FINAL REPORT

Commonwealth Scientific and Industrial Research Organisation

CSIRO Yarralumla
Heritage Management Plan

April 2018

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ACRONYMS AND ABBREVIATIONS

AHC	Australian Heritage Council
AHD	Australian Heritage Database
AHPI	Australian Heritage Places Inventory
CHL	Commonwealth Heritage List
CMP	Conservation Management Plan
DoEE	Department of the Environment and Energy (Commonwealth)
DECCW	Department of Environment, Climate Change and Water
EPBC Act	Environment Protection & Biodiversity Conservation Act 1999
ERM	Environmental Resources Management Australia Pty Ltd
HA	Heritage Assessment
HMP	Heritage Management Plan
IHO	Interim Heritage Orders
IM&T	Information Management and Technology
NES	National Environmental Significance
NHC	Natural Heritage Charter
NHL	National Heritage List
SHR	State Heritage Register

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to update the current Heritage Management Plan (HMP) for the CSIRO Yarralumla site in Canberra, Australian Capital Territory (ACT) (henceforth referred to as 'the study area').

CSIRO sold the study area to Gunyar Pty Ltd in June 2002. While the property was sold with a twenty year lease to CSIRO (plus two option terms each of 10 years) CSIRO retained control of the property through the lease which placed the responsibility for managing and maintaining the property with CSIRO. The study area is therefore required to be managed in accordance with the provisions of the Environment Protection and Biodiversity Conservation Act 1999 (EBPC Act).

The study area is currently included in the Commonwealth Heritage List. A CMP and HMP were previously prepared for the study area in 2001 and 2008, respectively, by Peter Freeman Pty Ltd Conservation Architects & Planners. It is noted that the study area has been subject to several activities since the 2008 HMP, including redevelopment such as the removal of several buildings. This HMP provides updated heritage advice pertaining to the future conservation and use of the study area.

An Action Plan is included to provide advice to the responsible site stakeholders and support implementation of this HMP. Any action that is not consistent with the HMP policies would require consideration under the EPBC Act, with expert advice from a heritage consultant where necessary. Maintenance plans also provide schedules for catch-up maintenance, cyclical preventative maintenance and planned works.

"Do's and Don'ts" guidelines for the heritage values of the study area have been prepared in Section 8 of this HMP, which provide further guidance for tradespeople, maintenance supervisors and tenants and provides technical advice consistent with retaining the site's heritage values.

In accordance with Section 10.03C and 16.05A of the EPBC Regulations, CSIRO and the Department of Environment and Energy (DoEE) invited comments on the draft HMP from members of the public, Indigenous people with rights and interests in the place, the ACT Government Agency responsible for the site (if any) and organisations or groups with interests in the property.

Public Notices inviting comments were placed in The Australian on 6 April 2017 and The Canberra Times on 5 April 2017 and a Commonwealth of Australia Government Notices Gazette was published on 10 April 2017.

Submissions were received from IFA (ACT) Management Committee (Institute of Foresters Australia); National Trust of Australia (ACT); and Yarralumla Residents Association Inc.

1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in October 2015 to prepare a Heritage Management Plan (HMP) for the CSIRO Yarralumla site, ACT. This HMP has been prepared to assist the CSIRO with meeting Commonwealth heritage obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This HMP is an update from a previous CMP and HMP prepared in 2001 and 2008 by Peter Freemen Pty Ltd Conservation Architects & Planners.

1.1 OBJECTIVES

This HMP has been prepared to assist the CSIRO to meet its Commonwealth heritage obligations under the EPBC Act. This HMP contains an updated context of the site, post redevelopment including the removal of several buildings, practical policies, guidelines and an action plan for the ongoing heritage management of the CSIRO Yarralumla site.

1.2 METHODOLOGY

This HMP has been prepared in accordance with the EPBC Act Regulations and has been informed by:

- EPBC Act and Regulation requirements for the assessment of places against the criteria for the Commonwealth Heritage List (CHL), the Commonwealth Heritage Management Principles and the requirements for the preparation of management plans for places with Commonwealth heritage values;
- Australia ICOMOS Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance 2013;
- Australian Heritage Council 2010 *Identifying Commonwealth Heritage values and Establishing a Heritage Register: A Guide for Commonwealth Agencies;* and
- The former Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) (now the Department of Environment and Energy [DoEE]) 2008 Guide: *Australia's Commonwealth Heritage – Working Together – Managing Commonwealth Heritage Places.*

The preparation of the HMP involved the following tasks:

- background research of existing site reports, online databases, National Archives of Australia and library references;
- review of existing historical background (see *Section 2.5*);
- targeted site investigation including photographs (undertaken on 18 November 2015);
- preparation of written summaries of site investigation observations;
- review of heritage legislation applicable;
- preparation of a summary statement of significance for the site;
- risk assessment of potential threats to and posed by the heritage values of the site;
- development of heritage conservation policies and guidelines;
- preparation of a maintenance plan and reporting protocols;
- compilation of an action plan to support HMP implementation; and
- compilation of a "Dos and Don'ts" Guide to support implementation and support compliance when undertaking maintenance, site works and planning activities.

1.3 AUTHORSHIP

This HMP has been prepared by ERM Heritage Consultant Janene May with assistance from ERM Heritage Consultant Katherine Deverson. Technical Review was conducted by ERM Principal Consultants, Claire Arthur. Internal ERM Partner and Quality Review were undertaken by ERM Partner Alan Simonic.

1.4 CONSULTATION

In accordance with Section 10.03C and 16.05A of the EPBC Regulations, CSIRO and the DoEE invited comments on the draft HMP from members of the public, Indigenous people with rights and interests in the place, the ACT Government Agency responsible for the site (if any) and organisations or groups with interests in the property. Public Notices inviting comments were placed in *The Australian* on 6 April 2017 and *The Canberra Times* on 5 April 2017 and a Commonwealth of Australia *Government Notices Gazette* was published on 10 April 2017. Submissions were received from IFA (ACT) Management Committee (Institute of Foresters Australia); National Trust of Australia (ACT); and Yarralumla Residents Association Inc.

Future HMP consultation and liaison will be undertaken in accordance with *Section 15.7* of *CSIRO Heritage Strategy for Land and Buildings, 2016-2026* (CSIRO 2016); CSIRO will work closely with stakeholders and consult representatives of the local and regional community for any future proposed actions or activities that may impact on the heritage values of the site. As part of this future consultation, CSIRO will consult with the Buru Ngunawal Aboriginal Corporation, Ngarigu Currawong Clan, Little Gudgenby River Tribal Council and King Brown Tribal Group about the Indigenous heritage values at the site and will arrange an agreement with the groups whereby the relevant Indigenous groups can access the site in future provided they contact CSIRO prior to the intended visit to arrange access.

1.5 LIMITATIONS

The scope of this HMP was limited to historic heritage values, and no consideration has been given to Indigenous or natural heritage values. No consultation with Indigenous stakeholders has therefore been undertaken as part of the preparation of this HMP. This has resulted in a lack of understanding regarding potential Indigenous and natural values.

Further, internal access was not possible to several buildings at the Site due to private leases.

2 SITE BACKGROUND

2.1 LOCATION

The CSIRO Yarralumla campus is bounded to the north by Banks Street, to the south by Bentham Street, and to the west and north by a boundary running irregularly from Bentham Street to Banks Street to the east (refer to *Figures 2.1* and *2.2*). For the purposes of this HMP, the CSIRO Yarralumla precinct is referred to as CSIRO Yarralumla or 'the study area'. This HMP excludes the Westridge House precinct, which was sold in 2002.

Figure 2.1 Study Area Location

Figure 2.2 Study Area Layout

2.2 *SITE DESCRIPTION (WHOLE SITE)*

The following site description has been derived from the previous 2001 CMP and the 2008 HMP, both prepared by Peter Freemen Pty Ltd Conservation Architects & Planners, and updated to reflect the site as it stands today.

The inventory description of the former Australian Forestry School precinct buildings is an integral part of the physical analysis of the precinct; and is thus part of the Conservation Analysis of this HMP.

The curtilage adopted for the physical overview comprises the entire CSIRO (former Australian Forestry School) precinct, excluding Westridge House (which was sold in 2011) and the oval (Which now belongs to the ACT Government). The curtilage is as delineated on the site plan at *Section 2.1* above. The oval has been included within the physical overview, as it was originally part of the Forestry School, but it does not now form part of the CSIRO Yarralumla site.

It is suggested that the 'inventory' format was chosen by the original 2001 CMP authors as it provides a simple and comparative method of presenting this material to the reader. This inventory 'field' approach and associated headings has been adopted within this HMP and are as follows:

Key Plan

A key plan prefaces each of the inventory descriptions. The building being described is highlighted by means of a toned area.

Building/Element Name & No.

This field identifies the particular building or element being described.

Historical Background

This field provides a concise description of the historical background and the associational significance of the building or element.

Description

This field provides a brief description of the building or element.

2.2.1 *Setting*

The CSIRO Forestry Precinct comprises about 12.85 hectares of land that includes groups of buildings mainly comprising the former Australian Forestry School that are clustered around an oval, plant nursery and arboretum. The oval was originally part of the Forestry School, but no longer forms part of the Complex and is now ACT Government land and responsibility. The former Forestry School is significant for its architectural design, its contribution to the townscape and its place in the early social history of Canberra.

The buildings (Forestry House and former museum building) are considered good examples of the simplified Classical approach common to Federal Capital Commission designs of the period (CHL Place ID # 105426). The timbers used in the building are examples from every Australian State and an effort has been made in the design to use otherwise common timbers in a decorative way.

2.2.2 *Built Elements and Historical Heritage*

The buildings of the CSIRO Yarralumla campus (formally the Australian Forestry School) range in date from the late 1920s to the 1980s. This inventory based assessment of the campus buildings provides information on past and present uses; history; comparative significance (i.e. cultural significance), and conservation policy/strategy. The location and layout of buildings present at the study area is shown in *Figure 2.3*. An inventory of buildings present at the site including a description and photograph of each asset is provided in *Annex E*.

Since the preparation of the 2008 HMP, the Site has undergone several changes including the demolition of the following buildings:

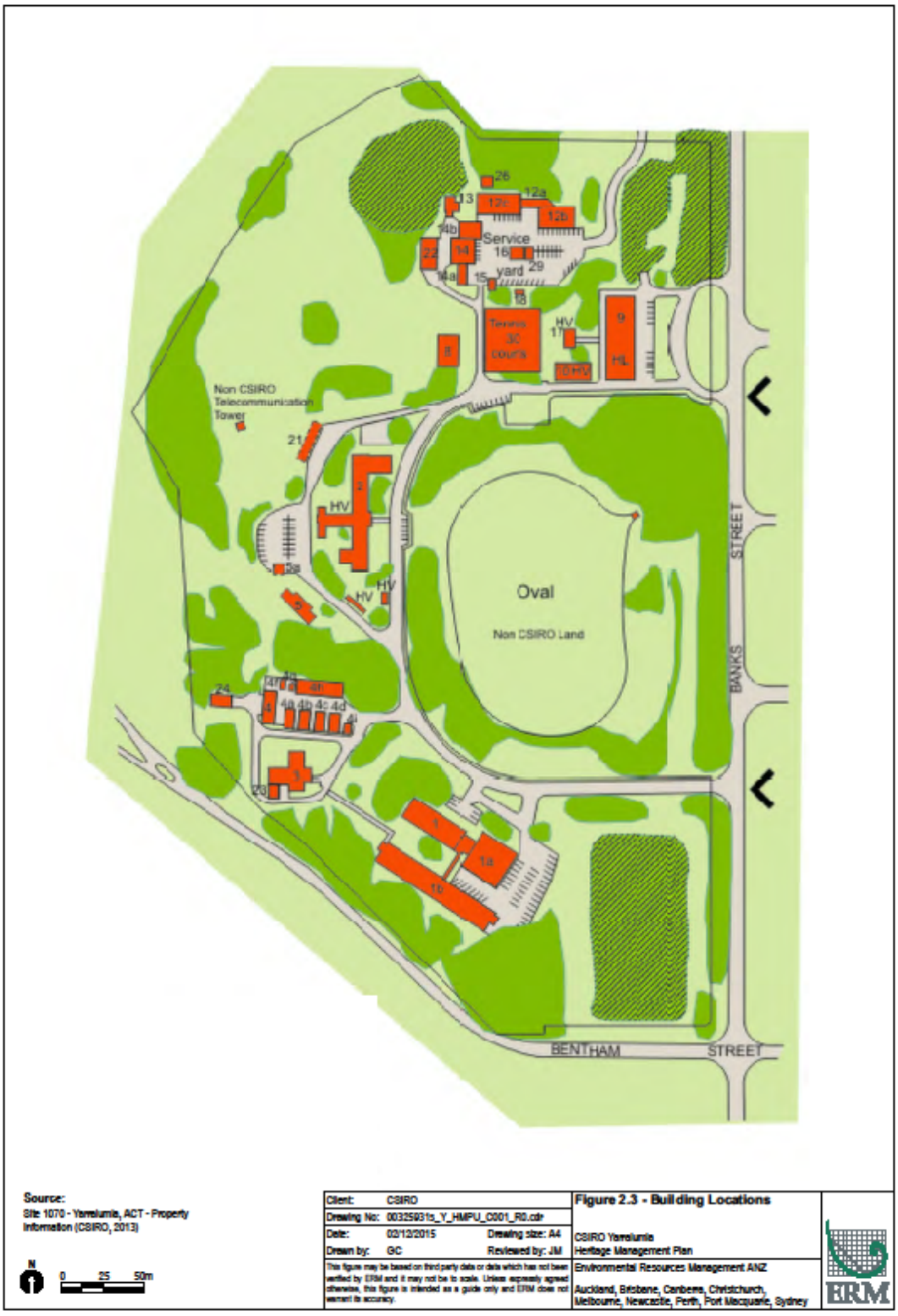
- The Recreational Hut: Building 021 (Former Forest Research Institute Building); and
- The Regional Office Building 006 (Former Nurse's Quarters (transported from Acton).

The following description of build elements at the Site has been adapted from the former 2008 HMP to reflect the CSIRO Yarralumla campus as it stands today.

The buildings are classified into three groups, as follows:

- the Southern Group - centred on the CSIRO occupied buildings (Building No. 1) and the Controlled Environment Building (Building 003) (refer to *Figure 2.4*);
- the Central Group - centred on Forestry House (Building 002) (refer to *Figure 2.5*); and
- the Northern group - centred on the former Australian Forestry School (AFS) Administration Building (Building 009) (refer to *Figure 2.6*).

Figure 2.3 Layout of Buildings



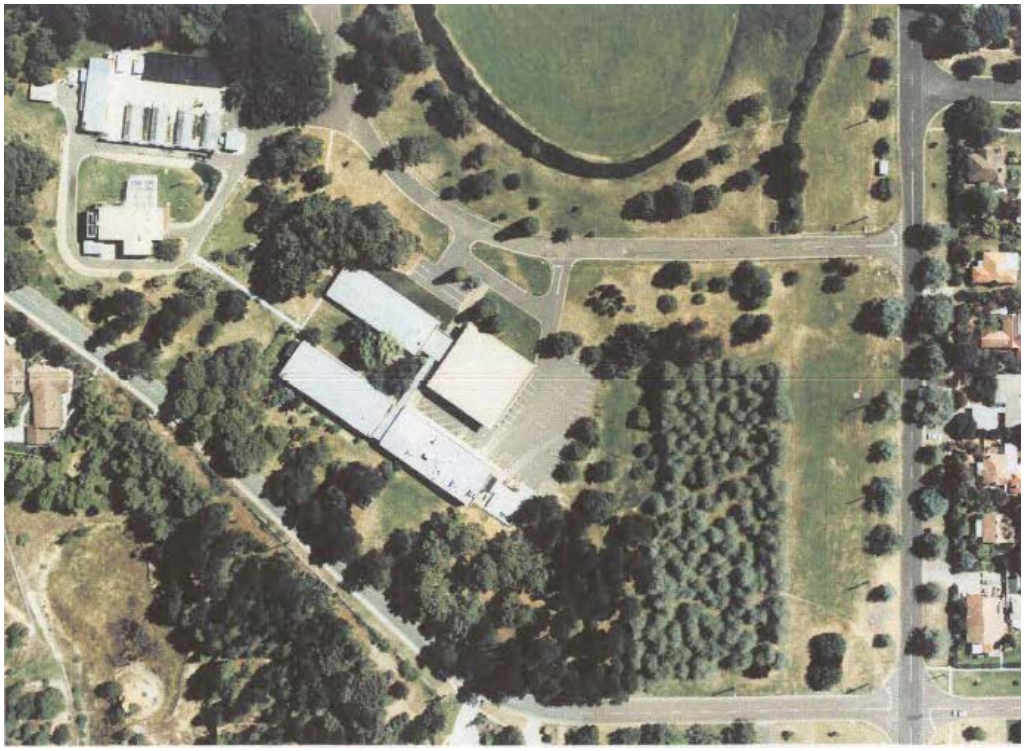


Figure 2.4 Aerial photograph of the southern group, CSIRO Yarralumla (CSIRO 2000 Plan).

The Southern Group is centred on the former AFS Forest Research Institute and the Controlled Environment Buildings.

Building Name & Number: OFFICES and LABORATORY: Buildings 001, 001A and 001B	
Former Uses/Name	Forest Research Institute Divisional Headquarters
Historical Overview	After the School of Forestry amalgamated with the ANU in 1965, the precinct continued to function as a research and administrative centre for national forestry, under the auspices of the Forestry and Timber Bureau. The Forest Research Institute had been formed in 1963 and construction of the Divisional Headquarters building (Building 001) commenced in 1965 and was completed in 1967. The library (Building 001A) was inserted in 1975-76. Refurbishment was undertaken in 1996 and included an addition to the eastern end.
Description	The entire complex comprises three buildings linked together with enclosed walkways and situated within an excavated site. The front section is in part two storeys (Buildings 001 and 001A) and the rear building (Building 001B) is three storeys. The functional design of the complex has enabled substantial internal modification when needed. 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.
 	
Building 001A (left) and Buildings 001 and 001A (right) (ERM 2015).	

Building Name & Number: CONTROLLED ENVIRONMENT BUILDING: BUILDING 003	
Former Uses/Name	Not applicable.
Historical Overview	After the School of Forestry amalgamated with the ANU in 1965, the joint institution continued to function as a research and administrative centre for national forestry, under the auspices of the Forestry and Timber Bureau. The Forest Research Institute was formed in 1963. Along with construction of the Divisional Headquarters building (Building 001) in 1967, a number of other research facilities were constructed during this period, including in 1969 the Controlled Environment Laboratory. The Laboratory was built beside the existing glasshouse complex. The Laboratory was used for tissue culture and for growing plants.
Description	The Laboratory is located on an elevated site overlooking the Glasshouse complex. A stone-faced retaining wall circles the building. The building is two storeys, of face brick face with concrete floors, a flat roof and aluminium windows. A glasshouse wing extends from the masonry mass to the north. The building has been described as distinctively bold forms and composition.
	
Building No. 3 looking south-east (left) and west (right) (ERM 2015).	

Building Name & Number: GLASSHOUSES & WORKSHOP: BUILDING COMPLEX 004	
This complex of buildings includes 004 Workshop, 004A Glasshouse, 004B Glasshouse, 004C Glasshouse, 004D Glasshouse, 004H Shadehouse and 004I Soil Preparation Shed.	
Former Uses/Name	Not applicable.
Historical Overview	The Australian Forestry School precinct underwent major development during the early post-World War II years, with the construction of Forestry House, the Caretaker's Residence and the glasshouse complex. The Glasshouses were built in 1949.
Description	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 004 which is a single-storey red brick building with a flat roof and highlight windows located to the western end of the complex. A corrugated rectangular metal shed has also been established to the north of the complex. Two containers are currently installed within the north-west corner of the complex. The glasshouses are composed of a single volume space, with a glazed and steel upper portion supported by a face brick lower wall. Building 4I, a small square shed with a concrete base, skillion roof and clad in horizontal timber panels.
	
View of glasshouses looking south-east (left) and view towards Building 004 showing Building 004H to the right (right) (ERM 2015).	

Building Name & Number: STORAGE SHED: Building 023	
Former Uses/Name	Storage Shed
Historical Overview	The Storage Shed was built in 1979 and was used for storage of machinery and samples. Located to the rear of the Controlled Environment Building (Building 003).
Description	Building 023 is a prefabricated steel structure, clad with vertical klip-loc wall sheeting and corrugated gable roof. It has a roller door and smaller door to the east facade.
	
Building 023, Storage Shed (ERM 2015).	

Building Name & Number: STORE BUILDING 024	
Former Uses/Name	Not applicable
Historical Overview	This modern storage shed was built in 1979 and is used for storage of fertilizer and machinery.
Description	The shed is a single storey gabled steel structure, with Colorbond roof and wall cladding. Features a roller door and single door along the east façade.
	
Building 024, Storage Shed (ERM 2015).	

The Central Group

The Central Group is centred on Forestry House and its associated outbuildings (refer to *Figure 2.5)*.

Figure 2.5 ***Aerial photograph showing the Central group, CSIRO Yarralumla (left of photograph) (CSIRO 2001).***

Building Name & Number: FORESTRY HOUSE BUILDING 002	
Former Uses/Name	Student accommodation, conference centre and offices.
Significance	Listed on CHL
Historical Overview	Although the Australian Forestry School was a Federal Government initiative, the Commonwealth had not accepted responsibility for student accommodation. When the School opened in 1927, students lived off-site at the former Government Printery at Kingston, occupying the staff quarters, and were transported by bus to the site each day. In 1949, construction of a new residential college, Forestry House, commenced. The building was designed by the Commonwealth Department of Works. Forestry House was completed and occupied early in 1952. 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*'. 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 the student accommodation into offices and laboratories.
Description	Forestry House is a rendered masonry building, with terracotta tile hipped roof. It is composed of three wings arranged about an east north-south axis. The east-west wing and the south wing of Forestry House are single storey with timber-framed windows, a high-pitched tiled gabled roof and features at the apex of the roof a bronze and timber turret. The north wing, which is 'L' shaped, is two storeys with timber framed windows and brick sills, and a high-pitched tiled gabled roof.
	
Building 002, Forestry House (ERM 2015).	

Building Name & Number: CARETAKER'S RESIDENCE: BUILDING 005	
Former Uses/Name	Not applicable.
Historical Overview	The Caretaker's Residence was built between 1948 and 1952. The precinct underwent major development during the years following World War II, with the construction of Forestry House, the Caretaker's Residence and the Glasshouse Complex. The building reflects a similar design style to the nearby Forestry House. The cottage has a small garden area with mixed species including agaves. After completion in 1951, it was used for approximately ten years as offices.
Description	The Caretaker's Residence is located on an elevated site, hidden by dense vegetation along the east, which provides privacy for the residents. The residence is a single storey rendered masonry building, with a stepped terracotta tile gabled roof. The residence is composed of three parts; two ends and a middle section. It features a rendered masonry chimney located on the gable façade off centre from the ridge and a front verandah, which is inserted within the main roof plane. The middle portion projects from the line of the end verandahs and its ridge is higher and off centre of the end ridges. The windows of the building are timber with low rendered brick sills. The cottage has a small garden with mixed species including agaves.
	
Building 005, Caretaker's Residence (PF 2001).	

The Northern Group

The Northern Group is centred on the original Australian Forestry School building (Building 009) and the adjacent service courtyard, refer to *Figure 2.6*.

Figure 2.6 Aerial Photograph of the Northern Group, CSIRO Yarralumla (CSIRO 2000 Plan).

Building Name & Number: OFFICE BUILDING 009	
Former Uses/Name	The former Australian Forestry School
Significance	Listed on CHL
Historical Overview	The Australian Forestry School was established temporarily 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 Charles Lane-Poole, then Inspector General of Forests for the Commonwealth, was appointed Acting Principal of the Forestry School. The Australian Forestry School building in Canberra was designed by Federal Capital Commission [FCC] architect J.H. Kirkpatrick, working with H.M. Rolland, Principal Architect of the FCC. The School opened in April 1927 and although the building was not completed until June that year, the formal opening was not held until 24 November 1927. Charles Lane-Poole had sought from States native timber for use in the School building. Tasmania, Victoria and NSW donated floor timber and South Australia donated timber for internal fittings. A carpenter's shop was built apart from the main educational block in August 1927. The plan of the approach to the Forestry School building was drawn in August 1927 by T.R. Casboulte, an FCC architect. Charles Lane-Poole held the position of Acting Principal of the School until his retirement in 1944. Dr Max Jacobs was the next Principal of the School and held the position from 1945 to the end of 1959. Jacobs was followed by K.P. McGrath as Acting Principal until responsibility for forestry education was transferred to the ANU in 1965. A new building for the Forestry Department of the ANU was opened in May 1968 by the Duke of Edinburgh. When the main building was vacated, senior officers of the Forestry and Timber Bureau moved into the building. 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. It is understood from communications with CSIRO that the building is presently leased to a third party. The exterior of the building was repainted in 2015 with the interior scheduled to be repainted in 2016.
Description	The former Forestry School is located on an elevated site fronting the intersection of Banks and Schlich Streets in Yarralumla. The elevation of the site is emphasised by the brick paved steps leading to the front portal from the middle semi-circular drive. The School is a single storey rendered masonry dwelling, with a parapet and terracotta tile hipped roof. The School was designed in the inter-war stripped classical style, and the key features of this style are the symmetrical facade, 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 and the east west axis is emphasised, by the projecting front portal, where the parapet wall is stepped. The downpipes are cast iron. The entrance door and rear external door are of Queensland maple. The windows are generally large vertically proportioned painted timber windows, with the corner composed of arched windows. The timbers used in construction throughout, including concealed timbers, are Australian hardwoods and softwoods. A vestibule leads through an archway into a large octagonal hall in the centre of the building. The doors at the front and rear entrances, as well as all the interior doors and picture rails throughout the building, are of Queensland maple (*Flindersia brayleana*). The front and rear vestibules have floors of jarrah (*Eucalyptus*

Building Name & Number: OFFICE BUILDING 009	
	marginate), with an edging of blackwood (*Acacaia melanoxylon*) and tallowwood (*Eucalyptus microcorys*). The wall panelling, extending to a height of 2.3 m, is of Queensland maple. The two small rooms flanking the front vestibule have flooring of red mahogany (*Eucalyptus resinifera*). The domed octagonal hall is possibly the most notable feature of the school. It occupies the centre of the building, and is entered from the east and west vestibules and north and south corridors by archways, each faced with a wide architrave of Queensland maple. The extreme height from floor to dome is 7.62 m, and the floor has a diametrical width of 9.15 m. The parquet flooring utilises dark and light coloured hardwoods to striking effect. In the centre, a circle 1.5 m in diameter is inlaid with alternate dark red and light coloured squares (each 300 mm x 300 mm) of jarrah and mountain ash (*Eucalyptus regnans*), forming a chessboard pattern. The circle is bounded by three concentric rings (each 63 mm) of tallowwood, jarrah, and tallowwood. From the circumference of the outer ring alternate strips of jarrah and tallowwood (355 mm) are inlaid in radial fashion, completing an octagonal feature, the sides of which are defined by eight 76 mm strips of tallowwood. From each corner of this octagon, which measures 7.62 m across, eight strips of tallowwood (each 76 mm wide and 2.74 m long) run out in radial fashion, forming eight sectors. These sectors are inlaid, chord-wise, with narrow strips of different timber so as to form successive octagons. Working outwards, there are first two strips of blackwood (each 63 mm wide), then a strip of tallowwood (76 mm wide), then thirty-five successive strips of jarrah (each 63 mm wide). From here to the base of the panelled walls there is a wide edging of blackwood, made up of 76 mm boards. The wall panelling has rails and styles of blackwood and panels of Queensland walnut (*Endiandra palmerstoni*), and extends to a height of 2.1 m along the eight walls, broken by masonry columns at each of the eight corners. Bounding a grill in the centre of the dome there is an octagon of Queensland maple and from each corner of this to the capitol of each corner column there is a wide arch of the same timber. The white ceiling, with its eight wide groins or arches of maple, is lit indirectly from light globes concealed in a flat bowl or electrolier of blackwood, suspended below the centre of the dome by four long heavy brass chains. The south corridor is floored with coachwood (*Ceratopetalum Apetalum*) and the former Principal's office (first room on right) is floored with Crow's ash (*Flindersia australis*) and panelled with red cedar (*Toona australis*). The next room along (south corridor, western side) is floored with blackbutt (*Eucalyptus pilularis*). The large room at the end of the corridor is the former museum. The floor here is of tallowwood, the original built in cupboards are of Queensland maple and the later wall shelving is of hoop pine with facing and ends of cedar. The room on the eastern side of the south corridor (original Library) is floored with Tasmanian myrtle (*Nothofagus cunninghamii*) with an edging of maple along the east wall. The northern corridor is floored with mountain ash, as is the first room to the right (original lecture room). The suite of offices to the north-east corner (originally one large lecture room) has flooring of spotted gum (*Eucalyptus maculate*). The original laboratory (and later conference room) to the north-west corner has jarrah flooring. All the concealed roof timbers are of hoop pine.

