). With the lack of students enrolled and the unlikelihood that any more would be nominated, the AFS was seen as an economic burden, and the continuance of the AFS could not be justified (NAA #B346/1/3 Part 2 Series A461). On 2 September 1942 the Premiers Department of Perth wrote to the Prime Minister (individual unknown) imploring the decision to close the AFS to be overturned.

It was argued that for any post-war reconstruction, Forestry would play an important role. Australian forests were greatly depleted by the demand of the war effort, timber that was normally imported was instead taken from Australian forest reserves (NAA #B346/1/3 Part 2 Series A461). It was argued that the AFS was not a school that could be shut down at will, periodically. The AFS, as represented by the teaching staff at the time, was regarded as an institute of continuous research, and that any interruption would be 'distinctly detrimental to its vital functions' (Premiers Department Perth 21 Sep 1942). The letter states in conclusion:

> '*The Commonwealth Government, in conducting the Australian Forestry School, is performing a function which is vital to the well-being of the Nation. The value of the service it has already rendered in this connection requires no comment. The present position in Australia is such that any discontinuance of the service, leading to a shortage of trained foresters in the future, might react disastrously on the forest policy of the Commonwealth'* (Premiers Department Perth 21 Sep 1942)

By the 2 December 1942, the Minister of the Interior had decided to rescind his decision to close the AFS for the duration of the war (memo from the Prime Minster 2 Dec 1942). The School continued to function as normal, with post WWII years seen as a period of growth for the AFS. The Board of Higher Forestry Education, established in 1930 by the State university representatives, to act as link between the universities and the school and to advise on curriculum and examinations, agreed it was best to keep the school open despite a small fluctuating intake for each of the war years. Students who would have otherwise enrolled at the school enlisted in the armed forces. In 1946, the Australian Forestry School became the Division of Education of the new Bureau (Carron 1977).

The Forestry and Timber Bureau Museum (10)

On 19 July 1938 the Department of the Interior released invitation of tenders for the construction of the 'New Museum and Store and Forestry School' with plans and specifications to be supplied by the Works & Services Brach, Acton (NAA: A295/1 B535005). The new museum building was to be situated behind the AFS to the west, and south of the existing Workshop (today the former 'Seeds Store (17)) (*Figure B1.9*). According to the specifications for the new Museum, the building was to be:

> *[…] one storey only, with reinforced concrete foundations, brick walls, concrete and wooden floors, tiled roof, box frame windows, timber and glazed doors, fibrous plaster ceilings, electric light and power, heating, drainage and stormwater services – as well as timber shelving, cupboards, bins etc*. (Specifications for the new Museum, Works and Services Branch 19 July 1938).

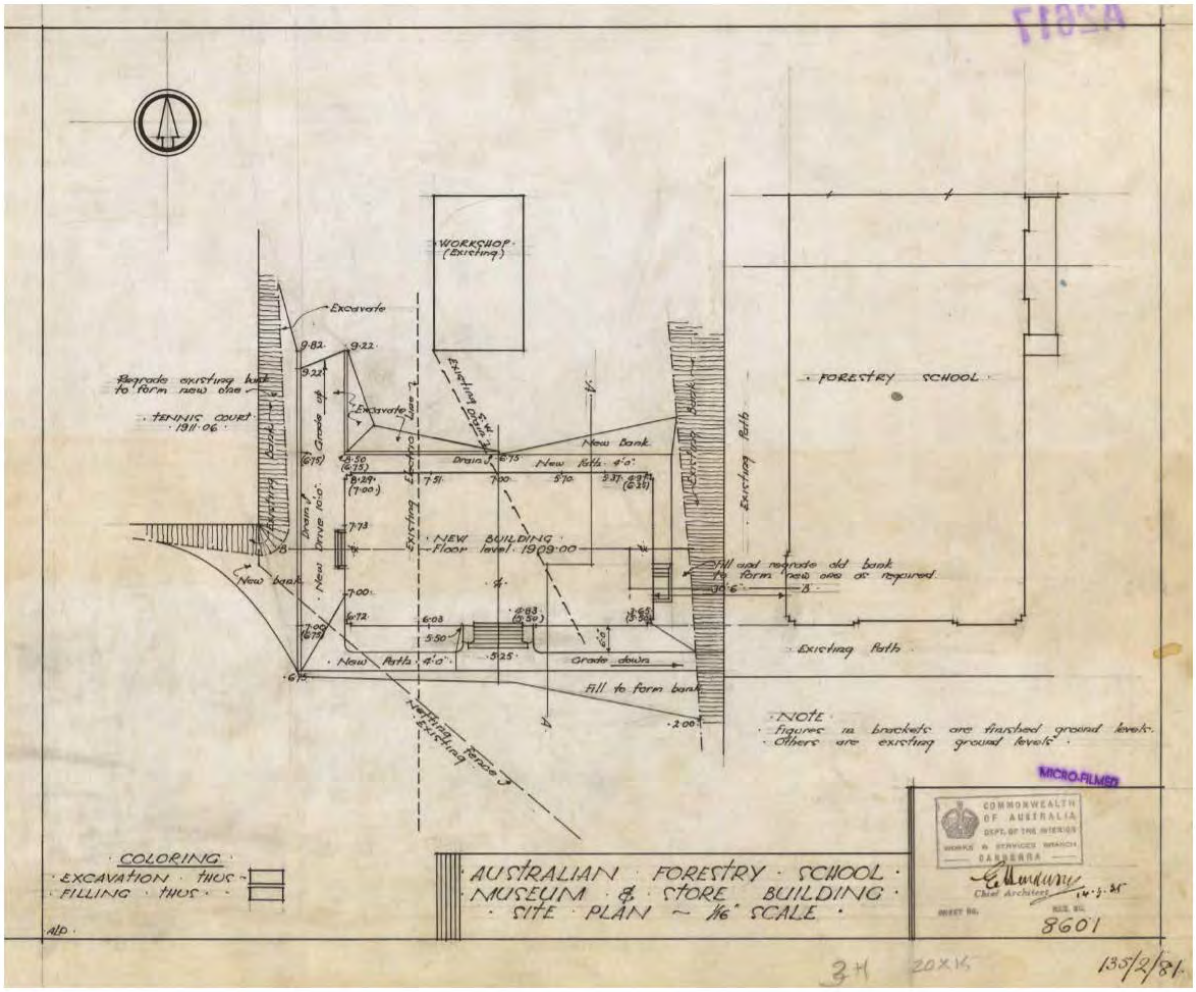


Figure B1.9 Site layout of Museum and Store, 1938 (NAA #7689914)

All materials were required to be of Australian origin, specifically, hardwood for framing, tallowwood flooring, and for joinery, linings, and finishing Alpine Ash and Queensland Maple were to be used. The roof was to be clad in Marseilles tiles to match the AFS building. All glazing was to be clear glass. The new driveway was to be filled with red gravel obtained from the Department's Red Hill quarry (approx 2.4 km from the site). Bricks were carefully selected with brick faces to be of even size, clean arises, good even colour and well burnt. Sound, well burnt, common bricks were to be used for all parts not exposed at finish all bricks purchased from the Department's brickworks.

The building originally housed an entrance hall, a Carpenter's Shop; a general museum in the centre; a Soils Room; a Seeds Room; a Papers Room; and a Woods Room. The Soils Room originally had an electrical refrigerator, and a wall of the best quality white glazed tiles, all set in sand and cement, with round edge tiles at the top and rounded corner tiles at the corners. White glazed tile soap holders were also installed in this room, one behind each sink. Each room also had timber racks and continuous pigeon holes for storing samples (*Figure B1.10)*. Hoop Pine was used for all bench tops, shelving, pigeon holes, benches and bins and Tallowwood was used for the floor to entrance hall, window sills and external door frames. The doors to the Museum were to be Queensland Maple. The floors to the Carpenter's Shop, Wood and Paper rooms were tongue and groove Cypress Pine (Specifications for the new Museum, Works and Services Branch 19 July 1938). The museum was designed in a similar style to the main school building, in an attempt to maintain continuity, but some subtle differences can be detected in the roundels, rainwater heads and downpipes (refer to *Figure B1.11* for building plan).

The Museum contained a botanical collection of Australian species including a herbarium, fruits, seeds and timbers. Material of the more important oversees trees, a collection of forest insects, fungi and geological specimens were also displayed. Other museum exhibits included manufactured articles of timber and other forest produce donated by representatives of various forest industries. Of special note, was a wooden model, complete in all details, of a five-roomed weatherboard house (Forestry and Timber Bureau Calendar, 1935).

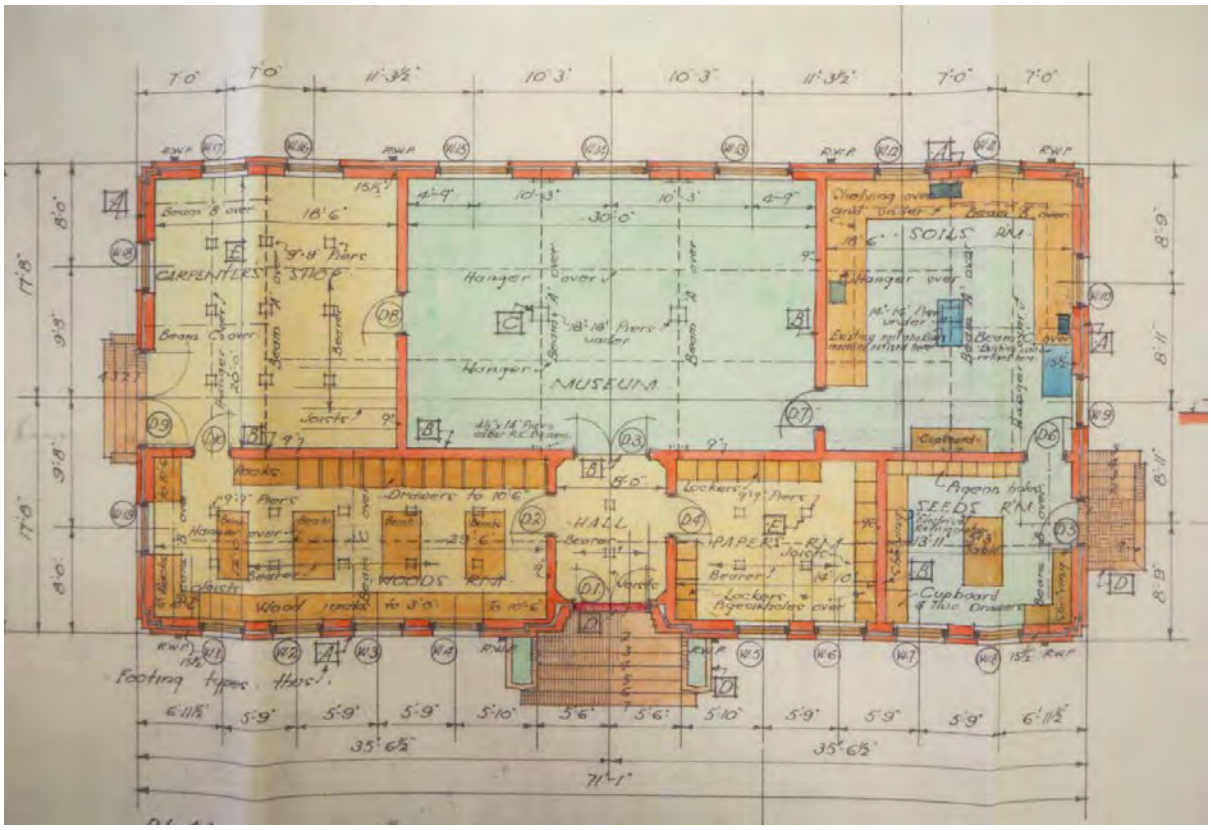


Figure B1.10 Museum building floor plan, details of Wood, Seeds and Papers Rooms (NAA #7689917)

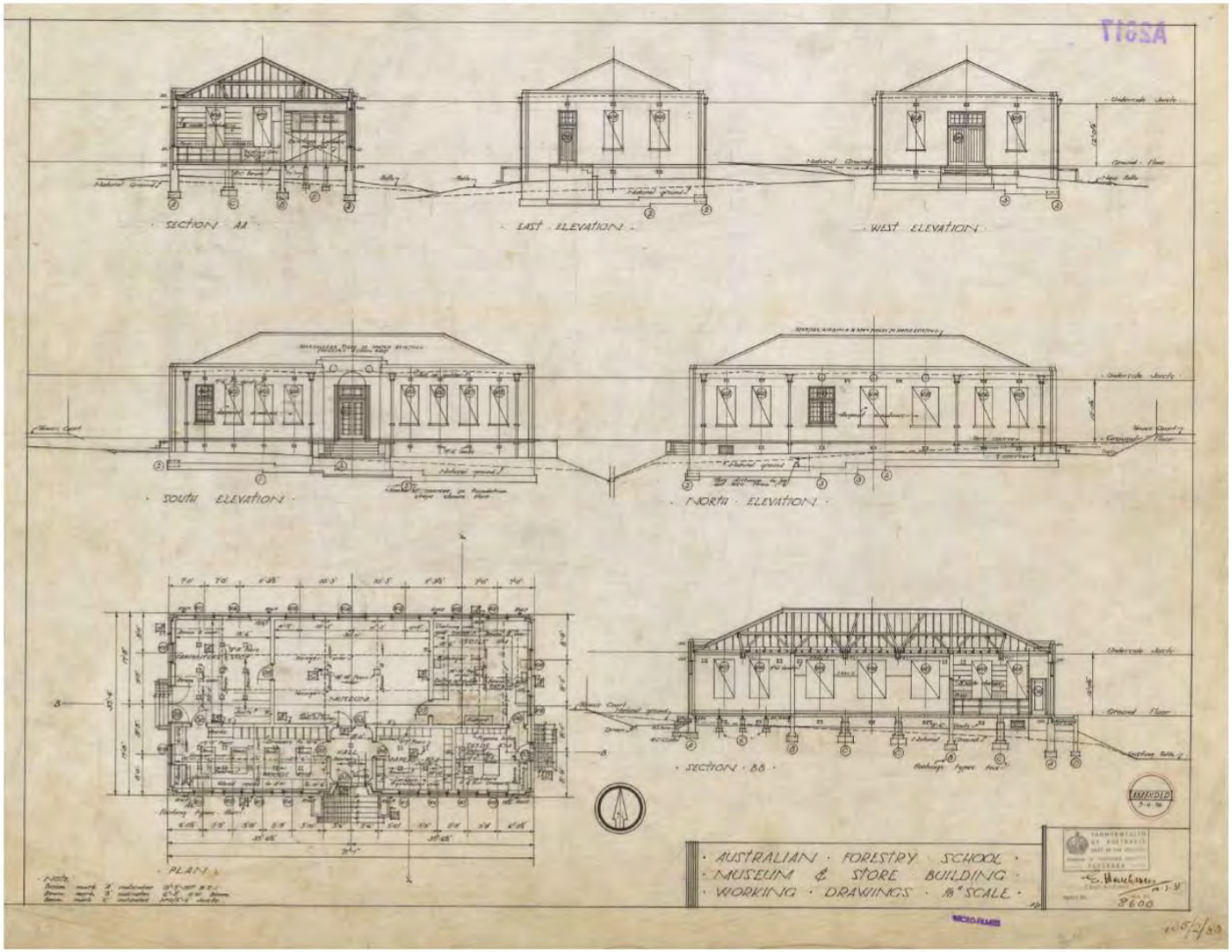


Figure B1.11 Museum and Store Building plan 1935 (NAA #7689917)

Carpenter's Shop converted to Seeds Store and Laboratory (17)

The Carpenter's Shop (currently Store building 17) was constructed sometime prior to 1938. The Workshop is a small timber-framed and clad building with a hipped tile roof located behind the AFS. The building was converted into a Laboratory and Seeds Storage facility sometime during the late 1930s or early 1940s. Proposed plans for the conversion of the Workshop were developed by the Department of Works and Housing and included the removal of existing doors and a timber partition, shelving existing sliding doors and tracks. New laboratory sinks were installed and a Seeds room.

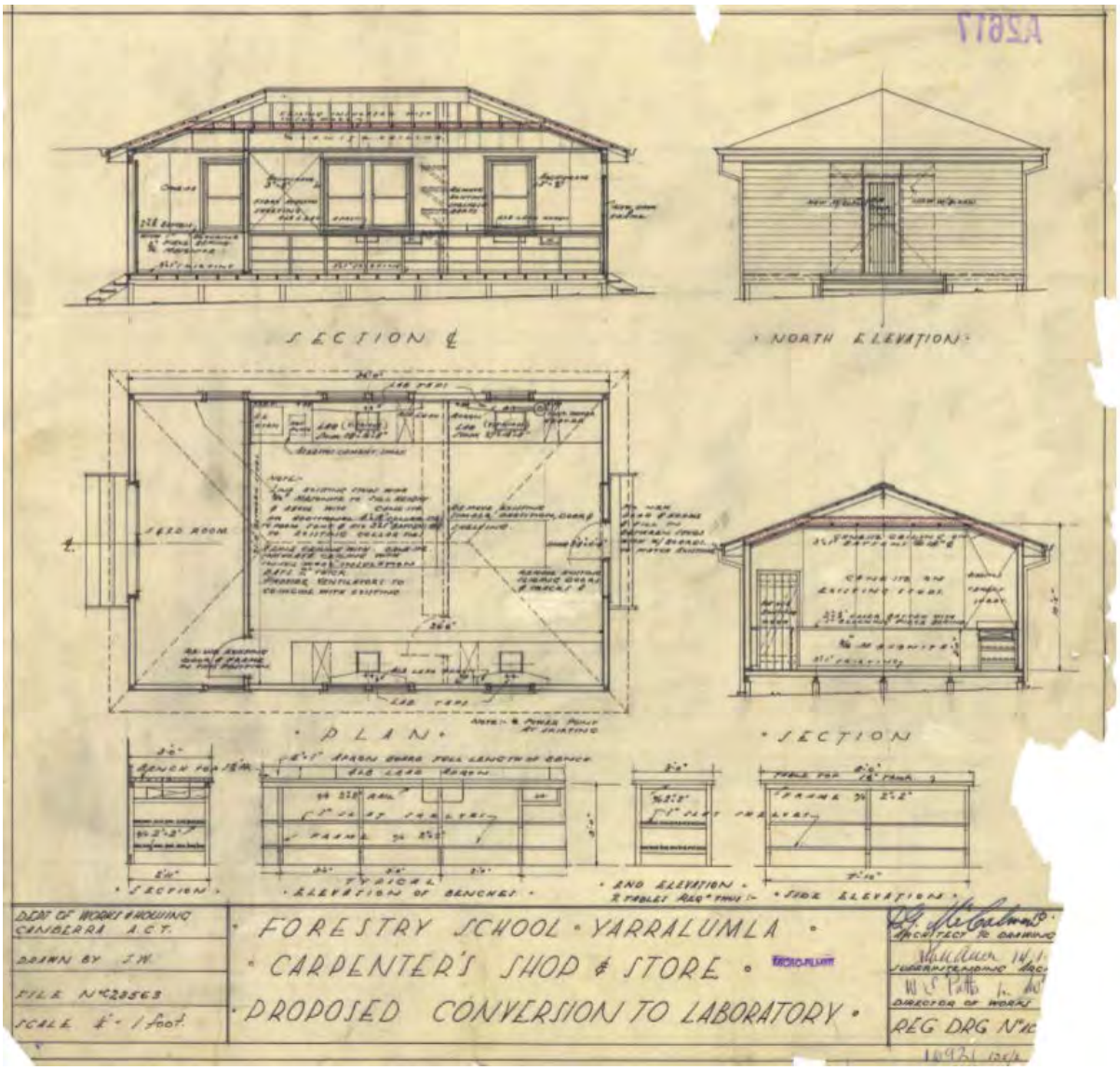


Figure B1.12 Proposed plans for conversion of Carpenter's Shop into Seed Store and Laboratory (nd) (NAA # 7499489)

B1.1.8 Years Post World War II

Although the first twenty years was documented to be a problematic period for the Australian Forestry School, the subsequent twenty-year period was one of growth and prosperity. The post-World War II years saw a significant increase in student numbers, due to the war-lag and ex-servicemen undertaking rehabilitation courses at the universities. In 1947, the Commonwealth Forestry Scholarship scheme began, with students on the scheme being obliged to serve forestry in some way anywhere in Australia for three years after graduation.

It is also interesting to note, that in August 1946 R.G. Kappler (Secretary to the Commonwealth Forestry Bureau) requested the blue print of the AFS to be supplied to the Forestry Service of the Dominion of New Zealand. New Zealand had, at the time, been considering the question of forestry education in which the construction suitable buildings would be required. The New Zealand authorities requested the AFS blue prints 'showing the arrangement of rooms, with dimensions' (NAA: Letter from R.G. Kappler to the Department of the Interior 15 Aug 1946). It is unknown whether the Forestry Service of New Zealand constructed a school building of similar design to the AFS, it is more likely the building constructed would have utilised the floor layout rather than external features.

In 1948, the first Asian student was enrolled at the school and in 1949, the first of approximately forty New Zealand Forest Services nominees began an association that would continue for twenty years until a school of forestry was opened at Christchurch. A number of Filippino, Thai, Malaysian, Burmese and Ethiopian students also attended the school (Carron 1977). This sudden and unforeseen increase in student numbers put pressure upon the school's 'temporary' accommodation facilities, located off-site in what is now Solander Place, Yarralumla.

Although the AFS was a Federal Government initiative, the Commonwealth had not accepted responsibility for student accommodation. When the School opened in 1927, the students lived off-site at the former Government Printery at Kingston, occupying the staff quarters, and were 'bused' to the site each day. Twenty-seven temporary huts, called 'cubes', were constructed in 1928 and used for student accommodation for 25 years (*Photograph B1.27* and *Photograph B1.28*). Each student had his own cubicle with it documented that:

> *'[…] these cubicles contain a bed with mattress, sheets and blankets, a small folding table, a wardrobe and a small mirror. In front of the cubicles are three brick cottages, the first is a dining room and kitchen, the second is a reading and recreation room, which is sometimes used for dances, while the third contains basins, troughs, showers, baths and exercise rooms'* (West Australian, 11 June 1930).

The brick cottages remain and are now Nos 2, 4 and 6 Solander Place, Yarralumla (*Photograph B1.29*). In the post-war years, as student numbers increased, the old mess was enlarged by the provision of a number of huts and cubicles from Army disposals. The Army hut known as "The Waldorf" (now 16 Solander Place) was also built following WWII and two additional temporary wooden lecture rooms were established – one at the eastern and one at the western end of the wooden buildings established for workshop purposes. A storeroom was built between the eastern lecture room and workshops, partly to deaden the noise from workshops. In 1961, this storeroom was used as an office by Mr. Hamilton, the lecturer in Dendrology. The western lecture room was used as a combined lecture room and drafting room. Three additional rooms were established in the block of wooden temporary rooms (now demolished) (CSIRO Black Mountain Library).

Despite the increase in structures suitable for students to live, still further accommodation was required to meet the growing number of students.

Photograph B1.27 The cubicles in 1927 (ERM 2018 via AFS History Files ANU)

Photograph B1.29 The cubicles in 1938 (ERM 2018 via AFS History Files, ANU)

Photograph B1.29 Brick cottages in 1927, now Nos 2, 4 and 6 at Solander Place (AFS History Files ANU via ERM 2018)

Forestry House

It had been the intention of the Government to establish more or less permanent residential housing for the Forestry students, and two or three drawings for this house were prepared. The drawings up until about 1948 proposed a residential house between the present garages and the Principal's residence (Westridge House). The building of a new residential college (referred to as the 'hostel' in early plans), Forestry House, was designed by the Commonwealth Department of Works with construction commencing during 1949. The original proposed design was a two-storey 'T' shaped floor plan, with a central recreation hall and dining, kitchen, staff lavatories and showers left of the T junction, with also a court and laundry entrance. To the right of the T junction was to be the student quarters, including 15 separate rooms, with the inside rooms facing west and looking out onto an open air recreation 'Assembly Court' (*Photograph B1.13*). The Department of Interior had a number of plans drafted for the proposed hostel, a number of which differed slightly with the main entrance accessed to the right of a central two-storey vestibule (*Figure B1.13* and *Figure B1.14*).