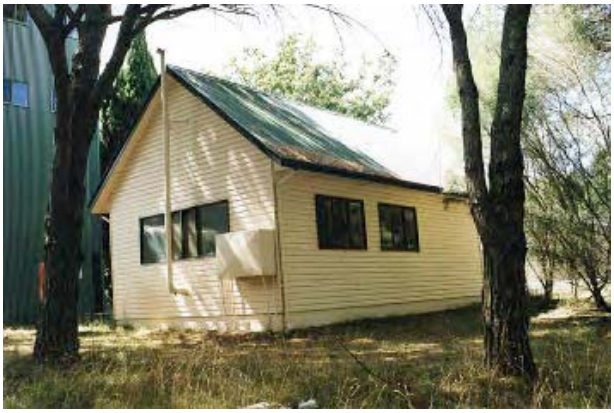
Building Name & Number: OFFICE BUILDING 009

Building 009, Office Building (ERM 2015).

Building Name & Number: OFFICE: BUILDING 010	
Former Uses/Name	Former Registry Building Former Industrial Museum; Forestry and Timber Bureau; and offices of a third party tenant. The building originally housed a Carpenter's Shop; a general museum in the centre; a Soils Room; a Seeds Room; a Papers Room; a Woods Room and an entrance hall.
Significance	Listed on CHL
Historical Overview	In 1938, the Industrial Museum, a small rendered brick building located directly behind the Australian Forestry School, was completed. The museum was designed in a similar style to that of the main school building, in an attempt to maintain continuity, but some subtle differences can be detected in the roundels, rainwater heads and downpipes. The building was refurbished in 1991 in a manner sympathetic to its heritage values. The building was repainted in 1998, and the exterior repainted again in 2015 (interior is scheduled to be repainted in 2016) and is observed to be in very good condition.
Description	The Registry building is a single storey render masonry building, with parapet walls and a terracotta tile hipped roof. The Registry building has a similar aesthetic to the former Forestry School building: that is, the building is similar to the School. It has key features of the inter-war stripped classical style, such as the symmetrical facade, 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.
	
Building 010, Former Industrial Museum (ERM 2015).	

Building Name & Number: TENNIS COURTS	
Former Uses/Name	Not applicable
Historical Overview	Two tennis courts were established for the staff and students of the AFS in 1930. The tennis courts are located to the west of the former Australian Forestry School building (behind Buildings 010 and 017).
Description	Contained within a large mesh fence behind the Printery and Registry are two tennis courts. The surface of the courts is clay (Paddys River gravel) and they have modern net equipment. 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.
	
Tennis Courts with memorial seat (ERM 2015).	

Building Name & Number: Service Yard	
The Service Yard is located within the northern portion of the site and contains various sheds and workshops predominantly from the 1970s including Buildings 012, 014, 015, 016 and 029.	
Former Uses/Name	Former Forest Research Institute buildings
Historical Overview	During the 1970s, a complex of 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 (1927) carpentry shop, and a lecture room and a drafting room added in 1948, were demolished.
Description	Building 012 is a long, low building of brick with metal deck roofing, metal framed windows and roller doors. Building 014 is a single storey face brick building in three sections, with terracotta tile skillion roof and metal framed windows. Building 015 is a small single storey face brick building with a metal deck skillion roof and single door opening. Building 016 is a simple open steel post and beam structure with klip-loc Colorbond roof and west wall
	
Building 012, Carpenter's Workshop, Office and Engineering Workshop and Amenities building (ERM 2015).	

Building Name & Number: STORE: BUILDING 013	
Former Uses/Name	Former Australian Forestry School Store
Historical Overview	The Store was built in 1949. No further documentation on the Store was available.
Description	The Store is located at the rear of the vehicle compound. It is a single storey weatherboard building, with gabled corrugated iron roof and has timber windows. The south facade features timber double doors and verandah.
	
Building 013, Store (PF 2001).	

Building Name & Number: STORE BUILDING 017	
Former Uses/Name	Former Laboratory, Seed Storage and Archive Store for the CSIRO. Former Printery Building
Significance	Listed on CHL
Historical Overview	The Printery was constructed around 1935-40, next to the former Forestry and Timber Bureau offices. It was used as a laboratory and store for seeds until the mid-1960s, when it housed printing equipment for some years. It is now used for storage by a third party tenant. In 1998, the building was repainted.
Description	The Printery is located behind the former Forestry School. The Printery is a single storey weatherboard building, with a terracotta tile hipped roof. The building is composed of timber double hung windows and timber doors with fixed glazed panel. The windows are generally located along the top of plate of the timber stud walls.
	
Building 017, The Printery (PF 2001).	

Building Name & Number: CHANGE ROOM/TOILET: BUILDING 018	
Former Uses/Name	Former Forest Research Institute building
Historical Overview	Built in 1973, replacing a former facility destroyed by fire.
Description	The Change Room/Toilet is a single storey vertical weatherboard building, with a flat roof. There are two doorways which have steel mesh doors and highlight glazed louvre windows.
	
Building 018, The Change Room/Toilet (PF 2001).	

Building Name & Number: VEHICLE COMPOUND AREA: BUILDING 022	
Former Uses/Name	Former Forest Research Institute Garage.
Historical Overview	During the 1970s, a complex of carpenter's and engineer's workshops, several storage sheds and offices was constructed to the north-west of the Forestry School. To enable the works to proceed the original carpentry shop, and a lecture room and a drafting room (previously established in 1948), were demolished.
Description	Building 022 is a prefabricated steel structure, clad with vertical klip-loc wall sheeting and corrugated gable roof. It has a large doorway along the south facade.
	
Building No. 22, Vehicle Compound Area (PF 2001).	

2.3 *SITE MANAGEMENT RESPONSIBILITIES*

CSIRO sold the Yarralumla property to Gunyar Pty Ltd in June 2002. While the property was sold with a twenty year lease to CSIRO (plus two option terms each of 10 years) CSIRO retained control of the property through the lease which placed the responsibility for managing and maintaining the property with CSIRO.

2.4 *HERITAGE STATUS*

The CSIRO Yarralumla site currently has two listings on the CHL including:

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

2.5 *HISTORICAL BACKGROUND*

2.5.1 *Prehistory*

Archaeological evidence suggests that Aboriginal people had occupied all of Australia's environmental zones by 31,000 years before present (BP) (Flood 1995). Ethnographic information relating to the Aboriginal occupation of the Canberra region has been obtained from historical documentation written by early European settlers and government officials during the mid to late 18th century (Barwick 1984).

Australian Aboriginal people occupied land according to a system of spatial organisation and land occupancy (Clark 1990). Individual groups were intimately familiar with their own geographical regions and the seasonal availability of resources within it. Tribal boundaries were often defined through linguistic associations, social relations, and spiritual links to the land. These boundaries were most likely fluid, changing position over time. If this was the case, then tribal boundaries recorded by European people at, or after, the point of contact can only be considered as current to that period and were probably quite different prior to European observation. To make things more ambiguous, the few European accounts of Aboriginal groups in the broad study region are limited in detail, were often confused in regard to Aboriginal group names, and provide varying interpretations of territorial boundaries (Flood 1980).

In general, early settlers recorded very little of their observations, particularly in regard to the Aboriginal people they encountered (Flood 1980). The best recorded observations come from the journals of early explorers, government surveyors and authors of travel books. By the early 1840s, Currie, Bennet, Lhotsky, Backhouse, and George August Robinson had each recorded small amounts of detail regarding the Aboriginal people within a broad region surrounding Canberra. These records are not detailed and by the 1880s, when more serious ethnographers came into the region, the consequences of European settlement had already greatly altered the traditional Aboriginal way of life (Flood 1980).

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 culture 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. 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).

Aboriginal people in the broader Canberra district are associated collectively within the Ngunawal boundaries (refer to *Figure 2.7*). These 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, ant eggs, insects, fish, mussels, yabbies, plant tubers, berries and seeds.

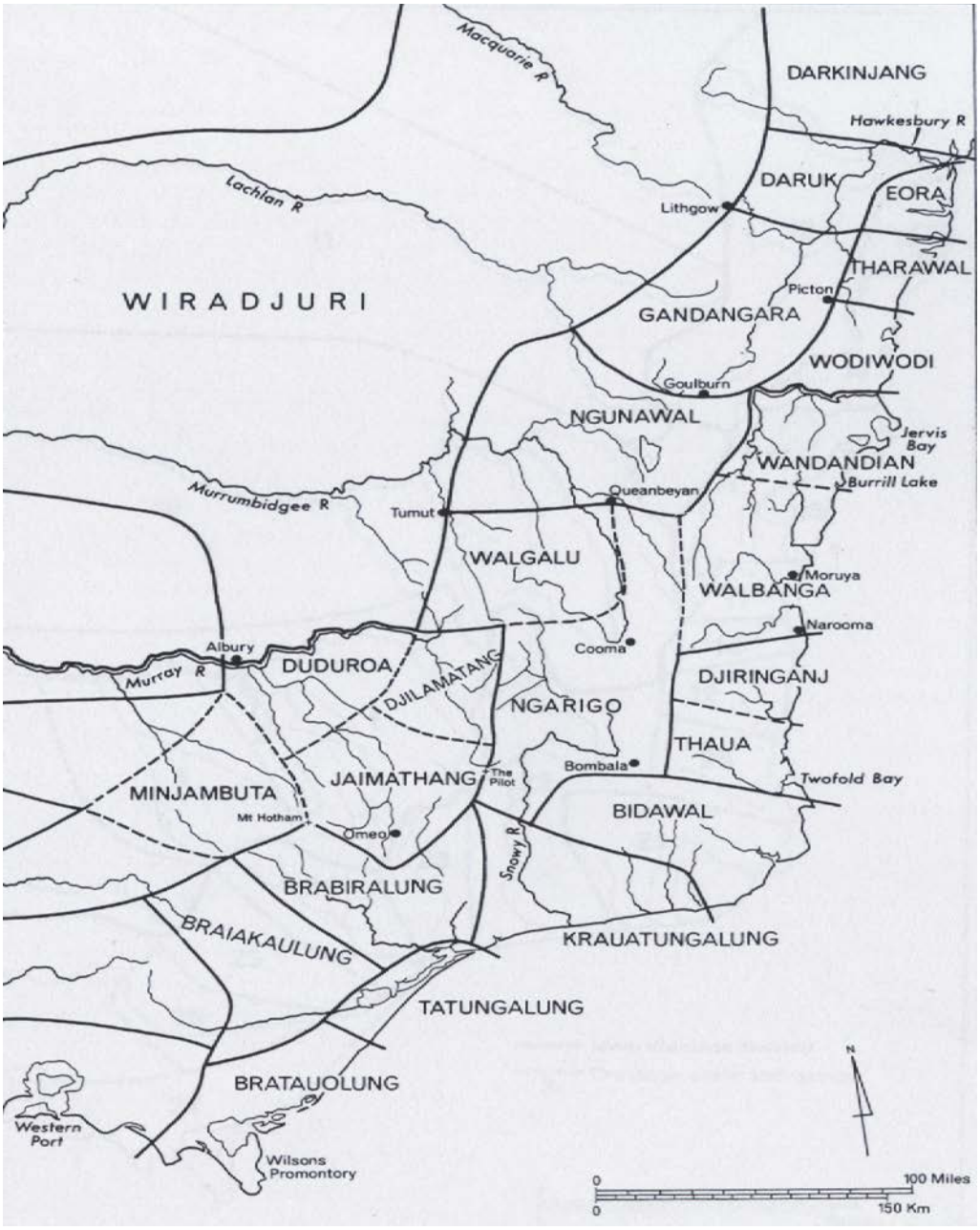


Figure 2.7 ***Tribal boundaries of Canberra and wider region (Tindale 1974).***

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

- Buru Ngunawal Aboriginal Corporation;
- King Brown Tribal Group;
- Little Gudgenby River Tribal Council; and
- Ngarigu Currawong Clan.

2.5.2 European History

The first documented case of Europeans visiting the Canberra/Queanbeyan region is in 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 (Cross 1985: 3-8).

2.5.3 The Nation's Capital

The search for a location to house the nation's capital took place between 1902 and 1908. Forty already settled districts were proposed, 23 of these were inspected by an official party who then narrowed the choice to seven. Albury, Bombala, Lake George, Lyndhurst, Tumut, Dalgety and Queanbeyan-Canberra were all examined closely, particularly with regard to water supplies, climate and landforms suitable for the building of a 'garden city'. In 1908, the Queanbeyan-Canberra area was selected as capable of fulfilling all requirements, and 2,368km^2 were set aside as Australian Capital Territory (ACT), with a separate coastal area selected at Jervis Bay for access to the sea.

Charles Scrivener, Surveyor-General selected the most suitable area of the ACT for the construction of a city. Scrivener chose the broad flood-plain of the Molonglo River, 550m above sea-level with additional land to the north and south, including two lines of hills on the north side rising 300m above the plain.

An international competition for a city plan was launched in 1911 and attracted 137 entries. First prize was awarded to American landscape architect Walter Burley Griffin. Griffin's plan laid out a city for a population of 25,000 people, with flexibility to expand to 75,000 people (refer to *Figure 2.8*).

Figure 2.8 ***One of Walter Burley Griffin's 1913 Plans for Canberra (Source: NAA Series A1, 1917/7242)***

After the World War I, and under the guidance of the Federal Capital Advisory Committee, the construction of Canberra progressed. Road and sewerage developments continued, tree plantings were carried out, and a temporary Parliament House constructed. Shops were built at Civic, Manuka and Kingston, and offices, hostels and houses were completed for 1,100 public servants (Hutchison 2000). The temporary Parliament House (now Old Parliament House, the Museum of Australian Democracy) was completed in 1926.

2.5.4 CSIRO

The following historical overview is summarised from the CSIRO website (http://www.csiro.au/en/About/History-achievements/our-history).

CSIRO started life as the 'Advisory Council of Science and Industry' in 1916. In 1926, the Council for Scientific and Industrial Research (CSIR) was established. Scientific research within the first few decades (1930s – 1940s) was focused on the fields of animal pests and diseases; plant pests and diseases; fuel problems; preservation of foodstuffs and forest products.

During World War II, CSIR research included areas such as radar to assist the Australian Defence Force. Following the World War II, research expanded to include building materials and wool textiles, coal and atmospheric physics, physical metallurgy and the assessment of land resources.

In 1949, following cessation of all classified work for the military, CSIR became the Commonwealth Scientific and Industrial Research Organisation (CSIRO). From 1961 to the present, the CSIRO has conducted research in almost all fields of primary, secondary and tertiary industry including the environment, human nutrition, conservation, urban and rural planning, and water.

2.5.5 CSIRO Yarralumla

The following section contains an historical (non-Aboriginal) summary of the history of the study area. Despite not being included here, it should not be assumed that there is no post-contact Aboriginal history associated with the site. Instead, it can be attributed to a lack of studies into this subject. The following historical overview has been adapted from *CSIRO Yarralumla Campus Heritage Management Plan Volume 1 of 3 – The Plan and Volume 2 of 3 – CSIRO Yarralumla CMP 2001* (Peter Freemen Pty Ltd Conservation Architects & Planners 2008).

2.5.6 Charles Weston and Westbourne Woods

In 1908, the area known as the Limestone Plains was chosen as the site of the new Federal Capital and later named Canberra. The region prior to this historic date was home to a number of pioneering families and a few small hamlets and communities. The natural grassland of the Limestone Plains was most suited to wool and grain production; however some land-holders, particularly those on larger stations, successfully bred cattle (Gillespie 1991).

After 1911, when Walter Burley Griffin won the international design competition for the design of the new Capital, rapid progress was made toward the 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 built during that year. The Government building works were soon under way and before long, imposing public buildings would stand proud upon the largely treeless landscape.

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). Colonel David Miller, the Administrator of the Department of Home Affairs (responsible for the development of the city from the then the head office in Russell Street, Melbourne), 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 horticulturist who had been trained in his native England but had worked for some time in Australia (*Figure 2.9*). 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 was Joseph Maiden who was the head of the Sydney Botanic Gardens. Prior to moving to Canberra, Weston became head gardener of Government House in Macquarie Street, then still under the guidance of Maiden. Government House was then the Sydney residence of the Governor-General, which ostensibly meant that, Weston worked for the Commonwealth (Gillespie 1991).

Figure 2.9 ***Thomas Charles George Weston c. 1926 (Sources, Left: Canberra Times, 20 April 1996. Right: Canberra Historical Journal, No. 44, September 1999)***

Charles Weston first visited Canberra in April 1911, to report on a site for a temporary nursery at Acton and later supervised its establishment. Two years later, on 5 May 1913, Weston arrived at Acton to take up the permanent appointment of Officer-in-Charge, Afforestation Branch of the Department of Home Affairs, Canberra. Within a few days he was inspecting potential sites for a permanent nursery, deciding that a site at Yarralumla, in 'Sheedy's paddock', was the most suitable. According to Weston the site was of sufficient size to facilitate extensions for testing and experimentation, the soil was of a good quality overall, it was sheltered and it had a permanent water supply from the Molonglo River which was capable of being pumped and reticulated (Gray 1999). On 14 May 1913, Weston showed the site to Colonel Miller who immediately gave his approval.

Weston's design for the nursery and arboretum was completed within a month and submitted to the Administrator on 10 June 1913. In the design, Weston laid down his approach to the development of the site, comprising two basic elements; a nursery/experimental area on comparatively level ground; and a demonstration arboretum on an adjacent undulating site to the

south (120 hectares of land bounded by the old brickworks site to the south and by Government House to the west) (Gray 1999).

Weston's plan for the site was scientific and well-articulated with a designated allocation of a forty hectare nursery/experimental area as Division A, which consisted of a twenty hectare open nursery for holding young trees and a twenty hectare sheltered area for propagation and testing of species (Gray 1999). The remaining 120 hectare arboretum, later named Westbourne Woods, was to be divided into three areas; Division B for Australian trees; Division C devoted exclusively to trees exotic to Australia; and Division D as an arrangement of conifers (Gray 1999).

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).

It was documented that much work was needed to prepare the site for planting including 'staking out' the area for planting in circular clumps and creating planting holes with the use of explosives (Gray 1999). The preparation process was quickly completed, however, and on 1 September 1914 the first trees, a batch of stone pines, were planted.

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 1988).

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. 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.

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.

Unbeknown to Weston, 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.

2.5.7 Charles Edward Lane-Poole & the Australian Forestry School

The Establishment of a National Forestry School

In 1911, the inaugural Interstate Conference of the infant forest services of Australia was held in Sydney. The agenda focussed on 'Australia united', demanding 'collective consideration in the interests of the whole Commonwealth' in the area of educating and training the country's future forest officers, an approach that followed the comparatively recent Australian Federation.

Many issues arose, including whether the school should be a part of, or associated with, a university, as was the pattern in the northern hemisphere. It was agreed that the northern hemisphere example should be followed in Australia and a national forestry school would be created, provided it could be closely located to a forest research organisation and have easy access to a range of 'well-managed forest types' (Carron 1977). As a centre of this kind did not exist in Australia in 1911, plans for a national school were deferred until a centre with the necessary requirements could become a reality.

The logical solution was to establish the new national school in South Australia where a university school of forestry already existed. It is documented that the heads of the State forest services believed Adelaide lacked the forests necessary for the required practical research and this difficulty rendered the school unsatisfactory for use as a national centre (Carron 1977). Despite the continuation of the Interstate Conferences, delegates came no closer to finding a solution to the problem of national forest education, heads of services became less federal in their outlook and alliances amongst them shifted (Carron 1977).

In 1920, Charles Edward Lane-Poole (*Figure 2.10*), who at the time was Conservator of Forests in Western Australia, pushed for a system whereby the Commonwealth would provide one sixth of the cost of the school with the States to pay the remainder – the amount payable by the States computed according to their relative population. In January 1921, a decision was made

to house the new school at Laurel Hill in the New South Wales Bago State Forest. The school did not materialise because two States could not guarantee a fixed number of students, a factor thought to be essential for the success of the school (Carron 1977).

Figure 2.10 Charles Lane-Poole c.1926 (NAA Canberra A3087/1).

Following a three-year assignment in Papua New Guinea, Charles Lane-Poole returned to Australia in 1925, as the newly appointed Commonwealth Forestry Adviser, and found little had been done to implement the 1920 resolution.

Lane-Poole's first task was to prepare a report to Federal Parliament outlining a federal forest policy and he took the opportunity to include within it recommendations for a national forestry school. Lane-Poole's advised the Federal Government that it should take primary responsibility for a single first class school to educate professional foresters, and that the school should be a branch of a Federal Forestry Bureau based in Canberra. Lane-Poole noted that:

'*… 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).

As a result of Lane-Poole's advice, Prime Minister Bruce wrote to the State Premiers in May 1925, informing them that the Federal Government proposed to establish a forestry school in the Federal Capital Territory, 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. The entry requirement would be a two-year science course at any State university except for officers of merit or those with experience in State departments who would be admitted on passing an entrance examination (Carron 1977).

The proposal was met with some hostility from States who believed the new school would encroach upon 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).

The Australian Forestry School operated at the Adelaide University for one full school year whilst the building at Westridge [now Yarralumla] was designed and 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 Charles 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).

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 and sixteen students nominated from Queensland, New South Wales, South Australia, Western Australia and Tasmania (*Figure 2.11*).

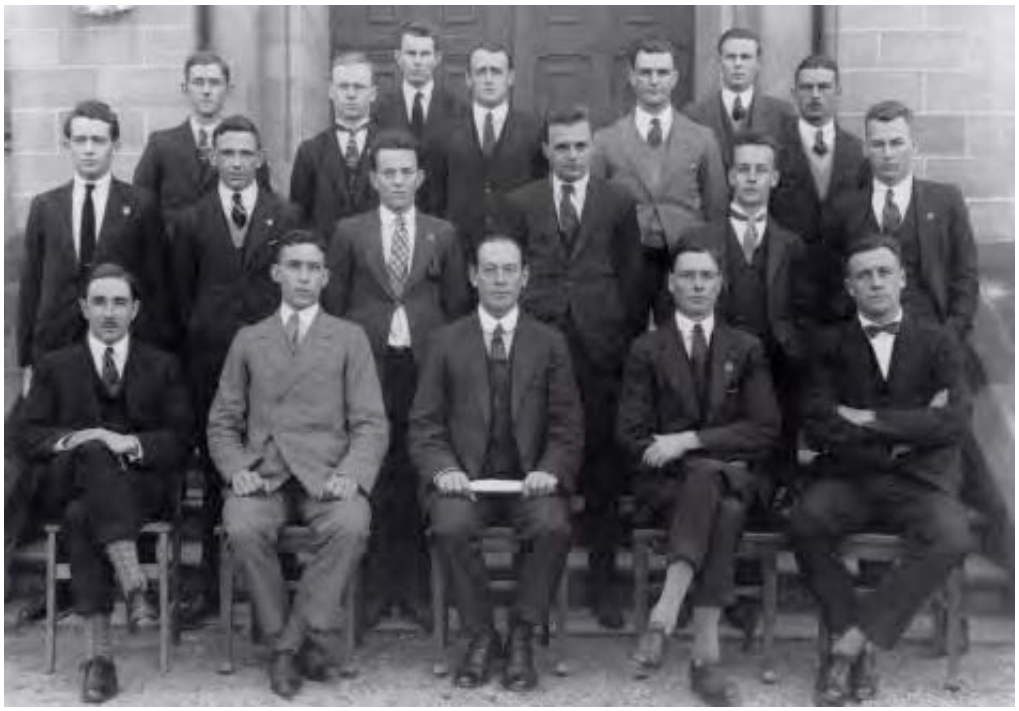


Figure 2.11 The first AFS class, Adelaide University, 1926 (L.T. Carron 2000).

The Construction of the Australian Forestry School

The Australian Forestry School building was designed by architect J.H. Kirkpatrick, assisted by Principal Architect of the FCC, H.M. Rolland (refer to *Figures 2.12 and 2.13)*. 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).

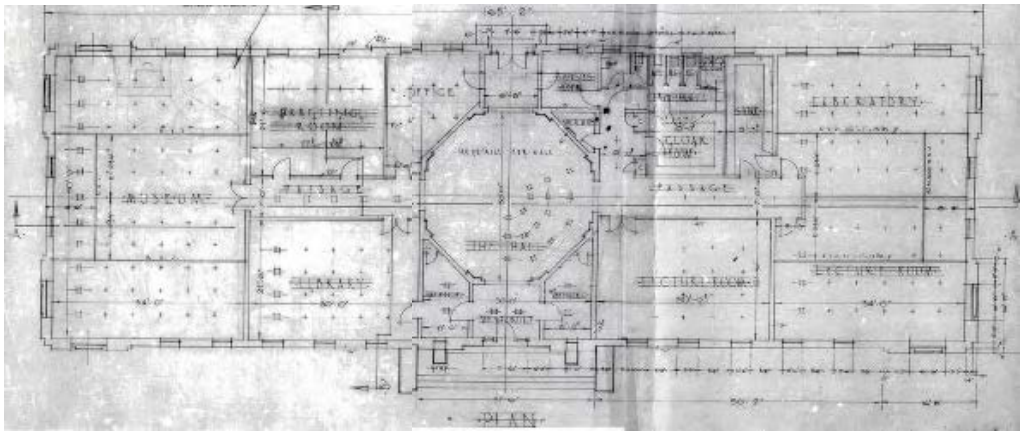


Figure 2.12 ***Amended floor plan of the Australian Forestry School building (National Archives of Australia).***

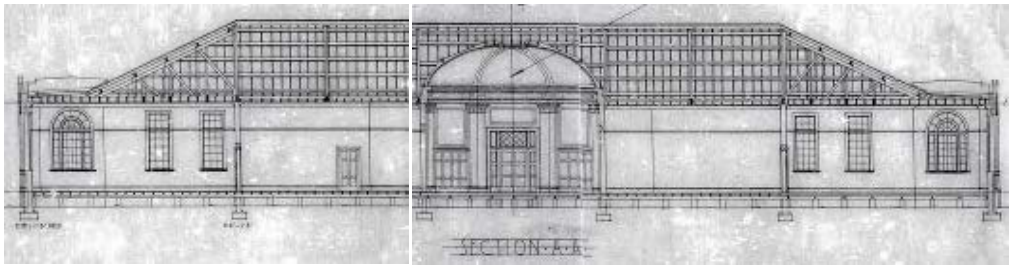


Figure 2.13 ***Amended section of the Australian Forestry School building (National NAA).***

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.

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 (*Figures 2.14* and *2.15*).

Figure 2.14 ***The worker's huts, 1927, demolished when the building was completed (AFS History Files).***

Figure 2.15 ***The AFS during construction, 1927 (Australian National University archive).***

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-Pool 1926).

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'* (Lane-Pool 1926).

By October 1913, 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-Pool 1926).

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-Pool 1927-28).

Completion of the building by March 1927 was not as easily achieved as Lane-Poole had envisaged in October 1926. 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 on the 10th and 11th instant 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-Pool 1927).

Despite being behind schedule, the Australian Forestry School opened on the intended date, 11 April 1927, although only two rooms were completed; the Principal's Room and the Drafting Room (*Figures 2.16* to *2.19*). 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. Lane-Poole 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-Pool 1927b).

Figure 2.16 The Australian Forestry School building shortly after it was completed, mid 1927 (The Mildenhall Collection, NAA A3650).

Figure 2.17 The Octagonal domed hall, AFS, 1927 (AFS History Files 1927, ANU).

Figure 2.18 The Museum, southern end of the Australian Forestry School (NAA Canberra).

Figure 2.19 The Library, Australian Forestry School, 1927 (NAA Canberra).

Lane-Poole also wrote to John Butters, who requested the architect to provide a list of items not completed and stating why, and sent an officer to see Lane-Poole about the matter (Cosgrove 1999).

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 (*Figure 2.20)* (*The Melbourne Sun*, 30 March 1927).

N.W. Jolly, the former principal at the Adelaide University, had retired late in 1926 to become the Chief Commissioner of the New South Wales Forestry Service (Carron 1977). The School was completed on 20 June 1927 at a cost of £22,022.4.5 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 (*Figure 2.21) (Sydney Mail,* 30 November 1927).

Figure 2.20 Charles Lane-Poole, 'who yesterday was appointed to the new office of Inspector-General of Forests for the Commonwealth' (The Melbourne Sun, 30 March 1927).

Figure 2.21 ***The Governor-General, Lord Stonehaven, delivers his address in the presence of Prime Minister Bruce, other politicians and members of the public (AFS History Files, 1927 ANU).***

The Forestry School building is a Stripped Classical design, rectangular in shape and measuring 50 metres by 17 metres, without excessive ornamentation (*Figure 2.22*). 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.

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 (*Figure 2.23*). The flagpole, also above the main entrance, flew the Australian Forestry School official flag. The entrance opens into an octagonal domed hall, panelled in Australian timbers and featuring a remarkable parquetry floor providing

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

Figure 2.22 The Australian Forestry School, 1928 (The Mildenhall Collection, NAA).

Figure 2.23 The official Australian Forestry School flag, featuring the School motto, Mihi Cura Futuri (NAA).

2.5.8 The Depression and World War II

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 (refer *Figure 2.24*).

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).

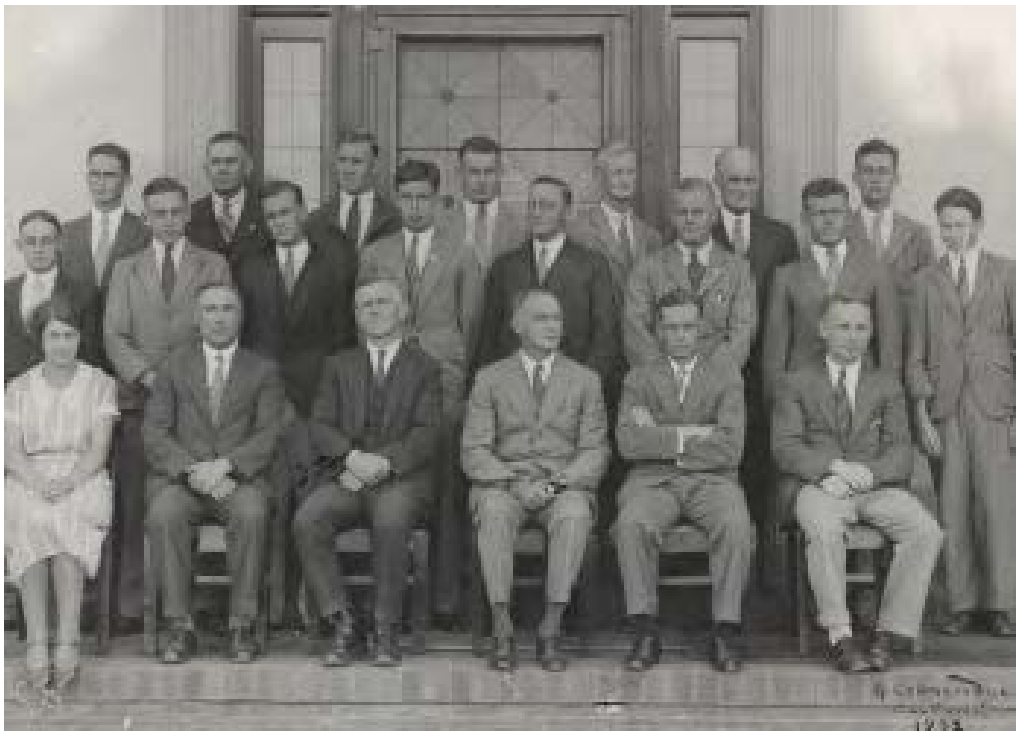


Figure 2.24 The staff and students of the Australian Forestry School, 1932 (AFS History Files, 1932, ANU).

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. In 1938 the Industrial Museum, a small rendered brick building located directly behind the Australian Forestry School, was completed (*Figures 2.25* to *2.28*). 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. 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.

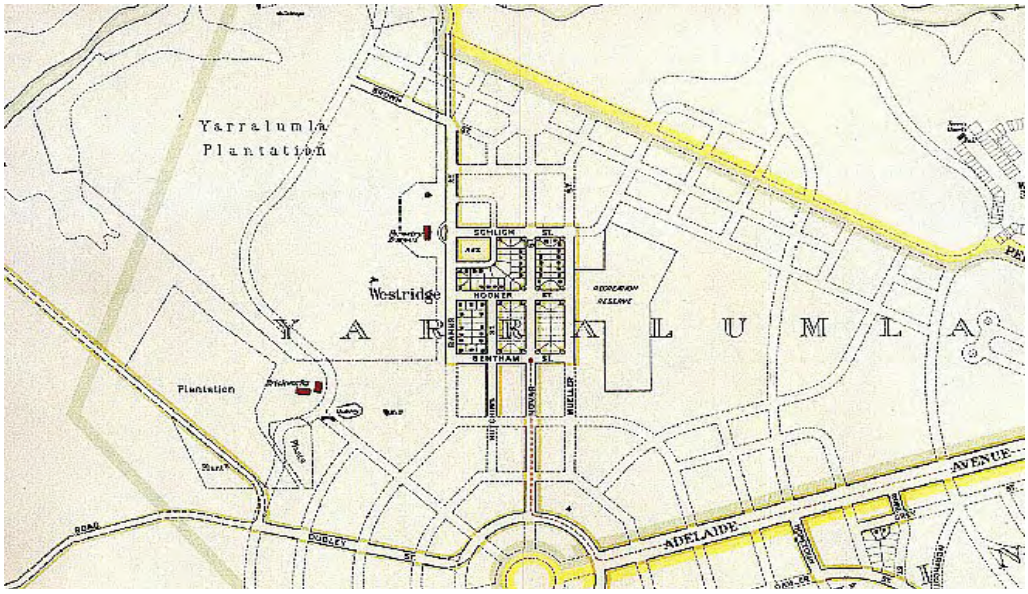


Figure 2.25 ***Plan of Canberra, 1933. Note that the AFS precinct is limited to the area around the School and Westridge House (NLA Canberra, 1987, Government Printer Plan, 1933).***

Figure 2.26 ***Charles Lane-Poole, centre front row, with staff and students, 1938. Max Jacobs is third from the left (AFS History Files, ANU).***

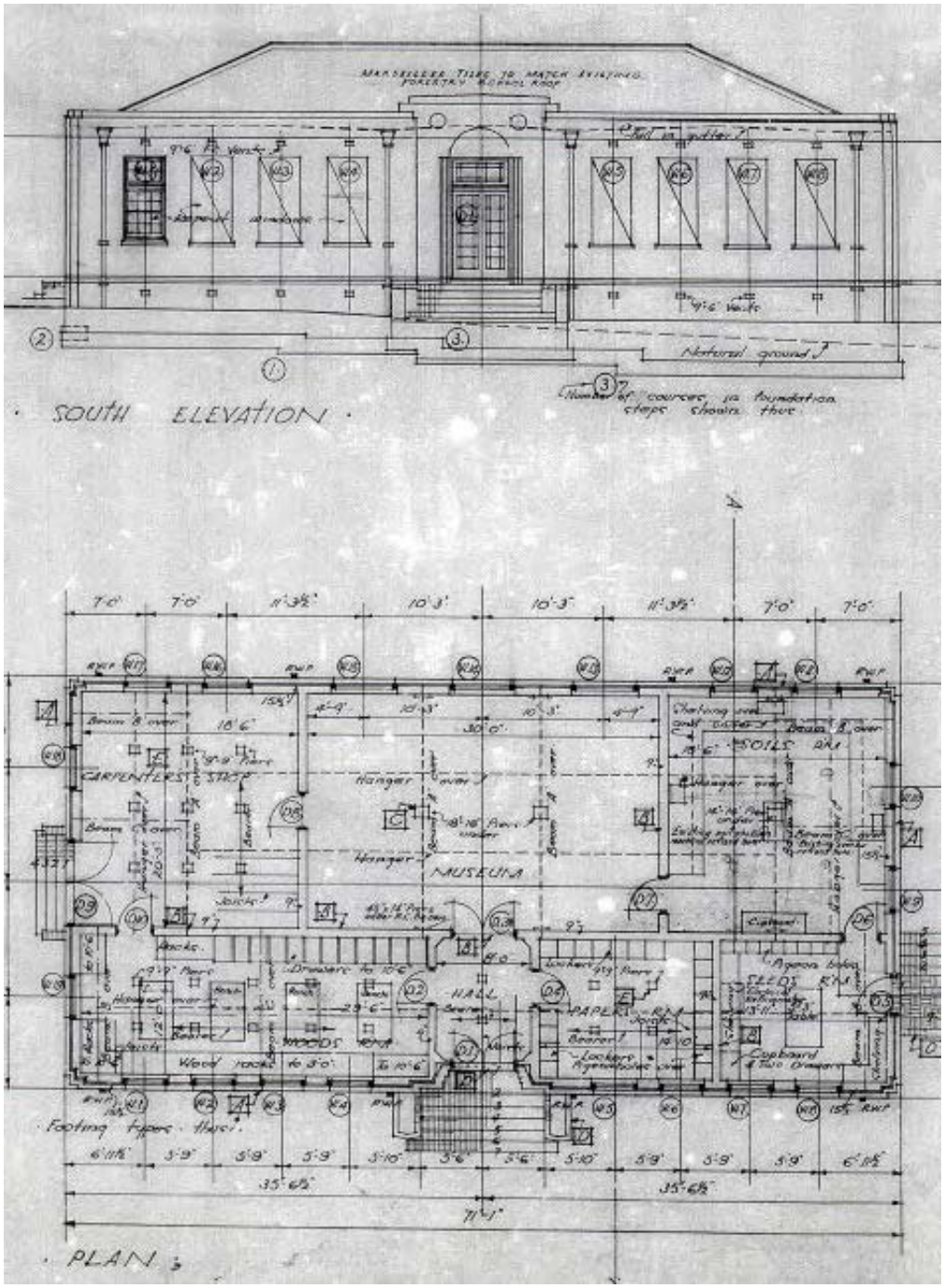


Figure 2.27 Architectural drawings of the Former Industrial Museum, June 1938 (Commonwealth of Australia Department of Interior).

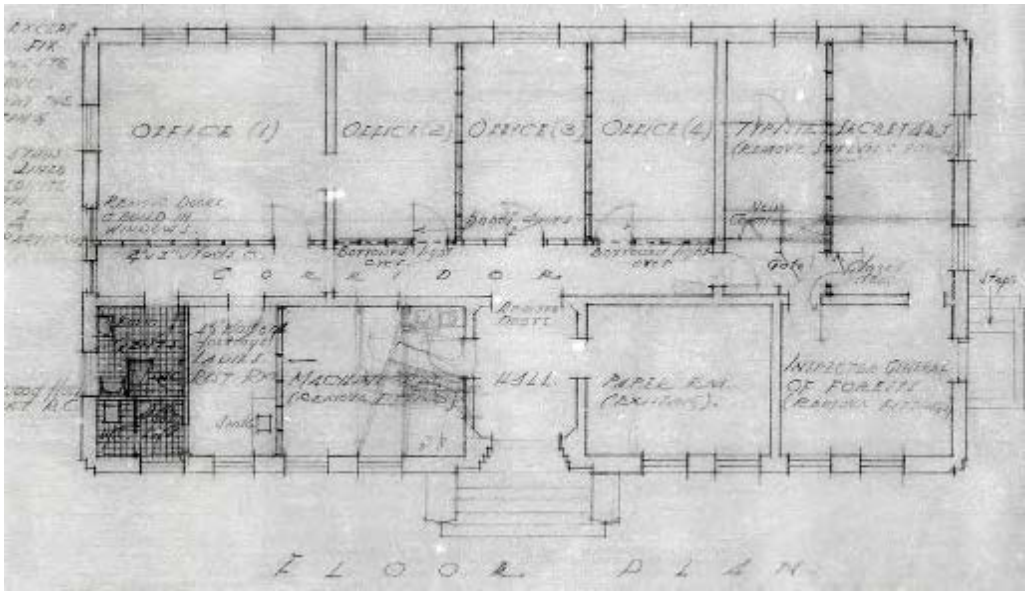


Figure 2.28 ***Floor plan of 'Conversion of Museum to Administration Building, January 1946 (Department of Works and Housing Canberra).***

The Seed Storage Building was built between 1935 and 1940 and the research Nursery was developed around 1940. The former is a small timber-framed and clad building with a hipped tile roof located behind the Forestry School, and originally used as a laboratory and seed storage facility. The Nursery was used from the 1940s to the 1980s for propagating *Pinus radiate* (AFS 1929).

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).

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).

2.5.9 The Post-World War II Years

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.

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 Philippino, 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 Australian Forestry School 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 (*Figures 2.29* and *2.30*). 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 (*Figure 2.31*). In the post-war years, as student numbers increased, more cubes were added along with another accommodation block affectionately referred to as 'The Waldorf' (now 16 Solander Place), but further accommodation was required to meet the growing number of students.

The building of a new residential college, *Forestry House*, designed by the Commonwealth Department of Works, commenced during 1949 (*Figures 2.32* to *2.37*). Forestry House was completed and occupied early in 1952. 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).

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.

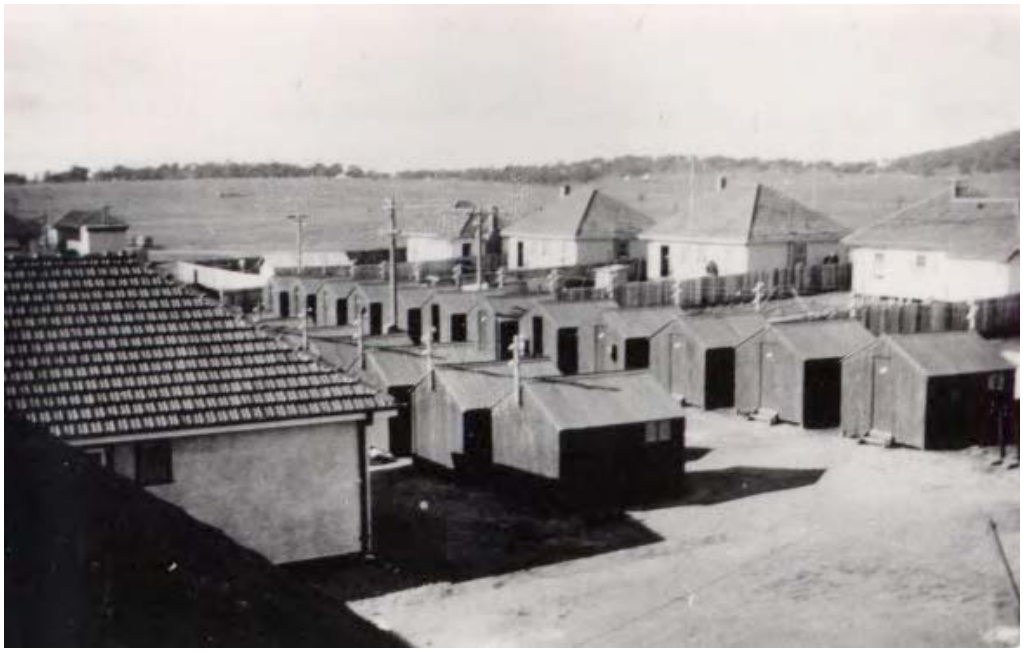


Figure 2.29 The cubicles in 1927 (AFS History Files, 1927, ANU).

Figure 2.30 The cubicles in 1938 (AFS History Files, 1938, ANU).

Figure 2.31 ***The three brick cottages in 1927, now 2, 4 and 6 Solander Place (AFS History Files 1927, ANU).***

Figure 2.32 ***Aerial photograph 1949, the AFS still occupies a relatively small area (Eric Martin Collection).***

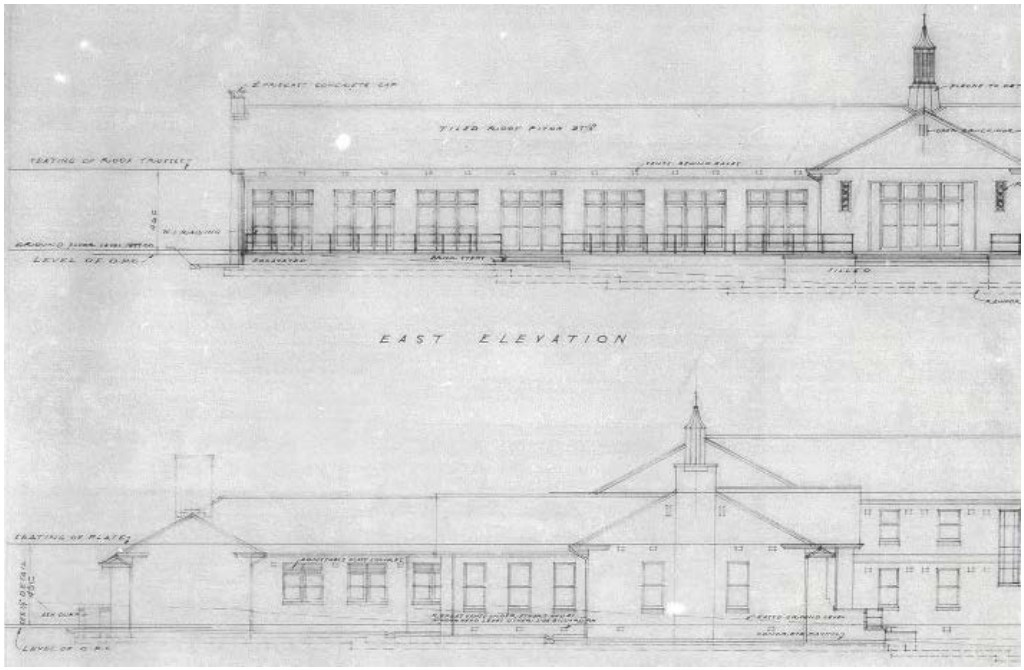


Figure 2.33 Architectural drawing, Forestry House: Eastern Elevation (NAA).

Figure 2.34 The dining room of Forestry House, 1954/55 (Robert Boden - Australian News and Information Bureau photograph).

Figure 2.35 ***The lounge Room of Forestry House, shortly after the building was completed (NAA).***

Figure 2.36 ***AFS students at the front of Forestry House during the study vacation of 1952. The concrete path leading to the entrance had not yet been laid (AFS History Files 1952, ANU).***

Figure 2.37 ***Forestry House, view from the oval, 1955 (Robert Boden photograph).***

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:

'*... The house 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).

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.

In 1946, the Industrial Museum was converted into 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 Museum's conversion entailed partitioning and some structural changes.

The large oval located at the centre of the precinct was completed in 1953 (*Figures 2.37* to *2.38*). 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).

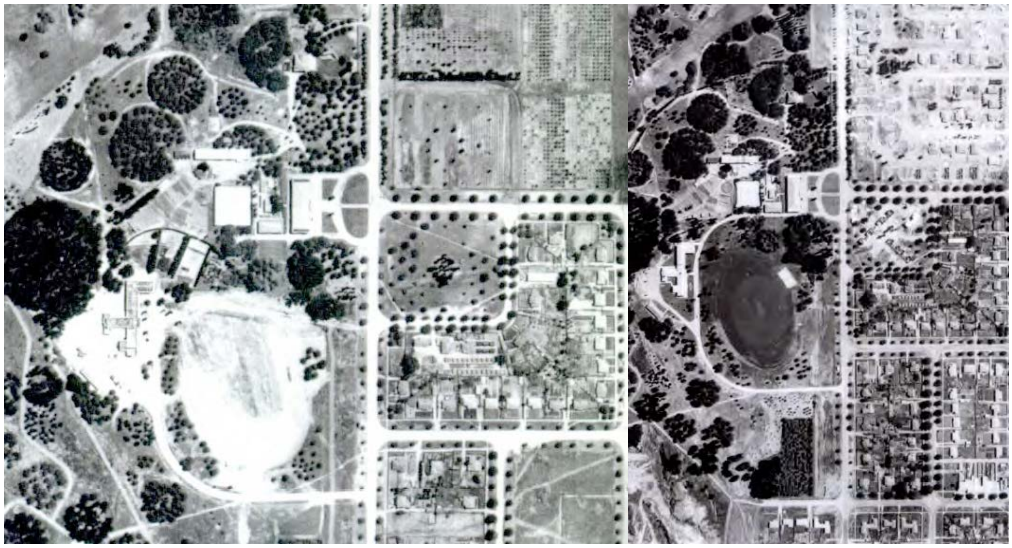


Figure 2.38 ***Aerial Photographs, 1950 and 1955 respectively, showing the Forestry Precinct 1950. The precinct is expanding to the south and west with construction of the oval with Forestry House behind (to the west). (Left, ACT Development Record 1950. Right, ACT Development Record 1955).***

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

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. The construction of Forestry House, the Caretaker's Cottage, the Glasshouse Complex and the oval were all major on-site developments. 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.

Student numbers declined in the 1950s, only to rise again in 1961. This new influx of students to the Australian Forestry School 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 (Pers. Comms. Alan Brown 5 April 2001). 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 Australian National University 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.

2.5.10 The Administration Period 1965-1975

By 1964, the Australian Forestry School was a respected tertiary institution which had produced more than 500 graduates. During the post-World War II 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 Australian Forestry School.

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, the Australian National University 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.

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 (*Figures 2.39* and *2.40*). 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).

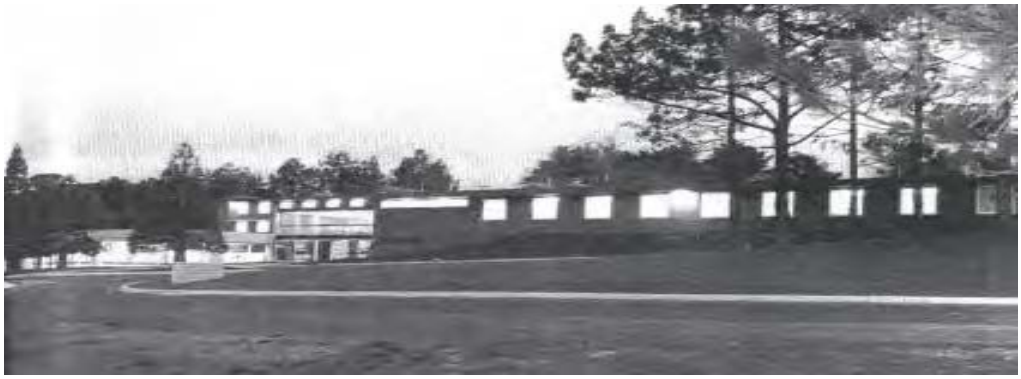


Figure 2.39 The new Forest Research Institute, May 1967 (The Forestry and Timber Bureau Annual Report, 1967).

Figure 2.40 Aerial photograph 1968 (ACT Development Record 1968).

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 (*Figure 2.41*).