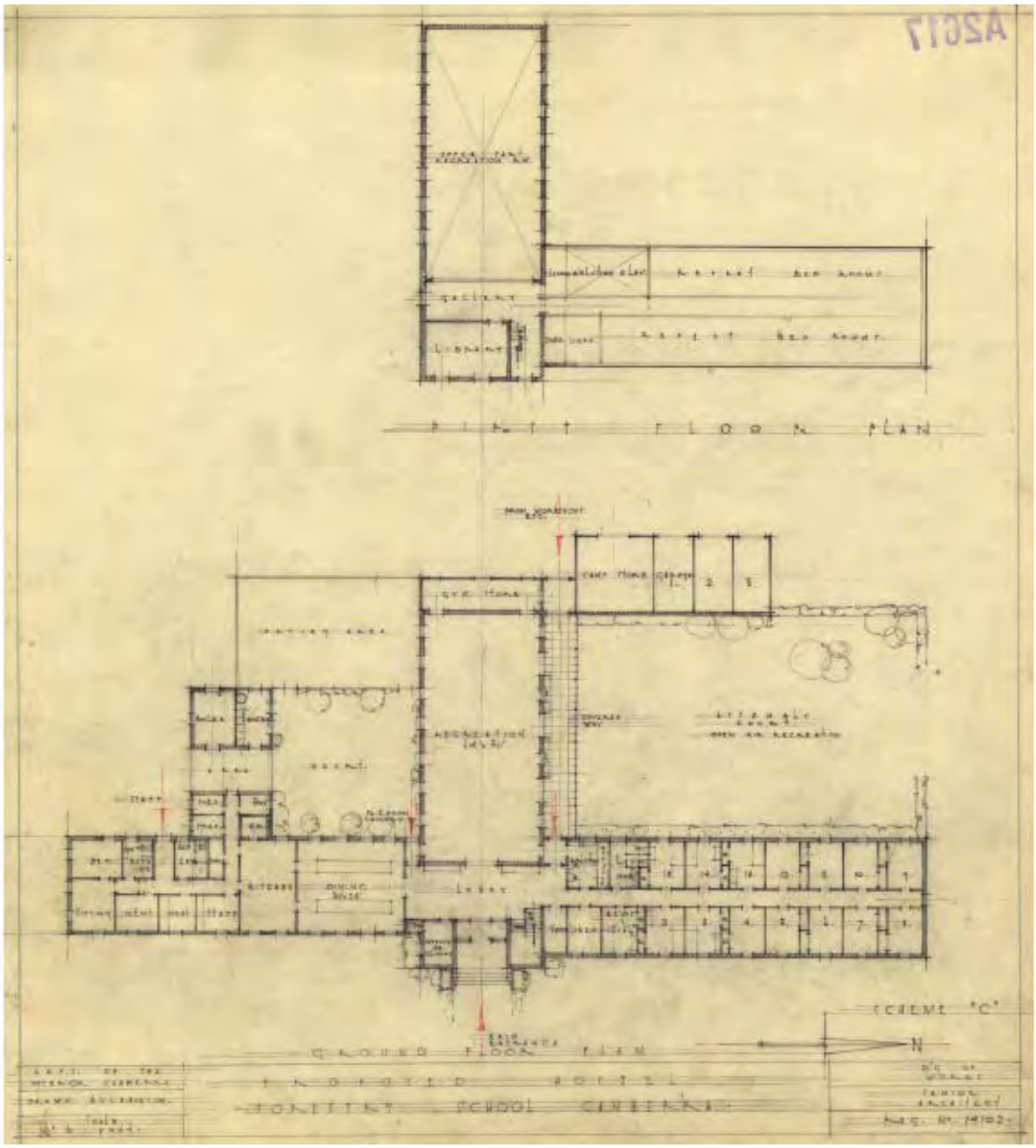


Figure B1.13 Original proposed architectural plan for the AFS students hostel (later called Forestry House) c.1949 (NAA #7689904)

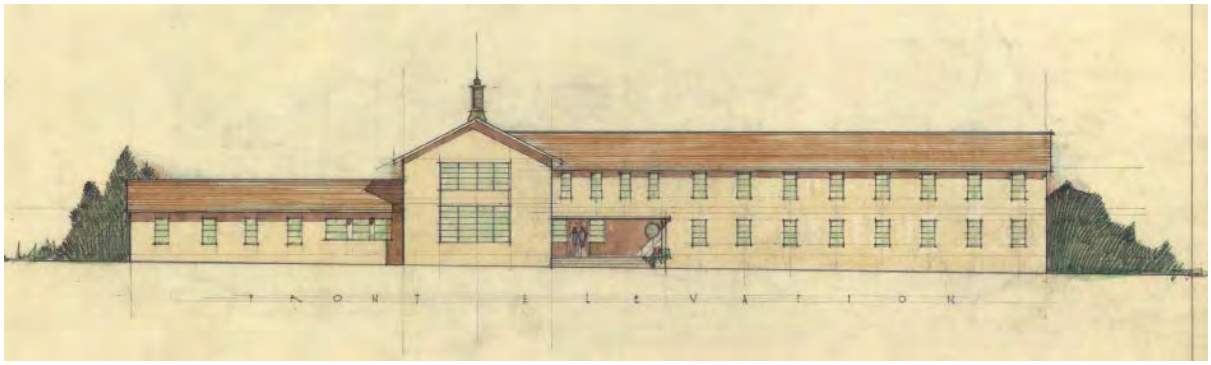


Figure B1.14 Proposed east façade of the new hostel accommodation by A. Hanson for the Department of Interior (NAA #7689904)

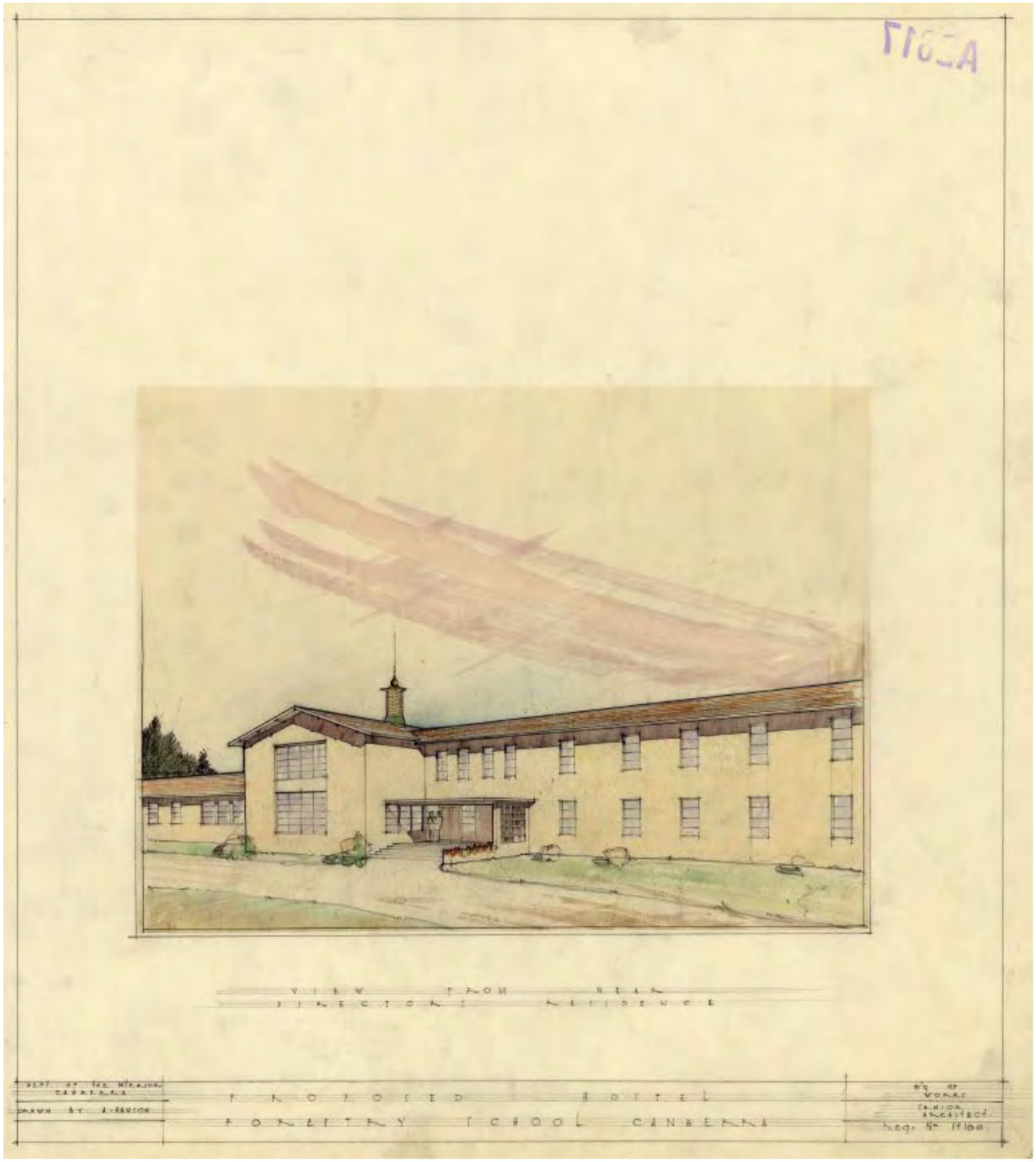


Figure B1.15 Proposed east elevation of the new hostel A. Hanson for the Department of Interior (NAA 7689908)

Forestry House was completed and occupied early in 1952. The ground floor had a large lounge connected to a library and billiards room with 21 bedrooms, a dining room kitchen and facilities. The upper level was an 'L' shaped corridor with another 21 rooms (*Figure B1.16* and *Figure B1.17*).The Bureau's 1952 Annual Report describes the building as:

> *'[…] A modern residential building designed to accommodate 40 students in single rooms, with a library, lounge room, billiard room, dining room and well-appointed kitchen'*
> (Commonwealth Forestry and Timber Bureau 1952).

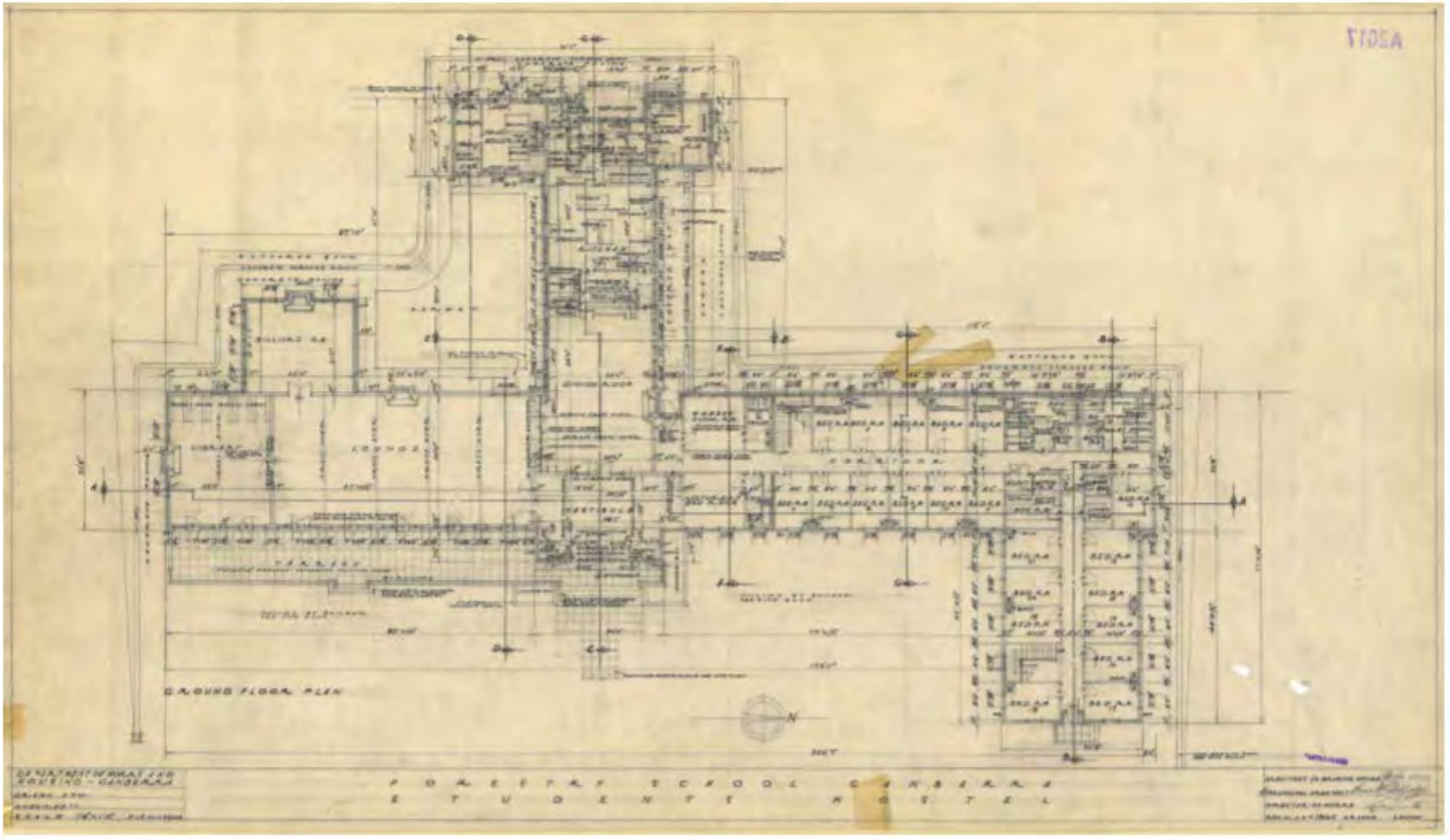


Figure B1.16 Final ground floor plan for the Forestry School Student Hostel c.1950 (NAA #7689885)

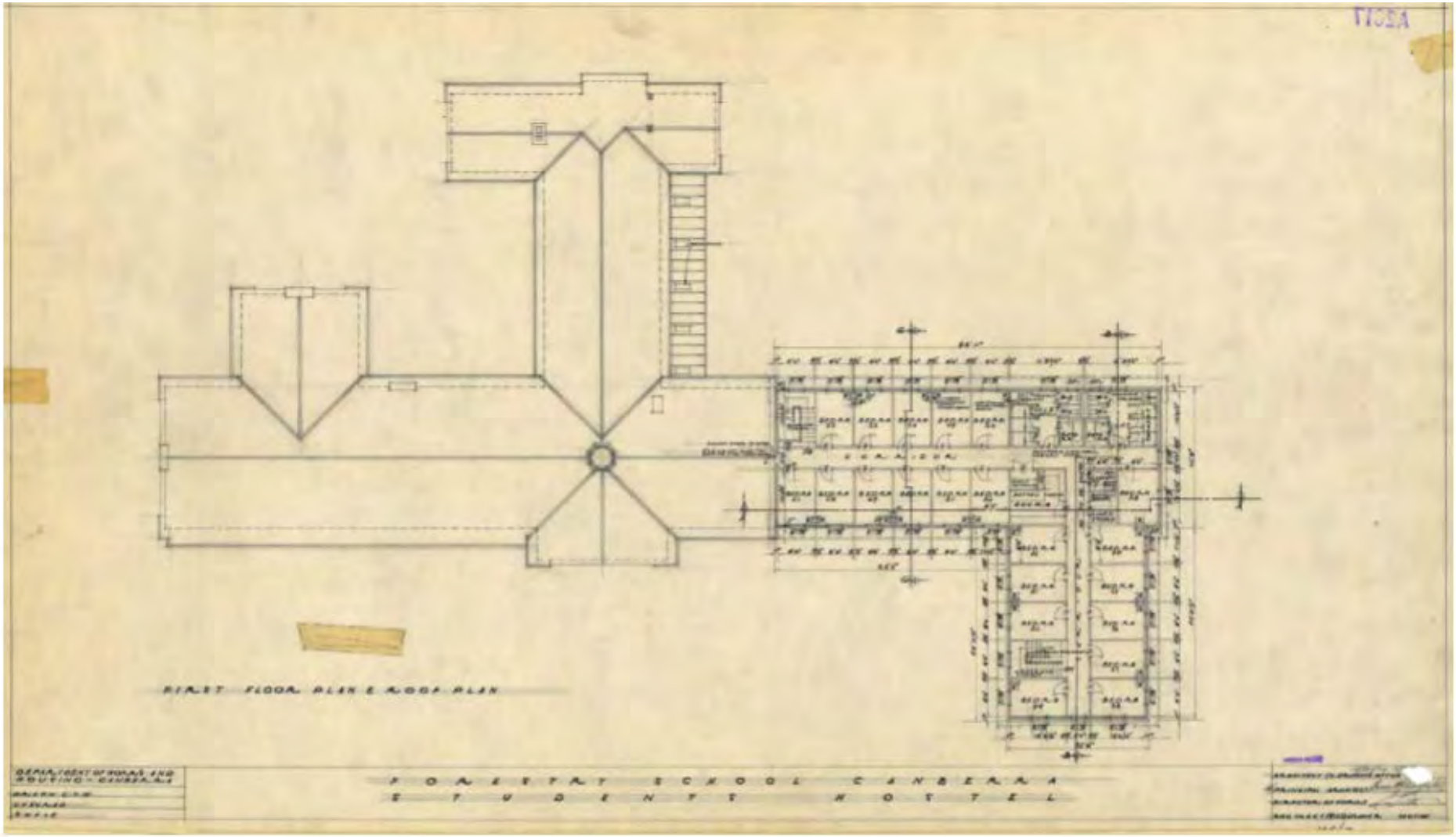


Figure B1.17 Final level 1 plan for the Forestry School Student Hostel c.1950 (NAA #7689886)

Forestry House is a rendered brick building with a long axis fronting the oval. The design reflects the post-War American Colonial style; a feature being the bronze and timber turret roof, and exposed ceiling timbers in the lounge room (originally planned to be the dining room) (*Figure B1.18* and *Photograph B1.30*).

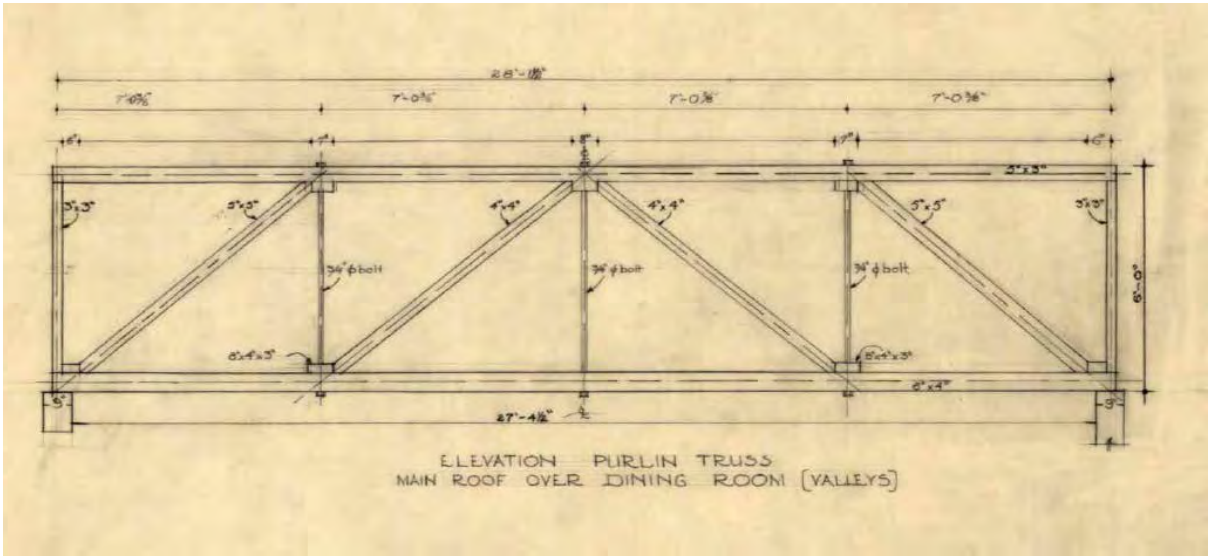


Figure B1.18 Detail of exposed purlin truss system (originally planned to be the dining hall ceiling, then the lounge in final plans, and later conference room) 1950 (NAA #7689987)

Photograph B1.30 The Lounge room of the newly completed Hostel (Forestry House) c.1952 (CSIRO Black Mountain Library)

The Forestry and Timber Bureau was impressed with new living quarters as the building was equipped for purposes other than the accommodation of students. In 1952, shortly after its completion, the building was used for the initial week of the FAO Eucalyptus Study Tour and documented to have been '[...] very suitable for the purpose' (Commonwealth Forestry and Timber Bureau 1952).

The Bureau again documented the building's versatility in 1953, as student numbers declined and it began using a section of the building as offices and the Lounge space as a conference room (*Photograph B1.31*): The Bureau stating that the building:

> *'[...] has improved study facilities and is useful in accommodating visiting foresters and for holding meetings. A portion of the building has had to be used as offices for the staff of the Central Experimentation station*' (Commonwealth Forestry and Timber Bureau 1953).

Photograph B1.31 Mr. Fairhall from the Forestry and Timber Bureau opening the Forestry Conference at Forestry House (NAA #117114534)

The building was first referred to as 'Forestry House' in 1956. The building has since undergone several stages of alterations to convert it into offices, laboratories and conference space (*Photograph B1.32* and *Photograph B1.33)*

Photograph B1.32 Forestry House c.1956 (NAA A3087 Photographic Prints, items 67-73)

Photograph B1.33 Delegates of the 1958 Forestry Conference outside Forestry House (NAA #64627)

Further post-war site development

Immediately after WWII it was realised that the number of students attending the School would rapidly increase, and the industrial museum was temporarily abandoned, the collection of exhibits within the Museum were temporarily stored in a wooden building which was later destroyed by a fire, including most of the exhibits (Mr. Heath of the National Capital Development Commission, CSIRO).

In January 1946, plans were drawn for the conversion of the Industrial Museum into Administration offices for use by the Forestry and Timber Bureau, the body which administered the school. The Commonwealth Forestry Bureau had only recently been amalgamated with the Commonwealth Timber Control to form the Forestry and Timber Bureau (Ramsey 2000). The plans were released by the Department of Works and Housing, Canberra. The conversion involved the installation of three partitions to create six new office spaces, the removal of the west elevation doors and installation of windows and conversion of the western half of the woods room into rest rooms (*Figure B1.19*).

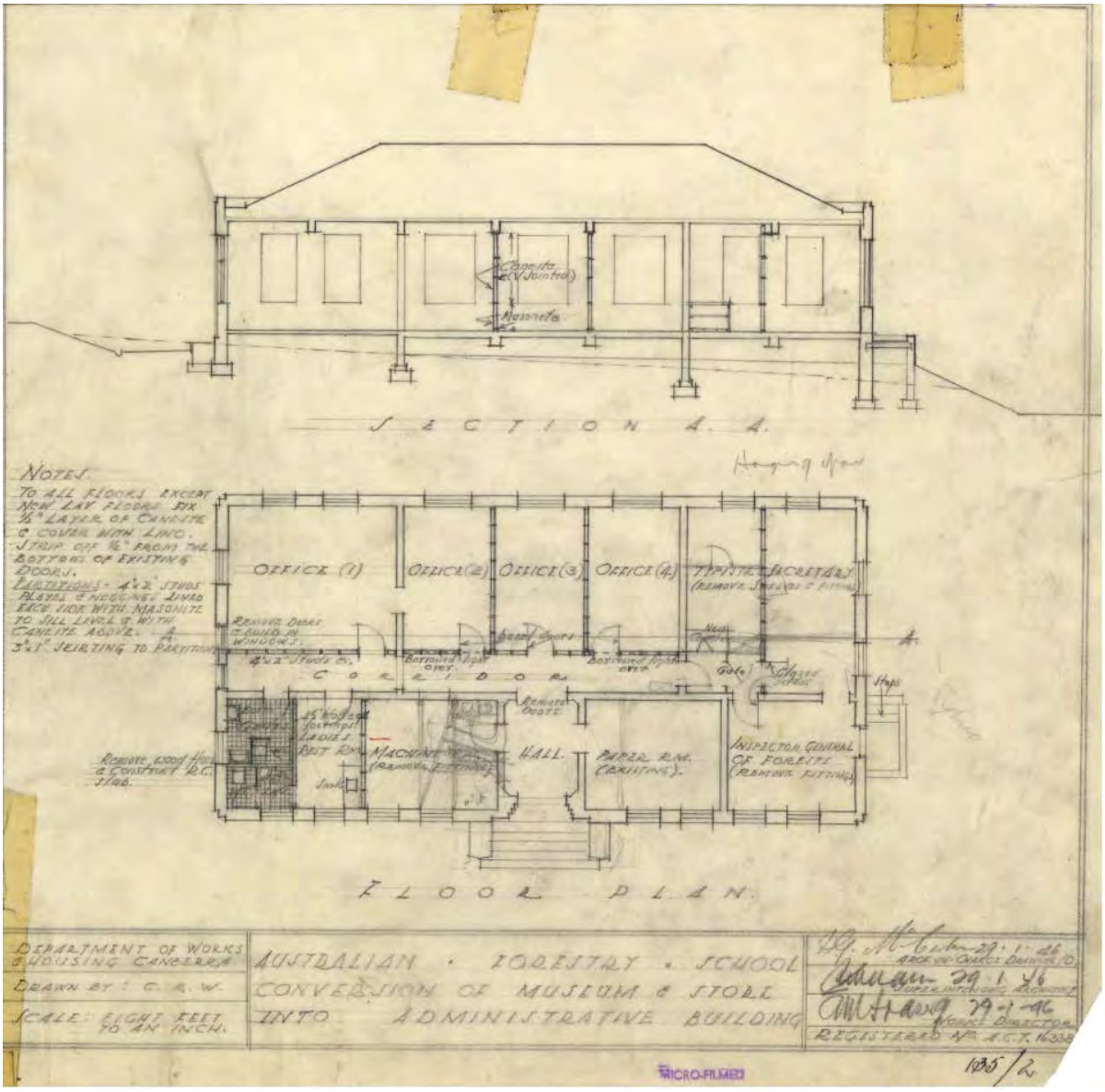


Figure B1.19 Conversion of Museum and Store in Admin Building plan 1946 (NAA #7689906)

The large oval located at the centre of the precinct was completed in 1953 (*Photograph B1.34)*. The oval is now an ACT Government asset and doesn't form part of the forestry precinct heritage listing. The Forestry and Timber Bureau first document the oval in the Annual Report of 1950:

> *'… A sports oval suitable for Australian Rules football and other games occupying less space, is being constructed near the residential college, and, it is hoped that this also will be available for use in 1952'* (Forestry and Timber Bureau 1950).

The Caretaker's Cottage was completed in 1952 (*Photograph B1.34*). The cottage's design was similar to that of Forestry House. The cottage featured a small garden with mixed species including agaves.

Photograph B1.34 Aerial view of the AFS c.1953 with newly completed cottage outlined by ERM (NAA #7827663)

Student numbers declined in the 1950s, only to rise again in 1961. This new influx of students to the AFS necessitated yet another accommodation building as Forestry House was simply unable to house the required number of students. The Former Nurse's Quarters building had been built during the war on the Canberra Hospital site at Acton where it was used for over fifteen years as a residence for nurses (Forestry and Timber Bureau 1950). When a new multi-storey accommodation block was built at the hospital site there was no longer a need for the building and it was relocated to the Forestry Precinct in 1963. It was documented that this 'temporary' building would: '[…] solve the problem for several years until permanent residential provision is made' (Commonwealth of Australia, Department of National Development 1964).

Further permanent residential provision was not made, however, as educational responsibilities moved to the ANU in 1968. The former Nurse's Quarters provided student accommodation for only five years before being converted into offices. This building was demolished in 2011.

Glass House Construction

In 1947, plans for a new Plant House were drawn up which was likely construction soon after. The design had a gabled glass roof, asbestos cement lining on an existing brick and cement foundations with air holes for airflow. This Plant House replaced the previously demolished Glass House and re-used the same materials (*Figure B1.20*). Yarralumla Nursery also has a number similar plant houses, with gabled glass roof and brick walls supported by a concrete foundation (*Photograph B1.35).*

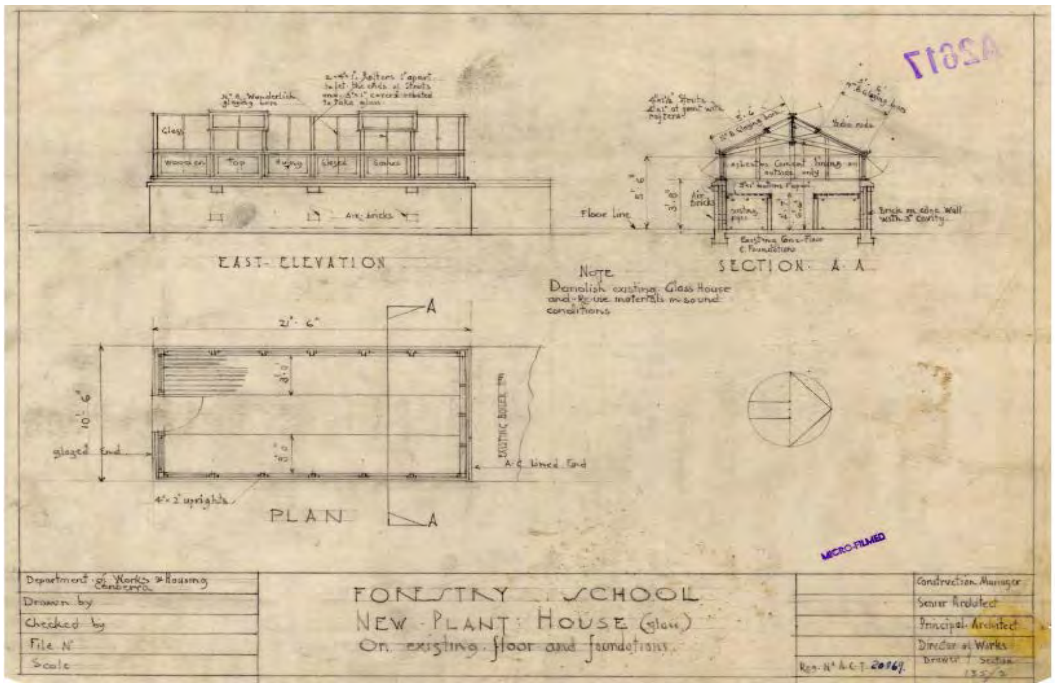
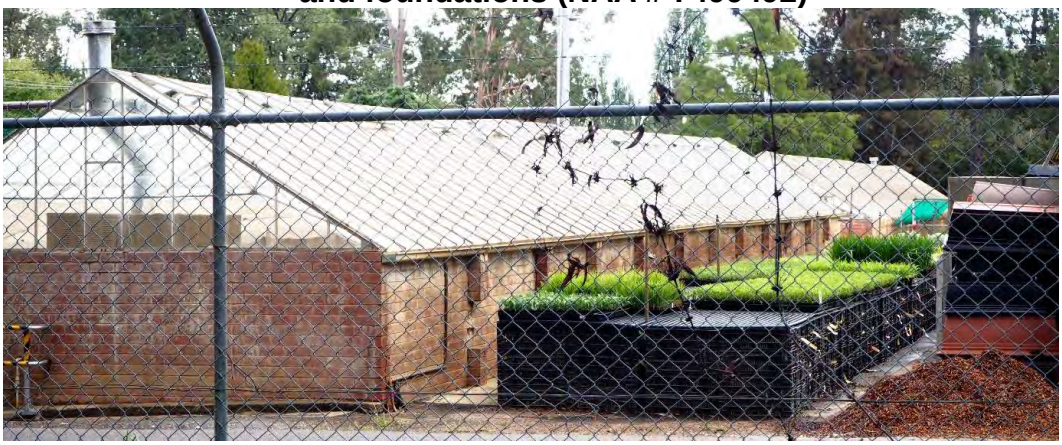
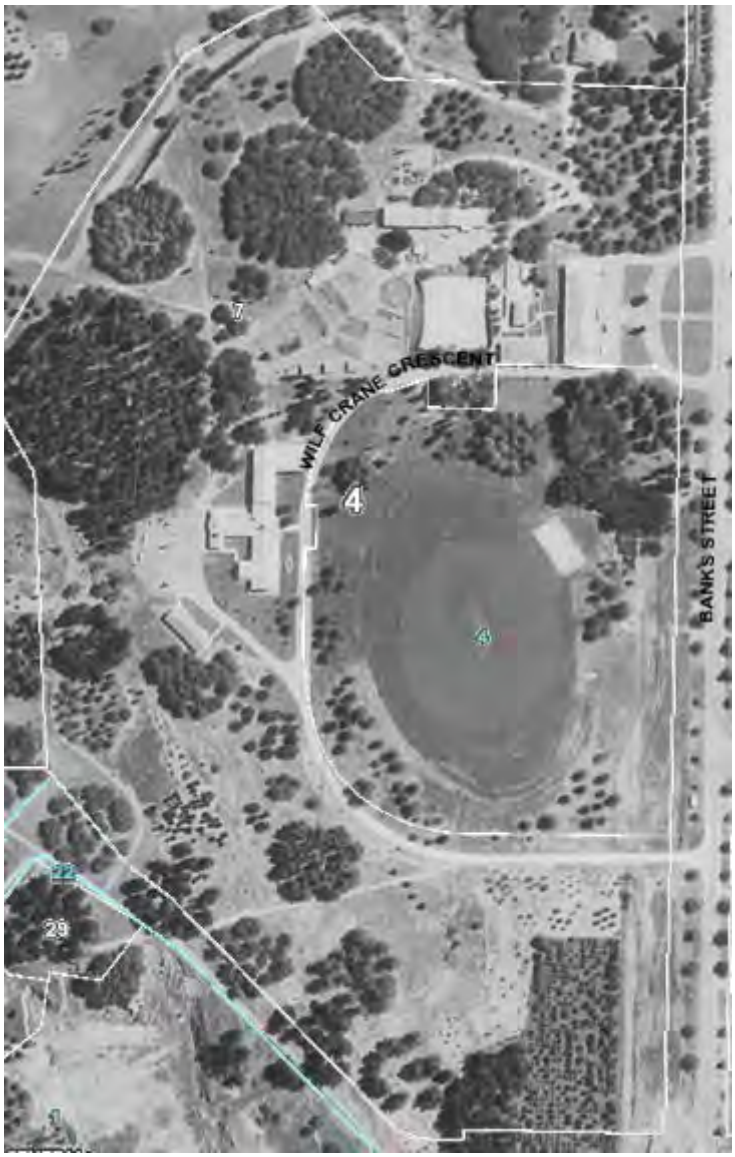


Figure B1.20 Forestry School New Plant House c.1947 on existing floor and foundations (NAA # 7499492)



Photograph B1.35 Plant house located at the Yarralumla Nursery of similar design to the plant house constructed in 1937 at CSIRO Yarralumla (ERM 2020)

Though it was thought a series of new Glass Houses were constructed in 1949, the Glasshouses which remain today (4a, 4b, 4c) did not appear on aerial mapping until 1958, and were therefore likely constructed between 1955 and 1958 (ACTMapi Aerial Imagery 1955) (*Photograph B1.36*). The Glasshouse Complex was another addition to the Forestry Precinct in the post-war years. The complex consists of a number of glasshouses and small structures which were built over the course of a decade including the Glass House Workshop (4), Soil Preparation Shed (4e) and Shadehouse (4h). The construction of Forestry House, the Caretaker's Cottage, the Glasshouse Complex and the oval were all major on-site developments post WWII. The Forestry Precinct dramatically increased in size as more land was acquired to the south-west of the main forestry school building to accommodate these new buildings.



Photograph B1.36 1955 Aerial Imagery showing Glasshouse not yet constructed

Between 1947 and 1957, in addition to the changes to the built features within the precinct, a number of trees were planted by the Research Division of the Forestry and Timber Bureau. Two areas were designated for planting, Area A which was south of Forestry House (west of the later constructed Forestry Research Institute building (3) 1967) and Area B, which was between Forestry House and the Forestry and Timber Bureau Offices and former Museum, north-east of Forestry House. The known species within Area A and Area B have been provided below in *Table B1.1.*

Table B1.1 List of Species known to have been planted at CSIRO Yarralumla between 1947 and 1957

Location	Common name/species	Year planted
Area A - South of Forestry House	Douglas pine (*Pinus douglasiana)*	1953
	Douglas pine (*Pinus douglasiana)*	1954
	Douglas pine (*Pinus douglasiana)*	1953
	Mexican pinyon (*Pinus cembroides)*	1953
	Montezuma bald cypress (*Taxodium mucronatum)*	1953
	Coulter pine (*Pinus coulteri*) and Torrey pine *(Pinus torreyana)*	1956
	Douglas Pine (*Pinus douglasiana)*	1955
	Aleppo Pine (*Pinus halepensis*) and Calabrian pine (*Pinus brutia*)	1954
	Shortleaf pine (*Pinus ehinata*)	1953
	Virginia pine (*Pinus virginiana*)	1953
	China fir (*Cunninghamia lanceolata*)	1953
NE of Forestry House	Dawn redwood (*Metasequoia glyptostroboides*)	N/A
	Hybrid poplar (*Populus androscoggin*)	1947
	Hybrid aspen (*Pinus tremulax tremuloides*)	1957

On 5 May 1960, the ashes of A.B. (Brian) Patton, a forester who died following a tree fall accident at Jervis Bay, were scattered under the Pine Oaks on the southern side of the AFS (CHL Listing #105426).

B1.1.9 The Administration Period: 1965 – 1975

By 1964, the AFS was a respected tertiary institution which had produced more than 500 graduates. During the post-WWII years, the School's staff, the forest services and graduates

began the push for wider post-graduate opportunities in forestry, which were not then offered in Australia at the AFS.

The students of the School lacked association with students of other disciplines and were not offered the extra-curricular activities that are typical on a university campus. The staff were also finding the combined roles of public servant, professional practitioner and university academic difficult. These problems pointed to the desirability of the Australian Forestry School forming a much closer relationship with a university or being incorporated within a university (Carron 1977).

After a three-year period of negotiations, ANU was the university of choice with it documented that:

> '*There has been a general desire in recent years for the school to become associated with the Australian National University and for this university to give the degree in Forestry. During 1963 the Australian National University advised the Commonwealth Government that the university would be prepared to take over the function of the Forestry School in a Department of Forestry of the school of General Studies in the university'* (Commonwealth Forestry and Timber Bureau 1963).

The beginning of the 1965 academic year marked the opening of the new Department of Forestry at the ANU, assuming the functions of the Australian Forestry School from the Forestry and Timber Bureau. Professor J.D. Overton was appointed head of the department, with an increased lecturing and support staff and a revised curriculum (Carron 1977). Planning commenced for a new building on the ANU university campus with funds specially provided by the Commonwealth Government; the Department of Forestry continued to occupy the buildings of the Australian Forestry School until the building was completed. Students continued to enjoy the oval and tennis courts holding local and interstate friendly competitions (*Photograph B1.37).*

The new building was opened in May 1968, by the Duke of Edinburgh, after which time the Forestry Precinct at Yarralumla continued to function as an administration and research centre for national forestry, under the auspices of the Forestry and Timber Bureau.

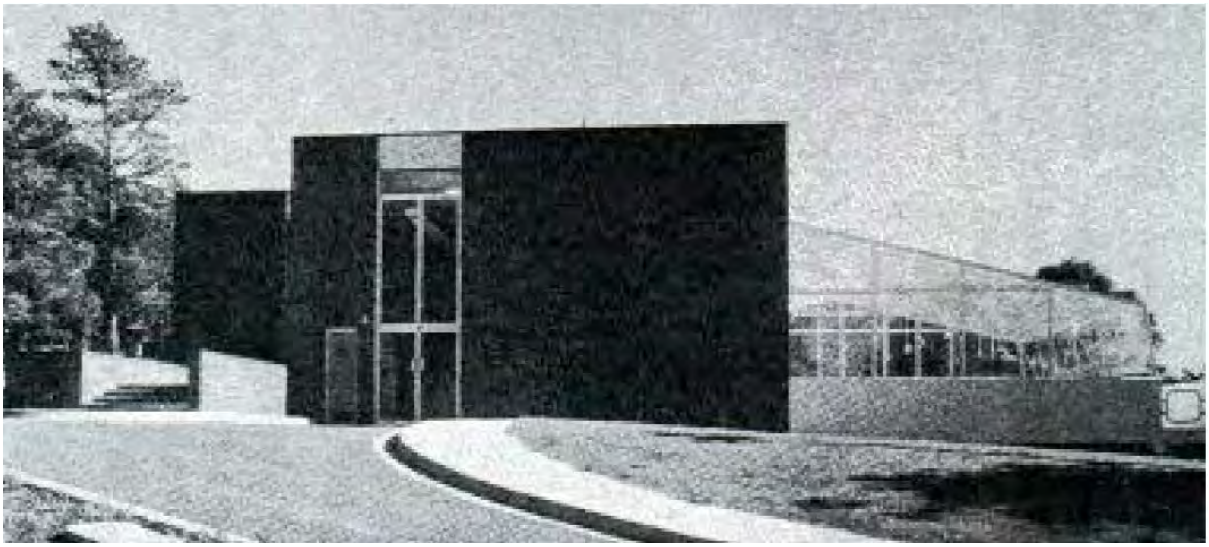
The Bureau had occupied Westridge House since 1963, and in 1968 staff moved into the main school building. Westridge House was then occupied by the Training Group of the Department of National Development.

During 1963, it is documented that research was given significant impetus with the formation of the Forest Research Institute within the Bureau, but the precinct lacked the required modern research facilities; a new building was needed. Construction of the Forest Research Institute Headquarters began in 1965 and the building was opened in May 1967 (*Photograph B1.38*). The building is a large split-level brick building of reinforced concrete columns and slabs, with brick curtain walls. The functional design has enabled substantial internal modification when needed. Between 1975 and 1986, the CSIRO added a library and a 1996 refurbishment included an addition to the eastern end (Ramsey 2000).

Photograph B1.37 AFS Students posing with tennis rackets outside Forestry House 1967 (NAA # 11718145)

Photograph B1.38 the new Forest Research Institute Headquarters, May 1967 (The Forestry and Timber Bureau Annual Report 1967, cited in ERM 2018)

A number of other research facilities were constructed during this period. In 1969, the Controlled Environment Laboratory was built beside the existing glasshouse complex and is used for tissue culture and growing plants (*Photograph B1.39)*. Also during the late 1960s, J.M. (Jack) Fielding was working on the improvement of *Pinus radiata* growth at Yarralumla. The growth of the tree had been an issue for foresters in Australia and New Zealand since the species was identified as the best for softwood production over south east Australian and much of New Zealand (ACT Government 'Canberra Tracks' signage). The Forestry and Timber Bureau and the Forest Research Institute at Yarralumla were instrumental in achieving improvement to growing *Pinus radiata* through growing the trees from cuttings. Dr. Jacobs had started the work at Yarralumla and Jack Fielding continued that work into the late 1960s, writing many papers on the topic, including 'Factors affecting the rooting and growth of Pinus radiata cuttings in the open nursery' (Timber Bureau Bulletin No.45 1969).

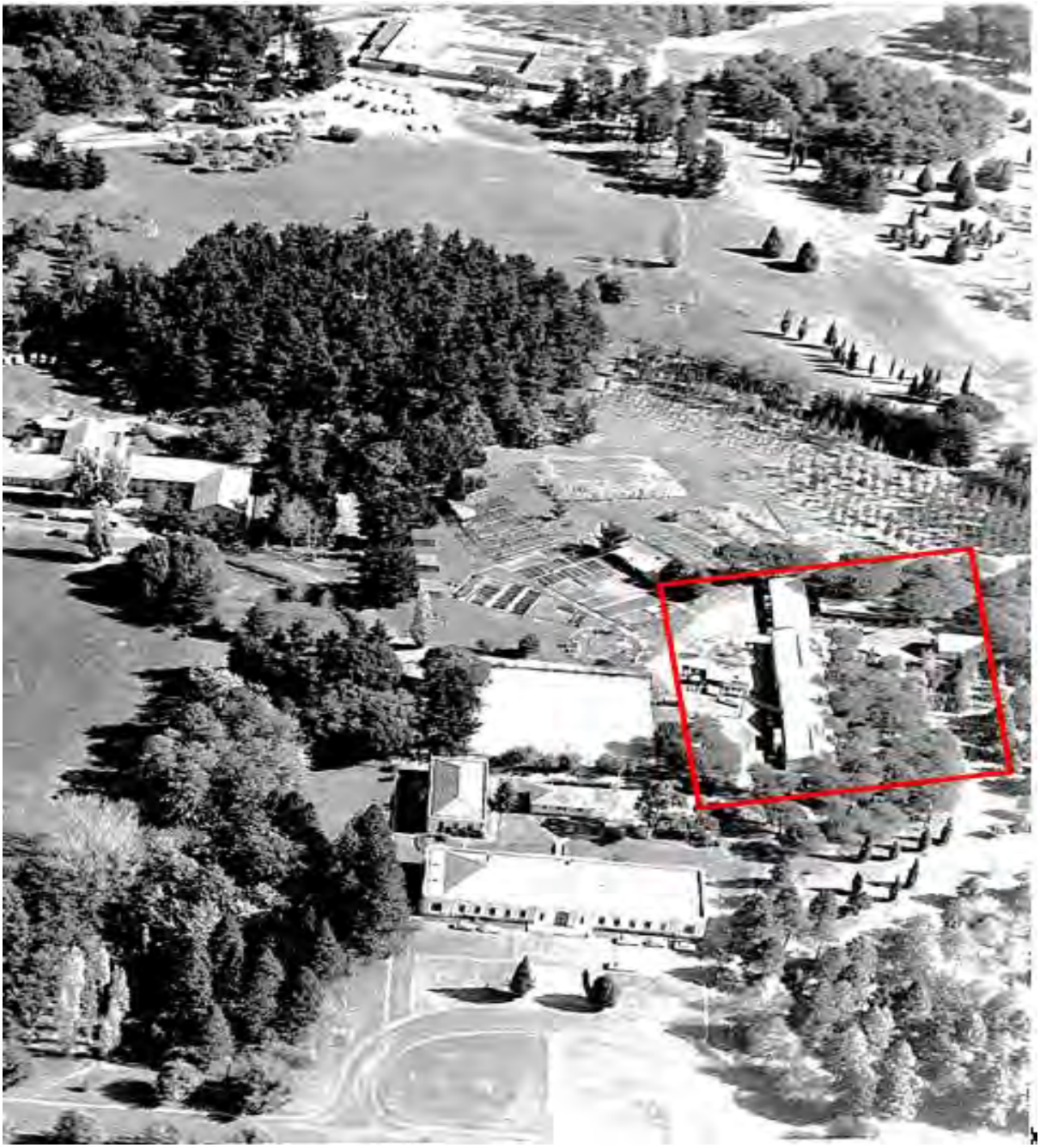


Photograph B1.39 The Controlled Environment Laboratory 1971 (ERM 2018 via The Forestry and Timber Bureau 1971-72)

In 1971, moves were made by CSIRO personnel for the construction of an 'early Australian sawmill' to house the early sawbench equipment and early steam engine. The structure was to be 'an open sided roofed-over structure to accommodate and shelter antique saw milling equipment' (Commonwealth of Australia Minute Paper, 1970). This work was completed 10 August 1971 at a total cost of $3,500 (Commonwealth Department of Works – Works Requisition). The replica sawmill was designed based on information gathered from a property owned by 'Mr. Johnson' who owned an early sawmill replica, used in 'the Ned Kelly film'. Today the antique saw milling equipment (specifically the two wood hauling vehicles) has been housed in an open, fenced area south of Forestry House, it is unknown what happened to this replica sawmill structure.

In 1973, two timber-clad ex-army buildings were moved to the site. The Photography Hut was located beside Westridge House and the Recreation Hut behind Forestry House.

The Industrial Facilities, a complex of carpenter's and engineer's workshops, including several storage sheds and offices were constructed to the north-west of the Forestry School, together with an access driveway created by extending the drive of Westridge House (Ramsey 2000). These buildings replaced a weatherboard carpenter's shop (1927), two classrooms (1948) and temporary garages, (*Photograph B1.40)*. It is not documented when the complex was built, but aerial photographs show that it was completed sometime in the 1970s (*Photograph B1.41*).