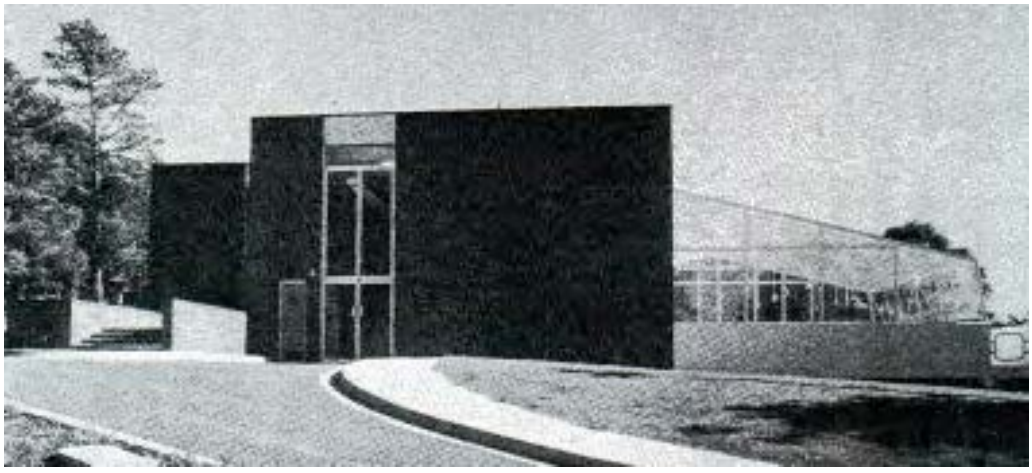


Figure 2.41 ***The Controlled Environment Building 1971 (The Forestry and Timber Bureau 1971-72).***

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, refer *Figure 2.39*. It is not documented when the complex was built, but aerial photographs show that it was completed by 1975 (*Figures 2.42* and *2.43*).

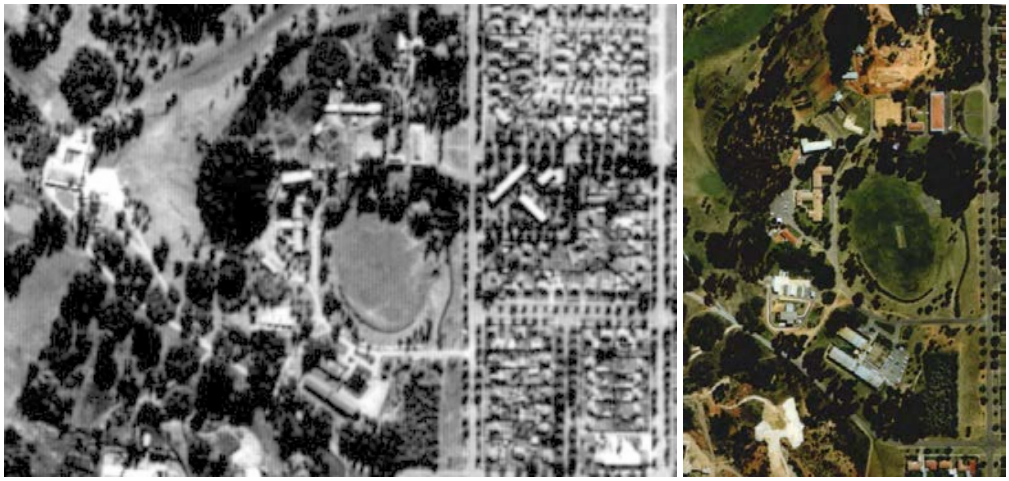


Figure 2.42 ***Left: Aerial photograph, 1968 (ACT Development Record, 1968). Right: Aerial photograph of the Forestry Precinct 1972. The industrial facilities are being constructed north of the tennis courts (ACT Development Record, 1972).***

Figure 2.43 ***Aerial photographs of the Forestry School Precinct, with the industrial facilities complete, located beside the tennis courts, 1972 and in 1975 (ACT Development Record, 1972 and 1975).***

2.5.11 The CSIRO Period 1975 to the Present

The CSIRO Division of Forest Research was established in July 1975, to assume the research functions, staff and facilities of the Forest Research Institute and the Forest Resources Development Branch of the Forestry and Timber Bureau. 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 currently occupy 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 Building 001 was constructed in 1975-76. *Figures 2.44* to *2.46* show the site during the 1970s. 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.

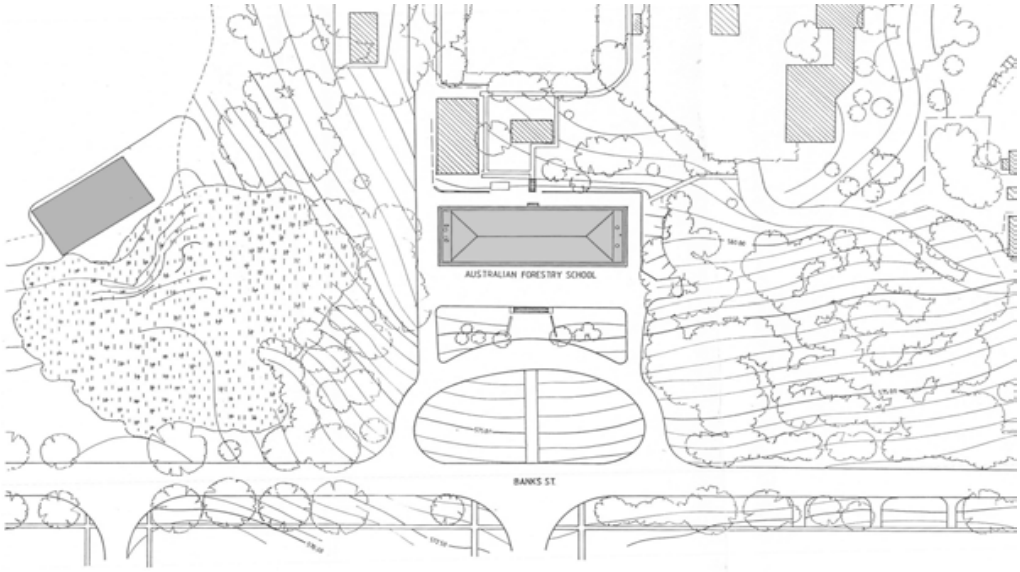


Figure 2.44 Site plan of the AFS building and precinct, as part of the Marion Mahony Griffin Measured Drawing Competition by Tim Leslie and Jennifer Dudgeon, 1995 (RAIA ACT Canberra).

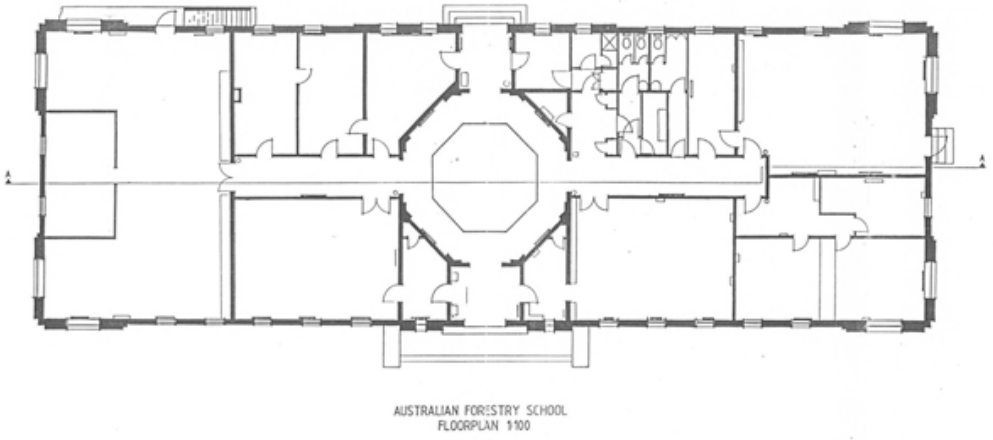


Figure 2.45 Measured drawings of the AFS building and precinct, as part of the Marion Mahony Griffin Measured Drawing Competition by Tim Leslie and Jennifer Dudgeon, 1995 (RAIA ACT Canberra).

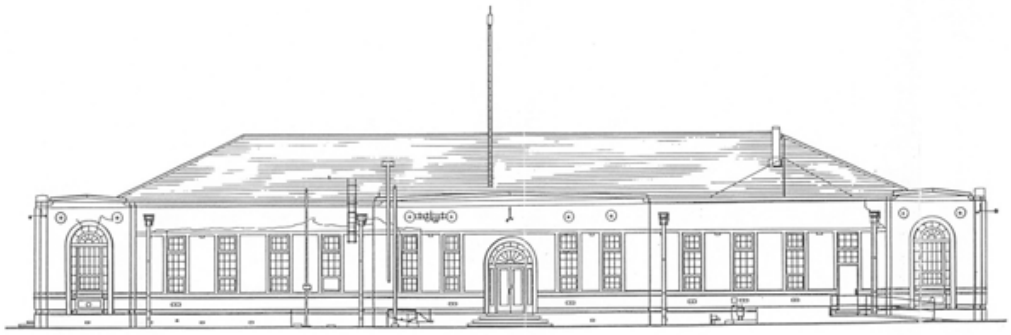


Figure 2.46 ***Measured drawings of the AFS building and precinct, as part of the Marion Mahony Griffin Measured Drawing Competition by Tim Leslie and Jennifer Dudgeon, 1995 (RAIA ACT Canberra).***

2000-2008

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.

2008 to Present

The site has been occupied by the CSIRO's Information Management and Technology (IM&T) Group since 2008. Other CSIRO groups and third party tenants (e.g. AARNET and Australian Marine Science and Technology) have occupied various buildings on the site during this time.

3 LEGISLATION

This Chapter of the HMP provides an outline of the heritage legislation framework for CSIRO Yarralumla, ACT.

3.1 SUMMARY

As the site is on Commonwealth land and CSIRO is a Government Agency who leases the property from Gunyar and has operational control of the site, the Yarralumla site is subject to Commonwealth legislation. The primary environment and heritage legislation to be addressed in the management of the site is therefore the EPBC Act. The CSIRO also employs a practice of complying with State and Territory environmental policies, initiatives and legislation (where these do not conflict with Commonwealth Legislation). In addition, under s.26 and s.28 of the EPBC Act, the CSIRO 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 State/Territory listed species and heritage values.

3.2 OVERVIEW OF RELEVANT LEGISLATION

3.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

The primary objective of the EPBC Act is to provide for the protection of the environment, particularly those aspects that are matters of National Environmental Significance (NES). The key parts of the EPBC Act that are of direct relevance to the heritage assessment and management of CSIRO Yarralumla are:

- Part 3, Division 1: Requirements Relating to Matters of National Environmental Significance;
- Section 26: Requirement for approval of activities involving Commonwealth land with the potential to have a significant impact on the environment;
- Section 28: Requirement for approval of activities undertaken by a Commonwealth agency with the potential to have a significant impact on the environment;
- Section 341S: Requirement to prepare a management plan for a Commonwealth Heritage Place in accordance with the Commonwealth Heritage Management Principles;
- Section 341V: Requirement to comply with a plan prepared under Section 341S;

- Section 341X: Requirement to review a plan prepared under Section 341S at least once every five years;

- Section 341ZC: Requirement to minimise adverse impacts on the heritage values of a place included on the National and/or Commonwealth Heritage List; and

- Section 341ZE: Requirement to provide ongoing protection of heritage values of a place included on the Commonwealth Heritage List in the event of sale or transfer.

Matters of National Environmental Significance (NES)

This aspect of the legislation would be triggered when Matters of NES, including World Heritage Properties, National Heritage Places, Ramsar wetlands, listed threatened species, ecological communities and migratory species are identified on, or within the vicinity of CSIRO Yarralumla. The first requirement is for "ground truthing" to confirm their presence or absence (particularly in the case of listed species). Subsequently, if a disturbance is to occur, an impact assessment would be undertaken to define the extent of the impact on the protected item and identification of any measures to avoid, minimise or reduce those impacts. No Matters of NES have been identified for CSIRO Yarralumla.

EPBC Act – Ss. 26 and 28

Section 26 relates to actions undertaken on Commonwealth land, which will or is likely to significantly impact the environment. S28 relates to actions undertaken by a Commonwealth agency (such as the CSIRO) which will or is likely to significantly impact on the environment. These Sections of the Act have a broader coverage than Matters of NES or S341ZC and S341ZE (outlined below), and would include, for example, ecological species and heritage places that are not otherwise listed, as well as other general environmental issues.

Any actions which will or are likely to significantly impact the environment or heritage on Commonwealth land would need to be assessed with respect to the potential significance of impacts on the environment or heritage generally. If potentially significant impacts are identified, opportunities for their avoidance, reduction or management would need to be sought. A Referral under the EPBC Act may also need to be considered.

EPBC Act – Ss 341S, 341V and 341X

These sections of the EPBC Act require a Commonwealth agency to prepare a Management Plan for a place on the CHL in accordance with the Commonwealth Heritage Management Principles.

The Commonwealth must comply with the Management Plan, and undertake a review and update of the plan at least once every five years in accordance with the details of S341X and the EPBC Regulations. The Principles and Management Plan requirements included in the EPBC Regulations are provided at *Annex B* for ease of reference.

EPBC Act S.341ZC

This section of the EPBC Act requires the minimisation of adverse impacts to the heritage values of a National or Commonwealth Heritage Place. This includes direct impacts from physical disturbance or secondary impacts that may affect visual aspects, cultural importance, landscaping or curtilage of an adjacent property.

Commonwealth Heritage List (CHL) Criteria

A place can be included on the CHL if it is found to be significant at a local, State or national level for one or more of the following criteria:

a) the place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history;

b) the place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;

c) the place has significant heritage value because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;

d) the place has significant heritage value because of the place's importance in demonstrating the principal characteristics of:

    i) a class of Australia's natural or cultural places; or

    ii) a class of Australia's natural or cultural environments;

e) the place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

f) the place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period;

g) the place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

h) the place has significant heritage value because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history; and

i) the place has significant heritage value because of the place's importance as part of Indigenous tradition.

Commonwealth Heritage List / National Heritage List Thresholds

The DoEE online heritage information provides some guidance on determining the level of heritage significance a place may have. DoEE states that as well as assessing a place against criteria for its heritage value, the Australian Heritage Council (AHC) applies a 'significance threshold' test. This test helps the Council to determine the level of significance of a place's heritage value by asking 'how important are these values?'

To reach the threshold for the National Heritage List (NHL), a place must have 'outstanding' heritage value to the nation against one or more criteria. To be entered on the CHL, a place must have 'significant' heritage value against one or more criteria.

3.2.2 ACT Heritage Act 2004

As noted, under S26 and S28 of the EPBC Act the CSIRO 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 ACT *Heritage Act 2004* would apply to CSIRO Yarralumla in the event that the property leaves Commonwealth control. Guidance on managing this type of change is provided at *Section 5.3.3* of this HMP.

The ACT Government has legislation designed to conserve significant heritage places and objects in the ACT. This legislation is in close alignment with those used in other states and territories. Following five years of consultation with the community and key stakeholders, the *Heritage Act 2004* (Heritage Act) came into force on 9 March 2005. The *Heritage Act 2004* protects the natural and cultural history of the ACT through protection provisions and the establishment of a Heritage Council. This Act was updated with the Heritage Legislation Amendment Bill 2013, which came into effect on 4 October 2014.

The *Heritage Act 2004* outlines eight 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. This HMP of CSIRO Yarralumla has included an evaluation against the criteria for the Heritage Register to assess whether CSIRO Yarralumla meets the threshold for ACT Listing.

For a place or an object to be determined as having heritage significance it must satisfy one or more of the legislative criteria:

a) it is important to the course or pattern of the ACT's cultural or natural history;

b) it has uncommon, rare or endangered aspects of the ACT's cultural or natural history;

c) it has potential to yield information that will contribute to an understanding of the ACT's cultural or natural history;

d) it is important in demonstrating the principal characteristics of a class of cultural or natural places or objects;

e) it is important in exhibiting particular aesthetic characteristics valued by the ACT community or a cultural group in the ACT;

f) it is important in demonstrating a high degree of creative or technical achievement for a particular period;

g) it has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reason; and/or

h) it has special association with the life or work of a person, or people, important to the history of the ACT.

3.2.3 Heritage and Development in the ACT

The ordinary definition of 'development' under the *Planning and Land Management Act 1988* is broadened where the land to be developed is in an urban lease area and is registered or nominated for registration under the ACT Heritage Register. In this circumstance, any works that would affect the landscape of the land are considered to be 'development' and therefore must be considered for approval by the ACT Environment and Planning Directorate and the ACT Heritage Council, as appropriate.

For development which requires an Environmental Impact Assessment (EIA), consideration must be given to the heritage significance of the land including the surrounding land. Development applications that have potential to damage heritage items listed on the Heritage Register are sent from ACT Planning and Land Authority to the Heritage Council for advice.

While the site remains in Commonwealth ownership, the requirements of the ACT Heritage Act provide relevant information in the event that CSIRO vacates the site or the Lessor divests the site is considered in the future.

3.2.4 Planning Framework

National Capital Plan

The National Capital Plan (NCP) is administered by the National Capital Authority (NCA) and outlines planning principles and policies, standards for the maintenance and enhancement of the national capital and general aesthetic principles. The Commonwealth and ACT governments must not undertake an activity that is inconsistent with the NCP. The NCP was updated on 5 May 2016.

3.2.5 Approvals under the National Capital Plan

The following information is summarised from advice provided by the NCA.

What Requires Approval?

Any buildings or structures, demolition, landscaping or excavation works in designated areas as defined by the NCP require the prior written approval of the NCA.

Applicants may also be required to provide evidence of environmental clearance or approval from DoEE before the NCA will give its approval to development proposals on:

- Commonwealth land;
- Designated areas;
- Sites that may have endangered and protected species of flora and fauna, or some other environmental value (including heritage); or
- Development that has a significant impact on the heritage values of a place entered in the CHL or NHL.

How to Start the Process

To determine if approval is required the NCA should be contacted. The NCA's role is to assist applicants through a process of negotiation and design development to achieve outcomes appropriate to those areas which embody the special characteristics of the national capital. The National Capital Plan Unit of the NCA can be contacted on 02 6271 2888 to initiate discussions or book a meeting time.

Sketch Submission

If a formal application is required, a sketch design showing development intention is submitted to the NCA for consideration and comment.

Lodging an Application

Once all the details of the proposed works have been clarified with the NCA, an application for approval can be prepared using the application form available on the NCA website.

This can be accessed via: http://www.nationalcapital.gov.au/downloads/planning_and_urban_design/Development_Approval_Form.pdf.

Consideration of applications by the NCA is completed within 15 working days. Major projects and those that require consultation or clearance from external agencies may take longer.

Public Consultation

Public consultation is required for certain types of developments. The level of consultation required may vary depending on the style and location of the development. The NCA can advise on the requirements for public consultation at any stage in the process.

Appeals

There is no provision for planning appeal relating to the merits or otherwise of development proposals approved or disallowed by the Authority. There is however, the opportunity for recourse under the *Administrative Decisions (Judicial Review) Act 1977* to determine whether a decision of the Authority has been made correctly.

3.2.6 Non-Statutory Considerations: Best Practice Guidelines

National Heritage Charter

The Natural Heritage Charter (NHC) provides best practice guidance for the conservation and management of natural heritage values in Australia. It provides a framework for making appropriate decisions for managing and restoring natural heritage values based on ecological processes which occur in natural systems and provides a process that can be used to support and implement local, State and Territory, national and international policies, agreements, strategies and plans.

A copy of the charter can be accessed at: www.environment.gov.au/heritage/ahc/publications/commission/books/pubs/australian-natural-heritage-charter.pdf

The Burra Charter

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Revised October 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 Charter provides specific guidance for physical and procedural actions that should occur in relation to significant places. A copy of the charter can be accessed online at: http://australia.icomos.org/publications/burra-charter-practice-notes/

3.3 MORAL RIGHTS

The information provided in this section has been drawn from the Copyright Agency's website (www.copyright.com.au/about-copyright/copyright-basics/moral-rights).

Moral rights for creators, including architects, were introduced in Australia in December 2000 through the *Copyright Amendment (Moral Rights) Act 2000*. This legislation provides creators with three rights:

- the right of attribution of authorship;
- the right not to have authorship of their work falsely attributed; and
- the right of integrity of authorship. This protects creators' work from being used in a derogatory way that may negatively impact on their character or reputation.

Moral rights last for the same time as copyright in a work, the term of which is usually the creator's life plus 70 years.

4 ASSESSMENT OF HERITAGE SIGNIFICANCE

An assessment of heritage significance for the study area was previously prepared in the 2008 HMP by Peter Freeman Pty Ltd Conservation Architects and Planner.

This chapter presents an updated assessment of significance against:

- the CHL criteria (*Section 3.2.1*); and
- the *ACT Heritage Act 2004* significance criteria (*Section 3.2.2*).

This Chapter also includes assessments against the criteria for the ACT Heritage Register, which assists with arranging ongoing heritage protection should the site leave Commonwealth ownership or control.

4.1 EXISTING HERITAGE ASSESSMENT

As outlined at *Section 3.4*, the study area is included on the CHL and RNE for its historic heritage significance. The citations for these listings are provided in full at *Annex A*.

4.2 ASSESSMENT OF HERITAGE VALUES

The assessment of heritage significance for the study area is provided in *Table 4.4* and *4.5*. The rankings are based on the system provided at *Annex B*.

4.2.1 *Comparative analysis*

A comparison with other related or similar sites and places assists in determining the heritage values of a particular item or feature. Comparative analysis can assist with identifying the appropriate level of heritage significance of a site, and is useful in the validation process of determining whether a heritage listing remains current. CSIRO operates several properties across the ACT that are comparable to the Yarralumla site. The Yarralumla site has been compared to three of these properties including:

- Black Mountain (refer to *Table 4.1*);
- Ginninderra (refer to *Table 4.2*); and
- Crace (refer to *Table 4.3*).

Table 4.1 Place 1: CSIRO Black Mountain

CSIRO Black Mountain, ACT	
Site Name:	CSIRO Black Mountain
Location:	Cnr Clunies Ross St and Barry Drive, Black Mountain, ACT
Description:	The Black Mountain CSIRO site covers an area of approximately 37.385 hectares. At present there are 115 buildings present at the site (excluding site infrastructure), though some of these are proposed for demolition as part of the upgrading of the site to incorporate staff from other CSIRO sites across the ACT. Development of the site commenced in the late 1920s when the Australian Government decided to provide research facilities for economic botany and economic entomology. The 40 acre site on the eastern slopes of Black Mountain was designated for this purpose. The site has been undergoing continuous development since its initial construction to meet changing requirements for CSIRO's scientific research.
Intactness and Condition:	The CSIRO site is still in use for both scientific research and public access and interpretation. The site is therefore very well maintained, with some alterations to buildings to meet current OHS requirements.
Heritage Status:	Several assets at the site are currently included within the CHL: • CSIRO Foundation Building (formerly known as CSIRO Main Entomology Building), Clunies Ross St, Acton ACT Australia (Building 101); • Blowfly Insectary Numbers 1 and 2, Silo Rd, Acton ACT Australia (Buildings 123 and 132 (demolished); and • Phytotron, Julius St, Acton, ACT Australia (Building). Several additional items have been highlighted for having design interest including: • Black Mountain Library and extension (Building 60); • F.C. Pye Laboratory (Building 19); • Discovery Centre (Building 702); and • Mural in C.S. Christian Laboratory (Building 201).
Current Use:	The CSIRO Black Mountain site is currently utilised by CSIRO for various research activities.
Significance:	The site has several individual items of significance which are listed above. The site has been utilised for research by CSIRO since the early 20th century and contains buildings and infrastructure that represent changing technologies. It is also representative of the early designing of Canberra. Several individual buildings exhibit rare and unique architectural and design features. The site has contributed to a variety of research initiatives in Australia, such as research into the dung beetle's effect on reducing the fly population and its subsequent introduction into Australia.
Photograph:	
Sources: 1. Rappoport Pty Ltd (2013). *CSIRO Black Mountain Acton, Australian Capital Territory.* 2. CSIRO Main Entomology Building, Clunies Ross St, Acton ACT Australia (Building 101), Australian Heritage Database #105428 (2004). Retrieved November 30, 2015 from http://www.environment.gov.au/	

Table 4.2 Place 2: CSIRO Ginninderra

CSIRO Ginninderra, ACT	
Site Name:	CSIRO Ginninderra, ACT
Location:	Ginninderra, ACT
Description:	The CSIRO Division of Plant Industry established facilities at the study area in the late 1950s. The study area is a Plant Industry Experimental Site and has been undertaking research into various crops in support of the Australian agricultural industry since this time. There are several buildings present at the CSIRO Ginninderra site which are functional in nature and include various sheds, vehicle shelters, animal pens, and a small number of residences for site managers and overseers. These buildings were constructed on site from the late 1950s onwards. Several Aboriginal and historic heritage sites have also been recorded at the CSIRO Ginninderra site including stone artefact sites, the Charnwood homestead site, historic tree markers and historic artefact scatters including ceramics, broken china and glass.
Intactness and Condition:	The CSIRO Ginninderra site is still in use for CSIRO agricultural activities and is well maintained and in good condition. This site is currently proposed for redevelopment.
Heritage Status:	The study area is not currently included on the World, National or Commonwealth Heritage Lists established under the EPBC Act. The study area is not included on the National Trust. A Heritage Assessment prepared for the site by ERM (2014) found that the site had Indigenous and historic heritage values but limited natural heritage values.
Current Use:	The CSIRO Ginninderra site is located on Commonwealth land and is maintained and operated by the CSIRO. The CSIRO has long term leases of four of the five parcels of land within the study area through the Department of Finance. The CSIRO uses the study area for agricultural and other scientific research.
Significance:	The site is important for historic heritage values relating to the Charnwood Homestead site which has archaeological potential that may provide insight into 19th century history and use of the local area. The study area has potential aesthetic significance arising from its landscape characteristics for the local community; however this has not been determined through a social significance assessment. The study area is also known to contain Indigenous and natural heritage values of significance.
Photograph:	
Sources: 1. *ERM (2015) CSIRO Ginninderra Site Heritage Management Plan. A report to CSIRO.*	

Table 4.3 Place 3: CSIRO Crace

CSIRO Crace, ACT	
Site Name:	CSIRO Crace
Location:	Bellenden Street, Crace, ACT
Description:	The CSIRO Crace site currently comprises the Gungahlin homestead and various buildings and associated landscapes and infrastructure for use as a scientific wildlife research station. Gungahlin is a former pastoral property homestead landscape that has been adapted for use as a scientific wildlife research station. The site comprises a complex of buildings, a carriage way and carriage loop with tree plantings, former garden areas, and former paddocks with dams and water race remnant. The oldest section of the house is the northern section. Access was gained through the front door off the verandah. Upon entering, the stairs to the first floor were to the right and the dining room was ahead. East of the dining room was a school room, then the kitchen. These rooms formed the nucleus of the plan which was surrounded by various storage rooms and verandahs. Much of this plan remains intact and is used for offices. In 1883 extensions were made to the south of the house. With the new addition in place, the formal entry was removed to a lobby on the addition's far western side. From the lobby, access to the house was through a long hall running eastward. South of this hallway was a drawing room and a dining room. Further to the east was a back hall, pantry and storage. These areas are now used for offices and a storage area has been converted to a rest room.
Intactness and Condition:	Verandahs need to be opened up and replaced, front door to original position. House is used as offices and many ugly partitions exist. The two main first floor rooms in the Crace wing have the floors supported with extra beams and posts, in main rooms. Following renovations in the mid-eighties, the building remains in good condition. Changes and repairs to the house and sections of the grounds which have been commented on by the Australian Heritage Commission (AHC) and thus are well documented in AHC files. The tree lined original driveway needs urgent attention because of overgrowth of invasive plants. (1995)
Heritage Status:	Commonwealth Heritage List – ID# 105437
Current Use:	Partially leased to external parties Ecosystems focused research carried out on site by CSIRO, including Australian National Wildlife Collection
Significance:	It is important for its ability to convey a history of rural property living within its current use as a national research station, encompassing major changes of homestead architecture resulting from economic booms, it is important for its association with Federation, it is one of a few two-storey late 19th century country estates of the pre-Canberra rural district
Photograph:	
Sources: 1. Gungahlin Complex, Barton Hwy, Crace, ACT, Australia, Australian Heritage Database # 105437. Retrieved November 30, 2015 from http://www.environment.gov.au/	

Conclusions of Comparative Analysis

The study area shares strong heritage values with CSIRO facilities at Crace, Ginninderra and Black Mountain. All of these sites share histories of use by the CSIRO for scientific research, and their respective landscapes and buildings have been adapted for these purposes. All sites have undergone continuing development throughout the 20th century to the present, which has seen the demolition and construction of buildings and changes in agricultural activities.

While the CSIRO Ginninderra site was established in the 1950s, the study area is similar to the CSIRO Black Mountain site in its specific designation for research purposes during the development of the Australian Capital Territory in the 1920s. However, the study area was initially developed as a Forestry school whereas the Black Mountain site was originally created for CSIRO scientific research. Some of the buildings present at the study area date from the 1920s and have been continuously adapted for changes in technological requirements and uses.

The Crace site exhibits evidence of a longer European history with the presence of the 1860s Gungahlin homestead. This building has been adapted for scientific research purposes. The CSIRO Ginninderra site also contains evidence of its early European use through the Charnwood Homestead. Although this structure is no longer present, exotic tree plantings remain and mark its former location.

The study area is unique in its history as being initially used as a forestry school in Canberra, though is one of several examples of CSIRO research facilities within the ACT.

4.2.2 Assessment against the CHL Significance Criteria

An assessment of the study area against the CHL significance criteria is provided in *Table 4.4*. In addition, a significance ranking has been provided based on ERM's guide, *Significance Rankings for Commonwealth Heritage Listed Properties,* refer to *Annex B*. To be entered on the CHL, a place must have significant heritage value. A place must meet one or more of the CHL criteria to have Commonwealth Heritage value.

Table 4.4 Summary of CHL Values Assessment

Criteria	2008 HMP	Current CHL Citation	ERM Assessment	Significance Ranking
a) the place's importance in the course, or pattern, of Australia's natural or cultural history	The former Australian Forestry School precinct 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 establishment of a National Forestry School was part of the national approach to many issues that were developed following Federation in 1901 and was a response to the international growth of the forestry movement. Thus the 1920's development phase in Canberra saw a number of government departments and institutions relocated to the national capital. The Forestry School was one of the few institutions for which the Federal Capital Commission provided buildings. 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 thus important as a component of the arboretum and nursery landscape of Yarralumla [Criterion A values]. The former AFS / CSIRO Yarralumla precinct, located within the larger Forestry Precinct 7 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. The precinct is important for its array of site elements related to different phases of development, which were linked to the scientific and educational purpose of the site. The AFS original building is a major element of Canberra's historic forestry precinct, which encompasses the Westbourne Woods and Westridge House, the former Australian Forestry School principal's residence	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.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	High

Criteria	2008 HMP	Current CHL Citation	ERM Assessment	Significance Ranking
b) the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history	The arboretum is an important reference site containing experimental plantings and a significant genetic resource for Australia.	Not documented	Comparative analysis has found that there are currently several CSIRO research facilities within the ACT and the Yarralumla site is therefore not rare as an example of this type.	Low
c) the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history	Not documented	Not documented	The site has potential to contribute to an understanding of the development of Australian Government research into forestry practices with the establishment of the Australian Forestry School at the Yarralumla site as a response to Federation to provide a national forestry school and national forest research centre. The Yarralumla site can also contribute to an understanding of the development of the CSIRO and the changing nature and technological requirements of its scientific research.	Low

Criteria	2008 HMP	Current CHL Citation	ERM Assessment	Significance Ranking
d) the place's importance in demonstrating the principal characteristics of: *(i) a class of Australia's natural or cultural places; or* *(ii) a class of Australia's natural or cultural environments*	Not documented	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.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	Moderate
e) the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group	The CSIRO Yarralumla precinct has aesthetic qualities 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, and as such has important townscape and planning value (Criterion E values). The restrained FCC architecture, and the timbers used in panelling, flooring and joinery of the original Forestry School building, particularly the octagonal entrance foyer, evidence a high degree of creative and artistic achievement	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.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	Moderate

Criteria	2008 HMP	Current CHL Citation	ERM Assessment	Significance Ranking
f) the place's importance in demonstrating a high degree of creative or technical achievement at a particular period	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 (Criterion F values).	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.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	Moderate
g) the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons	The former Australian Forestry School precinct has social significance to the former students educated at the place and the forestry scientists who have conducted research there, and community significance as one of the early national institutions in the Federal Capital	The School has social importance to the former students educated at the place. Attributes: The whole of the school.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	Moderate
h) the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history	The Australian Forestry School has a strong association with Charles Edward Lane-Poole and Dr Maxwell R Jacobs, principals of the Australian Forestry School who were both notable contributors to the science and study of forestry in Australia. The arboretum is also important for its association with T C G Weston, who was appointed officer-in-charge of the Afforestation Branch of the Department of Home Affairs in 1913, and who directed the major plantings in Canberra during the 1910s and 1920's. The place is also associated with Dr Wilf Crane Charles Lane-Poole was probably responsible for the planting of the Western Yellow Pines, which line the driveway, as these are believed to be contemporary with the residence, and one of these trees evidences experiments undertaken by Max Jacobs on climate and tree growth. Other trees within the precinct are associated with Thomas Charles Weston, appointed officer-in-charge of the Afforestation Branch of the Department of Home Affairs in 1913. These	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.	ERM's assessment concurs with the values of the Yarralumla site for this criterion.	Moderate

Criteria	2008 HMP	Current CHL Citation	ERM Assessment	Significance Ranking
	include the Roman cypresses which were part of Weston's original Westbourne Woods planting and which evidence a planting formation widely used by Weston; and the glade of Stone Pines, which were also planted in large groups in Westbourne Woods			
i) the place's importance as part of Indigenous tradition	Not documented.	Not documented.	The study area is not known to contain any Indigenous archaeological sites or areas of cultural sensitivity. However, no studies have been undertaken to examine this. The scope of this HMP did not include consultation with Aboriginal representatives.	None

4.2.3 *Assets of Historic Heritage Value*

The following is a list of all buildings ranked against the Significance Ranking System (*Annex B*). A description and photograph of all buildings present at the study area are provided in *Annex E*.

Table 4.5 Buildings of Significance

Asset Number	Name	Significance Ranking
001	Offices	None
001A	Offices	None
001B	Laboratory Block	None
002	Forestry House	High
003	Controlled Environment Building	Low
004*	Glasshouses Workshop	Low
004A*	Glasshouse	Low
004B*	Glasshouse	Low
004C*	Glasshouse	Low
004D*	Glasshouse	Low
4I	Soil Preparation Shed	None
004H*	Shadehouse	None
005	Site Residence	Low
005A*	Carport	None
008*	Meteorological Plot - not a building	Low
009	Office (*heritage*)	High
010	Office (*heritage*)	High
012	Workshop	None
12a	Workshop	None
012b	Workshop	None
012c	Workshop	None
013	Store	Low
014	Nursery/Poisons/Machinery Store	None
14a	Workshop	None

Asset Number	Name	Significance Ranking
14b	Workshop	None
015	Flammable Liquids Store	None
016	Open Shed	None
017	Store (*heritage*)	Moderate
018*	Change Room/Toilet	Low
022*	Storage Shed	None
023*	Storage Shed	None
024*	Store	Low
026*	Fire Wind Tunnel - not a building	Low
029*	Shed	None
030	Tennis Courts - not a building	Low

4.2.4 *Assessment against the ACT Significance Criteria*

An assessment of the study area against the ACT Heritage Significance criteria (refer to *ACT Heritage Act 2004, Part 2; Section 10*) is provided in *Table 4.6*. A place has heritage significance if it satisfies one or more of the heritage significance criteria.

Table 4.6 Assessment of study area against ACT Heritage Criteria

Criteria	ERM Assessment
a) importance to the course or pattern of the ACT's cultural or natural history	The Australian Forestry School 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. The CSIRO has continuously used the site as one of several agricultural facilities located throughout Australia. Although the site is part of CSIRO's ongoing contribution to agricultural research, it has not been noted as providing significant breakthroughs that have influenced the ACT's or Australia's agricultural industry.
b) has uncommon, rare or endangered aspects of the ACT's cultural or natural history	Comparative analysis has found that there are currently several CSIRO research facilities within the ACT and the study area is therefore not rare as an example of this type.

Criteria	ERM Assessment
c) potential to yield information that will contribute to an understanding of the ACT's cultural or natural history	The site contributed to the development of Australian Government research into forestry practices with the establishment of the Australian Forestry School at the Yarralumla site as a response to Federation to provide a national forestry school and national forest research centre within the ACT. The Yarralumla site can also contribute to an understanding of the development of the CSIRO within the ACT and the changing nature and technological requirements of its scientific research. The study area c 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 at this time. However, as CSIRO no longer occupies the site, information pertaining to the development of research and technology can no longer be obtained from the study area.
d) importance in demonstrating the principal characteristics of a class of cultural or natural places or objects	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 (CHL Place ID 105426).
e) importance in exhibiting particular aesthetic characteristics valued by the ACT community or a cultural group in the ACT	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 (Freeman 2008).
f) importance in demonstrating a high degree of creative or technical achievement for a particular period	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 (Freeman 2008).
g) has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons	The study area has an association with the former students educated at the place.
h) has a special association with the life or work of a person, or people, important to the history of the ACT	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 (CHL Place ID 105426).

4.3 *STATEMENT OF SIGNIFICANCE*

The following summary statement of significance includes recommended updates. Suggested additional text for the CSIRO Yarralumla Statement of Significance is provided in **bold**.

4.3.1 Summary Statement of Heritage Significance

The following Statement of Significance has been extracted from the 2008 HMP prepared for the study area by Peter Freeman Pty Ltd Conservation Architects and Planners.

The former Australian Forestry School precinct 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 establishment of a National Forestry School was part of the national approach to many issues that were developed following Federation in 1901 and was a response to the international growth of the forestry movement. 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 thus important as a component of the arboretum and nursery landscape of Yarralumla. The arboretum is an important reference site containing experimental plantings and a significant genetic resource for Australia.

The CSIRO Yarralumla precinct has aesthetic qualities 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, and as such has important townscape and planning value.

The former Australian Forestry School precinct has social significance to the former students educated at the place and the forestry scientists who have conducted research there, and community significance as one of the early national institutions in the Federal Capital. The Australian Forestry School has a strong association with Charles Edward Lane-Poole and Dr Maxwell R Jacobs, principals of the Australian Forestry School who were both notable contributors to the science and study of forestry in Australia. The arboretum is also important for its association with T C G Weston, who was appointed officer-in-charge of the Afforestation Branch of the Department of Home Affairs in 1913, and who directed the major plantings in Canberra during the 1910s and 1920's. The place is also associated with Dr Wilf Crane.

Charles Lane-Poole was probably responsible for the planting of the Western Yellow Pines, which line the driveway, as these are believed to be contemporary with the residence, and one of these trees evidences experiments undertaken by Max Jacobs on climate and tree growth. Other trees within the precinct are associated with Thomas Charles Weston, appointed officer-in-charge of the Afforestation Branch of the Department of Home Affairs in 1913.

These include the Roman cypresses which were part of Weston's original Westbourne Woods planting and which evidence a planting formation widely used by Weston; and the glade of Stone Pines, which were also planted in large groups in Westbourne Woods.

The following Statement of Significance has been extracted from CHL listing for the study area (Place ID 105426).

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 site has potential to contribute to an understanding of the development of Australian Government research into forestry practices with the establishment of the Australian Forestry School at the Yarralumla site as a response to Federation to provide a national forestry school and national forest research centre.

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).

5 MANAGEMENT OF HERITAGE VALUES

This section establishes the heritage management objectives for the study area, and outlines a number of policies to guide future management, planning, development and maintenance of the site which supports the protection of the site's heritage significance.

5.1 OBJECTIVES

The management objectives establish aims for the conservation of the Commonwealth and ACT heritage values of the study area in the context of a range of management requirements and issues. The management objectives were informed by the heritage values of the study area, stakeholder consultation, site investigation analysis and the risk assessment provided in *Section 5.2*.

- The overall heritage management objective is to ensure that the study area is managed in a manner that conserves the heritage values of the place whilst allowing compatible uses and activities now and into the future. The heritage management objectives provided below are the primary responsibility of both CSIRO and the current site owners. Any future site owners should be encouraged to adopt these heritage management objectives. The management and maintenance of the study area is informed and guided by the heritage values of the place;
- the heritage values of the study area are understood and interpreted; and
- stakeholders and the local community are consulted on relevant issues arising from the use and management of the study area in relation to its heritage values.

5.2 RISK ASSESSMENT

This section identifies and rates the current and future risks to the heritage values of the study area. The purpose of this risk assessment is to identify policy and guideline requirements for the effective management of the study area's heritage values. It does not conform to a Department or Australian standard for risk assessments. Therefore, the risk ratings should only be interpreted as relative indicators of priority, rather than indicative of specific consequences generally associated with a Department or Australian standard risk assessment framework. The assessment includes consideration of the current ownership and management strategies as well as potential for future uses. The risks are categorised and recommendations provided as to how the risks can be practically addressed. The risk assessment has been undertaken using the likelihood and severity categories presented in *Table 5.1.*

Table 5.1 ***Risk Assessment Matrix***

	Consequence (if untreated)	*High*	3	4	5
		Moderate	2	3	4
		Low	1	2	3
			Low	*Moderate*	*High*
			Likelihood		

Risk Rating		
1	None	No action required
2	Low	No immediate action but monitor
3	Low-Moderate	Some management may be required
4	Moderate-High	Management required to reduce likelihood or severity
5	High	Immediate management action required

The higher the score a risk receives, the more the extensive management action required.

NB: 'Likelihood' refers to the probability of a consequence to the heritage values occurring, not the likelihood of the risk itself occurring.

5.2.1 Risk Categories

The following risk categories have been considered for the study area:

Table 5.2 ***Risk Categories***

Risk Category
1. Change in Ownership and/or control
2. Future Use and Development Controls
3. Interpretation
4. Management and Maintenance Framework
5. Legislative Compliance
6. Consultation
7. Changes to Fabric
8. Risks Posed by Heritage Fabric
9. Maintenance of Heritage Values
10. Public Access

5.2.2 Risk Register and Risk Responses

The risks have been listed in *Table 5.3*, with comments against the assessed heritage values categories and risk rating applied. The risks have been listed in descending order of risk rating (i.e. starting with the highest risk).

Recommended risk responses have been identified to assist in avoiding or reducing potential threats to the heritage values of the place. These recommendations have informed the heritage management policies and guidelines contained in the following section. The recommendations are provided in *Table 5.3*. These recommended risk responses have informed the heritage conservation policies and guidelines provided in this Chapter.

These risk responses in conjunction with the policies and guidelines would assist CSIRO in providing continued protection of the identified heritage values of the study area.

Table 5.3 Risk Assessment and Risk Response Summary

Risk Category	Risk Description	Unmitigated impact on Heritage values	Likelihood	Consequence	Risk Rating	Mitigation Management	Post Mitigation Rating	Policies and Guidelines
Change in Ownership and/or control	Study area changes ownership, new owner is not aware of heritage values. Commonwealth occupation of study area ceases resulting in no legal protection for identified heritage values.	Heritage values could be destroyed or damaged without adequate legal protection.	High	High	5 High	If a change of ownership that would remove the study area from protection under the EPBC Act is to occur, at least 12 months prior to divestment, nominate the assessed values to the ACT Heritage Register and liaise with the ACT Heritage Council to ensure protection will be in place upon sale transaction.	2 Low	*Section 5.3.3*
Future Use and Development Controls	Changes to the current use of the study area, including new development that does not consider heritage values.	Heritage values damaged or destroyed through unsympathetic changes in use and new development.	Low	High	3 Low-Moderate	Ensure any proposed changes of use and new development carefully consider impacts to heritage values.	2 Low	*Sections 5.3.1 and 5.3.4*
Interpretation	Insufficient or inaccurate interpretation of heritage values.	Heritage values may not be understood by management and/or visitors, and sensitive Aboriginal heritage information may not be managed appropriately.	Low	High	3 Low-Moderate	An interpretation strategy can be developed to assist CSIRO with ensuring information about heritage values is provided.	1 None	*Section 5.3.8*

Risk Category	Risk Description	Unmitigated impact on Heritage values	Likelihood	Consequence	Risk Rating	Mitigation Management	Post Mitigation Rating	Policies and Guidelines
Management Framework	Lack of clarity of responsibility for heritage management of the study area between CSIRO management authorities.	Management decisions may result in damage to or loss of heritage values.	Low	High	3 Low-Moderate	The lease arrangement for the study area establishes roles and responsibilities between the management authorities responsible for the site. Guidance on considering heritage values when making management decisions, along with training recommendations for personnel, is provided in this HMP to assist with addressing this risk. A commitment by CSIRO management to use this HMP for guidance is a key step in managing this risk.	2 Low	*Sections 5.3.1 and 5.3.4*
Legislative Compliance	Compliance with the EPBC Act, and relevant ACT legislation is required. Confusion over legislative requirements could lead to non-compliance.	Activities may be undertaken that may result in damage to or loss of heritage values.	Low	High	3 Low-Moderate	A summary of legislative requirements is included at *Section 3* of this HMP to assist CSIRO management authorities to achieve legislative compliance on heritage issues.	2 Low	*Section 2, Section 5.3.4 – Works Approval*
Consultation	Consultation with stakeholders can take time, which can delay activities. Lack of stakeholder consultation when planning changes that may impact heritage values can cause delays during the approvals phase.	Activities may be undertaken that may result in damage to or loss of heritage values.	Low	High	3 Low-Moderate	Where an activity is proposed that may require an EPBC referral, early consultation with DoEE is advised to ensure all timelines for approvals are factored into work programs. CSIRO HMPs comply with EPBC Regulations whereby the public is invited to comment on the document (after advertising in paper and Gazette).	2 Low	*Section 5.3.6*

Risk Category	Risk Description	Unmitigated impact on Heritage values	Likelihood	Consequence	Risk Rating	Mitigation Management	Post Mitigation Rating	Policies and Guidelines
Changes to Fabric	Unsympathetic changes to heritage fabric.	Damage to or loss of heritage values.	Moderate	High	3 Low-Moderate	Ensure any work is planned in consideration of heritage values. Physical works affecting heritage values should be conservation focussed, and significant changes should be avoided.	2 Low	Guidelines regarding building fabric are provided in *Section 5.3.4.* Refer to *Policies 21 to 31.*
Risks posed by Heritage Fabric	Some heritage fabric and sites can pose a risk to health and safety, such as asbestos materials, trips and falls.	Inadvertent damage to or loss of heritage values arising from asbestos removal or stabilisation works.	Moderate	High	3 Low-Moderate	Ensure works are carefully planned and implemented to avoid impacting heritage fabric. Engage appropriate specialists to advise on works where necessary. Any future works to the study area needs to ensure that heritage values are not impacted. Provide signage to warn of presence of asbestos in appropriate locations.	2 Low	Guidelines regarding building fabric are provided in *Section 5.3.4.* Refer to *Policies 21 to 31.*
Maintenance of Heritage Values	Unsympathetic maintenance of heritage fabric.	Damage to or loss of heritage values.	Moderate	High	3 Low-Moderate	Ensure all maintenance is low impact and seeks to conserve and retain fabric and setting in-situ.	2 Low	Maintenance Plan provided at *Chapter 5*.
Public Access	Visitors' numbers may result in damage to heritage items and sites, including vandalism and souveniring.	Damage to heritage sites and places, with a consequential loss and damage to the heritage values.	Low	High	3 Low-Moderate	The interpretation of the study area should act to educate the general public as to the values and significance of the building.	2 Low	Interpretation and access guidelines are provided in *Section 5.3.5.*

5.3 POLICIES AND GUIDELINES

5.3.1 Heritage Management Plan Adoption and Monitoring

Adoption

In the first instance the HMP should be adopted by CSIRO. This HMP supersedes previous heritage assessments and the former Yarralumla HMP (Freeman 2008). It is important that the personnel responsible for site management and maintenance are familiar with the requirements of a heritage facility. Awareness of the matters to consider and procedures to follow is essential to the successful ongoing conservation management of CSIRO Yarralumla. A succinct training and awareness package can be developed and provided to appropriate personnel on an ongoing basis.

Policy 1 The HMP should be adopted by CSIRO and heritage conservation awareness training should be developed and implemented via mandatory inductions for personnel responsible for the management and maintenance of CSIRO Yarralumla.

Implementation, Monitoring and Review

A priority for the successful implementation of the HMP is to integrate the content of the document with Yarralumla's internal management and auditing systems. This will greatly assist in the timely application of the HMP in all areas of planning and management. A Yarralumla Heritage Reference Group should be established as an advisory body to monitor the implementation of the HMP and would sit within CSIRO Yarralumla's management team.

Policy 2 The policies outlined in the HMP will be adopted by CSIRO and an annual internal audit for the first year will be undertaken. Subsequent audits to be on a 2-yearly roster. Any changes to the place or new information revealed during this period will be recorded and appended to the HMP. Interim information must be noted as having "endorsement pending" status prior to the next HMP review (5 yearly at a minimum). Any implementation failures would be addressed internally by a 'Heritage Reference Group' elected by CSIRO management.

Communication

In accordance with the *CSIRO Land and Building Heritage Strategy 2016 – 2026* (CSIRO 2016), CSIRO will provide regular updates to the Minister. The updates will include expenditure on heritage assets; new or updated heritage assessment reports and heritage management plans; and any changes or impacts to CSIRO Yarralumla following site activities (i.e. maintenance of heritage values, changes in use etc.).

Policy 3 CSIRO should regularly provide updates to the minister on changes to or actions and activities that impact the heritage assets at CSIRO Yarralumla.

5.3.2 Heritage Management Approach

The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance, 2013, the *Burra Charter,* is widely recognised for its guiding principles on the conservation in Australia in terms of the physical fabric. The Charter contains basic conservation principles in a range of articles, which address cultural significance and how to protect it. This HMP advocates an understanding of the Charter principles which include:

- the place itself is important;
- understand the significance of the place;
- understand the fabric;
- significance should guide decisions;
- do as much as is necessary, as little as possible;
- keep records; and
- do everything in a logical order.

A copy of the Burra Charter can be found at http://australia.icomos.org/publications/charters/

Policy 4 The conservation and management of the heritage values within the study area shall be carried out in accordance with the principles of the Burra Charter.

Specialist Advice

The care of historic places requires specialist knowledge and skills. Article 4 of the Burra Charter advocates the use of all the knowledge, skills and disciplines which can contribute to the study and care of a place. The care of CSIRO Yarralumla may require the expert advice of a heritage architect, structural engineer, archaeologist and heritage interpretation specialist.

Policy 5 It is recommended that the care of CSIRO Yarralumla utilises specialist heritage and engineering services when required.

Training and Awareness

It is important that the personnel responsible for the management and maintenance of the CSIRO Yarralumla site are familiar with the requirements of a heritage site. Awareness of the matters to consider and procedures to

follow is essential to the successful ongoing conservation management of the heritage place.

A succinct training and awareness package should be developed and provided to appropriate personnel on an ongoing basis in accordance with the CSIRO Heritage Strategy for Land and Buildings.

Policy 6 ***Mandatory heritage awareness training should be developed and implemented for personnel responsible for the management and maintenance of the CSIRO Yarralumla site. All maintenance personnel who undertake the mandatory training should be required to sign a register recording their compliance with this Policy and their awareness of the heritage status of the site.***

5.3.3 Review of the Heritage Management Plan

For this HMP to remain a useful heritage management and conservation tool it needs to be reviewed and updated at regular intervals. It is considered unlikely that the entire HMP will require extensive revision.

The review is to be undertaken by CSIRO, or a future owner, with assistance from a heritage specialist as required. The review is to focus on:

- amending responsibilities;
- document any works undertaken since the last HMP review;
- consider any changes or planned changes of use; and
- any changes or updates in interpretation strategy.

In accordance with the EPBC Act, it is recommended this HMP be reviewed at least once every five years. This approach is also consistent with best practice and would support compliance under the ACT *Heritage Act 2004*. The review should assess the content of the plan and determine its effectiveness in protecting the heritage values of the place, and make recommendations for updating or re-writing the plan as required. The first review is required to be undertaken by 2021, or sooner, if ownership of the site changes before this time.

Policy 7 ***This HMP will be reviewed and updated at least once every five years.***

Policy 8 ***CSIRO should consider assessing the Indigenous and natural heritage values of the study area in the future, through updating this HMP or preparation of a separate Indigenous and Natural Heritage Management Plan.***

5.3.4 Change in Ownership

The heritage values of the study area should be nominated for formal protection under the ACT heritage system. Some values warrant protection on the ACT Heritage Register.

Under possible future ownership and management changes, the identified historic heritage values could be added to the ACT Heritage Register. Existing management arrangements for the study area would assist with appropriate ongoing management of the Yarralumla site.

It is recommended that a copy of the updated HMP be lodged with the ACT Heritage Council.

Policy 9 ***This HMP should be reviewed and updated within six months of a change of ownership.***

Policy 10 ***Any new owners or lessees of the study area should be provided a copy of this HMP.***

Policy 11 ***The heritage values of the study area will be nominated for formal heritage listing under the ACT heritage system.***

Policy 12 ***The updated HMP should be lodged with the ACT Heritage Council.***

Policy 13 ***Negotiations with the ACT Government regarding future protection and management arrangements for the study area should be undertaken.***

5.3.5 Future Use and Development

Changes in use and new development have the potential to have an impact on the heritage values of the study area. It is important to ensure any proposed changes consider potential heritage impacts and the necessary approvals have been obtained. ***In considering impacts, it must be noted that there exists a lack of understanding of Indigenous and natural values, therefore Aboriginal stakeholders should be consulted.***

Policy 14 ***Ensure proposed changes and any new development considers the potential impacts to heritage values.***

Policy 15 ***Ensure proposed changes and any new development obtains the necessary EPBC Act and ACT planning system approvals.***

Future Use

The future use of the study area should avoid and minimise physical and visual impacts to the identified heritage values and viewpoints across the study area.

Increased public access and recreation activities can be considered under future uses, provided that heritage values are carefully incorporated into master planning and adverse heritage impacts are avoided. Opportunities to interpret and enhance heritage values should be incorporated into proposed future uses where possible.