Photograph B1.40 CSIRO Yarralumla c.1960s, prior to the removal of the Carpenter's Shop, two classrooms and temporary garages (as indicated by ERM) (CSIRO Black Mountain Library)

Photograph B1.41 Aerial view of CSIRO Yarralumla c.1970s, The Industrial Facilities have been completed north-west of the AFS (as indicated by ERM) (CSIRO Black Mountain Library)

B1.1.10 The CSIRO Period: 1975 – 2018

In March 1975, the Minister for Agriculture, Senator K.S. Wriedt, and the Ministor for Science, Mr W.L. Morrison, released a joint statement announcing that agreement had been reached on the establishment of a CSIRO Division of Forest Research with headquarters in Canberra. The new Division, which would come into being on 1 July 1975, would include the research activities previously carried out by the Forest Research Institute and the harvesting and mensuration research groups of the Forestry and Timber Bureau. The change, which affected about 200 officers of the Forestry and Timber Bureau located in Canberra and at field stations in the States and Northern Territory, was aimed at achieving better coordination of Australian Government scientific research into forestry. The Ministers said that the CSIROs role would be to concentrate on long-term strategic research to complement the research undertaken by State forestry authorities. The move had the support of the Australian Forestry Council and industry. Area of research for the new Division included ecology, management and harvesting of forests, forest pests and tree physiology, health and nutrition. The Division was concerned with the whole forest ecosystem in relation to timber production and other uses of forests (CSIRO 27th Annual Report 1974/75)

The CSIRO acquired the entire Forestry Precinct (excluding the oval) in 1975. The unit became the Division of Forestry and Forest Products in 1988, the Division of Forestry in 1991 and in 1996, the Division of Forestry and Forest Products (Ramsey 2000). In the early to mid-2000s the CSIRO's forestry researchers were relocated to the CSIRO Black Mountain site.

The CSIRO Information Management & Technology Section more recently (2000s) occupied buildings 001; 001A and 001B and CSIRO's Ocean and Atmosphere groups are temporarily housed in the Forestry House whilst a new building is being constructed at the Black Mountain site.

During the 1970s, plans were prepared for the refurbishment and internal alteration of the original Forestry School building, in an effort to make the building more suitable for office use. Most notably, the former northern Lecture Room was divided, forming three separate rooms, and the original museum was divided into two rooms. Presently, CSIRO's Ocean and Atmosphere group occupy the southern end of the building whilst the northern end remains vacant. The library within the Forest Research Institute was constructed in 1975-76.

In 1993, the main drive of CSIRO Yarralumla was named Wilf Crane Crescent. The name was given in honour of Dr. Wilf Crane, who had a heart attack at the controls of his homemade plan on 7 march 1991. Wilf originated as a forestry student at the AFS and later became a senior research scientist for the CSIROs Forestry Division. Dr Crane was made a fellow of the Institute of Foresters of Australia in1987 and was known for his work in siviculture and was known as the driving force behind the 300 hectare demonstration agriforest near Tallagana, New South Wales (Obituary, CSIRO Black Mountain). Dr Crane was remembered in the Canberra Times in 1993 and noted as saying 'the need for trees cannot wait for the research' (Grose 8 march 1993) (*Photograph B1.42*).

Photograph B1.42 Dr Wilf Crane and the then Governor Ninlan Stevens (CSIRO Black Mountain Library)

In 1996, there was an addition to the eastern end of the building (Ramsey 2000). No major structures have been added to the precinct during the CSIRO occupation of the site, although it is worth noting two Storage Sheds were erected in 1979 and the Garage at the Caretaker's Cottage was established in 1998.In the early 2000s' the AFS building was occupied by NASA and the former Forestry and Timber Bureau Offices/former Museum were occupied by AMSAT. The Museum replica Sawmill was also survived this period. A Conservation Management Plan was prepared for the CSIRO Yarralumla precinct, in preparation for the sale and leasing of the precinct in 2002.

The CSIRO Yarralumla site was entered on the Commonwealth Heritage List in June 2004. The CSIRO Heritage Strategy was completed in 2006 in accordance with the EPBC Act provisions. The 2001 Conservation Management Plan and the 2008 Heritage Management Plan were prepared for the CSIRO Yarralumla campus, in accordance with the Commonwealth Heritage List requirements. The CSIRO Forest Biosciences Division (the successor to the CSIRO Forest Research) was in the process of being disbanded in 2008 with staff being relocated to both Black Mountain and Gungahlin sites.

In 2018 ERM finalised an updated HMP for CSIRO Yarralumla that covers the redevelopment since the 2008 HMP such as the removal of buildings.

B1.1.11 Site Management Today

Today the CSIRO Yarralumla site has been largely vacant since the exodus of the CSIRO personnel. Building 1 group, Building 3, and Building 4 group, along with Forestry House and the former Bureau Offices/Museum are all vacant. The AFS building is privately leased through Oakstand.

B1.2 Key Associations

The following section provides a brief summary of two important individuals associated with the AFS. This section will assist in determining associational significance under criterion h) of the CHL criteria. Both of these summaries have been largely reproduced from the Australian Dictionary of Biography. The Forestry Bureau released a detailed obituary for Dr Jacobs in Australian Forestry Journal (Vol 42. No 3: 138-141 1979) which has also been utilised for this summary.

B1.2.1 Charles Edward Lane-Poole

Charles Edward Lane-Poole was born on 16 August 1885 at Eastbourne, Sussex, England, youngest son of Stanley Edward Lane-Poole, Egyptologist and professor of Arabic at Trinity College, Dublin, and his wife Charlotte Bell, née Wilson. He was educated at St Columba's College, Dublin, and at the Ecole Forestière, Nancy, France. After a year at the South African Forest School in 1906-07 he served until 1910 as district forest officer in the Transvaal. In 1911-16 he was conservator of forests, Sierra Leone, and a member of the Legislative Council. On the recommendation of Sir David Hutchins, who had reported on forestry in Australia, Lane-Poole was appointed conservator of forests for Western Australia in 1916 and vigorously set about providing a sound forest policy and a school to train foremen and rangers. The Forests Act (1919) which he formulated was regarded as a model in professional circles, but lack of support and opposition to its implementation prompted his resignation in 1921.

In 1922 he was commissioned by the Commonwealth government to report on the forest resources of Papua and New Guinea and recommend a programme for their development. In 1925-27 he was forest adviser to the Commonwealth government. At his prompting, the States and the Commonwealth finally agreed to establish an Australian Forestry School which was set up temporarily in Adelaide in 1926.

In 1927 Lane-Poole became inspector-general of forests and acting principal of the Australian Forestry School (1927-44) in Canberra. He was also the administrator of the Forestry Bureau which he had proposed to co-ordinate education, research and policy (not formally established until 1930). The research section which he first promoted in Western Australia to include research into making paper from eucalypts was developed in Melbourne as the division of forest products, Council for Scientific and Industrial Research. The forestry research section of the bureau eventually developed as the division of forest research, C.S.I.R., in Canberra.

Lane-Poole represented the Commonwealth government at the Empire Forestry conferences of 1920, 1923 and 1928. At the first conference (London) he proposed the resolution which led to the formation of the Empire Forestry Association. He was one of the great pioneers of forestry in Australia, working tirelessly to promote a national policy. Of strong personal and professional principles, he exerted considerable influence through his teaching and administration and as the author of over fifty papers covering both scientific and general aspects of forestry. He was a foundation member of the Royal Society of Australia (Royal Society of Canberra).

After he passed on his role as Principal of the Australian Forestry School to successor Dr. Jacobs in 1944 he also retired as inspector-general in 1945. Though he carried out consulting work in Sydney. Lane-Poole died on 22 November 1970 in Sydney.

B1.2.2 Dr Maxwell Ralph Jacobs

Dr Maxwell Ralph Jacobs was born in Adelaide South Australia in 1905 and received his early education in that State, graduating as a Bachelor of Science in Forestry from the University of Adelaide in 1925. On graduation he received the Lowry Agricultural Scholarship to study forest soils and was one of the first post-graduate students at the Waite Agricultural Research Institute in the University of Adelaide. Late in 1926 he was appointed Forest Assessor in the Australian Federal Capital Territory under Mr. G. J. Rodger, later Conservator of Forests in South Australia and Director-General, Australian Forestry and Timber Bureau, with whom he collaborated for many years. In 1928 Dr Jacobs became Chief Forester of the Federal Territory and in 1929 received a Commonwealth of Australia Scholarship in Forest Management which enabled him to undertake post-graduate studies at the Imperial Forestry Institute, Oxford, and the Forestry School at Tharandt in Saxony. As a result of this work he received the Diploma of Forestry from Oxford and a Doctorate in Forest Science from Tharandt.

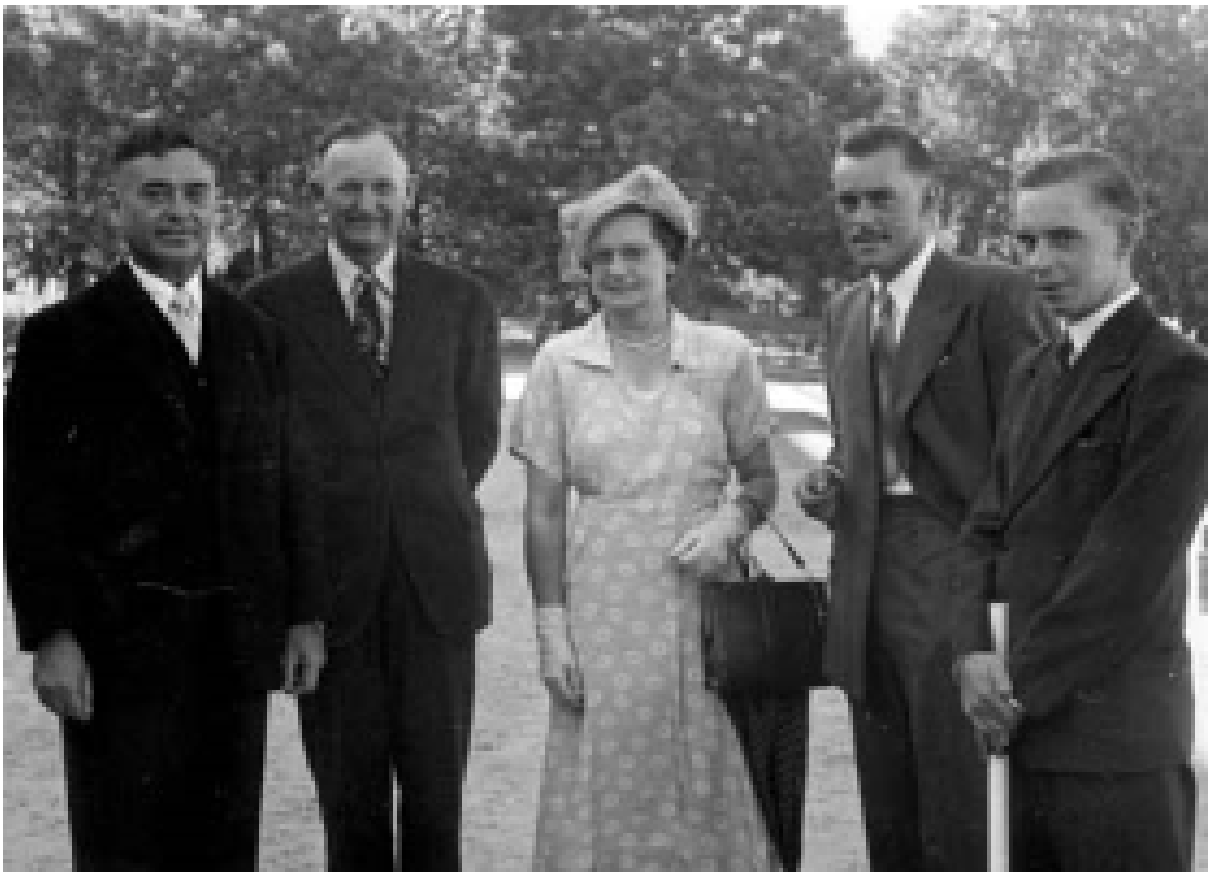
Returning to Australia at the end of his work in Europe, Dr Jacobs carried out a reconnaissance of the timber resources of the Northern Territory of Australia in 1933. This resulted in the discovery of some new species of eucalypts and the extension of the known range of others. A bulletin published by the Forestry Bureau (No. 17) “A Survey of the Genus Eucalyptus in the Northern Territory” described that work. From 1934 to 1939 Dr Jacobs worked under Mr. C. E. Lane Poole, Inspector General of Forests, as a Research Officer for the Forestry Bureau and a lecturer at the Australian Forestry School. One of his research projects was the growth stresses found in trees. A pioneer in this field, he produced several papers published by the Forestry Bureau on the subject. Another field of his research was on the effect of wind sway on trees. These studies were undertaken to see if the movement of trees in wind might explain certain anomalies in diameter growth found in rapidly growing pine plantations thinned to different spacings.

Dr Jacobs was one of the early workers to use cuttings as a means of multiplying selected trees of *Pinus radiata* on a field scale. An early paper on this, “Experiments with Cuttings of *Pinus radiata*” (Bureau Bulletin No. 25, 1939), described tests which have yielded field trials with trees which are now well over 30 metres high. Dr Jacobs also studied the anatomy, bud

systems and behaviour of eucalypt trees in the forest and this work led to several papers in scientific journals. In 1955 much of this work was consolidated in a book

The Growth Habits of the Eucalypts published by the Commonwealth Government Printer, which became a standard text not only in Australia but for countries growing eucalypts throughout the world. In 1939 Dr Jacobs received a Commonwealth Fund of New York Fellowship and studied at Yale University under Dean Samuel Record and Professor Edmund Sinnott. His subject was the growth stresses of growing trees and he received the degree of Ph.D in 1941.

From December 1941 to December 1944 Dr Jacobs served with the Royal Australian Engineers. In December 1944 he was appointed Principal and Lecturer in Silviculture of the Australian Forestry School, holding this post until 1959 except for a short F.A.O. Mission in Argentina in 1958 (*Photograph B1.43*). In December 1959 he became Acting Director-General and then Director-General of the Forestry and Timber Bureau. In this capacity he assisted the Federal Government in its collaboration with the States and with timber industries.



Photograph B1.43 Dr. Jacobs with his wife (centre), an official (far left) and two AFS students (far right) 1955 (NAA # 5281162)

During his service as Director-General, Dr Jacobs collaborated with State Heads of Forest Services and Commonwealth and State Ministers in the formation of the Australian Forestry 140 Council. He was Chairman of the Standing Committee of the Council from 1964 and Chairman of the Timber Industries Committee of the Standards Association of Australia from 1966 until 1970 (*Photograph B1.44*). Dr Jacobs was awarded the Jolly Medal of the Institute of Foresters of Australia in 1962 and was made an Honorary Member of the New Zealand Institute of Foresters and the Society of American Foresters. He travelled widely and represented Australia at several international conferences, including the Fifth and Sixth World

Forestry Congresses, Seattle and Madrid, and the Ninth Commonwealth Forestry Conference, New Delhi (*Photograph B1.45*). He was awarded the Imperial Service Order in 1966.

Photograph B1.44 Dr Jacobs, c.1960s (CSIRO Division of Forest Research)

Photograph B1.45 Dr Jacobs, leader of the Australian delegation, plants a commemorative tree in Seattle, USA, Fifth World Forestry Congress, 1960 (CSIRO Division of Forest Research)

Early in 1968 Dr Jacobs was invited to deliver the H. R. MacMillan Lecture at the University of British Columbia in Canada. His subject was “Federal-Provincial Forestry Problems with special reference to the Commonwealth of Australia”. Also in 1968 he was invited by the then Emperor of Ethiopia to visit that country and report on the situation with respect to eucalypt planting, which resulted in aid from Australia to Ethiopia, for example the supply of eucalypt seeds.

Dr Jacobs was Principal of the Australian Forestry School during the post-war years when large numbers of students were being trained in forestry, not only from Australia but from New Zealand, Asia and Africa. Dr Jacobs was easily able to establish rapport with his students and followed their careers with great interest. He was much admired by them and was warmly welcomed whenever he visited forest districts in which ex-students were serving. Australian forestry has suffered a great loss in the passing of one who led the way in putting forestry and forestry education on a scientific basis.

APPENDIX C COMMUNITY CONSULTATION PRESENTATION

Project Introduction

CSIRO Yarralumla is located in the prestigious residential suburb of Yarralumla. The site is situated off Banks Street adjacent to the Royal Canberra Golf Club and Westridge House, across the way from the Brickworks mixed use precinct, and close to Weston Park and the Molongolo River foreshore.

The site comprises approximately 11 hectares (ha) of land with groups of buildings including the historic former Australian Forestry School (AFS) and Forestry House as well as other research buildings clustered around an oval, plant nursery and arboretum.

The AFS, having been constructed prior to the residential development of the suburb, has been part of its growth and has remained a significant landmark to the local community, the city and the ACT.

The precinct is an example of the principles of the garden city movement – an ideal city, a city of the future: a city of hexagonal boulevards and streets joined by bush corridors, embellished with monumental buildings and surrounded by land and water.

This exhibition includes a detailed investigation of the site, the cultural heritage, and its landscape heritage to inform the development of a sensitive and respectful concept master plan that fits within the site and the greater precinct of Yarralumla.

The proposed master plan is the embodiment of the urban principles establish by Walter Griffin and renowned architectural artist Marion Mahony Griffin.

Community Consultation

This draft master plan has been informed by extensive engagement with key stakeholders who participated in several workshops and subject specific roundtable meetings.

Key considerations included:

- Preservation and maintenance of heritage buildings and setbacks
- Respect for the historical treescape, retention of significant trees and tree renewal
- Ratio of open space to built form
- Quality of design and built form
- Traffic generation
- Density and scale of future development
- Possible infrastructure upgrades
- Future of Forestry Oval (which is not within the Forestry Place lease).

Master Plan Concept

From the key stakeholder engagement, three master plan concepts were developed for consideration;

- The retention of a CSIRO 'campus style' research precinct
- An education master plan
- A mixed use residential precinct with additional uses, such as aged care, commercial adaptive reuse and community facilities.

The draft master plan presented within this community consultation exhibition refers specifically to a mixed use residential precinct with additional uses.

The general principles underlying the urban design are:

1. Achieve an integrated built form/landscape outcome that maximises the excellent strategic location of this site.
2. Maximise the use of land to achieve a yield commensurate with its value.
3. Ensure the new development sits comfortably within its urban setting, acknowledging the heritage, landscape character, and leafy nature of Yarralumla.
4. Provide private and semi-public areas to meet the needs of new residents and visitors.

Context

The site is within 10 minutes' walk of Weston Park and the Lake Burley Griffin foreshore, and within 5 minutes' walk of the Yarralumla Shops.

The Royal Canberra Golf Club lies directly to the west. It is considered one of Australia's premier golf courses. The golf course is fenced and public access restricted.

Adjacent to RCGC are the historic Westbourne Woods which are publicly accessible.

Whilst Yarralumla as a suburb extends to the east, there is a section of residential that sits between the open space corridor leading to Yarralumla Bay and the golf course. The site comfortably extends the existing residential land use between these two open spaces.

Banks Street is an important vehicle access road within Yarralumla leading, circuitously, off Yamba Drive to Novar Street and then Weston Street to Banks Street.

FORESTRY PLACE
YARRALUMLA

The Shepherd Centre
Giving deaf children a voice

oakstand

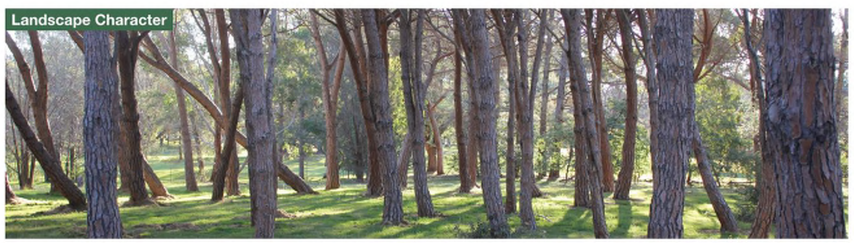
KANNFINCH

oxigen

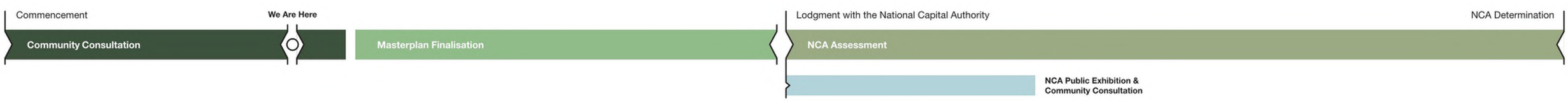
TANIA PARKES consulting

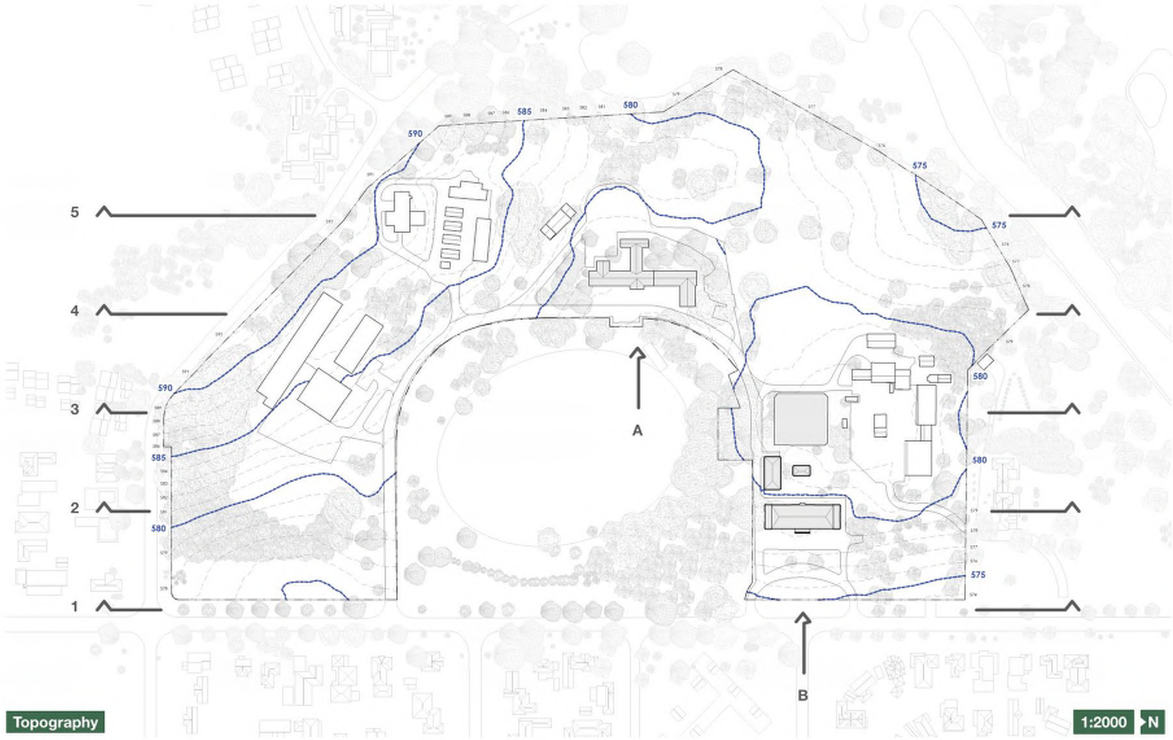
ERM

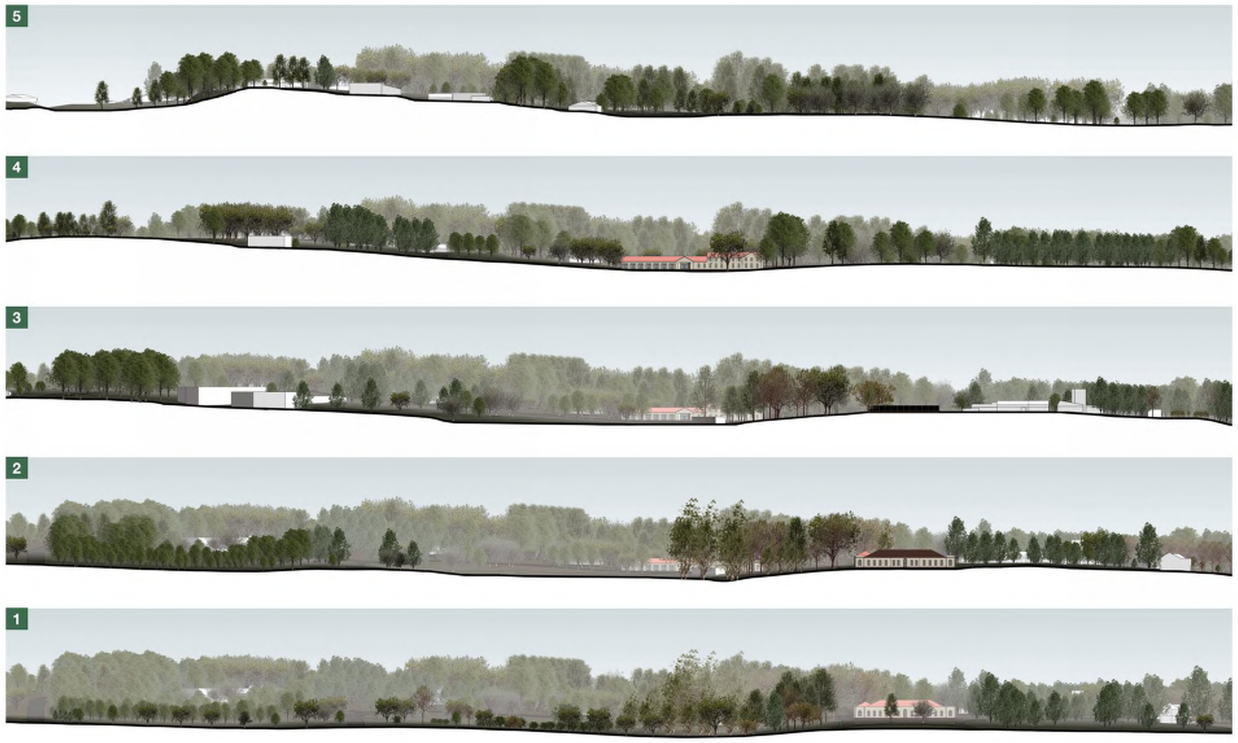
www.forestryplace.com.au



Timeline







Views and Sight Lines

There are a number of important aesthetic views and 'sight lines' to and from, and within the CSIRO Yarralumla site. These views are short (between buildings) and medium distance views (outside of the Site looking in, and from the Site looking out).