The local community, former students/teachers etc. are able to access heritage premises (if vacant or by negotiation) by submitting request through http://www.csiro.au/en/About/Strategy-structure/Heritage-management. That stated, the study area is a CSIRO operational site and due to research activities conducted on site, or if a building is leased to a third party, access is not always possible.

Policy 16 Consider heritage values when planning new uses of the study area.

Adaptive Re-Use

As discussed above, adaptive re-use of the study area should focus on low heritage impact options. Adaptive re-use of the study area as a whole should consider options that respond sensitively to the existing surrounding context, which is comprised of a mix of landscaped, open and built areas.

In considering impacts, it must be noted that there exists a lack of understanding of Indigenous and natural values, therefore Aboriginal stakeholders should be consulted.

Policy 17 Adaptive re-use of the study area, or parts/areas thereof, should aim to conserve all identified heritage values.

Management Framework

The study area is leased and managed by CSIRO. Refer to the guidelines and policies at *Section 5.3.3* for details on a change of ownership.

Policy 18 This HMP is to be adopted by the authorities responsible for the management of the study area and used in its ongoing strategic and day to day management.

Works Approval

Major changes to the site that have the potential to impact heritage values would require approval under the EPBC Act. Consultation with CSIRO is required as part of determining if a referral under the EPBC Act will be necessary for proposed works. Impacts to heritage values should be avoided where possible. The EPBC *Significant Impact Guidelines 1.2 – Actions on, or impacting upon, Commonwealth, and actions taken by Commonwealth agencies* (SIG 1.2) provide guidance on heritage considerations to assist with EPBC Act compliance. These are provided at *Annex C* for ease of reference.

CSIRO HMPs comply with EPBC Regulations whereby the public is invited to comment on the document (after advertising in paper and Gazette).

Policy 19 Annex C – SIG 1.2 - should be used to help guide development planning activities.

Policy 20 Seek approval under the EPBC Act for proposed activities with the potential for a significant impact, in consultation with CSIRO.

Changes to Site Features and Elements

The aim for the conservation and management of the heritage values that occur within the study area is to minimise impacts to heritage values as far as practicable.

Policy 21 Aim to conserve existing heritage site features and elements.

Policy 22 Minimise impacts to heritage site features and elements as much as possible.

Development Controls

As noted above, any development of the study area would need to consider potential impacts to heritage values of the overall site, important viewpoints and individual assets of significance. Heritage attributes of the study area to consider when planning new development are:

- Individual assets with moderate or high levels of heritage significance including Buildings 002, 009, 010 and 017;
- Movable heritage items such as furniture stored in Buildings 001 and 002;
- The immediate setting and historic and aesthetic importance of the plantings at the front of Building 009 and across the study area; and
- Important viewpoints such as views of the site along Banks Street and views west towards Building 009.

Regarding proposed development of the study area utilising in-house expertise within CSIRO where possible will assist with ensuring EPBC compliance and cost management.

Policy 23 Focus any new buildings within areas of existing development and so as not to block important viewpoints.

Policy 24 The density of new development should respond to the character of the landscape and surrounding context.

Policy 25 Incorporate open space areas into development planning considerations.

Policy 26 ***Prepare a Heritage Impact Assessment (HIA) for any new development that has the potential to impact on the heritage values of the study area.***

Policy 27 ***Maintenance activities should not involve changes to significant trees, fabric or relics.***

Policy 28 ***Significant trees and plantings should be maintained and conserved, and should not be removed except where:***

- ***a. The tree is moribund or dies, in which case replanting with trees propagated from the same stock, where feasible;***
- ***b. If not feasible, the tree shall be replanted with trees of the same species; and***
- ***c. Any new planting shall be on the site of the original tree or as close to it as possible.***

Policy 29 ***Trees shall only be removed if assessed by a professional as being moribund or demonstrated as posing a significant health and safety risk.***

Policy 30 ***Any tree removal should be undertaken in accordance with the ACT Tree Protection Act 2005, including consultation with the ACT Conservator for Flora and Fauna.***

Policy 31 ***Open landscape vistas to and from the sites shall be maintained, with no new plantings permitted on site except as replacement plantings.***

Unforeseen Discoveries

Given the extent of sub-surface disturbance which occurred during the construction of the buildings at CSIRO Yarralumla and during subsequent construction projects, it is unlikely that extant, in-situ Aboriginal archaeological deposits would be present at CSIRO Yarralumla. However, it is recommended that a precautionary approach be adopted, and a Chance Finds Procedure be developed and approved for the site, in the event that future construction activities uncover any unexpected archaeological finds. A recommended procedure is as follows:

1) Cease work in the immediate area.

2) Notify the building manager and CSIRO heritage team.

3) Photograph the item in situ (i.e. do not move the object).

4) Inspect the item with a CSIRO representative, and assess whether further consultation with the Representative Aboriginal Organisations (RAOs) should occur.

5) Prepare a brief report documenting the item type, its location, date found, and recommendations for consultation, management and future storage.

6) If the item cannot be removed without further archaeological excavation, or if a number of items are found in a single location, engage a suitably qualified archaeologist to record and assess the find(s) and assess whether the works which uncovered the item need to be amended to protect the find. This should occur in consultation with representatives from the CSIRO, DoEE and the RAOs as required.

7) Implement the outcomes of 5) and 6), including ongoing requirements for the item's protection as needed.

A similar procedure should be undertaken in the event of an unforeseen historical archaeological find, and management recommendations should be devised in consultation with the CSIRO and DoEE.

Policy 32 ***In the unlikely event of unforeseen Aboriginal and historical archaeological* discoveries*, implement the Chance Finds Procedure presented in this HMP.***

5.3.6 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 the public that access the place.

A heritage interpretation strategy can be developed where there is a public access and/or interest in the place. The Strategy can be used to prioritise interpretation actions and allocate funding over a rolling program of signage upgrade and new signage installation.

There are a range of considerations and requirements to address the interpretation of each of the heritage values that occur within the study area. The policies for overall interpretation as well as each heritage value type are provided below.

The information contained in this HMP also provides interested parties with a stronger insight into the history of the study area. A copy of this HMP will be made available to the Department of Environment, ACT Library and on CSIRO's internet page: www.csiro.au/en/About/strategy-structure/Heritage-management/Heritage-land-and-buildings.

General Interpretation Policies

Policy 33 ***Any new development of the study area should include a comprehensive approach to the integration and interpretation of its identified heritage values.***

Policy 34 ***A Heritage Interpretation Strategy should be prepared to address community heritage information requirements.***

Policy 35 ***Consider lodging a copy of part or all this HMP with suitable external libraries to increase access to historical information about the site to interested parties.***

5.3.7 Reporting Protocols

The objective for reviewing and reporting on the plans and processes in this HMP is to ensure information about the heritage values of the study area, their maintenance and management continues to be regularly updated. These protocols are to be implemented by the current owner and lessees of the study area.

Reporting and Recording

Planned and unscheduled maintenance works to heritage items and areas need to be reported to provide a centralised record of changes to the place over time, and to satisfy requirements under the EPBC Act for places with Commonwealth heritage values. This also supports compliance under the ACT *Heritage Act 2004.*

All maintenance and conservation works carried out on any heritage item or site within the study area should be recorded in an asset management system Maintenance inspection results should also be recorded in an asset management system upon completion.

Policy 36 ***Ensure that all maintenance and conservation works are recorded in the CSIRO Land and Building Heritage Register***

CSIRO Business and Infrastructure Services (CBIS) are responsible for the property, facilities and asset management of the CSIRO Land and Building Portfolio. CBIS are also charged with managing the heritage values of the Estate in accordance with the requirements of the EPBC Act. This includes the identification, conservation and protection of assets with heritage values.

CSIRO sites have specific Facilities Managers who are responsible for monitoring land and buildings and tenant relations on their sites. The Yarralumla site is visited weekly (at least) and CSIRO has implemented a works program, in consultation with CSIRO staff and tenants, on the heritage buildings over the last few years. Refer 15.2 – 15.5 of the CSIRO Heritage Strategy - http://www.csiro.au/en/About/Strategy-structure/Heritage-management.

CBIS is currently preparing Users Guides (including What to Do and What Not to Do) for a) CBIS staff and b) Building Occupants (CSIRO and Tenants). Upon completion, these Guides, the Heritage Strategy and the HMP for the site will be issued to the relevant groups. Refer to Section 15.5 of the

CSIRO Heritage Strategy - http://www.csiro.au/en/About/Strategy-structure/Heritage-management.

Prior to making major changes to the study area, the current condition should be recorded. This can be undertaken in accordance with the NSW guidelines for Photographic Recording using Digital Capture, provided at *Annex F*. These are considered industry best practice guidelines, and are adopted by Commonwealth agencies such as the Department of Defence and the Department of Finance as such in the absence of similar Commonwealth guidelines. A copy of the resulting report can be lodged with the ACT Heritage Library to assist with recording the history of changes to the study area over time.

Policy 37 ***Ensure changes to the heritage values of the study area are documented.***

Policy 38 ***Prepare a Photographic Record of the site in accordance with the guidelines at Annex F site prior to commencing any major changes or works to areas or items with heritage values.***

5.3.8 Stakeholder and Community Consultation

The EPBC Regulations require the management of a heritage place to be informed by consultation with stakeholders and the community where appropriate. Where an activity is proposed that may require approval by the NCA and/or under the EPBC Act, early consultation with the tenants, NCA and DoEE is required to ensure all timelines for approvals are factored into work programs.

Under the *Ask First* guidelines, Aboriginal stakeholders should be consulted regarding future development in relation to CSIRO Yarralumla.

Policy 39 ***Ensure stakeholder consultation is undertaken where necessary, and allows sufficient time for public/community input and responses in accordance with requirements under the EPBC Act.***

6 ACTION PLANS

This Chapter provides guidance on heritage actions and maintenance policies. It presents a maintenance plan based on ERMs site observations and a cyclical maintenance plan. Routine maintenance is critical for the ongoing care and use of any building, and it is important to ensure the study area is regularly maintained.

Implementation of the Action Plans

A strategic and coordinated approach is required for the heritage management of CSIRO Yarralumla and associated repair and maintenance works. Following the establishment of management and maintenance recommendations and policies for CSIRO Yarralumla, the next step in the management process is their implementation.

Thus, the General Heritage Action Plan, Historic Heritage Action Plan and Cyclical Maintenance Plan within this HMP provides a suite of short to long-term practical heritage maintenance, repair and management actions for the buildings that, when implemented, will enable the successful ongoing conservation of the site and its heritage values. The action plans provided within this HMP have been developed to address the maintenance needs of the site as a place of heritage significance and are designed to assist in achieving the 'best practice' management and sustainable conservation of the Yarralumla site.

An important component in ensuring the successful on-going management and maintenance of the site is to firstly ensure that all contractors engaged to undertake works within CSIRO Yarralumla are aware of the historical significance of the place, the necessity to preserve its identified heritage values and the best ways to achieve this. Accordingly, this HMP and the separate Heritage 'Dos and Don'ts' in *Annex G* in particular, should be provided to all contractors prior to their commencement of any required maintenance works. In addition, all regular/full time on-site maintenance and amenities staff should also be made aware of the specific requirements of a heritage facility and this HMP and the Heritage 'Dos and Don'ts' made available to them. A cohesive approach to the on-going maintenance activities required at CSIRO Yarralumla is necessary in order to ensure all those undertaking works or developments to the site understand their obligations and to ensure CSIRO is adequately managing its risk and compliance in relation to the relevant commonwealth legislative requirements. Maintenance is all the processes by which a site is kept viable for the benefit of its users, visitors and future generations. The desirable standard of maintenance depends on the intensity of use and climatic conditions and should follow the Burra Charters principle of 'do as much as is necessary, but as little as possible'.

A regular program of inspections and maintenance is advocated. Use of specialist advice is required where more technical maintenance may be involved.

The following tables also outline the action plans for implementing specific heritage management strategies provided in *Chapter 5*. The plans contain recommendations for the management of the study area with priority ratings and timeframes.

6.1 GENERAL HERITAGE ACTION PLAN

The activities required to be undertaken to protect and manage the study area's heritage values are outlined in *Table 6.1*.

Table 6.1 General Heritage Action Plan

Policy & Guideline reference	Action	Responsibility	Timeframe
Section 5.3.1 Policy 1	Ensure HMP adopted by CSIRO Ensure all on-site maintenance/amenities personnel as well as any contractors engaged to undertake works at CSIRO Yarralumla are made aware of the heritage significance of the site and the resultant specific maintenance requirements and actions permissible on such sites.	CSIRO	Immediately
Section 5.3.1	This HMP supersedes former Yarralumla HMP (Freeman 2008)	CSIRO and Contractors.	As required
Sections 5.3.1 and *6.2.1*	Commence implementation of Maintenance Schedule Refer to Maintenance Issues at *Section 6.2.1*	CSIRO and Contractors.	Once HMP is finalised
Section 5.3.7 Policies 36 & 37	Works undertaken within the study area will be recorded and retained by CSIRO	CSIRO and Contractors.	As required
Section 5.3.6 Policies 33 , 34 & 35	Interpretive information regarding the study area will be considered by CSIRO and collated for potential future use.	CSIRO and NCA	As required
Section 5.3.2 Policy 6	Training and awareness of the heritage values of the study area will be undertaken by site personnel	CSIRO and Contractors.	By January 2017
Section 5.3.7 Policy 38	Where proposed changes are to occur in relation to the study area these will be subject to an archival recording	CSIRO	As required

6.2 *HISTORIC HERITAGE ACTION PLAN*

This section outlines the activities required to be undertaken to protect and manage the historic heritage values of the study area. Building maintenance issues noted during ERM's site visit are also included at *Table 6.3.*

Further information relating to acceptable and unacceptable changes to heritage assets is included in the Do's and Don'ts guide at *Annex G.*

Table 6.2 Historic Heritage Action Plan.

Policy & Guideline reference	Action	Responsibility	Timeframe
Section 5.3.2 Policy 4	The general approach to the conservation of the physical heritage 'fabric' should be one of minimal intervention, with the Burra Charter philosophy of "do as much as necessary, but as little as possible	CSIRO	As required
Section 5.3.5 Policies 21 & 22	Conservation, remediation or maintenance works should avoid altering or negatively impacting on the heritage values of the property.	CSIRO	As required
Section 5.3.2 Policy 5	People skilled and experienced in protecting and conserving heritage sites and places should be involved in overseeing any remediation and/or conservation works to fabric and items of heritage value at the study area. This includes future interpretation and general maintenance and repair works.	CSIRO and Contractors.	As required.
Section 5.3.5 Policy 15	Consider heritage values when planning new uses and ensure proposed changes and development consider potential heritage impacts.	CSIRO	As required.
Section 5.3.5 Policy 19	Ensure proposed changes and development obtain the necessary EPBC Act approvals.	CSIRO	As required.
Section 5.3.5 Policy 20	New development proposed at the study area should aim to preserve the heritage setting of the place and be sited in an appropriate manner.	CSIRO	As required.
Section 5.3.4 Policy 9	If part or all of the study area is to be disposed of in the future, CSIRO will notify the Minister for DoEE in accordance with section 341ZE that a place with CH values is to be sold.	CSIRO	As required.

Policy & Guideline reference	Action	Responsibility	Timeframe
Section 5.3.4 Policies 8, 10 & 11	CSIRO will ensure the protection of CH values post-sale by nominating the study area to the state or territory heritage register, or requiring the purchaser to nominate the site. The HMP will also be provided to the purchaser.	CSIRO	As required.
Section 5.3.7 Policy 35	Works undertaken within the study area will be recorded and retained by CSIRO	CSIRO and Contractors.	As required
Section 5.3.6 Policies 33, 34 & 35	Interpretive information regarding the study area will be considered by CSIRO	CSIRO and NCA	As required
Section 5.3.2 Policy 6	Training and awareness of the heritage values of the study area will be undertaken by site personnel	CSIRO and Contractors.	By January 2017
Section 1.4	Consultation with key stakeholders on matters involving heritage impacts.	CSIRO and Contractors.	As required
Section 1.4	Ensure key stakeholders are kept informed of decisions regarding changes to heritage values at the study area.	CSIRO and Contractors.	As required
Section 5.3.3 Policy 7	Review and update HMP at least once every five years.	CSIRO	By 2021
Section 5.3.3 Policy 8	CSIRO should consider assessing the Aboriginal and natural heritage values of the study area as soon as practicable within the Action timeline set out below (refer to Section 5.3.8 Policy 39) through the preparation of a separate Aboriginal Cultural Heritage and Natural Heritage Management Strategy. The Strategy document would be appended to this current HMP (as per Policy 2) and integrated during the next HMP review (2023).	CSIRO	By 2021
Section 1.4	Manage the study area in accordance with the latest CSIRO security arrangements. Public access to the study area is permitted, and opportunities s to allow traditional owner access should be investigated should this be requested.	CSIRO and Contractors	As required

Policy & Guideline reference	Action	Responsibility	Timeframe
Section 5.3.8 Policy 39	Ensure that consultation with Aboriginal stakeholders within the recommended timeframe, in order to inform the preparation of a Cultural Heritage and Natural Heritage Management Strategy document by 2021 (refer *Section 5.3.3 Policy 8)*. In any situation where development is proposed, and there is potential for Aboriginal cultural heritage or an archaeological resource to be present, heritage advice should be sought. A higher potential for Aboriginal cultural heritage exists in less developed areas and where no structures have been erected.	CSIRO	Target 2019-2020
Section 5.3.5 Policy 32	Ensure unforeseen discoveries and disturbances are reported and further investigation is undertaken where necessary. Unforeseen archaeological discoveries are possible at the study area. Indigenous and historical archaeological finds may be revealed in the course of new development, new building work, or excavation for services. It is unlikely that significant artefacts will be present in close proximity to the buildings; however the potential does exist for finds to be made, particularly in the less developed areas where no structures have been erected.	CSIRO and Contractors	As required
Section 5.3.5 Policy 26	It is recommended that a HIA be prepared prior to the relocation or demolition of individual assets of significance at the study area.	CSIRO	As required
	Consult Capital Works and Redevelopment checklist for works at the study area.	CSIRO	As required.
Section 5.3.5 Policy 17	Adaptive reuse of buildings at the study area should aim to conserve all heritage values.	CSIRO	As required.
	Investigate opportunities for the future remediation and adaptive reuse of assets of heritage significance to ensure heritage values are conserved and maintained.	CSIRO	As required.
Section 5.3.1 Policy 1	Continue a maintenance program in accordance with this HMP.	CSIRO	As required.
Section 5.3.7 Policy 37	All refurbishment/maintenance works which replaces or repairs heritage fabric should be date stamped.	CSIRO	As required.

Policy & Guideline reference	Action	Responsibility	Timeframe
Section 5.3.5	All prudent and feasible alternatives to demolition must be examined when demolition of a heritage asset is proposed. Demolition to remove an ongoing maintenance requirement or WHS requirement is not sufficient justification alone.	CSIRO	As required.
Section 5.3.5 Policy 14	New buildings constructed adjacent to existing heritage buildings at the study area should be sympathetic to existing structures and not detract from their setting, architectural or aesthetic values.	CSIRO	As required.
Section 5.3.7 Policy 38	Where an element of heritage value to the place is to be removed, replaced or modified, the element should be photographically recorded beforehand.	CSIRO	As required.
Section 5.3.7 Policy 38	Where the change to an element of heritage value is significant, the recording should be in accordance with the NSW Heritage Office Guidelines for Photographic Recording of Heritage Items.	CSIRO	As required.

6.2.1 General Maintenance Issues

CSIRO sites have specific Facilities Managers who are responsible for monitoring land and buildings and tenant relations on their sites. CSIRO has implemented a works program, in consultation with CSIRO staff and tenants, on the heritage buildings over the last few years, refer to the CSIRO Heritage Strategy - http://www.csiro.au/en/About/Strategy-structure/Heritage-management.

Table 6.3 outlines building maintenance issues observed during the November 2015 survey due to general housekeeping and maintenance issues and provides advice on how these issues should be rectified.

Since the survey, CSIRO has put in place a timeline to rectify previously identified maintenance issues:

- Building 009 was repainted internally and externally during the 2015/2016 financial year
- Building 009 roof was inspected and repaired
- Building 017 was repainted in the 2015/2016 financial year
- Building 002 is scheduled to be repaired before 30 June 2018
- General maintenance (including weeding, tree pruning, and removal of spider webs) is actioned annually
- Tennis court to be restored prior to Lease expiry in 2022

- Shed in service yard has been marked for removal, but has no firm timeline.

Table 6.3 General maintenance issues

Location	Issue	Recommendation	Photograph	Priority
Landscape and Building Surrounds				
Building 009	Cracking and paint peeling on internal ceilings.	Scrape off peeling paint and repaint to match original colour scheme, monitor cracking		Moderate
Tennis Court	Disuse leading to overgrowth of weeds	Spray weeds on regular basis, re-do tennis court flooring to allow for use		Low
Shed in Service Yard	Graffiti on container	Remove graffiti		Low
Building 009	Dampness on internal ceilings	Inspect roofing and repair any leakages where water may be seeping through		Moderate - Ongoing
Building 017	Peeling paint on guttering	Scrape off peeling paint and repaint to match original colour scheme, monitor cracking		Moderate

Location	Issue	Recommendation	Photograph	Priority
Building 017	Spider webs around window frames is unsightly and can damage heritage fabric	Remove regularly		Low - Ongoing
Building 017	Tree growth above roofline creating build-up of debris in gutters	Prune trees and maintain to height below roof level		Moderate - Ongoing
Building 017	Peeling paint on timber panels	Scrape off peeling paint and repaint to match original colour scheme, monitor cracking		Moderate
Building 017	Rust in guttering and downpipes.	Treat rust with rust kill and replace areas of corrosion to match existing.		Moderate
Between 013 and 022	Weeds between concrete flooring.	Ensure regular spraying of weeds undertaken.		Low – Ongoing

Location	Issue	Recommendation	Photograph	Priority
Building 002	Spider webs around window frames is unsightly and can damage heritage fabric	Remove regularly		Low-Ongoing
Building 002	Tree growth above roofline creating build-up of debris in gutters	Prune trees and maintain to height below roof level		Moderate - Ongoing
Building 002	Cracking and paint peeling on timber door.	Scrape off peeling paint and repaint to match original colour scheme, monitor cracking		Moderate

6.2.2 *Asbestos*

Replacement of asbestos material in heritage assets is an ongoing requirement. Where asbestos cement sheeting is removed it should be replaced with fibrous cement sheeting to retain the appearance of the fabric.

6.2.3 *Cyclical Maintenance*

The Commonwealth Heritage Management Principles (Schedule 7B of the EPBC Regulations) require a proactive approach to the conservation of places with Commonwealth Heritage values. This requires a preventative cyclical maintenance regime to ensure all heritage assets are appropriately maintained.

Regular inspections are essential for effective preventative maintenance and play an important role in extending the life of a building. Inspection records help to build up a picture of the asset and how it is performing. Planned maintenance inspections need to be carried out in a systematic way and thus require dedicated time that is scheduled well in advance.

A recommended Maintenance Inspection Cycle for all buildings at the study area is provided below:

Six Month Cyclical Maintenance Plan:

- Clear roof gutters and down pipes, and ensure that the building is waterproof and rainwater is effectively discharged away from the building;
- Check and clear sewer pits and drains;
- Clear paving adjacent to the building of weeds;
- Prune back all hedges and plants that block drains; and
- Check with tenants to list any items they have noticed.

Annual Cyclical Maintenance Plan:

- Check and clear sewer pits and drains;
- Check electrical fitouts for faults and repairs;
- Check heating/cooling system for faults and repairs;
- Check plumbing and drainage of sanitary fixtures;
- Check gas appliances;
- Check windows and doors to ensure that they are intact and operate correctly, ease and adjust all locks;
- Check all timber for rot, termites or borer attack;
- Check the whole building to ensure that there is no rodent activity;
- Check external painted elements for paint splitting, peeling or cracking;
- Check for concrete cancer;
- Check for rust on metal elements;
- Check fences to ensure they are in good condition;
- Check the building generally to ensure that it maintains its structural soundness; and
- Check with tenants to list any items they have noticed.

5 Yearly Cyclical Maintenance Plan

- Replace all sash cords to double hung windows;
- Check all fly screens;
- Check, relay and re-point ridge and roof tiles;
- Repaint all internal painted surfaces;
- Repaint external painted finishes, if these are showing signs of deterioration;
- Check for any major tree pruning or removal required; and
- Check with tenants to list any items they have noticed.

10 Yearly Cyclical Maintenance Plan

- Check and re-point all brickwork, including base courses to buildings, retaining walls;
- Repaint all external painted finishes, unless dealt with as part of the 5 year maintenance plan;
- Replace internal floor coverings;
- Replace internal window dressings; and
- Check with tenants to list any items they have noticed.

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Annex A - Heritage Citations

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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Place Details

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 byproviding 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,

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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Annex B - Significance Ranking For Commonwealth Heritage Listed Properties

Significance Ranking For Commonwealth Heritage Listed Properties

Ranking significance assists with identifying management priorities in the first instance. Ranking also assists with determining if a property meets the threshold for inclusion on the Commonwealth Heritage List (CHL). The criteria state that a place needs to have "significant" value in order to meet one or more criterion.

Ranking of significance is also a tool to be used in the development of management recommendations, maintenance priorities and long term planning decisions. Secondarily, they can be used in support of funding and resource allocations.

Therefore, ranking is a critical component underpinning specific management planning development.

The significance rankings described here are divided into three categories

– Item, Precinct/Group and Intangible. These categories are based on our experience with large and complex sites and with managing European, Indigenous and Natural values. This allows a more meaningful use of ranking when:

a) Comparing of individual items and precincts within the site itself (ie multiple items which may have varying degrees of significance based on their context, integrity and condition);

b) Comparing a property with other similar sites (eg two buildings of comparable significance at 2 different sites may have settings of differing significance, thereby allowing a clearer comparison and more informed and secure basis for the overall ranking);

c) Identifying CH values across the site and making management recommendations specific to those defining qualities;

d) Providing a context to the ranking where an element may be contributory rather than significant as an individual item. This underpins management of the item as a part of a larger context and assists in prioritising maintenance resources.

The values identified can then either be managed under the CH provisions or broader environmental requirements of the Environment Protection and Biodiversity Conservation Act (EPBC Act) depending on whether the CH threshold has been met. We find that this system allows us to be morespecific about why a place has value, which in turn helps us to develop more targeted management methods.

The ranking system has been developed in reference to the ICOMOS, Burra Charter, World Heritage Guidelines, Ask First Guideline for Indigenous places and the Natural Heritage Charter. We have included "universal" level ranking for identifying potential national or World Heritage values.

The tables below outline the categories and ranking levels for built and Indigenous values (Table 1) and natural values (Table 2).