The most noteworthy of these sight lines is the axial alignment of the AFS building as the termination of Schlich Street, a wide tree-lined residential street. The symmetrical arrangement of the AFS and Schlich Street intersecting on east/west axes of symmetry is the principal view within CSIRO Yarralumla. The two Roman Cypress trees framing the AFS east façade also contribute to this important sight line.

The central line of the Australian Forestry School (AFS) Eastern façade was designed to align with the soon to be constructed Schlich Street (named after Sir William Schlich, a prominent Oxford professor of Forestry). This significant view is one of many in Canberra where buildings, roads and trees work together to make a picturesque and liveable city. This view is a demonstration of Walter Burley Griffin's artistic grasp on town planning and the consideration of his plan in the design process for the AFS.

Further, the view from the patio east façade of Forestry House onto the large oval with views of mature plantings both north-east and south-east and the view of Forestry House facing north-west from Wilf Crane Crescent both also contribute to CSIRO Yarralumla's setting and significant views.

These significant heritage views have been protected and preserved within the current Masterplan concept. Buildings have been scaled to preserve view corridors and provide adequate building separation and curtilage so that the viewer can experience the legacy of the heritage buildings within their original intended place making and functional design setting.

KANNFINCH oakstand oxigen TANIA PARKES consulting ERM

FORESTRY PLACE YARRALUMLA

Traffic Assessment

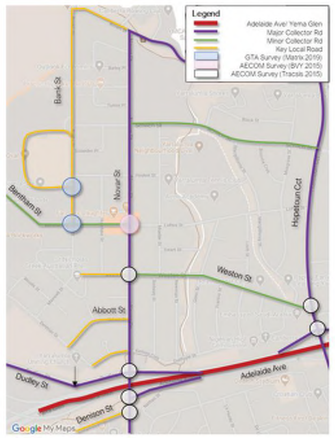
Traffic Data and Analytics Evaluation Methodology

Network Map

Classification of Yarralumla Road System.

Nodes or intersections where transport data has been collected (see circles).

Identification of survey origin for individual intersections.



Traffic Modelling Methodology

1. Data Collection

AECOM, 2015 - Intersection Surveys

GTA, 2019 - Intersection Surveys

2. Data Purification

Sensibility Check

Review Annual Traffic Growth

3. Baseline Traffic Demand

Delivery of Canberra Brickworks Precinct

(380 Residential Dwellings)

4. Development Traffic Forecast for Various Options

Transport for NSW Guide

Estate Development Code

GTA Database of similar developments

5. Development Traffic Distribution Across Road Networks

ABS Census Data

Road Network Characteristics

Origin/Destination Evaluation

6. Post-Development Traffic Demand

Planned and Committed Road Network Upgrade

Adelaide Avenue Interchange

ACT City Services have defined three intersections to signalize:

Dudley Street/Novar Street/Adelaide Street/Adelaide Avenue on-ramp

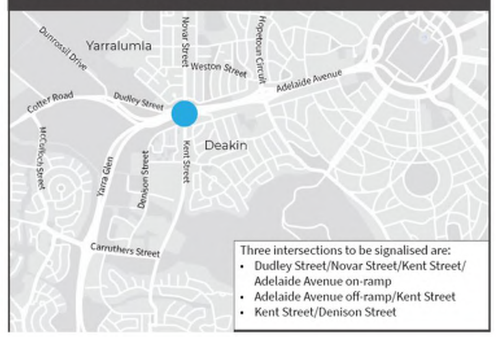
Adelaide Avenue off-ramp/Kent Street

Kent Street/Denison Street

Detailed designs are currently being prepared, to be finalised and released to the public in 4th quarter 2020. Construction is expected to be complete late 2022.

Project will increase transport capacity and improve safety on the local road network.

Central Canberra signalisations



Vehicle Traffic

Novar Street is the main access and through route to this section of the suburb of Yarralumla.

A minor street, Wilf Crane Crescent, provides access internally to the site and the former Forestry School and Forestry House. Bentham Street provides access to the Royal Canberra Golf Club and more recent Westbourne Woods residential development.

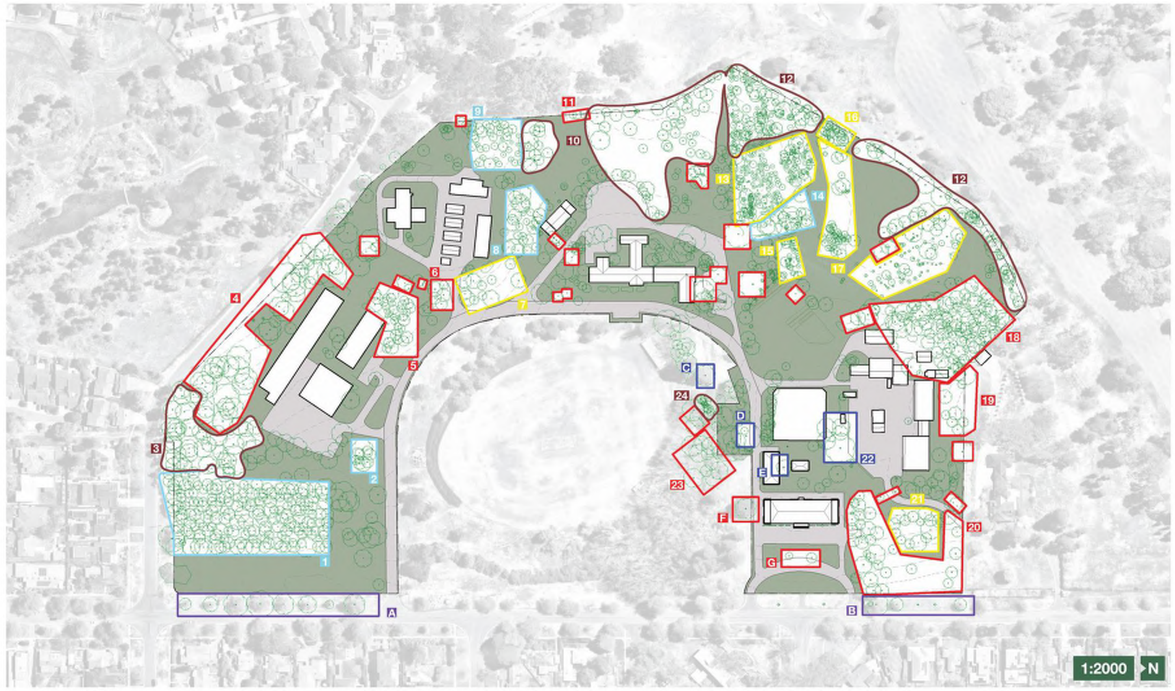
Cycles

A commuter and recreational cycle route circumvents Lake Burley Griffin passing through Weston Park and crossing Banks Street. This cycle route connects to Civic, Woden and other places in Canberra.

There is no direct connection along Banks Street to the site although the western verge is wide enough to accommodate a future link.

Existing Site Trees

1. The ACT identifies both significant and regulated trees. A regulated tree is one that is either:
   a. 12m or more in height; or
   b. 1.5m or more in circumference at 1m above ground level; or
   c. With two or more trunks and the total circumference of all the trunks 1m above ground level is 1.5m or more; or
   d. 12m or more in crown width.
2. The urban design master plan should identify which trees are regulated as development approval will be required if these trees are proposed for removal. If possible, as many regulated trees as possible should be retained.
3. The ACT also identifies significant trees on a Tree Register. No significant trees appear to be listed on the site.



Legend

- Registered
- Exceptional
- High Quality
- Medium Quality
- Low Quality
- Poor Quality

Tree Groups

1. Medium Quality - Atlantic Cedar
2. Medium Quality - Mixed Eucalypts
3. Weed Species - Pinus Radiata
4. High Quality - Mixed Pinus
5. High Quality - Canary Island Pine
6. High Quality - Chir Pine
7. Poor Quality - English Oak
8. Medium Quality - Pin Oak
9. Medium Quality - Brachychiton Populneus
10. Weed Species - Pinus Radiata
11. High Quality - Canary Island Pine
12. Weed Species - Pinus Radiata
13. Poor Quality - Mixed Eucalypts
14. Medium Quality - Quercus Robur
15. Poor Quality - Mixed Pinus
16. Poor Quality - Eucalyptus
17. Poor Quality - Pinus & Eucalyptus
18. High Quality - Pinus Pinea
19. High Quality - Pinus Ponderosa
20. High Quality - Pinus Ponderosa
21. Poor Quality - Quercus Palustris
22. Exceptional - Pinus Pinea
23. High Quality - Quercus Palustris
24. Weed Species - Pinus Radiata

Individual Trees

- A. Registered Trees - Atlantic Cedar
- B. Registered Trees - Atlantic Cedar
- C. Tree 1445 - Pinus Species
- D. Tree 567 - Eucalyptus Albens
- E. Tree 581 - Araucaria Bidwillii
- F. Tree 293 - Pinus Ponderosa
- G. Tree 305 & 306 - Cupress Sempervirens

Existing Landscape Character

1. Yarralumla is one of Canberra's 'greenest' suburbs given the nearly 50% allocation of open space within the suburb, generally larger blocks, and well established street tree plantings and gardens.
2. Overall, the landscape character is one of well integrated gardens, public realm and built form with extensive open spaces used for recreation.
3. The wide planted verge and setbacks on the western side of Banks Street reinforce this character adjacent to the Forestry Oval and site.
4. The Forestry Oval and curtilage remains for public use under control of the Territory.

Tree Assessment

An Arborist was engaged to survey the location and condition of all trees on the site during April and May 2020. All assessment results were tabulated within a Tree Schedule and the Tree location plan

Currently there are 1550 trees over 6m in height on the site.

The trees were assessed as either individual trees or in groups where appropriate. Each tree or group of trees were identified, assigned a tree number or group, height, trunk circumference, canopy width and were assessed for health, structure, regulatory status and overall tree quality. Trees less than 12m or weed species were identified but not assessed as described above.

There were 24 Tree Groups that were divided up into species or groups of similar species. Each group was assigned an overall Tree Quality assessment of either Exceptional, High, Medium, Poor or Weed Species.

If Individual trees within a group were significantly different then comments were detailed within the tree schedule.

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Existing Site

Built Form

Removed

Heritage Value

Plantings

Removed

High Quality

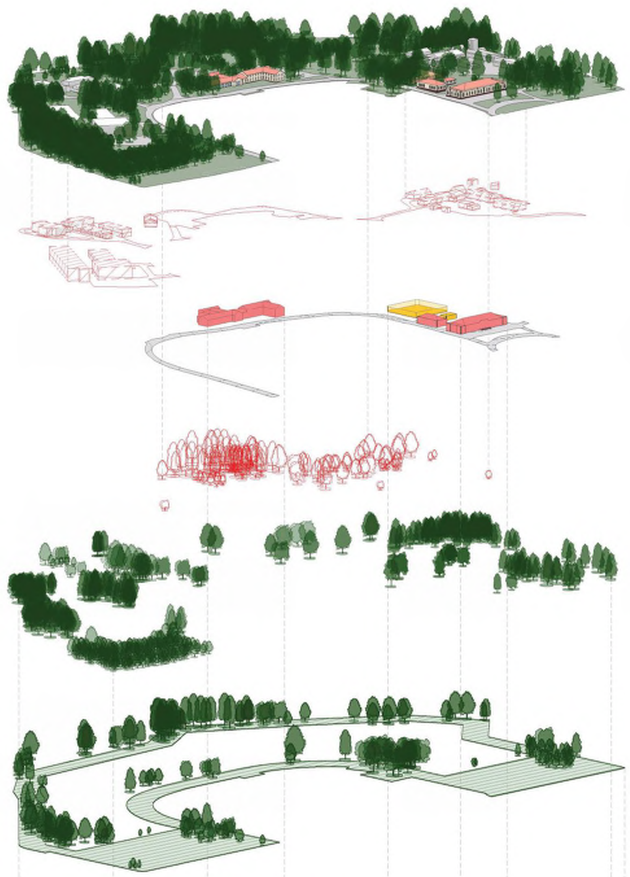
Landscape Buffer

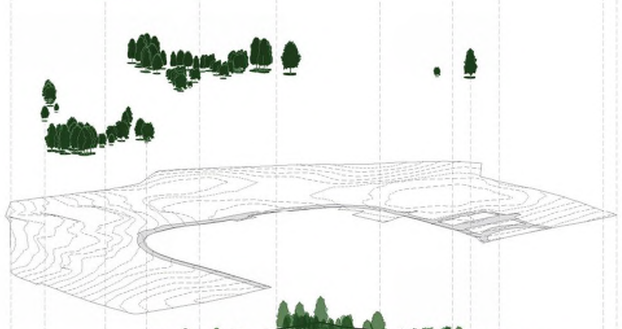
Heritage Value

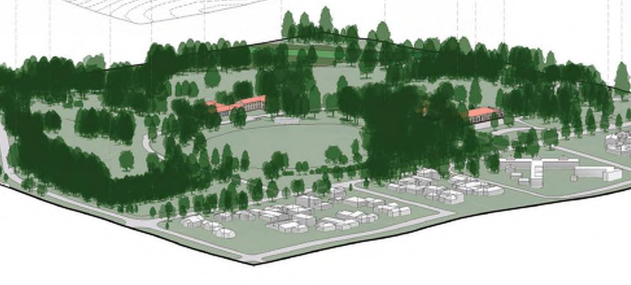
Topography

Resulting Site

Development Opportunities







Development Opportunities

Volume Study

Developable Areas

Preliminary Footprints

Building Interface

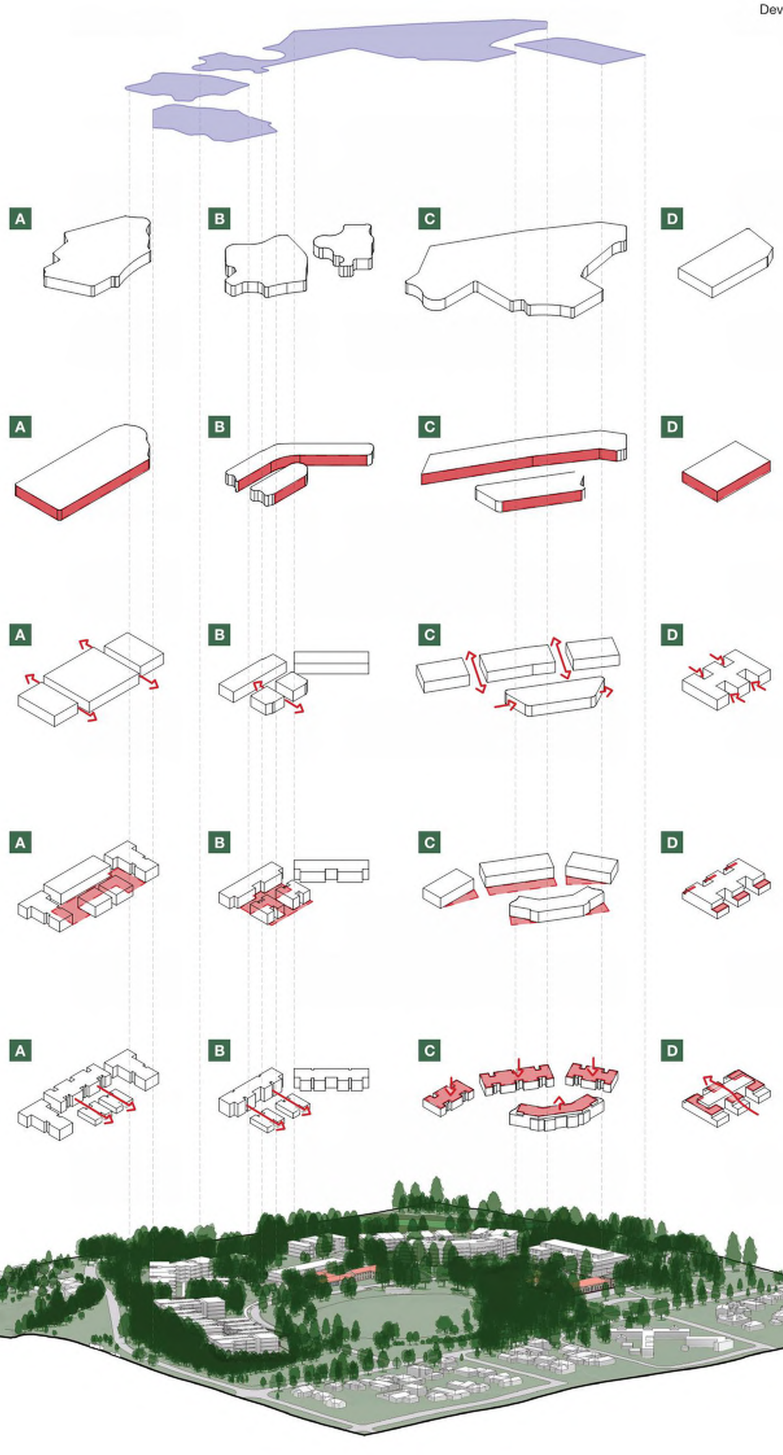
Access & Separation

Building Articulation

Height/Scale

View Analysis

New Landscaping



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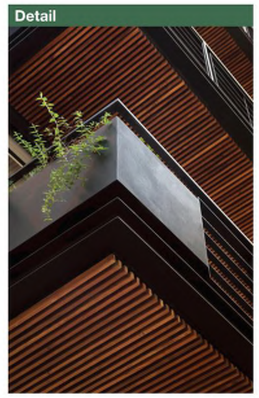
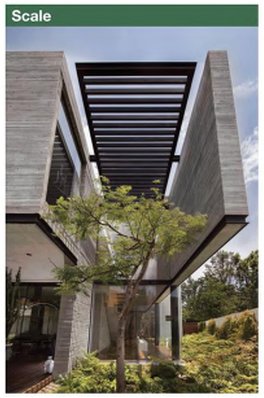
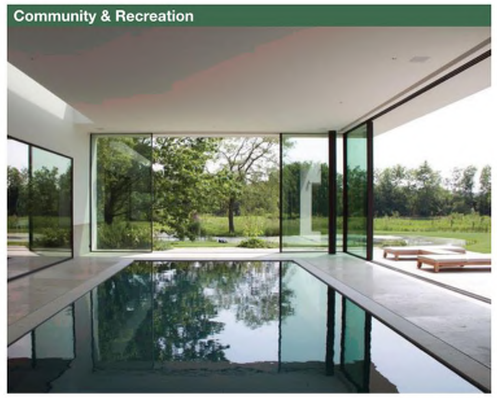
Aged Care

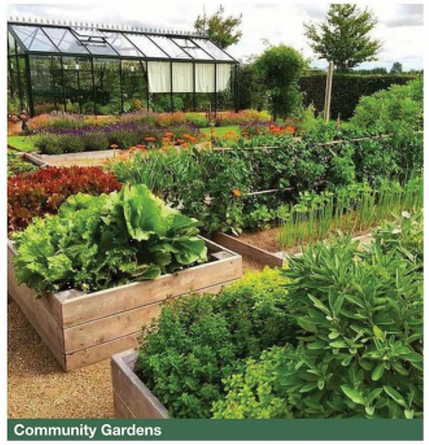

Community & Recreation

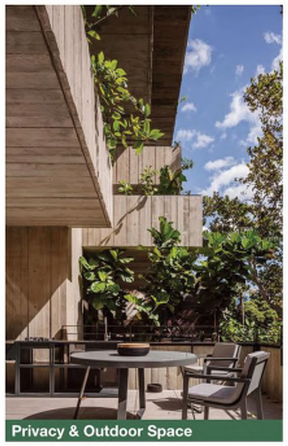

Detail

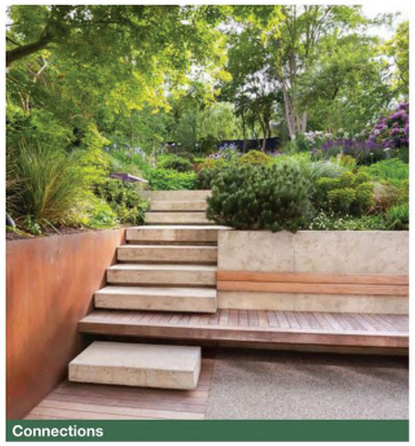

Scale


Materiality


Community & Recreation


Community Gardens


Privacy & Outdoor Space


Connections


Scale


Materiality


Detail

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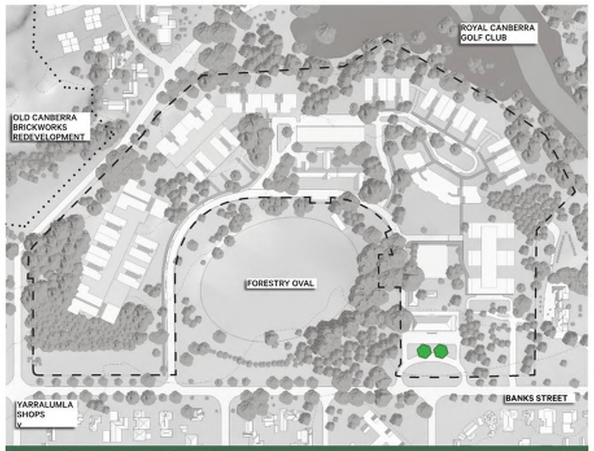
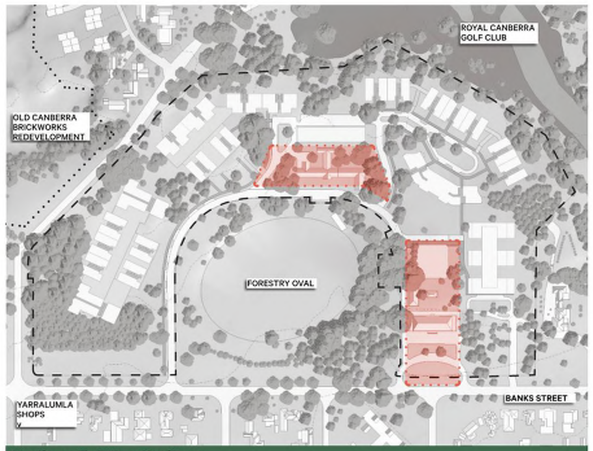
Approach to Revitalising the Landscape

1. Rejuvenate the existing trees on site, ensuring the high value trees or copse of trees are retained and incorporated into the landscape design.
2. Be cognisant of the extensive stands of evergreen trees and other stands of deciduous trees forming the landscape character. While some of the evergreen trees have significance in character because of their historic association as wind breaks, the new uses and activities proposed for Forestry Place may favour a variety and mix of tree species for environmental (sun penetration in winter to residences) and amenity reasons.
3. Plant new semi-established trees.
4. Establish a planned tree management, maintenance and renewal regime for the long term viability and success of the scheme.
5. Retain all registered trees and other high quality trees, noting that not only individual specimens, but also a copse of trees may designate significance.
6. Look to maintain a similar density of canopy over the site.
7. Manage a staged removal of poorer quality trees with consideration to their future growing conditions and medium and long term viability.
8. Continue the history of experimental tree planting through some planting of new trees and in particular those selected for climate adaptation.
9. Ongoing work with the Institute of Foresters and The Friends of ACT Trees during development.