Table 1 Summary of Significance Rankings for Built and Indigenous Heritage

Ranking	Justification – Item	Justification – Precinct/Group	Justification – Intangible
Universal (only to be used for World Heritage Sites)	Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;	Groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;	Sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view
Exceptional	The item is a demonstrably rare, outstanding and / or an irreplaceable example of its type. It has a high degree of intact and original fabric that is readily interpreted. Loss or alteration would substantively undermine the Commonwealth heritage values of the place overall.	The precinct/group demonstrates collective characteristics that are rare or unique in Australia Precinct/group is intact and readily interpreted Loss, alteration or removal of component elements would substantially undermine the CH values of the place overall	The site represents significant social, cultural, natural and/or mythological values that may not be embodied in any physical item but which demonstrate unique, iconic markers in Australia's past or ongoing dynamic histories and / or processes.
High	The item demonstrates a rare example of its type Is largely intact and interpretable Loss or unsympathetic alteration may diminish the Commonwealth Heritage values of the item and of the place overall	The precinct/group demonstrates a rare example of collective characteristics or features physically linking or defining the space Precinct/group is largely intact and interpretable Loss, unsympathetic alteration or removal of component elements or defining qualities may detract from the CH values of the precinct/group and of the site overall.	The site represents important social, cultural, natural and/or mythological values that may not be embodied in any physical item but which demonstrate rare points in Australia's past or ongoing dynamic histories and / or processes.
Moderate	The item may have altered or modified elements Item is intact enough to be partially interpretable as a single item or as part of the site in its entirety Loss or unsympathetic alteration is likely to diminish the Commonwealth Heritage values of the item and potentially the place if inappropriately	Precinct/group demonstrates valuable (although modified) collective characteristics and linking/defining spatial qualities Precinct/group intact enough to be interpreted as a discrete space or as part of the site overall. Loss, unsympathetic alteration or removal of component elements or defining qualities may detract from the CH values of the precinct/group and potentially of the site overall if inappropriately managed	The site represents social, cultural, natural and/or mythological values that may not be embodied in any physical item but which demonstrate points in Australia's past or ongoing

Table 2 Summary of Significance Ranking for Natural Heritage Values

Significance	Justification - Natural
Universal (only to be used for World Heritage Sites)	**Natural features** consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; **Geological and physiographical formations** and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; **Natural sites** or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.
Exceptional	The species, area or ecosystem demonstrates individual or collective characteristics that are rare or unique in Australia Species, area or ecosystem is in high level of health, condition and integrity Loss, alteration or removal of component elements would substantially undermine the CH values of the place overall
High	The species, area or ecosystem demonstrates a rare example of individual or collective characteristics or features physically linking or defining space Species, area or ecosystem is largely intact and in good state of health Loss, damage or removal of components or defining qualities may detract from the CH values of the area or ecosystem and of the site overall
Moderate	Area or ecosystem demonstrates valuable (although modified) qualities Intact enough to be interpreted as a discrete space or as part of the site overall with ability to be regenerated Loss, damage or removal of component elements or defining qualities may detract from the CH values of the area or ecosystem and potentially of the site overall if inappropriately managed
None (Does not meet CHL criteria)	Species, area or ecosystem does not reflect or demonstrate any CH values
Intrusive	Loss, alteration or removal of component elements actually contribute to the CH values of the place overall

Annex C - EPBC Significant Impact Guidelines - Actions on or affecting Commonwealth Land

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

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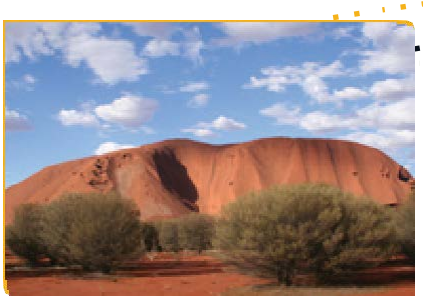


CONTENTS

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,

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).

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,

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.

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

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

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 theprocess.

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.

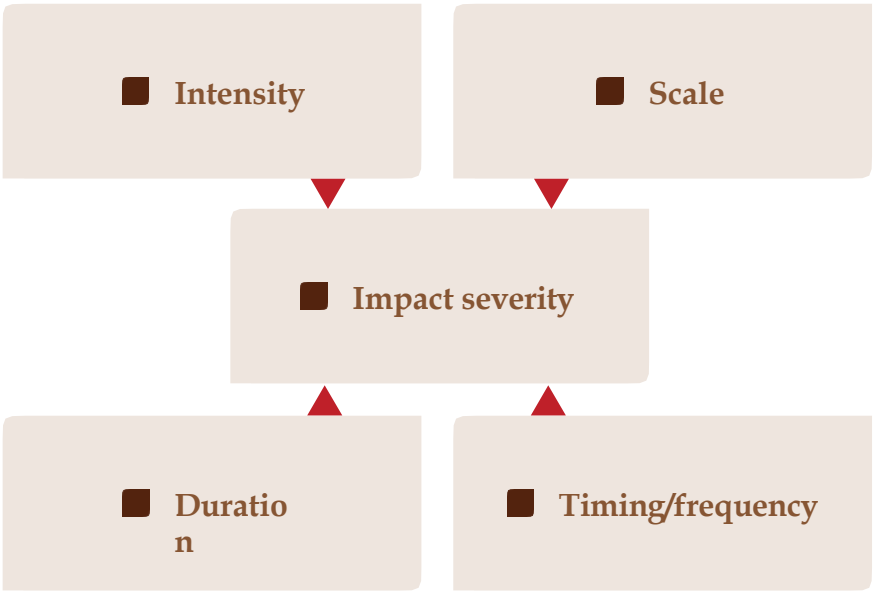
Consideration should be given to all adverse impacts that could reasonably be predicted to follow from the action, whether these impacts are within the control of the person proposing to take the action or not. Indirect impacts will be relevant where they are sufficiently close to

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.

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 (forexample 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

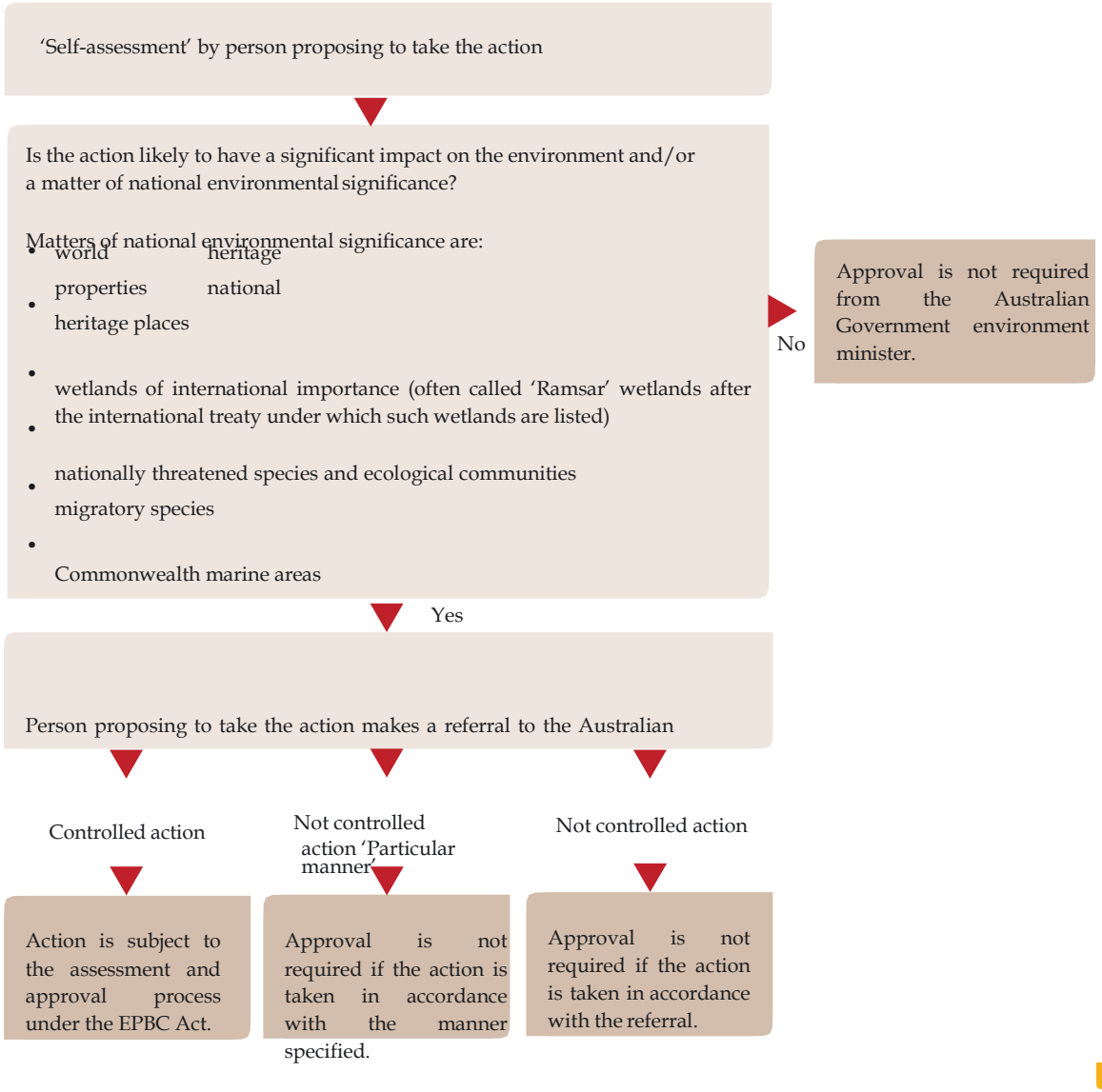
Referral process

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

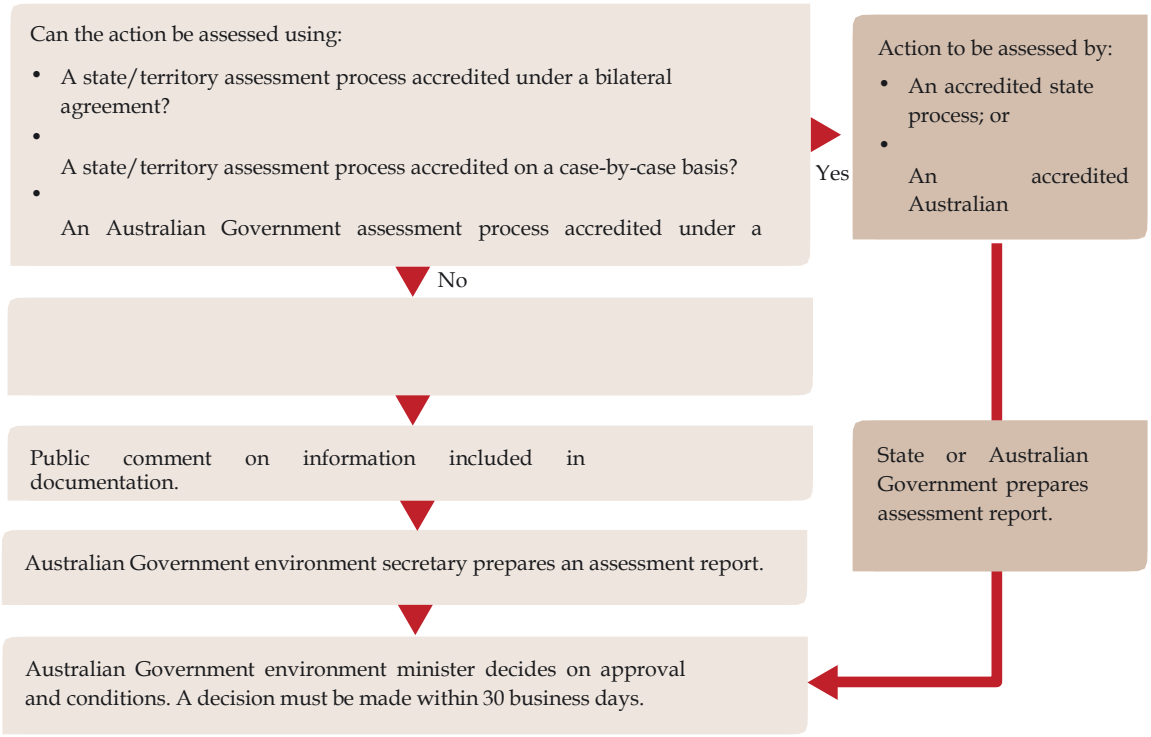
If the minister decides that an action requires approval, then an environmental assessment of the action must be carried out. If a bilateral agreement is in place the action may be assessed by the state or territory in which the action is to be undertaken, using the processes accredited under the bilateral 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) Act1989;*
- 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.

Annex D - EPBC Commonwealth Heritage Regulations Compliance Summary

EPBC Regulations For Commonwealth Heritage

This Annex provides extracts from the EPBC Regulations in compliance tables for ease of reference. The key HMP regulations for Commonwealth Heritage Places are Management Plans for Commonwealth Heritage Places (Schedule 7A) and the Commonwealth Heritage Management Principles (Schedule 7B).

Management Plans for Commonwealth Heritage Places

A management plan must:

Schedule 7A Requirement for Commonwealth HMP	Relevant Chapter of this HMP
(a) establish objectives for the identification, protection, conservation, presentation and transmission of the Commonwealth Heritage values of the place; and	*Chapter 5*
(b) provide a management framework that includes reference to any statutory requirements and agency mechanisms for the protection of the Commonwealth Heritage values of the place; and	*Chapter 5*
(c) provide a comprehensive description of the place, including information about its location, physical features, condition, historical context and current uses; and	*Chapter 2*
(d) provide a description of the Commonwealth Heritage values and any other heritage values of the place; and	*Chapter 4*
(e) describe the condition of the Commonwealth Heritage values of the place; and	*Chapters 2 and 4*
(f) describe the method used to assess the Commonwealth Heritage values of the place; and	*Chapters 1 and 4*
(g) describe the current management requirements and goals, including proposals for change and any potential pressures on the Commonwealth Heritage values of the place; and	*Chapters 1 and 5*
(h) have policies to manage the Commonwealth Heritage values of a place, and include, in those policies, guidance in relation to the following:	*Chapter 5 and 6*
(i) the management and conservation processes to be used;	*Chapters 5 and 6*
(ii) the access and security arrangements, including access to the area for Indigenous people to maintain cultural traditions;	*Section 6.3*
(iii) the stakeholder and community consultation and liaison arrangements;	*Chapter 5 and 6*
(iv) the policies and protocols to ensure that Indigenous people participate in the management process;	*Chapter 5 and 6*
(v) the protocols for the management of sensitive information;	*Chapter 5 and 6*
(vi) the planning and management of works, development, adaptive reuse and property divestment proposals;	*Chapter 5 and 6*
(vii) how unforeseen discoveries or disturbance of heritage are to be managed;	*Chapter 5 and 6*
(viii) how, and under what circumstances, heritage advice is to be obtained;	*Chapter 5 and 6*
(ix) how the condition of Commonwealth Heritage values is to be monitored and reported;	*Chapter 5 and 6*
(x) how records of intervention and maintenance of a heritage	*Chapter 5 and 6*

Schedule 7A Requirement for Commonwealth HMP	Relevant Chapter of this HMP
places register are kept;	
(xi) the research, training and resources needed to improve management;	*Chapter 5 and 6*
(xii) how heritage values are to be interpreted and promoted; and	*Chapter 5 and 6*
(i) include an implementation plan; and	*Chapter 5 and 6*
(j) show how the implementation of policies will be monitored; and	*Chapter 5 and 6*
(k) show how the management plan will be reviewed.	*Chapter 5 and 6*
(Source: Environment Protection and Biodiversity Conservation Regulations 2000; Schedule 7A)	

Commonwealth Heritage Management Principles

7B - Commonwealth Heritage Management Principles	Relevant Section of this HMP
1) The objective in managing Commonwealth Heritage places is to identify, protect, conserve, present and transmit, to all generations, their Commonwealth Heritage values.	*Chapter 5*
2) The management of Commonwealth Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their Commonwealth Heritage values.	*Chapter 5*
3) The management of Commonwealth Heritage places should respect all heritage values of the place and seek to integrate, where appropriate, any Commonwealth, State, Territory and local government responsibilities for those places.	*Chapter 5*
4) The management of Commonwealth Heritage places should ensure that their use and presentation is consistent with the conservation of their Commonwealth Heritage values.	*Chapter 5*
5) The management of Commonwealth Heritage places should make timely and appropriate provision for community involvement, especially by people who: a) have a particular interest in, or associations with, the place; and b) may be affected by the management of the place;	*Chapter 5*
6) Indigenous people are the primary source of information on the value of their heritage and that the active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.	*Out of scope*
7) The management of Commonwealth Heritage places should provide for regular monitoring, review and reporting on the conservation of Commonwealth Heritage values.	*Chapter 5*
(Source: Environment Protection and Biodiversity Conservation Regulations 2000; Schedule 7B)	

Annex E - Building Inventory

Building Inventory, Significance Ranking and Condition of CSIRO Yarralumla Site

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
001	Offices	1965/96/2007		None	Good
001A	Offices	1965/1976		None	Good
001B	Laboratory Block	1965		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
002	Forestry House	1948/1996		High	Very Good
003	Controlled Environment Building	1959		Low	Good
004*	Glasshouses Workshop	1949		Low	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
004A*	Glasshouse	1949		Low	Good
004B*	Glasshouse	1949		Low	Good
004C*	Glasshouse	1949		Low	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
004D*	Glasshouse	1949		Low	Good
004I	Soil Preparation Shed	1949		None	Good
004H*	Shadehouse	1949		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
005	Site Residence	1948		Low	Good
005A*	Carport	1948		None	Good
008*	Meteorological Plot - not a building	-		Low	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
009	Office (*heritage*)	1930		High	Very Good
010	Office (*heritage*)	1946		High	Very Good
012	Workshop	1972		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
12a	Workshop	1980s		None	Good
012b	Workshop	1980s		None	Good
012c	Workshop	1980s		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
013	Store	1949		Low	Good
014	Nursery/Poisons/Machinery Store	1973		None	Good
14a	Workshop	1980s		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
14b	Workshop	1980s		None	Good
015	Flammable Liquids Store			None	Good
016	Open Shed	1980s		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
017	Store (*heritage*)	1940s		Moderate	Good
018*	Change Room/Toilet	1940s		Low	Good
022*	Storage Shed	1980s		None	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
023*	Storage Shed	1979		None	Fair
024*	Store	1979		Low	Fair
026*	Fire Wind Tunnel - not a building	1997		Low	Good

Asset Number	Building Use	Date	Photograph	Significance Ranking	Condition
029*	Shed	1980s		None	Good
030	Tennis Courts - not a building	1940s		Moderate	Fair

Please note: asset condition may vary from Very Good, Good, Fair to Poor. The condition assessment of individual assets has been based on review of external photographs (ERM 2015). It is noted that the condition relates to a general description of the physical integrity of the building and is not a structural assessment of the asset.

Annex F - NSW Heritage Office Photographic Recording Guidelines

HERITAGE INFORMATION SERIES

PHOTOGRAPHIC RECORDING OF HERITAGE ITEMS USING FILM OR DIGITAL CAPTURE

ACKNOWLEDGEMENTS

This document was prepared by Lawrie Greenup in 2006 based on the original guidelines, *Guidelines for Photographic Recording of Heritage Items* produced by Don Godden for the Heritage Office in 1994.

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Photographic Recording of Heritage Items

INTRODUCTION

These guidelines provide an outline for making a photographic record of sites, buildings, structures and movable items of heritage significance. They are particularly relevant to the recording of items of industrial or technological significance and domestic items and interiors.

Making a photographic record of a heritage place or object documents it for the future, before it is lost or changed, either by progressive alterations or by the ravages of time. Photographic records are often required by authorities such the Heritage Council of NSW or local councils as part of a conditional approval for work to be carried out on a heritage place, or, in some instances, before demolition.

This document revises the earlier guidelines on photographic recording published by the Heritage Council of NSW. It includes the use of both film-based and digital-based technology as acceptable methods of photographic recording for heritage purposes. The guideline takes into account changing photographic technologies, but provides a system that does not compromise the overall goal of a stable and long term photographic record. It addresses concerns about print permanency, long-term stability of digital storage media and software obsolescence, and has been written with safeguards in mind.

A recent development in colour prints, using specific archival inks and photographic paper, has shown, under accelerated ageing laboratory tests, to have long-term permanency similar to archivally processed black and white prints. Digital storage media and software obsolescence have been addressed by following the guidelines that have been developed by key Australian archival authorities.

WHATYOU NEEDTOKNOWABOUT PHOTOGRAPHIC RECORDING FOR ARCHIVAL PURPOSES

What is a photographic recording?

A photographic recording is an archival record of a heritage place or object. Its purpose is to document a heritage item for future generations. Specific requirements on photographic equipment, archivally stable materials and photographic method aim to ensure optimum survival of the photographic record.

A photographic recording can be made using film-based technology, OR digital technology.

When is a photographic recording needed?

A photographic recording of an item on the State Heritage Register may be required by the Heritage Council of NSW as part of conditional approval for work to be carried out on the place or object, or before full or partial demolition. It can also be required as part of an archaeological investigation.

Local councils may also require a photographic recording be made of a heritage item on their local environmental plan as part of the approval process.

These guidelines have been written for items listed on the State Heritage Register, but may be cited by local councils as a reference document.

What are the requirements?

A model brief is provided to guide those commissioning or carrying out photography for heritage purposes [see page 30]. Below is a summary of the Heritage Council's final requirements for a photographic record of an item on the State Heritage Register. For more detailed information, turn to the page indicated:

Film-based Projects:

Three copies of the photographic report including catalogue sheets, photographic plan, supplementary maps [see pages 18 & 23];

B&W materials:

- One set of archivally processed and numbered B&W negatives stored in archival sheets or envelopes [see page 23]
- Three sets of archivally processed proof (contact) sheets, labelled and cross-referenced to the catalogue sheets [page 23];

▪ Colour materials:

- Three sets of colour transparencies (either original transparency plus two duplicates or three original images taken concurrently) numbered, labelled and cross-referenced to the catalogue sheets and stored in archival slide sheets [see page 23].

Digital Projects

- Three copies of the photographic report including catalogue sheets, photographic plan, supplementary maps [pages 18 & 25];
- Three sets of thumbnail image sheets (e.g. A4 page with six images by six images) showing images and reference numbers. The thumbnail sheets should be processed with archivally stable inks on archivally acceptable photographic paper and cross referenced to catalogue sheets [page 25-26];
- Three copies of CD or DVD containing electronic image files saved as TIFF files with associated metadata, and cross-referenced to catalogue sheets [page 27];
- One full set of 10.5x14.8cm (A6) prints OR, if a large project, a representative set of selected images processed with archivally stable inks on archivally acceptable photographic paper [page 25].

How should the report be presented?
The report should be presented in a suitable archival binder and slipcase, and all storage of individual components must be in archival quality packaging suitable for long term storage [page 26].

Has everything been included in the report?
Use our checklist to ensure that you include all the required elements of the report [page 34].

Where should the report be deposited?
The placement of material depends on whether the record was required by the Heritage Council or NSW, or a local council [see page 28 for details].

Reports required by Heritage Council	**Required by Local council**
First set: deposit at Heritage Office	**First set:** deposit at local council
Second set: deposit with State Library of NSW for public access	**Second set:** deposit with local council library for public access
Third set: deposit with owner/client	**Third set:** deposit with owner/client

PHOTOGRAPHER'S REQUIREMENTS

The photographer undertaking the recording of a heritage place needs to have:

- requisite training, skills and equipment to undertake heritage assignments;
- awareness that heritage sites and surrounds often have a range of hazards, which have to be considered in undertaking the photography, including:
  - dangerous substances
  - confined spaces
  - demolition activity
  - adverse environmental and weather conditions
  - moving machinery and vehicles
  - noise
  - dust
  - overhead hazards
  - remote locations
  - working at height, or over, near, on, in or under water;
- public liability insurance, as well as workers compensation Insurance
- (if assistants or support staff are used);
- an understanding of the requirements of the Occupational Health Safety and Rehabilitation (OHS&R) Act, a Hazard Control Plan and Work Safety Plan, and an understanding of environmental considerations generally;
- ability to meet the client's working and safety requirements. The photographer needs to visit the site prior to commencing the project. Preferably this should be with someone who has an understanding of the heritage photographic project. This allows the photographer to assess what photographic equipment is required, as well as being able to assess the site's safety requirements;
- access to safety clothing such as safety helmet, safety glasses, ear protection, highly visible safety vest, steel-toed boots or shoes. The client may have requirements for additional safety equipment for the photographer if working at heights or over or near water;
- materials for recording and documenting the photographic undertaking including such things as notebooks, pens, pencils, maps, torches and a compass;
- personal items such as sunscreen and insect repellent.

EQUIPMENT – FILM-BASED RECORDING

CAMERAS

35mm Single Lens Reflex (SLR) Camera

This is the most popular and versatile camera format and, when combined with quality lenses, is entirely adequate for most heritage photography.

There are a large number of brands available and the most suitable ones for heritage photography have the following specifications:

- full exposure control, especially manual control and the ability to override full autoexposure;
- range of shutter speeds, including the ability to take long exposures in dark places or dull light;
- remote release devices, such as cable releases and electronic releases, to minimize camera vibrations;
- mirror lock-up which is useful to stop camera shake, especially with larger lens;
- depth-of-field preview to see what's in or out of focus;
- connections for external flash.

Medium Format Cameras

Medium format cameras, especially SLR systems, are often used. However, these cameras are generally heavier and less versatile for field work than 35mm SLRs. The format is ideal if large, quality enlargements are required. Some types have interchangeable backs allowing one camera body to be used with different film types.

Large Format Cameras

Large format cameras are for specialised use, such as architectural photography, and are best when a slow and studied approach can be undertaken. Their bulk restricts their use in the field.

Lenses

The following deals primarily with 35mm SLR camera systems but the principles can be applied to both medium and large format camera systems.

A range of lenses with different focal lengths is required to cover all aspects of heritage photography. Either fixed focal length lenses or zoom lenses can be used and should cover the focal length range of 20mm – 300mm. The following is recommended:

- **fixed lenses:** 20mm, 28mm, 35mm, 50mm, 105mm, and 300mm focal length;

- **zoom lenses:** 18-85mm; 70-200mm; 1.4X or 2.0X extender lens. Other combinations can be used as long as they cover the 20mm –
- 300mm focal length range;
- **specialised lenses:** perspective control lens and macro lens for
- close-up images. Macro lenses are usually available as 50mm, 60mm,
- 105mm 180mm or 200mm focal lengths. These lenses can be
- substituted for fixed focal length lenses.

Only some of these lenses may be needed for a particular assignment.

Camera Accessories

These will vary depending on the project. Again, the following is relevant for both 35mm SLR cameras and medium and large format camera systems:

tripod - heavy duty;
flash units – one or more flash guns and slave unit;
scale rods - for inclusion in the photographs, where appropriate;
polarising and other filters;
cable or remote electronic releases;

FILM

There is a range of black and white, colour transparency and colour negative films on the market. Films vary in their sensitivity to light. If the film is highly sensitive to light, it needs only a little light to form an image and is called a fast film. A slow film needs a lot of light to form the image so therefore is called a slow film. ISO is the standard way to indicate film speed or its sensitivity to light. A high ISO number indicates a fast film; a low ISO indicates a slow film.