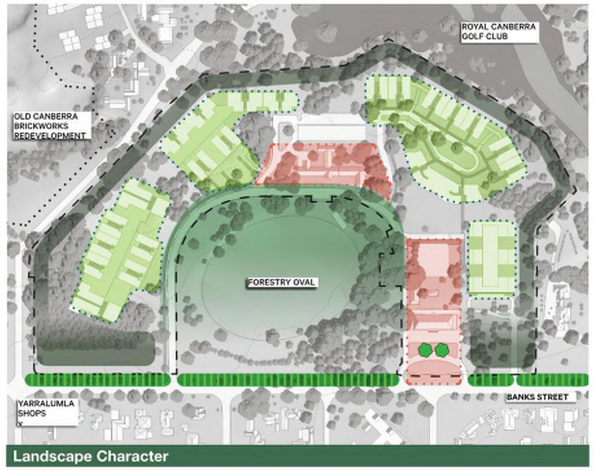


Special Trees to be Retained

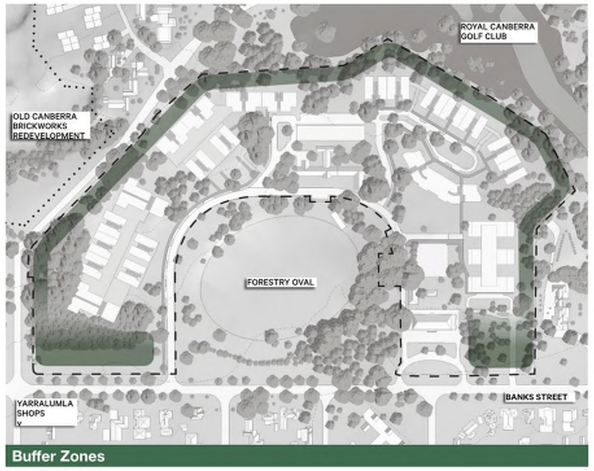


Heritage Building Curtilage

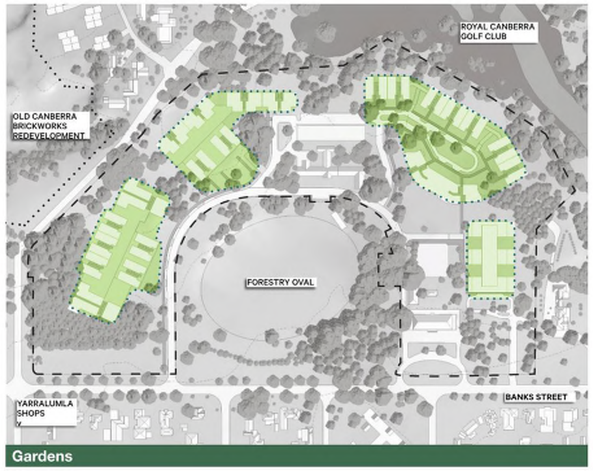
Oval & Curtilage



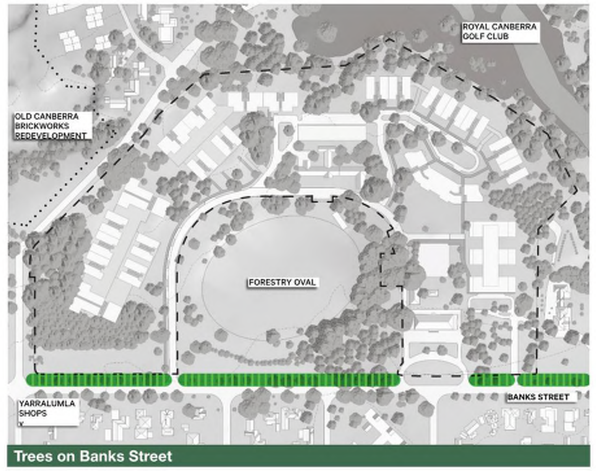
Landscape Character



Buffer Zones



Gardens



Trees on Banks Street

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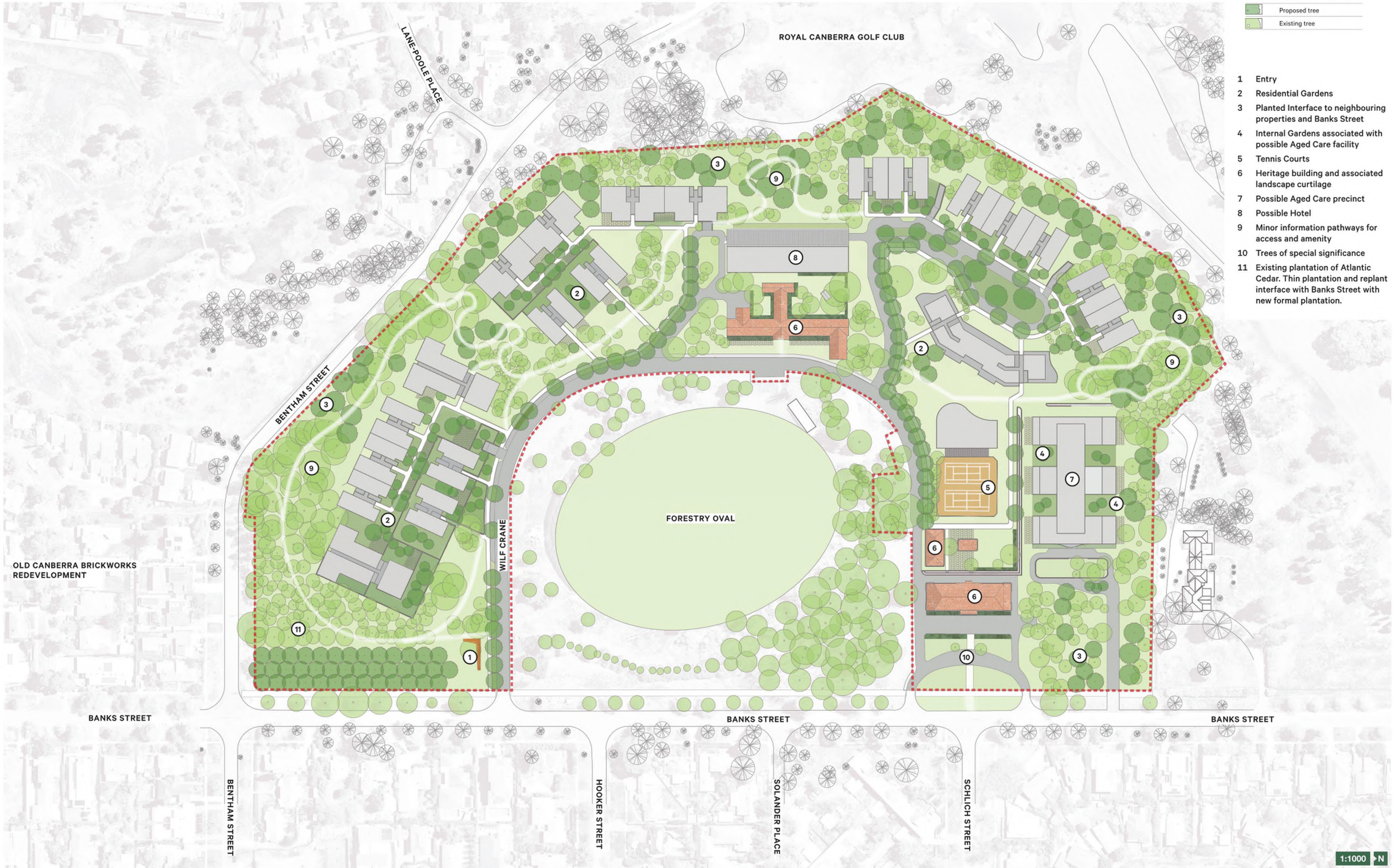

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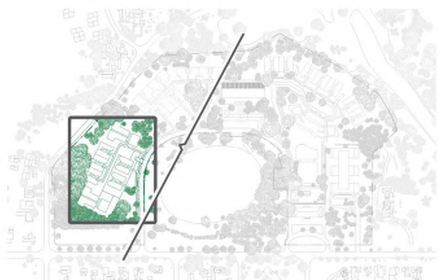

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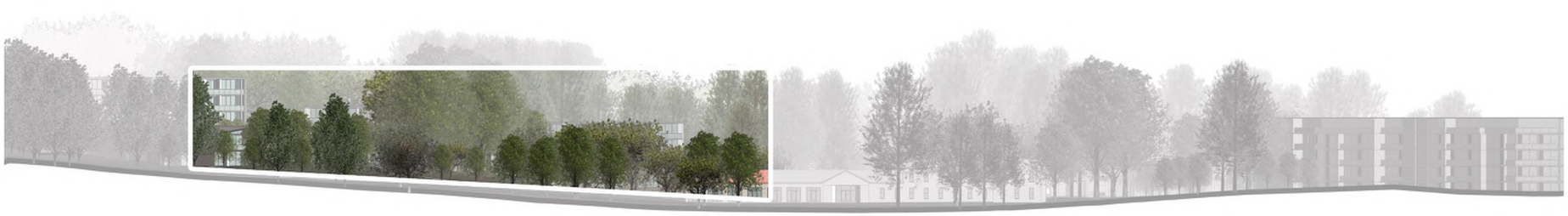

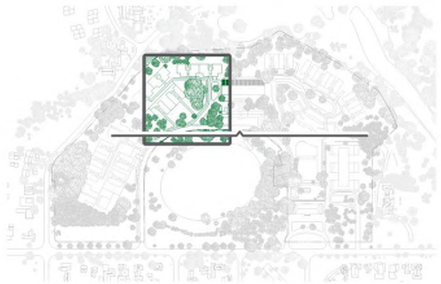

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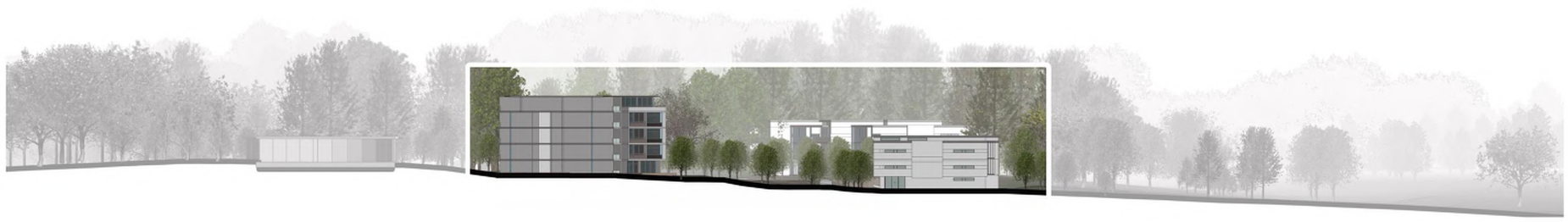

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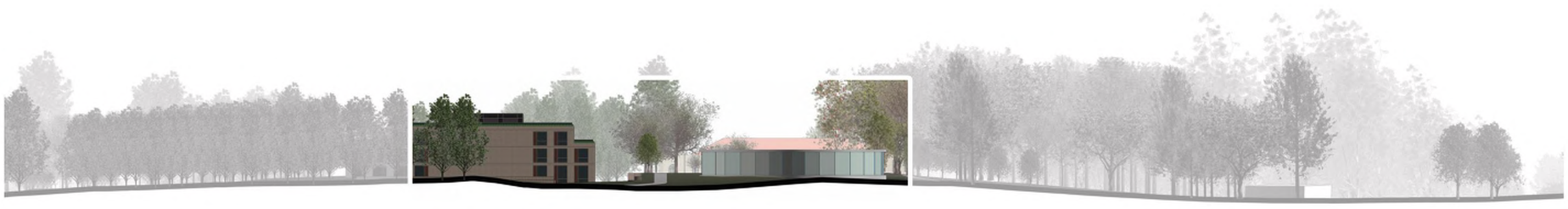

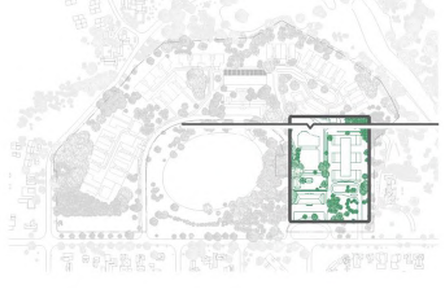

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APPENDIX D SIGNIFICANT IMPACT GUIDELINES

Australian Government
Department of Sustainability, Environment,
Water, Population and Communities




Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies

Significant impact guidelines 1.2
Environment Protection and Biodiversity Conservation Act 1999

BIO070.0613

Disclaimer
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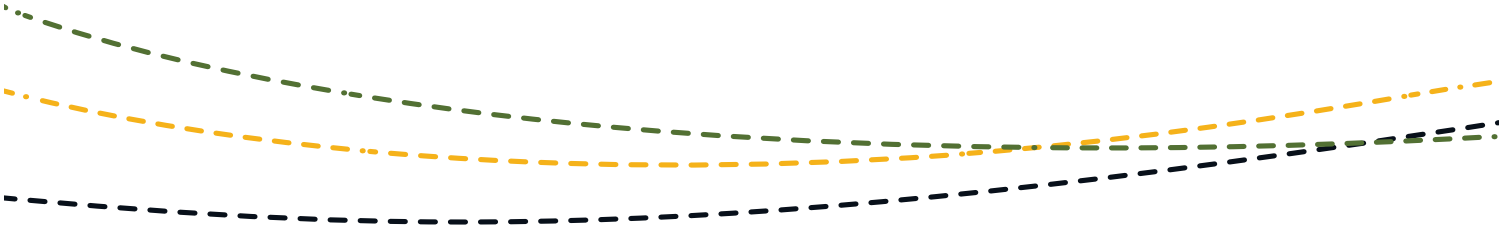
Photo credits for front cover (from left to right)
South West Coringa Islet (Australian Customs Service)
Cape Byron Lighthouse and Residences (John Houldsworth)
Uluru-Kata Tjuta National Park (Andrew Hutchinson)
Sub-Antarctic fur seals with Big Ben in the background, Heard Island (Ken Green)

CONTENTS



INTRODUCTION

These guidelines apply to:

1. any person who proposes to take an action which is either situated on Commonwealth land or which may impact on Commonwealth land, and/or
2. representatives of Commonwealth agencies who propose to take an action that may impact on the environment anywhere in the world.

The purpose of these guidelines is to assist persons in the above categories to decide whether or not they should submit a referral to the Australian Government Department of the Environment, Water, Heritage and the Arts (the department) for a decision by the federal environment minister on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).[1]

These guidelines may also assist members of the public or interest groups who wish to provide comments on actions which have been referred under the EPBC Act.

What is an action?

'Action' is defined broadly in the EPBC Act and includes: a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things.

Actions include, but are not limited to: construction, expansion, alteration or demolition of buildings, structures, infrastructure or facilities; storage or transport of hazardous materials; waste disposal; earthworks; impoundment, extraction and diversion of water; research activities; vegetation clearance; military exercises and use of military equipment; and sale or lease of land.

Actions encompass site preparation and construction, operation and maintenance, and closure and completion stages of a project, as well as alterations or modifications to existing infrastructure.

A decision by a government body to grant a governmental authorisation (however described) for another person to take an action is not an action. However, the EPBC Act requires Commonwealth agencies or employees to obtain and consider advice from the federal environment minister before making a decision to authorise certain actions (see Appendix C) and prohibits Commonwealth agencies from authorising a person to do, or omit to do, anything that would contravene a plan for managing a Commonwealth Heritage place (see Appendix B).

1 Note that an action does not require approval under the EPBC Act if it meets the criteria for the 'prior authorisation' or 'continuing use' exemptions. These criteria are explained in the Practice Guide entitled *Prior Authorisation and Continuing Use Exemptions – Sections 43A and 43B*, available on the department's web site at: www.environment.gov.au/epbc/publications/exemptions.html

Further exemptions include:

- certain activities allowed in the Great Barrier Reef Marine Park "as of right" (that is, without a permission) under a *Great Barrier Reef Marine Park Act 1975* (GBRMP Act) zoning plan (EPBC Act section 43);
- certain forestry operations in Regional Forestry Agreement Areas (EPBC Act section 42); and
- certain actions requiring separate authorisation by an Australian Government agency or employee and subject to an alternative assessment and advice process under section 160 of the EPBC Act.

What is a referral?

'Referral' of an action involves filling out a referral form and sending it to the Department of the Environment, Water, Heritage and the Arts. A referral identifies the person proposing to take the action and includes a brief description of the proposal, the project location, the nature and extent of any potential impacts, and any proposed mitigation measures. The EPBC Act referral process is outlined in more detail at the end of these guidelines.

These guidelines should be considered in conjunction with the *Significant impact guidelines 1.1*, which deal with matters of national environmental significance. The nine matters of national environmental significance (MNES) are:

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

You should consider separately whether or not your action is likely to impact on any of these matters of national environmental significance. However, if referral is necessary, you need only submit one referral that includes all relevant matters.

If you represent a Commonwealth agency which owns or controls land consisting of, or containing, a listed Commonwealth Heritage place, there are additional management responsibilities under the EPBC Act which are outlined in Appendix B.

Determining whether a referral is required under the EPBC Act

Under the EPBC Act approval is required for:

1. **An action taken by any person on Commonwealth land** that is *likely* to have a significant impact on the environment (subsection 26(1) of the EPBC Act)[2].
2. **An action taken by any person outside of Commonwealth land** that is *likely* to have a significant impact on the environment on Commonwealth land (subsection 26(2) of the EPBC Act).
3. **An action taken by a Commonwealth agency anywhere in the world** that is *likely* to have a significant impact on the environment (section 28 of the EPBC Act).

2 In relation to actions proposed to be taken on Commonwealth land in an Australian Government leased airport, refer also to Appendix D.

What is the environment?

'Environment' is defined in the EPBC Act as:

a. ecosystems and their constituent parts including people and communities ('ecosystem' is defined in the EPBC Act as 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functioning unit')

b. natural and physical resources

c. qualities and characteristics of locations, places and areas

d. heritage values of places ('heritage value' is defined in the EPBC Act as including 'the place's natural and cultural environment having aesthetic, historic, scientific or social significance, or other significance, for current and future generations of Australians.' 'Indigenous heritage value' is defined as meaning 'a heritage value of the place that is of significance to Indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history'), and

e. the social, economic and cultural aspects of a thing mentioned in paragraphs a, b or c.

These guidelines outline a 'self-assessment' process to assist you in determining whether your action is likely to have a significant impact on the environment. If an action which you propose to take falls within one of the three categories outlined above, or if you are unsure, you should refer the action to the federal environment minister. A person who takes such an action which has not been approved by the minister and which has a significant impact on the environment may be subject to criminal and civil penalties.

What is a significant impact?

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. You should consider all of these factors when determining whether an action is likely to have a significant impact on the environment.

When is a significant impact likely?

To be 'likely', it is **not** necessary for a significant impact to have a greater than 50 per cent chance of happening; it is sufficient if a significant impact on the environment is a **real or not remote** chance or possibility.

If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment.

Environmental risk management by Commonwealth agencies

In addition to distributing this guideline, Commonwealth agencies should have in place procedures and protocols to ensure that all relevant staff understand and comply with the agency's obligations under the EPBC Act.

Agencies regularly undertaking actions that require assessment and approval under the EPBC Act should consider undertaking a strategic assessment under section 146 of the EPBC Act. Section 146 provides for the assessment of the impacts of actions under a policy, plan, or program agreed between the implementing agency and the federal environment minister on a matter protected under Part 3 of the EPBC Act. The minister can take a strategic assessment into account when deciding whether or not actions by the agency require approval under the EPBC Act and, if approval is required, what level of assessment is appropriate.

SELF-ASSESSMENT PROCESS

Introduction

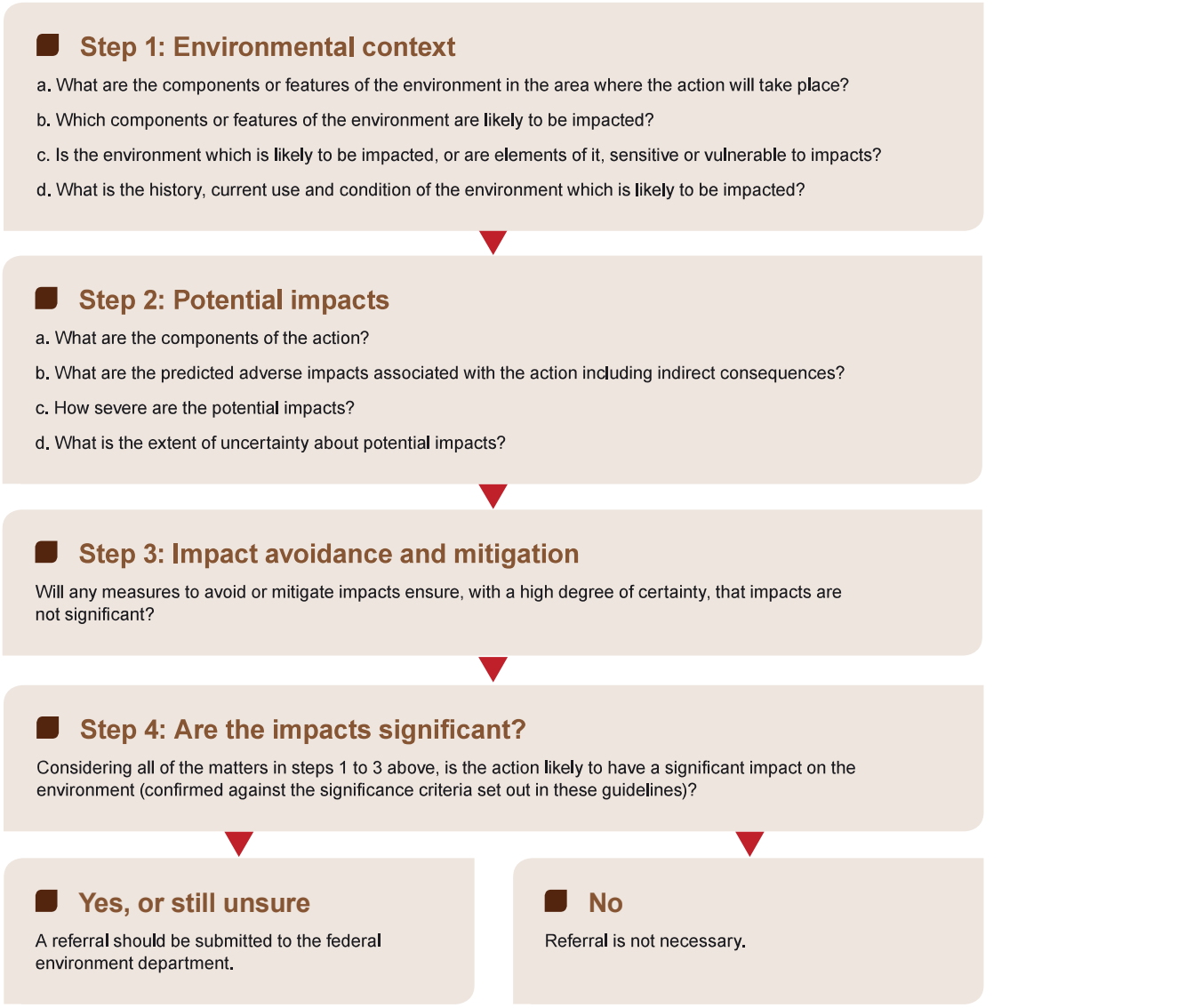
The 'self-assessment' process set out on the following pages is intended to assist you in deciding whether or not your action is likely to have a significant impact on the environment. Your self-assessment should be as objective as possible and based on sufficient information to make an informed judgement. If you complete the self-assessment process and you are still unsure whether the action you propose to take is likely to have a significant impact on the environment then you should refer the action to the Department of the Environment, Water, Heritage, and the Arts. In considering taking this step, you may like to discuss the matter with the department's business entry point. The business entry point can be contacted through the department's community information unit on **1800 803 772** or by emailing **epbc.referrals@environment.gov.au**.

In deciding whether or not the action that you propose to take is likely to have a significant impact you must consider:

1. the environmental context
2. potential impacts likely to be generated by the action, including indirect consequences of the action
3. whether mitigation measures will avoid or reduce these impacts, and
4. taking into consideration the above, whether the impacts of the action are likely to be significant.

The self-assessment process is summarised in Figure 1. Each step in the self-assessment process is discussed on the following pages.

Figure 1: The self-assessment process



Step 1: Environmental context

The key to determining whether an action is likely to have a significant impact on the environment is to understand the environment which will be impacted (the 'environmental context'). When identifying the environmental context you should consider both the site of the action and adjacent, surrounding, downstream, or downwind areas that may be directly or indirectly affected by the action.

The key questions to consider when identifying the environmental context are:

- What are the components or features of the environment in the area where the action will take place?
- Which components or features of the environment are likely to be impacted by the action?
- Is the environment which is likely to be impacted, or are elements of it, sensitive or vulnerable to impacts, and/or are components of it, rare, endemic, unusual, important or otherwise valuable?
- What is the history, current use and condition of the environment which is likely to be impacted by the action?

What are the components or features of the environment?

The first step in identifying the environmental context of an action is to identify the general features of the environment in the area where the action will take place.

Which components of the environment are likely to be impacted?

Once components or features of the environment have been identified the second step is to identify which components or features of the environment are likely to be impacted by the action.

Is the environment sensitive or vulnerable to impacts?

The third step is to determine whether the environment which is likely to be impacted, or components or features of that environment, are sensitive or vulnerable to impacts. An action is more likely to have a significant impact on the environment if it will impact upon sensitive or vulnerable areas, components or features of the environment.

Areas, components or features of the environment may be vulnerable to all impacts or they may be especially vulnerable to certain kinds of impacts. Examples of environmental components which are likely to be vulnerable to all impacts include:

- environmental components which are physically fragile, for example, limestone formations or rock art
- environmental components which have very specific environmental requirements, for example, some animal species, such as the Red-tailed Black-Cockatoo, have very specific feeding and nesting requirements, and
- environmental components which are non-renewable or very slow to reproduce or regenerate, for example, many heritage buildings or sites cannot be repaired or replaced if damaged or destroyed, some tree species such as Huon Pine are very slow growing and slow to regenerate.

In contrast, some environmental components are more robust and more able to withstand impacts. These include plant and animal species that occur in a wide range of environments or which have a high rate of reproduction or regenerative capacity, such as kangaroos.

Environmental components may also be vulnerable in relation to specific types of impacts. For example, a heritage building which is important for its aesthetic values is vulnerable to visual impacts (such as the erection of buildings or other structures in close proximity which are inconsistent with the heritage values of the building) but is less vulnerable to noise impacts. Alternately, environmental components may be more vulnerable to impacts at certain times, for example many animals are more vulnerable during their breeding season.

Is the environment, or are components of it, rare, endemic, unusual, important or otherwise valuable?

It is also helpful to determine whether any components or features of the environment have special value. All components or features of the environment have values. Some of these values may be described as inherent values, which derive from the existence of each component and its interaction with other components in an ecosystem. Other values derive from the importance of those components or features of the environment to people. Components of the environment may have a range of different values, including both natural and cultural values.

Some components or features of the environment are considered to have special value. These include animal and plant species, landforms, heritage buildings, or other components of the environment which are unique or rare. Places may also be considered to have special value because they contain components or features, or combinations of components or features, which are unique or rare.

The relevance of threatened species, heritage and other lists

The EPBC Act provides protection for places and components of the environment which are unique, rare or considered to have special value at a national level. These include listed threatened species and ecological communities, listed migratory species, National Heritage places, Commonwealth Heritage places, World Heritage properties, listed Ramsar wetlands, and the Great Barrier Reef Marine Park.* State government protected species lists and heritage lists may also assist in identifying components of the environment with special value, and your local government may also have information about rare or otherwise important elements of the environment. However, when you are considering the environmental context of your action, all components of the environment should be considered and not merely those components which are identified and/or protected by local and state governments, or by the Australian Government. Many components of the environment, such as landforms, geological features, and water bodies, do not appear on formal lists or registers, but still have important environmental value.

*See ‘Further sources of information’ on pages 20-21

Places or components of the environment may also be considered to have special value because they have recreational values, tourism values, or other social or cultural values. These include parks, reserves, historic sites, and ceremonial or sacred sites. Alternately, elements of the environment may have special value because they are a source of important resources. Generally, an action which is likely to impact upon a place, or environmental elements, with special values is more likely to have a significant impact.

Heritage values

Heritage values include any element of a place's natural and cultural environment that has aesthetic, historic, scientific, social or other significance, for current and future generations. Elements to consider include significant buildings and structures, landscapes, sites, routes, aesthetic qualities, surface and sub-surface archaeology, sacred sites, traditions, significant plants, animals, ecological communities and geological formations. Consider their potential significance to Indigenous and non-Indigenous people. The sensitivity of heritage values will vary widely. A key question to consider is whether an action will affect the significance or value that the place holds for people, as well as simply the physical impacts on its fabric or condition.

Indigenous heritage value is that which is of significance to Indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history. The sensitivity and value of Indigenous heritage are identified through consultation with the Indigenous people that are potentially affected. Impacts on particular species of plants or animals or on elements of the landscape may have a significant impact on Indigenous cultural heritage. Impacts on Indigenous cultural heritage can also occur without physical disturbance to a site.

As a starting point you should consider if there are any places listed on the World Heritage List, National Heritage List, Commonwealth Heritage List or the Register of the National Estate (www.environment.gov.au/heritage/places/rne/index.html) in the area in which the proposed action will occur. You should also check state and local government heritage registers and any previous surveys that have been undertaken on the site or in its vicinity. The Australian Heritage Places Inventory allows you to search for places which are on Australian Government or state or territory lists (www.heritage.gov.au/ahpi/index.html).

What is the history, current use and condition of the environment which is likely to be impacted by the action?

The final step when considering the 'environmental context' for your action is to consider the history, current use and condition of the environment which is likely to be impacted by your action. The history and current use of the area in which the proposed action will occur is an important aspect of the environmental context. The history and use of the area affect the characteristics and the condition of the environment in that area. Generally, an action in a previously undeveloped area, particularly if it involves native vegetation clearance, is more likely to have a significant impact on the natural environment than an action in an area which is already developed.

The extent of consistency between the action and surrounding land-use is also an important consideration. Generally, an action is more likely to have a significant impact on the environment if it involves a land-use which is more intensive than other activities in the area, or if it is inconsistent with existing land-use in the area, particularly if the area has heritage values.

The condition of environmental elements depends upon the level of disturbance which an area has experienced. Factors which affect the condition of the environment include: the modification, removal or damage of environmental elements, such as vegetation clearance or diversion of water courses; the introduction of competing elements such as exotic weed species; and the introduction of pollutants or other substances which affect the ability of the environmental components to exist or function.

Generally, an action which is proposed to occur in an environment which is in good condition is more likely to have a significant impact than an action which is proposed to occur in an environment which is heavily degraded.

An important exception to the examples above is the possibility of significant cumulative impacts. An action which will take place in an area that is already developed, or which is consistent with existing land-use, may nevertheless have a significant impact on the environment if cumulative impacts are increased to unacceptable levels. For example, an action which involves the release of pollutants, chemicals or fertilisers to a river is more likely to have a significant impact on the environment if the addition of further pollutants, chemicals or fertilisers would result in the river exceeding important ecological thresholds (for example resulting in plant or animal deaths or algal blooms), or recognised water quality standards.

The 'environmental context list' in Appendix A contains a list of environmental components and specific questions in relation to those components which may further assist you in identifying the environmental context for your action.

Step 2: Potential impacts

What are the components of the action?

The first step in assessing the potential impacts of an action on the environment is to consider all components of the action individually. You should consider the action at its broadest scope. Most actions consist of a combination and/or series of smaller activities each with its own associated impacts. All components of an action should be considered, including any associated infrastructure (such as link roads, or linkages to reticulation systems or power networks). If an action consists of stages, it is also necessary to consider the impacts associated with the components of the action at each stage, for example, construction and operation stages.

What are the predicted adverse impacts associated with the proposed action?

Having identified the different components of the proposed action, consideration should be given to the potential adverse impacts resulting from them.

Adverse impacts and beneficial impacts

When deciding whether or not a proposed action is likely to have a significant impact on the environment, you should consider only the adverse impacts that the action is likely to have. Beneficial impacts cannot be offset against adverse impacts. For example, a hydro-electricity scheme may have both beneficial and adverse impacts on the environment, however, only the adverse impacts are relevant when determining whether assessment and approval is required under the EPBC Act. If a project does require approval, beneficial impacts are considered during the assessment and approvals stages of the process.

Potential adverse impacts can be predicted by considering individual components of the action in the context of the environmental components or features identified in accordance with Step 1 of the self-assessment process. You need to consider how different components of the action will interact with different components of the environment. The nature, location, timing and size of the action will determine what environmental components will be impacted. When identifying potential impacts associated with each component of an action, both onsite and offsite and direct and indirect impacts must be considered.

Indirect and offsite impacts

'Indirect' and 'offsite' impacts include:

a. 'downstream' or 'downwind' impacts, such as impacts on wetlands or ocean reefs from sediment, fertilisers or chemicals which are washed or discharged into river systems

b. 'upstream impacts' such as impacts associated with the extraction of raw materials and other inputs which are used to undertake the action, and

c. 'facilitated impacts' which result from further actions (including actions by third parties) which are made possible or facilitated by the action. For example, the construction of a dam for irrigation water facilitates the use of that water by irrigators with associated impacts.

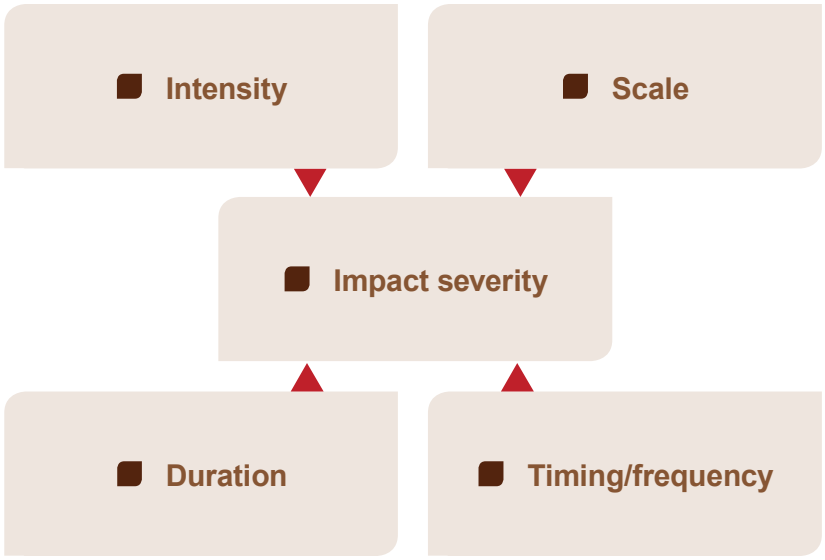
Consideration should be given to all adverse impacts that could reasonably be predicted to follow from the action, whether these impacts are within the control of the person proposing to take the action or not. Indirect impacts will be relevant where they are sufficiently close to the proposed action to be said to be a consequence of the action, and they can reasonably be imputed to be within the contemplation of the person proposing to take the action.

If the action which you propose to take does not have any direct impacts (such as a sale of land) you must still consider whether or not the action facilitates another action which is likely to have a significant impact on the environment. These are considered to be indirect impacts of the action and if these impacts are likely to be significant the action should be referred.

How severe are the potential impacts?

Once all the potential impacts of an action are identified, the next step is to consider how severe those impacts are likely to be. The following criteria are relevant:

- the scale of the action and its impacts
- the intensity of the action and its impacts, and
- the duration and frequency of the action and its impacts.



Scale

The scale of the action and its impacts is a fundamental consideration when predicting the severity of impacts. Generally, a larger-scale action with widespread impacts is more likely to have a significant impact on the environment than a smaller-scale action with localised impacts. However, it is important to consider scale in conjunction with the intensity and duration/frequency of the impacts.

Intensity

Intensity refers to the strength and concentration of the impacts. Open cut mining, which involves comprehensive modification of the environment, is an example of an action with high intensity impacts. Low density grazing of livestock on native pastures is an example of an action with low intensity impacts in most circumstances.

Timing, duration and frequency

An action may consist of a continuous activity or it may consist of a series of periodic activities. The starting point is to consider the duration and frequency of each component of an action. However, it is most important to consider the duration and frequency of the impacts. It is necessary to consider the long term and indirect impacts of the proposal on the environment as well as the immediate impacts. Impacts may persist long after an action ceases, or may be irreversible. In order to assess the severity of impacts you should consider the total impact that can be attributed to the whole action over time. The timing of the activity may also be relevant when environmental elements have seasonal characteristics (for example migration, breeding seasons, etc) or when seasonal weather conditions affect impacts (for example periods of high rainfall or high winds).

In order to judge the severity of potential impacts, it is necessary to consider the likely scale, intensity, duration and frequency of impacts collectively. The following categories may assist in drawing a conceptual distinction between different levels of severity:

- **Severe:** Severe impacts generally have two or more of the following characteristics: permanent/ irreversible; medium-large scale; moderate-high intensity.
- **Moderate:** Moderate impacts generally have two or more of the following characteristics: medium-long term; small-medium scale; moderate intensity.
- **Minor:** Minor impacts generally have two or more of the following characteristics: short term/ reversible; small-scale/localised; low intensity.

Severity of impacts alone does not necessarily indicate significance. The potential impacts of the action must be considered in the context of the environment in which the action will take place, particularly if the action is likely to impact upon sensitive or valuable components of the environment.

What is the extent of uncertainty about potential impacts?

Predicting potential adverse impacts on the environment requires an exercise of judgement about complex relationships and processes of cause and effect, and uncertainty often arises. To manage uncertainty during the self-assessment process:

- Make conservative conclusions (that is, assume that the effect is more rather than less adverse), and
- Seek further information about the environmental context to increase your understanding of the likely impacts.

Where there is scientific uncertainty the precautionary principle is relevant. Accordingly, where there is a risk of serious or irreversible damage, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment.

Step 3: Impact avoidance, mitigation and management

It is important to consider the environmental impacts of the proposed action early in the planning of the proposal. Careful planning of the action can avoid, or reduce, the likelihood of a significant impact on the environment. Where possible and practicable it is best to avoid impacts. If impacts cannot be avoided they should be minimised or mitigated as much as possible.

In some cases it is possible to design an action in such a way that significant impacts can be avoided. You should consider environmental impacts in relation to the following:

- site selection and the location of activities or infrastructure on the selected site
- the timing of the action or components of the action, and
- the design of the proposal and infrastructure.

Site selection

As outlined previously, the environmental context of an action is a substantial determinant of whether or not an action is likely to have a significant impact on the environment. If there are a number of possible sites for the action, you can reduce the environmental impacts by choosing a site which is already substantially disturbed or less sensitive to impacts.

The location of the activities or infrastructure on the particular site can also be planned to reduce or avoid impacts, for example by minimising the clearance of vegetation and/or avoiding proximity to sensitive areas or components of the environment, such as breeding grounds for animals or Indigenous heritage sites.

Timing

The timing of the proposed action or its components can be important in relation to some types of activity or components of the environment. For example, if aspects of the action have the potential to impact upon migratory birds or migratory marine species, planning the action to occur outside of the migration period for those species will avoid or substantially reduce the likelihood of impacts. Similarly, if the action involves earthworks and will take place in a monsoonal environment the timing of earthworks to occur during the dry season will reduce the likelihood of soil erosion and associated impacts.

Design of the proposal and infrastructure

The design of a proposal is an important determinant of ongoing environmental impacts. Environmental impacts can be reduced through choice of materials and machinery which are less energy intensive, less polluting and recyclable, or by incorporating passive design features that reduce resource consumption, such as energy efficient architecture, or by incorporating active features that reduce waste or pollution, such as wastewater recycling systems or flue gas cleaning systems.

If your action includes management or mitigation measures you should consider whether these measures are sufficient to avoid or reduce the likelihood of a significant impact. Further the relevant question is whether all *adverse* impacts of your proposed action are likely to have a significant impact on the environment. Measures to offset impacts, such as planting trees, are not relevant.

You should not conclude that a significant impact will not occur because of management or mitigation measures unless the effectiveness of those measures is well-established (for example through demonstrated application, studies or surveys) and there is a high degree of certainty about the avoidance of impacts or the extent to which impacts will be reduced.

Step 4: Are the impacts significant?

In order to determine whether or not an action is likely to have a significant impact on the environment it is necessary to consider the total adverse impact of the action in the context of the environment which will be impacted, particularly those elements of the environment which are sensitive or valuable. It is necessary to consider all of the considerations/criteria outlined in Steps 1 to 3 of the self-assessment process in determining whether an action is likely to have a significant impact on the environment. Further, the following criteria are intended to provide general guidance on the types of actions that are likely to have a significant impact on the environment. They are not intended to be exhaustive or definitive. The particular facts and circumstances of a proposed action will need to be taken into account in determining whether that action is likely to have a significant impact on the environment. However if you answer ‘yes’ to one or more of the questions below, then it would be expected that your action is likely to have a significant impact on the environment.

Impacts on landscapes and soils

Is there a real chance or possibility that the action will:

- substantially alter natural landscape features

- cause subsidence, instability or substantial erosion, or
- involve medium or large-scale excavation of soil or minerals?

Impacts on coastal landscapes and processes

Is there a real chance or possibility that the action will:

- alter coastal processes, including wave action, sediment movement or accretion, or water circulation patterns
- permanently alter tidal patterns, water flows or water quality in estuaries
- reduce biological diversity or change species composition in estuaries, or
- extract large volumes of sand or substantially destabilise sand dunes?

Impacts on ocean forms, ocean processes and ocean life

Is there a real chance or possibility that the action will:

- reduce biological diversity or change species composition on reefs, seamounts or in other sensitive marine environments
- alter water circulation patterns by modification of existing landforms or the addition of artificial reefs or other large structures
- substantially damage or modify large areas of the seafloor or ocean habitat, such as sea grass
- release oil, fuel or other toxic substances into the marine environment in sufficient quantity to kill larger marine animals or alter ecosystem processes, or
- release large quantities of sewage or other waste into the marine environment?

Impacts on water resources

Is there a real chance or possibility that the action will:

- measurably reduce the quantity, quality or availability of surface or ground water
- channelise, divert or impound rivers or creeks or substantially alter drainage patterns, or
- measurably alter water table levels?

Pollutants, chemicals, and toxic substances

Is there a real chance or possibility that the action will:

- generate smoke, fumes, chemicals, nutrients, or other pollutants which will substantially reduce local air quality or water quality
- result in the release, leakage, spillage, or explosion of flammable, explosive, toxic, radioactive, carcinogenic, or mutagenic substances, through use, storage, transport, or disposal
- increase atmospheric concentrations of gases which will contribute to the greenhouse effect or ozone damage, or
- substantially disturb contaminated or acid-sulphate soils?

Impacts on plants

Is there a real chance or possibility that the action will:

- involve medium or large-scale native vegetation clearance
- involve any clearance of any vegetation containing a listed threatened species which is likely to result in a long-term decline in a population or which threatens the viability of the species

- introduce potentially invasive species
- involve the use of chemicals which substantially stunt the growth of native vegetation, or
- involve large-scale controlled burning or any controlled burning in sensitive areas, including areas which contain listed threatened species?

Impacts on animals

Is there a real chance or possibility that the action will:

- cause a long-term decrease in, or threaten the viability of, a native animal population or populations, through death, injury or other harm to individuals
- displace or substantially limit the movement or dispersal of native animal populations
- substantially reduce or fragment available habitat for native species;
- reduce or fragment available habitat for listed threatened species which is likely to displace a population, result in a long-term decline in a population, or threaten the viability of the species
- introduce exotic species which will substantially reduce habitat or resources for native species, or
- undertake large-scale controlled burning or any controlled burning in areas containing listed threatened species?

Impacts on people and communities

Is there a real chance or possibility that the action will:

- substantially increase demand for, or reduce the availability of, community services or infrastructure which have direct or indirect impacts on the environment, including water supply, power supply, roads, waste disposal, and housing
- affect the health, safety, welfare or quality of life of the members of a community, through factors such as noise, odours, fumes, smoke, or other pollutants
- cause physical dislocation of individuals or communities, or
- substantially change or diminish cultural identity, social organisation or community resources?

Impacts on heritage

Is there 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 diminish the heritage value of a heritage place for a community or group for which it is significant
- substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place, or
- substantially restrict or inhibit the existing use of a heritage place as a cultural or ceremonial site?

THE REFERRAL, ASSESSMENT AND APPROVAL PROCESS

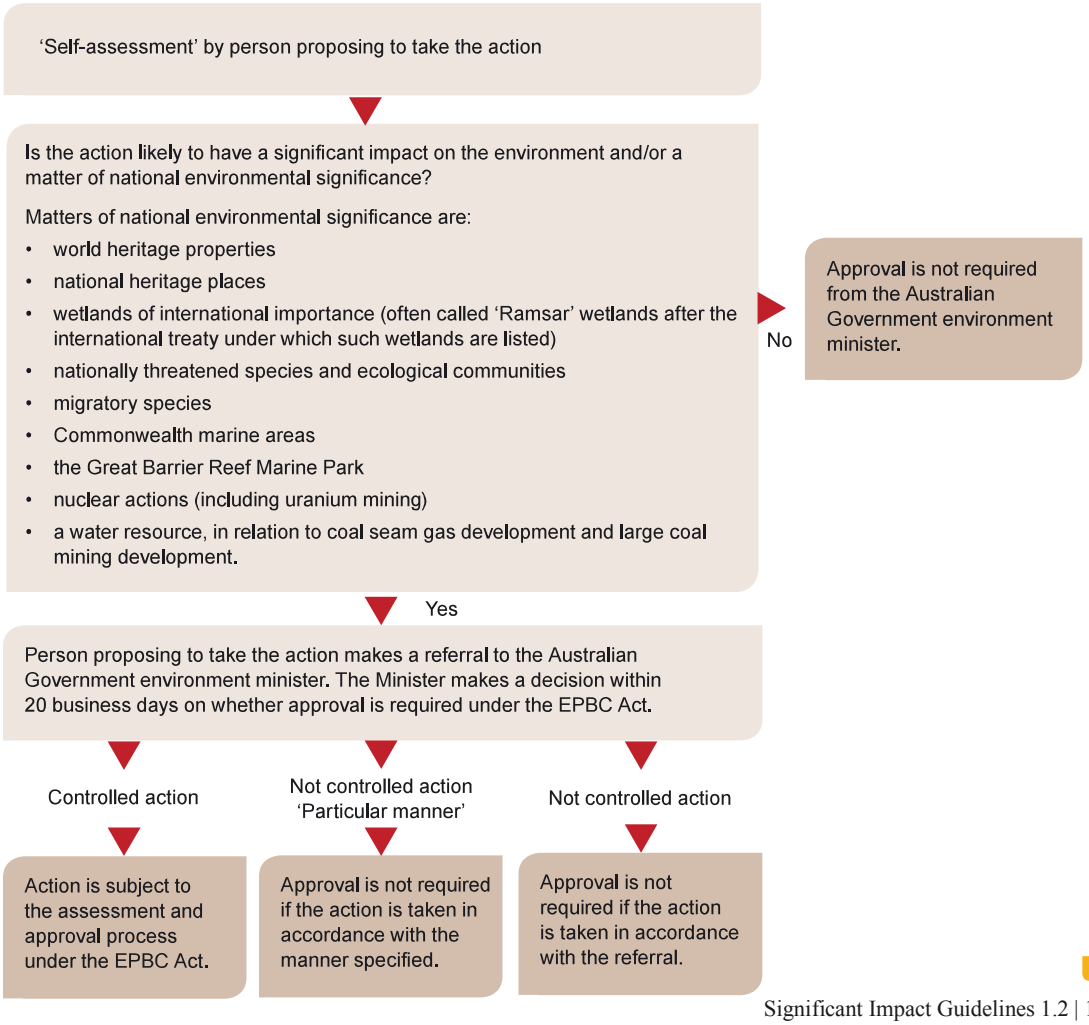
Referral process

If after undertaking a self-assessment you conclude that your action is likely to have a significant impact on the environment, or if you are unsure, you should refer the action to the Australian Government environment minister. Substantial penalties apply for taking an action without approval that has, will have or is likely to have a significant impact on a matter of national environmental significance or on the environment where the action is taken on, or may impact upon, Commonwealth land and/or the action is taken by a Commonwealth agency.

Referral forms and a guide to assist in filling out the referral form can be obtained from the department's community information unit on 1800 803 772, or from the department's web site at: www.environment.gov.au/epbc/assessments/referral-form.html

The EPBC Act referral process is summarised in Figure 2 below.

Figure 2: EPBC Act referral process



After receiving a referral, the minister will decide whether the action is likely to have a significant impact on the environment (and/or a matter of national environmental significance):

- if the minister decides that the action is likely to have a significant impact, then the action requires approval under the EPBC Act (it is a **controlled action**);
- if the minister decides that the action is not likely to have a significant impact, then the action does not require approval under the EPBC Act (it is a **not controlled action**).[3]

The minister may also decide that an action is not likely to have a significant impact, and does not require approval under the EPBC Act, because it will be taken in a '**particular manner**'. However, the action must be undertaken in a way that is consistent with the manner specified in this decision, or penalties apply.[4]

The minister is generally required to make a binding decision on whether an action requires approval within 20 business days of receiving a referral. If the minister's decision is that an action does not require approval, a person will not contravene the Act if the action is taken in accordance with that decision.

Assessment and approval process

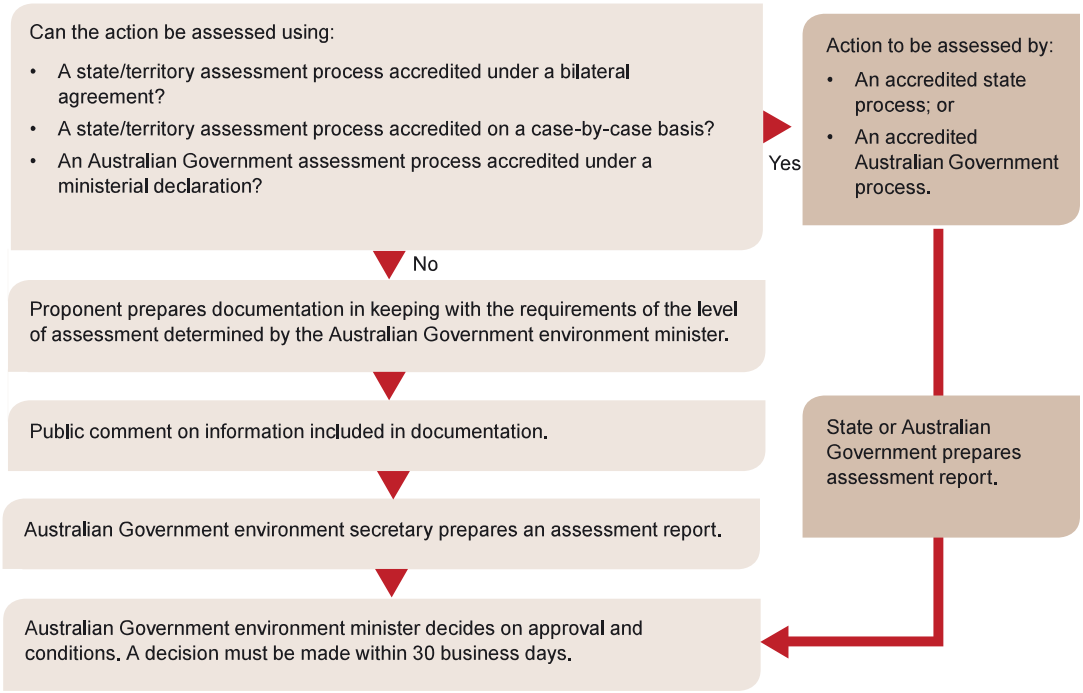
If the minister decides that an action requires approval, then an environmental assessment of the action must be carried out. If a bilateral agreement is in place the action may be assessed by the state or territory in which the action is to be undertaken, using the processes accredited under the bilateral agreement. If a ministerial declaration is in place accrediting another Australian Government assessment process, the action may be assessed by the process accredited under that declaration. Otherwise, the assessment will be undertaken by one of a range of assessment approaches outlined under the EPBC Act. An assessment report will then be prepared.

After considering the environmental assessment report, the minister decides whether to approve the action, and what conditions (if any) to impose. The EPBC Act assessment and approval process is summarised in Figure 3.

3 Please note that, regardless of whether approval is required under the EPBC Act, separate environmental assessment and approval may be required under state/territory and/or local government legislation.

4 More information about particular manner decisions can be found in the Practice Guide entitled *Application of 'Particular Manner' decision making under the EPBC Act*, available on the Department's web site at: **www.environment.gov.au/epbc/publications/manner.html**

Figure 3: EPBC Act assessment and approval process



FURTHER SOURCES OF INFORMATION

EPBC Act policy statements

A range of other EPBC Act policy statements are available to assist you in determining whether you are likely to have a significant impact on the environment and/or matters of national environmental significance, including the following:

- The *Significant impact guidelines 1.1 – Matters of national environmental significance* provide guidance on whether or not an action is likely to have a significant impact on a matter of national environmental significance protected by the EPBC Act: www.environment.gov.au/epbc/publications/nes-guidelines.html
- The range of EPBC Act policy statements provide more detailed guidance in relation to particular industries or areas of activity, or particular protected matters. These policy statements can be obtained by contacting the department's community information unit on **1800 803 772** or can be downloaded from the department's web site: www.environment.gov.au/epbc/guidelines-policies.html

The Australian Natural Resources Atlas

The Australian Natural Resources Atlas provides general information about soils, vegetation and biodiversity, water, and various land uses for Australia and different regions within Australia: www.anra.gov.au/

Search tool

The EPBC Act protected matters search tool allows you to search for matters of national environmental significance in an area where you propose to take an action:

www.environment.gov.au/erin/ert/epbc/index.html

There is also a range of information on the Department's web site which may assist you in understanding the environmental context for your action, including the following:

World heritage properties:
www.environment.gov.au/heritage/about/world/index.html

National heritage places:
www.environment.gov.au/heritage/about/national/index.html

Commonwealth heritage places:
www.environment.gov.au/heritage/about/commonwealth/index.html

Ramsar wetlands:
www.environment.gov.au/epbc/protect/wetlands.html

Listed threatened species and ecological communities:
www.environment.gov.au/epbc/protect/species-communities.html

Copies of recovery plans and threat abatement plans:
www.environment.gov.au/biodiversity/threatened/recovery.html
www.environment.gov.au/biodiversity/threatened/tap/index.html

Migratory species:
www.environment.gov.au/epbc/protect/migratory.html

The Great Barrier Reef Marine Park:
www.environment.gov.au/epbc/protect/great-barrier-reef.html
www.gbrmpa.gov.au

Commonwealth national parks and reserves:
www.environment.gov.au/parks/index.html

Commonwealth marine protected areas:
www.environment.gov.au/coasts/mpa/index.html

Biosphere reserves:
www.environment.gov.au/parks/biosphere/index.html

Indigenous protected areas:
www.environment.gov.au/indigenous/ipa/index.html

There are established national criteria for some elements of the environment, for example the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (www.mincos.gov.au/publications/australian_and_new_zealand_guidelines_for_fresh_and_marine_water_quality) or the *National Environmental Protection Measures* published by the Environment Protection and Heritage Council (www.ephc.gov.au/nepms). There may also be established criteria, such as state noise level criteria, as well as Australian Standards (www.standards.org.au/), that may be relevant to understanding the impacts of an action. Standards and criteria should be used as a guide only. Compliance with relevant criteria does not necessarily mean that the impacts are not significant, particularly if the environment is particularly sensitive to impacts or if the impacts will compound existing impacts.

More information on the EPBC Act referral, assessment and approval process is available on the department's web site at www.environment.gov.au/epbc/approval.html or by contacting the department's community information unit on 1800 803 772.

Electronic copies of the EPBC Act and EPBC Regulations can be accessed from the department's web site at: www.environment.gov.au/epbc/about/index.html

GLOSSARY OF TERMS

Action – is defined in section 523 of the EPBC Act as including a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things.

A decision by a government body to grant a governmental authorisation (however described) for another person to take an action is not an action (for details see full exception in section 524 of the EPBC Act).

Commonwealth agency – means:

- a minister, or
- a body corporate established for a public purpose by a law of the Commonwealth, or
- a body corporate established by a minister otherwise than under a law of the Commonwealth, or
- a company in which the whole of the shares or stock, or shares or stock carrying more than one half of the voting power, is or are owned by or on behalf of the Commonwealth, or
- a person holding, or performing the duties of:
  - an office established by or under a law of the Commonwealth (except a judicial office or office of member of a tribunal), or
  - an appointment made under a law of the Commonwealth (except an appointment to a judicial office or office of member of a tribunal), or
- a person holding, or performing the duties of, an appointment made by the Governor General, or by a minister, otherwise than under a law of the Commonwealth (with the exception of certain offices established by legislation for the self-governing territories and specific Aboriginal bodies. See full definition in section 528 of the EPBC Act for details); or
- a company prescribed by the Environment Protection and Biodiversity Conservation Regulations 2000.

Commonwealth land – includes land owned or leased by the Commonwealth or a Commonwealth agency (including land owned or leased by the Commonwealth on Norfolk Island), land in the Jervis Bay Territory, land in the following external territories: Christmas Island, Ashmore and Cartier Islands, Coral Sea Islands, Cocos (Keeling) Islands, Australian Antarctic territory and Heard and McDonald Islands, and any other area of land that is included in a Commonwealth reserve. In the Australian Capital Territory, territory land is not Commonwealth land, unless it is leased by the Commonwealth or a Commonwealth agency (territory land is all land in the ACT other than National Land).

Endemic – means restricted to a particular locality or region.

Environmental components – means the components or factors that collectively make up the environment, such as landforms, soils, water bodies, plants, animals, human communities, and heritage buildings or sites.

Australian Government environment minister – refers to the Australian Government minister responsible for the administration of the EPBC Act.

Impact – is a change in the physical, natural or cultural environment brought about by an action. Impacts can be direct or indirect.

APPENDIX A

Environmental context list

The following list incorporates the questions above and is intended to assist you in identifying the environmental context for your action. Please note that the list is not exhaustive.

1 Landscapes and landforms

a. What landscape features or landforms are present?
   - For example: plateaus; deserts; mountains; karst (limestone) areas; coastlines and dunes; glacial landforms; geological formations; caves; cliffs; river terraces; billabongs; estuaries; islands; shoals; reefs; and seamounts.

b. What landscape features or landforms are likely to be directly or indirectly impacted by the action?

c. Are there any outstanding, rare, unusual, valuable or important landscape features or landforms?

2 Soil and other substrates

a. What soils or other substrates are present?
   - What is the soil type/structure?
   - Are any other substrates present? For example sand, gravel and rock.

b. Is it likely that the soil/substrate will be directly or indirectly impacted by the action?

c. Is the soil/substrate valuable, or does it contain objects that are rare or otherwise valuable? For example: archaeological items with heritage value.

d. Is the soil susceptible to impacts or will disturbance of the soil cause further impacts?
   - Are there steep slopes?
   - Is there evidence of previous erosion?
   - Is the soil/substrate friable (easily eroded)?
   - Are acid sulphate soils present?

3 Water

a. What are the characteristics of the catchment area and what water bodies are present?
   - What water catchment area will the action be located in and what geographic area does the water catchment cover?
   - What water bodies are present (for example, rivers, creeks, lakes groundwater, wetlands, estuaries and the ocean)?

b. Is it likely that any water bodies will be directly or indirectly impacted by the action?
   - Does the action involve impoundment, diversion, or extraction of water?
   - Will the action alter drainage patterns?
   - Will the action create or increase pollutants, nutrients, or sediment?

c. Will any sensitive, valuable or otherwise important water bodies be impacted?
   - For example, wetlands or other sensitive environments and drinking water supplies.

d. What is the condition and current use of water bodies which may be impacted?
   - What is the water quality?
   - Are there competing uses?

4 Vegetation

a. What general vegetation types and vegetation species are present?
   - Vegetation types: rainforest; forest; woodlands; grasslands; riparian (river side) vegetation; mallee vegetation; sub-alpine heath; coastal heath; mangroves.
   - Vegetation species: tree species; shrub species; grass species; marine plants.
   - Are any ecological communities present?

b. Is it likely that vegetation will be directly or indirectly impacted by the action?

c. Are there any vegetation types or associations that are rare, endemic or otherwise valuable?
   - For example, listed threatened plant species and ecological communities; habitat for listed threatened animal species or ecological communities.

d. What is the condition and current use of the vegetation?
   - Is the vegetation remnant vegetation or regrowth?
   - Does the vegetation contain weed species? How many?

5 Animal species

a. What animal species are present and what are their characteristics?
   - Terrestrial species/marine species/ecological communities?
   - Populations, movements, and breeding, feeding, and migration patterns/times

b. Is the action likely to directly or indirectly impact upon animal species?
   - Will the action result directly or indirectly in animal deaths or injury?
   - Will the action impact upon habitat, water or other resources utilised by animals?

c. Is the action likely to impact upon animal species that are rare, endemic or otherwise valuable?
   - For example, listed threatened species and listed migratory species.
   - Feeding, nesting, breeding areas.

6 Conservation and special use areas

a. Are any conservation areas or special use places present?
   - For example, national parks, conservation reserves, state forests, parkland and marine protected areas, including the Great Barrier Reef Marine Park.

b. Is the action likely to directly or indirectly impact upon conservation or special use areas?

c. What is the current use and condition of conservation areas or special use places that are likely to be impacted by the action?

7 Heritage places and items

a. Are any heritage places or items present?
   - Are there places with cultural or natural heritage values including places with Indigenous heritage values?

- Are there items with heritage value, such as historical artefacts or archaeological remains?

b. Will the action directly or indirectly impact upon heritage places or items?
   - Will the action damage, destroy, remove, alter or modify a heritage place or item?
   - Is the action inconsistent with the heritage values of heritage places?

c. Will the action impact upon heritage places or items which are very rare or have special value?
   - For example, National Heritage places, Commonwealth Heritage places, the Great Barrier Reef Marine Park.

d. What is the condition and current use of the heritage place or items?

8 Renewable or non-renewable natural resources

a. Are there any sources of renewable or non-renewable resources in the area?
   - For example, oil, gas, coal, sand or other minerals, forests or woodlands, ground or surface water, fish or crustaceans.

b. Is the action likely to utilise, impact upon or restrict access to renewable or non-renewable resources, either directly or indirectly?

c. Will the action impact upon renewable or non-renewable resources that are rare or have special value?

d. What are the existing uses of renewable and non-renewable resources?
   - How are the resources currently used?
   - What is the current availability of resources?
   - What is the current level of demand for resources?

9 Utilities, energy, and transport, resources and infrastructure

a. Is there existing energy and transport resources and infrastructure in the area?
   - For example, electricity and water supply, roads, public transport.

b. Will the action utilise, impact upon, or restrict access to existing utilities, energy, and transport resources and infrastructure, or require additional resources or infrastructure?

c. What are the existing uses of renewable and non-renewable resources?
   - How are the resources or infrastructure currently used?
   - What is the current availability of resources or infrastructure?
   - What is the current level of demand for resources or infrastructure?

10 People and communities

a. Are there people or communities in the area?

b. Is it likely that the action will directly or indirectly impact upon people or communities?

- Will the action impact upon the existing social fabric/organisation, for example, culture, demographics, jobs, income?
- Will the action impact upon community resources, for example, facilities, infrastructure, services, recreation areas?
- Will the action impact upon public amenity?
- What activities/uses exist in the area and how is it zoned?
- Is the action inconsistent with existing uses?

c. Is the action likely to impact upon sensitive land uses?

- For example, schools, hospitals, retirement villages.

d. What is the existing social and economic status of people and communities the action is likely to impact upon?

APPENDIX B

Management of Commonwealth Heritage places

The EPBC Act provides for the Australian Government environment minister to include a place in the Commonwealth Heritage List if the place is in a Commonwealth area, or is owned or leased by the Commonwealth or a Commonwealth agency outside the Australian jurisdiction, and the minister is satisfied that the place has one or more Commonwealth Heritage values.

Before a Commonwealth agency takes an action that has, will have, or is likely to have a significant impact on a Commonwealth Heritage place, the agency, in accordance with section 341ZD of the EPBC Act, must ask the minister for advice about taking the action.

In addition to seeking advice from the minister, a Commonwealth agency may still be required to seek the approval of the minister if it proposes to take an action that will have, or is likely to have, a significant impact on the environment of a place, including its heritage values.

A Commonwealth agency is not required to ask for advice from the minister if the agency has a plan for managing the Commonwealth Heritage place that is endorsed by the minister and the action is provided for or taken in accordance with the plan (see section 341T of the EPBC Act for details about the requirements for getting endorsement of a management plan).

A Commonwealth agency must not contravene a plan made under the EPBC Act for managing a Commonwealth Heritage place or authorise another person to do, or omit to do, anything that would be inconsistent with such a plan.

If a Commonwealth agency does not have a management plan in force for a particular Commonwealth Heritage place under the EPBC Act, the Commonwealth and each Commonwealth agency must take all reasonable steps to ensure that its acts relating to the place are not inconsistent with the Commonwealth Heritage management principles. These principles are set out at Schedule 7B of the Environment Protection and Biodiversity Conservation Regulations 2000.

APPENDIX C

Authorisations by Commonwealth agencies

Section 160 of the EPBC Act requires a Commonwealth agency or employee to obtain and consider advice from the Australian Government environment minister before authorising one of the following actions:

- entry into a contract, agreement or arrangement for the implementation of a project under Australia's foreign aid program that is likely to have a significant impact on the environment;
- adoption or implementation of a plan for aviation airspace management involving aircraft operations that are likely to have a significant impact on the environment;
- the adoption or implementation of a major development plan (as defined in the *Airports Act 1996*);
- an action authorised by a permit under the *Environment Protection (Sea Dumping) Act 1981;*
- an action authorised by a Basel permit, or by a variation of a Basel permit, under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989;*
- an action authorised by a grant, renewal or variation of a permit or the grant of an exemption certificate under the *Sea Installations Act 1987*; and
- an action authorised by a permit or authority under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982.*

The agency or employee must inform the minister of the proposal to authorise the action. Once the minister has been informed of the proposal to authorise the action, the action must be assessed in accordance with the environment assessment provisions in Part 8 of the EPBC Act. The minister must give the Commonwealth agency or employee advice on protecting the environment from the action within 30 days of receiving a report of the environmental assessment.

APPENDIX D

Actions on Commonwealth land in Australian Government leased airports

The *Airports Act 1996* (Airports Act) and associated Airport (Environment Protection) Regulations 1997 requires Federally leased airports to develop and implement Master Plans and Airport Environment Strategies, which are approved by the Minister for Infrastructure, Transport, Regional Development and Local Government (Australian Government transport minister). These statutory documents outline the airport-lessee company's (ALC) development objectives for the airport and govern the management of the airport site including the identification and management of environmentally significant areas.

A person who proposes to take an action on Commonwealth land in an Australian Government leased airport should contact the ALC to determine whether or not a Major Development Plan (MDP) is required for the proposed action as outlined in section 89 of the Airports Act. It is noted that an MDP needs to be consistent with the approved Airport Master Plan and Environment Strategy.

The requirement under the EPBC Act for approval of actions on Commonwealth land, which are likely to have a significant impact on the environment, does not apply in relation to actions that involve the adoption or implementation of a MDP. Consequently, an action which is the subject of a MDP, does not need to be referred under the EPBC Act by the person proposing to take the action.

Under section 160 of the EPBC Act (see Appendix C) the Australian Government transport minister is required to seek the advice of the Australian Government environment minister before deciding to approve a draft MDP. The transport minister is responsible for referring a draft version of the MDP to the environment minister prior to it going out for the required public consultation period. The environment minister then decides what approach should be used to assess the environmental impacts of the proposal under the EPBC Act. After the public comment period has closed and the documentation is submitted for approval the environmental impacts of the proposal will be assessed and the environment minister will provide advice to the transport minister. The transport minister is then required to advise the environment minister on the outcome of his decision and how the environment minister's advice was taken into account.

A person who takes an action on Commonwealth land in an Australian Government leased airport, which is not in accordance with an approved MDP, and/or which is likely to have a significant impact on the environment, may be subject to civil or criminal penalties under the EPBC Act. If you are uncertain about whether your action is likely to be covered by the EPBC Act, it is advisable to consult with the Department of the Environment, Water, Heritage and the Arts.

APPENDIX E TREE GROUP AND LOCATION PLAN (TGLP)

TREE AND GROUP LOCATION PLAN

The **Canopy Tree Experts** tree location plan is to be read in conjunction with the Tree Schedule and Explanatory Notes in Appendix 1 and 2.
The tree assessment complies with 2009 AS 4970 protection of trees on development sites and takes into consideration the ACT Tree Protection Act 2005(although it is not private lease, it is currently commonwealth land).

GROUP 12 (contd)
WEEDS SPECIES
(see below)

GROUP 17
Pinus species
POOR QUALITY GROUP

GROUP 16
Eucalyptus species with
mixed understorey of weeds species
POOR QUALITY GROUP

GROUP 15
Pinus species
POOR QUALITY GROUP

GROUP 14
MEDIUM QUALITY GROUP
Quercus robur

GROUP 13
POOR QUALITY GROUP
Mixed group of Corymbia maculata
Eucaylptus saligna and
Eucalyptus maidenii

GROUP 13 A
POOR QUALITY GROUP
Pinus species
very densely planted

GROUP 12
WEED SPECIES POOR QUALITY GROUP. Mostly Pinus radiata in decline and mixture of weeds species and not regulated Brachychiton populneus.

GROUP 10
WEED SPECIES
Pinus Radiata

GROUP 11
HIGH QUALITY
Pinus canariensis
Trees 1193-1195

GROUP 10
WEED SPECIES
Pinus Radiata

GROUP 9
MEDIUM QUALITY GROUP
Brachychiton populneus

GROUP 17
LOW QUALITY GROUP
Mixed group of Eucalyptus species
juvenile and early mature

GROUP 18
HIGH QUALITY GROUP
Pinus pinea

GROUP 19
HIGH QUALITYGROUP
Pinus ponderosa

GROUP 22
EXCEPTIONAL GROUP
Pinus pinea

GROUP 21
POOR QUALITY GROUP
Quercus palustris

GROUP 20
HIGH QUALITY GROUP
Pinus ponderosa
and some other pinus species
refer to Tree Schedule.
Group is drought affected
and some arboricultural work
is necessary.

Registered Trees
Cedrus atlantica - Atlantic Cedar
Street Trees 298-296. veteran trees sparse canopy.

Tree 305,306 Cupressus sempervirens

Tree 293 Pinus ponderosa

Tree 581 Araucaria bidwillii

Tree 567 Eucaylptus albens

GROUP 23
HIGH QUALITY GROUP
Quercus palustris
except for 576 577(refer to Tree Schedule)

Tree 1445
Pinus species

GROUP 24
WEED SPECIES
Pinus radiata

GROUP 8
MEDIUM QUALITY GROUP
Quercus palustris -Pin Oak
Deadwood present, some arboricultural work is required.
Trees 1310,1311 are in decline
Tree 1257 and 1245 need arboricultural work.

GROUP 7
POOR QUALITY GROUP
Quercus robur -English Oak
in advanced decline and poor form.

GROUP 6
HIGH QUALITY GROUP
Pinus roxburghii- Chir pine
Trees 1499-1500, 1502-1504

GROUP 5
HIGH QUALITY GROUP
Pinus canariensis - Canary Island Pine, Tree no. 1453-1477 and 1482-1493,

GROUP 2
MEDIUM QUALITY GROUP
Tree numbers 96- 105
Mixed group of Eucalyptus species mostly Eucalyptus sideroxylon.

GROUP 4 -HIGH QUALITY
Pinus canariensis
Trees no. 1339 1346
228-232, 283-284
291-292
Pinus brutia 1347
Pinus douglasiana 1352,1353,1356,)
Pinus halepenses - Aleppo Pine 1357-1360
Pinus michoacanna cornuta
1361-1372

GROUP 3
Pinus radiata- WEED SPECIES

BANKS STREET

CRESCENT

CRANE FLIM

BENTHAM STREET

REGISTERED TREES

EXCEPTIONAL QUALITY GROUP or individual tree

HIGH QUALITY GROUP(or individual tree)

MEDIUM QUALITY GROUP

POOR QUALITY GROUP

POOR QUALITY GROUP
Mostly weed species (refer to Tree schedule for details)

Registered Trees
Street Trees 1-8
Cedrus atlantica - Atlantic Cedar
mostly veteran trees in poor health
most likely caused by drought.

GROUP 1
MEDIUM QUALITY GROUP
Cedrus atlantica - Atlantic Cedar.
Most trees are below 12m in height. A closely planted group of medium quality, good structure and fair to good health.

PREPARED BY:
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date: MAY 2020
scale:
sheet: @ A0
drawn: Hayley Crossing
job no: **5056**

REV A

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