Slower films are preferred for heritage photography as they give fine-grained images, with excellent contrast and sharpness. Sometimes faster films may be necessary because of low light conditions.

Most good quality, brand-name film from recognised manufacturers is acceptable.

Black and White Film & Processing

Black and white film, if properly processed and stored, is the preferred medium for archival recording. Slow and medium speed black and white films, 50 – 125 ISO, are preferred, although faster films, 400 ISO or faster, may be required under low light conditions.

Black and white films designed to be processed using the chromogenic C41 process are not acceptable because they are not sufficiently stable and are unsuitable for long term storage.

Processing Film for Long-term Stability

Careful processing of the negatives under clean and controlled conditions is the first step in achieving optimum long-term stability. This includes developing and fixing of the image followed by washing and drying of the negatives. Photographic companies producing black and white films have fact sheets outlining the correct procedures to follow in the processing of their film products. Film processing should be done by professional laboratories or by the photographer, if they have darkroom facilities.

The following steps should be followed for maximum image stability:

step 1 – developer is used to develop the image. The appropriate film developer should be used to achieve the finest grain and sharpness;
step 2 – acid stop bath is used to stop the action of the developer;
step 3 – fixer fixes the visible, but unstable, image formed during the developer process. Best results with frequent agitation and adherence to recommended fixing times;
step 4 – good washing in clean water is important for image stability;
step 5 – drying in an environment that will avoid contamination by chemicals or dust.

Processing Contact Prints and/or Prints for Long-term Stability

As with film negatives, processing of black and white papers should be undertaken under clean and controlled conditions. The steps are similar to those followed for negatives. Again, photographic companies producing black and white films and papers have fact sheets outlining the correct procedures to follow in the processing of their paper products. Processing can be done by professional laboratories or by the photographer, if they have darkroom facilities.

The following steps should be followed for maximum image stability:

step 1 - developer is used to develop the image;
step 2 – acid stop bath stops development immediately, reduces the risk of staining, and will extend the life of the fixer bath;
step 3 - two-bath fixing is best for both fibre-based and resin-based papers. Best results with intermittent agitation and adherence to recommended fixing times;
step 4 – good washing in clean running water is important;
step 5 - drying in an environment that will avoid contamination by chemicals or dust.

Either resin-coated or fibre-based photographic papers can be used. Optimum permanence is achieved with fibre-based papers, although they may not be as readily available. Long-term stability with fibre-based paper is ensured by adequate fixing and washing. This is achieved by following an optimum permanence sequence after and including **step 3.** The sequence is:

- **fixing** with intermittent agitation;
- **first wash** in fresh and clean running water;
- **rinse** with a wash aid with intermittent agitation, and;
- **finally washing** in fresh and clean running water;
- **drying** in an environment that will avoid contamination by chemicals or dust.

Colour Transparency Film and Processing

Colour transparency film (colour reversal film or colour slide film) should be taken, as well as black and white, because it provides colour information about the heritage item. Also, it can be digitally scanned and used in electronic presentations. The long-term stability of modern colour transparency film has improved considerably, although black and white is still the most stable.

Colour transparency film to be stored for maximum longevity should not be projected.

Slow and medium speed colour transparency films, 50 – 100 ISO, are preferred, although faster films, 400 ISO or faster, may be required under low light conditions.

Processing (E6 chemistry)

Colour transparency film needs to be developed using E6 processing. This should be done at recognised commercial laboratories which meet the quality assurance standards of the major film companies. This ensures consistent and professional results.

Colour Negative Film or Prints

Colour negative or print films using chromogenic C41, processing are not acceptable for heritage recording as their longevity is poor and they do not meet the permanence standards. Colour negatives and prints often fade, lack the detail and sharpness of colour transparency film, and have restricted contrast and colour range. *

Black and white prints produced by C41 processing have the same problems as colour negatives or prints.

Colour prints have a limited life as the colours are chemically unstable. However, they can be useful for digitising and for use in reports and publications. If colour prints are to be included as part of the archival recording, they should be labelled as such and, only be used to SUPPLEMENT the B&W film and colour transparencies .

Storage of Black and White and Colour Transparencies

The following conditions will ensure optimum survival of records:

- storage must be in archival quality packaging suitable for long-term storage. If plastic packaging is used it should be polypropylene, **not** PVC;
- black and white negatives can be stored in polypropylene sleeves which are manufactured to hold a range of image formats;
- black and white contact sheets can be stored in polypropylene sleeves, as can black and white prints. A range of sleeves, which take various image sizes, are available;
- colour transparency slides, both 35 mm and other formats, can be stored in polypropylene sleeves. Note that in a high humidity environment plastic sleeves can cause problems as they restrict air flow and stick to moist film emulsion. In circumstances where there are problems with high or fluctuating humidity store slides in appropriate and archivally suitable storage units.
- negatives, prints and slides require a temperature and humidity controlled environment for optimum long-term storage;
- annotate and cross-reference the negatives, contact sheets, prints and transparencies using archivally stable ink.

EQUIPMENT - DIGITAL RECORDING

A comparison between film-based recording and digital recording reveals many similarities, as well as differences. The following is a brief summary of some of the features of digital recording:

- **digital camera** – a camera is basically a box that holds a lens that focuses the image. With digital photography the camera converts the light to an electronic image. Further processing can be done within the camera to the captured image;
- **LCD Monitor** - major advantage of digital cameras is the image can be reviewed on the LCD monitor within seconds of taking the shot. This gives the photographer the opportunity to evaluate the image and re-take, if necessary;
- **histogram -** checking the camera's histogram, shown in the LCD monitor, enables the photographer to see and assess the brightness range of the captured image;
- **digital sensors -** digital cameras expose pictures using methods identical to film cameras. The sensitivity standards for both film and sensors are similar and the shutter and aperture mechanisms are the same;
- **memory cards -** instead of film, digital cameras use memory cards which are used to store the images. These come in a range of sizes; most have the capacity to hold more images than film. Images on a memory card can be deleted, transferred or kept any time. Once the images are transferred to a computer or other storage device, the memory card can be re-used; **ISO -** digital cameras can be set to record different light sensitivities or ISO speeds. This can be done at any time and the ISO setting can be changed from image to image. Technically, digital cameras do not have a true ISO, but for practical purposes a digital camera's ISO equivalent settings correspond to film;
- **noise and grain -** noise in digital photography is equivalent to grain in film photography. It appears as an irregular, sand-like texture and, if large, can be unsightly and hide details. This is undesirable in heritage photography and, as with film photography, lower ISO settings should be used where possible;
- **resolution -** in digital cameras resolution is expressed as the number of pixels contained in the sensor area, usually expressed as the number of megapixels (MP). Generally, the higher the number of pixels the higher the resolution and the corresponding increase in detail;
- **light settings -** digital cameras can automatically check the light and calculate the proper settings for the light's colour temperature. This is done based on an internal setting called the white balance. This enables digital cameras to be set to specific light conditions, such as daylight, shade, fluorescent or tungsten, removing the need for most filters.

DIGITAL CAMERAS

35mm Single Lens Reflex (SLR) Digital Camera

As with film photography this is the most popular and versatile camera format. Again, when combined with quality lenses and a range of accessories, the 35mm digital SLR camera is very suited to most heritage photography needs There are a number of brands available and the most suitable ones for heritage photography should have the following specifications:

- 8 megapixels or more resolution.
- NB A good quality 8 MP digital SLR camera can produce high quality A4 or A3 images or prints which are suitable for most heritage studies. If larger images or prints are required cameras with a 10 MP or more may be needed.
- ISO range 100/200 – 800 (noise reduction function an advantage);
- interchangeable-lenses;
- good image histogram;
- image shooting information – metadata;
  comprehensive viewfinder display;
  comprehensive flash control features;
  flexible white-balance controls;
- raw capture and high quality raw-conversion software;
- full exposure control, especially manual control and the ability to override full autoexposure;
- range of shutter speeds, including the ability to take long exposures in dark places or dull light;
- remote release devices, such as cable releases and electronic releases, to minimize camera vibrations;
- mirror lock-up, a useful device to stop camera shake, especially with larger lenses;
- depth-of-field preview to see what's in or out of focus;
- facilities for external flash.

Medium and Large Format Cameras

Digital backs are available for both medium and large format cameras.

Lenses

The following deals primarily with 35mm digital SLR camera systems but the principles can be applied to both medium and large format camera systems.

Digital cameras sensors can vary in size and are frequently smaller than a 35mm-film frame. If the sensor is smaller a focal-length magnification or lens conversion factor is applied to the focal length of the lens.

An example: a digital SLR camera has an APS sensor, which is smaller than a 35mm film-frame, and has a focal length conversion factor of 1.5X. This means a 50mm lens on the digital SLR camera would be equivalent to 75mm (50mm x 1.5 = 75mm) on a film SLR camera. Some digital cameras have a full size (35mm) sensor and, therefore, do not have to apply focal length conversion factor.

As with film or analogue SLR cameras, a range of lenses with varying focal lengths are necessary to cover all aspects of heritage photography. These can be either fixed focal length lenses or zoom lenses. Either fixed focal length lenses or zoom lenses can be used and should cover the focal length range of 20mm – 300mm.

As there is range of sensor sizes used in digital SLR cameras the lens focal lengths are given for a full size (35mm) sensor. The focal length conversion factor will need to be applied for cameras with smaller sensors.

- **Fixed lenses** (35mm equivalent): 20mm, 28mm, 35mm, 50mm,
- 105mm and a telephoto lens of 300mm focal length.
- **Zoom lenses** (35mm equivalent): 18-85mm; 70-200mm, 1.4X or 2.0X extender lens. Other combinations can be used as long as they cover the 20mm – 300mm focal length range.
- **Specialised lenses** (35mm equivalent): macro lenses are used for
- close-up images. Macro lenses are usually available as 50mm, 60mm,
- 105mm 180mm or 200mm focal length. These lenses can be substituted for fixed focal length lenses.

Only some of these lenses may be needed for a particular assignment.

Image Storage

Digital cameras use some form of removable storage, usually memory cards. Memory cards come in a range of sizes and the type to use varies between camera brands. The number of images stored depends on the capacity of the storage device and the resolution at which the image is taken.

As an example: - a 1GB memory card can store approximately 80-90 images captured in RAW format with an 8 MP digital SLR camera. This is equivalent to 2.2 rolls of 36 exposures of 35mm film. Cameras with higher resolutions than 8MP will have larger image size resulting in fewer images being able to be stored on the storage card.

The photographer needs to ensure there is sufficient storage capacity on the available memory cards to undertake the assignment.

The photographer in the field has two options:

(1) have sufficient capacity on the memory cards to be able to record images without having the need to transfer the images to another storage device; or

(2) use a portable downloader or have access to a computer, normally a portable laptop. The images can be transferred each time the storage card is full. Laptop can be a problem on difficult sites because of their weight and fragility.

Image File Size, Format and Digital Image Management

Heritage photography requires quality images and the photographer needs to make choices about image sizes, compression, and file formats. These choices determine the image quality and image file size.

The photographer should undertake the following:

- photograph at the highest quality;
- record image in RAW format to capture the maximum amount of information; and
- provide client with a copy of the image in RAW format and a copy converted to TIFF format, a universal format.
- **DO NOT** save images in JPEG format as this uses lossy compression which degrades the image to some extent.

There are a number of software packages which can be used to sort, label and file captured images. The labelling should relate to the specific project and to the catalogue sheets.

Digital Camera Accessories

These will vary depending on the project:

- tripod - heavy duty;
- flash units – one or more flash guns and slave unit;
- scale rod/s - for inclusion in the photographs, where appropriate;
- filters, such as polarising and UV filters;
  cable or remote electronic releases;
  additional batteries;
- battery charger.

PHOTOGRAPHIC METHOD

Every photographer has an individual technique. When photographing for the purpose of making an archival record, however, it is the information content rather than the artistic effect which is paramount. Photographs of a particular scene should be uncluttered with extraneous material and should emphasis the subject.

The photographer should be aware of all plans and documentary evidence available on the place and should have an understanding of its history and operations. This is especially important with industrial sites. Without this knowledge significant items may not be treated appropriately. If necessary, the photographer should be accompanied on the site by a person familiar with the site's heritage significance and the processes related to it. The preferred shooting method is to proceed from the general to the specific. There are two methods which can be used.

1. In the first method the context photo is taken first, then the structures or items showing their relationship to each other, followed by the external facades of each building, the relationship of the elevations to each other and to all equipment or relics housed in each space. Internally, the main elevation of each room or space should be photographed. Finally, each piece of equipment in each space should be carefully and completely photographed.

2. In the second method, the external content photographs are taken initially and the individual buildings and relics are then photographed in a sequence determined by either geographic location, a precinct convention, or, in the case of industrial sites, by a material flow chart.

Whichever method is used the photographer must be aware of the appropriate sequence, and the site must be inspected and the project planned before commencement.

BASE PLAN

The photographer must be equipped with a map of the site on which each building, structure or movable item is shown. Each building, structure or movable item must be given its correct name or it must be denoted by a symbol such as a number or letter of the alphabet. Identify movable items. Where there are a number of buildings on a site, it may be necessary to draw each building separately. In some cases, each space may have to be drawn separately.

Some photographers like to draw a sketch plan themselves as it increase their awareness of the buildings and their contents.

SCALE RODS AND MEASURING STICKS

It may sometimes be useful to include a measuring stick placed in the plane of the photograph's subject which will serve as an indication of the relative scale. (Note: this will be essential for an archaeological excavation, but may not always be practical or necessary for other kinds of photographic recording.)

For large scale photographs the stick or rod should be similar to a field surveyors levelling staff, at least one metre long calibrated in bands from 10mm to 1 000mm wide. For photographs of smaller details prepare a ruler approximately 300mm long with calibrations from 1mm to 10mm. The markings on the scale rods must be bold to be able to be read in the print or slide.

RECORD OF PHOTOGRAPHIC METHOD

Photographic records are taken on behalf of a client and it is essential that the client, or the client's representative, is able to review the catalogue and be satisfied that the coverage is complete.

Photographic Catalogue

Each image must be catalogued. By adopting a set sequence the catalogue recording is much simpler. With film it is normal to assign a number or alphabetical prefix symbol to each type of film, then to number each roll of film and finally to number each frame. Digital images have a unique image file number.

It is normal practice to have a catalogue sheet and enter as much information as possible in the field. Further annotation may be made off-site if required. This may be done when the images are available to be viewed or it may be done simply by reference to the original field notes. The catalogue sheet is then typed. The typed version then becomes the image catalogue. In the case of film this is stored with the negatives and all copies of the contact sheets. With digital recording the catalogue sheet should be stored with the 'thumbnail' image sheet and the CD-R disc.

When cataloguing information for each image it is essential to record data in a consistent manner. Again, different photographers will vary the way they enter information in the catalogue. It is important that the method of entering the information remains the same throughout the project.

It is recommended that the catalogue sheets be specially prepared for each project. In the case of film photography the catalogue sheet should list the site name, date, photographer's name, camera type and lenses, film type, roll number and a description of each frame. Digital recording catalogue sheets need to list site name, date, photographer's name, camera type and lenses, image file number, and a description of each image.

See Appendices A-1 & A-2 for examples of photographic catalogue sheets.

Photographic Plan

A plan of the site, each building and of each space within the building should be obtained and each image or frame exposed should be entered directly on that plan. Each entry should show the position of the camera and the direction in which it was fired. (see Appendix B). The nomenclature should be identical to that used for the catalogue sheets. Normally, a map of the site or a plan of a building should be lodged with the catalogue sheet and contact sheet in the case of film photography or the catalogue sheet and 'thumbnail' image sheet with digital recording. The plan should have a north point which can be true north or a nominal north.

The plan should show the sequence in which the photographs were taken.

PHOTOGRAPHIC TECHNIQUE

CONTEXT PHOTOGRAPHS

Each site, place or movable item or collection should be recorded in its context. This means that the surrounding landscape with the site and structures in it should be photographed from several distant points. Buildings, rivers, landform and other items should be included and their relationship with the subject defined. Photograph the site, room or space where movable items are located and show how the items relate to each other and their setting. In some cases this will require 8-10 images.

RELATIONSHIP OF BUILDINGS ON SITE TO EACH OTHER

The spatial relationship of each structure to another, and to surrounding buildings or structures should be shown. This will allow functional connections to be recognised. Quite often, this can be done by placing the camera where four or five buildings are in view and taking a series of images radiating from the point where the photographer is standing. On a complex site five or six positions may be required before each building is defined in its relationship with those surrounding it. In other cases, one or two shots are all that are required.

INDIVIDUAL BUILDINGS OR STRUCTURES

External images should be taken of each façade with a perspective control lens or a telephoto lens where possible. Wide angle lenses tend to distort the perspective of building facades.

The detail of each façade should be approached in a logical manner usually working from the upper left-hand corner to the bottom right. Details such as eaves, soffits, rainwater heads, downpipes, window reveals and sills, doorways and steps, and balustrades will require individual treatment.

Where individual features are outstanding because of their form, texture, historic nature or condition, several images of one item may be necessary. This may include images taken from a distance as close as a few centimetres, in which case a macro lens will be required.

INTERNAL SPACES

Internal spaces of an individual building are usually more complex. Here knowledge of the operation of the space is essential. Images should be taken in a sequence to show all internal elevations, including floors and ceilings, where possible. Special attention should be placed on structural elements, fittings and any movable items. Do not forget spaces which are difficult to get to, such as the roof, basements, shafts and underfloor spaces.

ITEMS AND RELICS

Individual relics and movable items such as the machinery on an industrial site or furniture in a building should be photographed perpendicular to each face and from each corner. Where possible they should also be photographed from above or from a high vantage point. Normally each item is completely photographed before the photographer moves on to the next one.

Relics and movable items usually exist as assemblages, collections or systems and this should be taken into account by the photographer.

An **assemblage** is a relic or structure including all the artefacts, tools and items normally associated with it when it was operating. In the case of a workshop machine, it would include spanners and wenches used to tighten nuts, the tools needed to adjust gears or belts, the safety screens which prevent contact with moving parts and, if applicable, samples of completed or partially completed work. It also includes signs, pipe work and associated services.

The term **collection** describes a number of relics, movable items or structures which belong to a group because they perform the same function or produce the same finished product. Items in a collection are usually photographed concurrently.

A **system** is more than a collection of artefacts. It is an operational group of related relics or structures which cannot function effectively if any of them is removed. Where a system is being recorded the sequence in which the items are photographed will be determined by the operation of the system.

Photographers, who have not worked extensively in recording buildings and sites, should be walked through the complex before work starts by someone who knows the process related to the site.

ACCUMULATED CULTURAL MATERIAL

On some sites accumulated cultural material or rubbish may be so distracting that it has to be cleared before photography can be undertaken. Details may be partially obscured or completely hidden and a clean-up is essential. This is particularly necessary if the site has been vacant for some years and is subject to weed growth, bird infestations, squatters and vandalism.

Care should be taken not to disturb materials that are a legitimate part of the historic record. Material which appears disruptive to the photographer's eye and which belongs to a structure or relic, such as an oil can, may be relevant to the operation of the machine and should not be removed. It may, however, be repositioned if such action will not compromise the relationship of the items within the assemblage.

FINAL PHOTOGRAPHIC IMAGE REPORT - FILM-BASED REQUIREMENTS

MINIMUM REQUIREMENTS FOR FILM PHOTOGRAPHIC REPORT

When the survey is complete the minimum requirements for the **photographic report** and materials are:

- an introduction which explains the purposes of the report and gives a brief description of the subject, as well as details of the sequence in which photographs were taken. The report may also address the limitations of the photographic record and may make recommendations for future work;
- the report should include all technical details including camera and lenses, film types and processing, and photographic prints and processing;
- the report should also contain the catalogue sheets, photographic plan, and supplementary maps or plans.

MINIMUM REQUIREMENTS FOR FILM MATERIALS

Black and White Film

The minimum requirements for black and white film are as follows:

- one set of archivally developed and numbered negatives in strips and stored in archival sheets or envelopes;
- three sets of proof sheets, labelled and cross-referenced to the catalogue sheets.

The black and white negatives, one set of proof sheets, and one copy of the photographic report should be stored together in a public archive. One set of proof sheets and the photographic report should be stored together in a second archive. The final set of one set of proof prints and photographic report should be located with the client. (see section: Lodgement of Final Film or Digital Photographic Report for details)

In the case of movable items and collections, it is recommended to keep one set with the items and another in the archives.

Colour Transparencies

The minimum requirements for colour transparencies are:

- three sets of colour transparencies (either original transparency and two duplicate or three original images taken concurrently) numbered,

- labelled and cross-referenced to the catalogue sheets and stored in archival slide sheets.

One set of transparencies (original images) together with the photographic report should be stored together in a public archive. The second set of transparencies (original or duplicates) with the photographic report should be stored together in a second archive. The final set of one set of transparencies (original or duplicates) and photographic report should be located with the client. (See Lodgement of Final Film or Digital Photographic Report on page 28 for details.)

In the case of movable items and collections, it is recommended to keep one set with the items and another in the archives.

Digitisation of film material

All film material, black and white negatives and prints, colour transparencies, and colour negatives and prints can be digitised by the use of scanners. Details relating to the use and storage of digital images are dealt with in the next section on the digital image report and placement of digital materials.

Australian National Library Guidelines for the digitisation of film-based materials are as follows:

- coloured photographic prints: 24 bits per pixel, 300 or 600 pixel per inch (PPI), RGB colour space;
- colour transparencies: 24 bits per pixel; 2000 PPI; RGB colour space;
- colour negatives: 48 bits per pixel; 2000 PPI; RGB colour space;
  black and white prints: 8 bits per pixel; 300 or 600 PPI; greyscale;
  black and white negatives: 8 bits per pixel; 3000 PPI; greyscale.

FINAL PHOTOGRAPHIC REPORT - DIGITAL REQUIREMENTS

MINIMUM REQUIREMENTS FOR DIGITAL PHOTOGRAPHIC REPORT

When the survey is complete the minimum requirements for the **photographic report** and materials are:

- a very brief report or introduction which explains the purposes of the report and gives a brief description of the subject, as well as details of the sequence in which images were taken. The report may also address the limitations of the photographic record and may make recommendations for future work;
- the report should include all technical details including camera and lenses, image file size and format, technical metadata associated with the images, and colour information;
- the report should also contain the catalogue sheets, photographic plan, and supplementary maps or plans.

MINIMUM REQUIREMENTS FOR DIGITAL MATERIALS

The minimum requirements for digital work are:

- three hard (paper) copies of the photographic report including catalogue sheets, photographic plan and supplementary maps;
- three sets of thumbnail image sheets (e.g. A4 photographic paper with six images by six images) showing images and file numbers. Thumbnail image sheets should be processed with archivally stable inks using approved archival photographic papers and cross- referenced to catalogue sheets;
- three copies of archival quality CD-R discs containing electronic images files and associated metadata, cross-referenced to catalogue sheets. If there are a large number of images, then DVD media can be used;
- one set of 10.5 x 14.8cm (A6), prints using archival quality paper and archivally stable inks. If the project is very large and includes a considerable number of digital images, key or representative images may be selected for reproduction at 10.5 x 14.8cm.

Digital Thumbnail Sheets and Prints

The thumbnail image sheets or prints should be printed on archival paper using archival inks or dyes. This will ensure optimal longevity.

Image stability, a problem in the past, is improving rapidly with new technology, improved inks and papers. A number of printer manufacturers offer printers which, with correct inks and specific papers, can produce prints with an expected life comparable to traditional black and white prints, provided storage conditions are suitable. These results are based on laboratory accelerated ageing techniques.

This technology is available through professional photographic laboratories.

Currently, there are three acceptable systems:

- Epson PictureMate Printers (or Epson equivalent) using Epson UltraChrome K3 inks and Epson archival photographic paper (Epson PictureMate paper (dye-based inkjet printing);
- Hewlett-Packard (HP) Photosmart Photo Printers (or HP equivalent) with HP Vivera Inks and HP Premium Plus photographic paper papers (dye-based inkjet printing); or
- FujiFlex utilising Fujicolor Crystal Archive Type One or Type Two Paper printed with Fuji Frontier digital minilab and Fuji washless chemicals(silver-halide colour prints).

Photographers are advised to check each company's website to keep up-to-date on improvements in printers, inks, chemical processing or photographic papers. In the future other companies may develop archivally acceptable methods.

Rather than relying on claims made by the various companies an objective assessment of the permanency of any particular system can be found at www.wilhelm-research.com

Costs may be similar to or slightly higher than that charged for producing film proof sheets and prints.

One-hour shops, particularly those using C-41 processing, are not suitable for producing prints acceptable for long-term storage.

STORAGE OF PHOTOGRAPHIC MATERIALS

PROOF SHEETS, SLIDES AND PRINTS

Proof sheets, slides and prints should meet the following storage standards:

- all storage must be in archival quality packaging suitable for long-term storage. If plastic packaging is used it should be polypropylene, **not** PVC;
- colour transparency slides, both 35 mm and other formats, can be stored in polypropylene sleeves. Note that in a high humidity environment plastic sleeves can cause problems as they restrict air flow and can cause the film emulsion to stick to the plastic. In these circumstances appropriate storage containers should be used;
- prints can be stored in polypropylene sleeves which are manufactured to hold a range of image formats;
- thumbnail image sheets (usually A4 size) can be stored in polypropylene sleeves;

- the photographic report and photographic materials should be stored in a suitable archival binder. These include a slipcase to ensure optimal survival and protection from the dust.

All printed material requires a temperature and humidity controlled environment for archival storage.

Any cross-reference notes and details associated with the prints or proof sheets should be written in pencil (preferably B) or with approved archival photo-labelling pen. Any writing should be restricted to the borders of prints or proof sheets.

CD-ROM OPTICAL MEDIA DISCS

With good care and maintenance a high quality CD-R disc is said to last around 30 years, although some manufacturers claim lifespan of 100 years plus. The difficulty is finding out which discs are best and knowing where the disc was manufactured. Another problem with CD-R is the technology may become obsolescent before the disc deteriorates, so the wisest option is to transfer the information to new media every 10 years.

DVDs are a storage option if the project is very large. Again, be careful to select a good quality DVD with long lasting qualities.

To ensure optimum life of CD-R discs and DVDs the following is suggested:

- use high quality CD-R discs or DVDs that are produced by a reputable brand and meet quality controlled manufacturing standards;
- burn CD-R or DVD at 1x or 2x speed to minimise data errors and then verify to make sure there are not data faults;
- it is recommended that TIFF images be saved as a Windows PC file rather than MAC. However, this should be determined with the client based on the client's computer system and future use..
- CD-R discs should be in plastic jewel cases which should be stored upright and under suitable storage conditions;
- CD-R discs should be labelled on their protective packaging rather than directly on the discs themselves;
- ensure CD-R are handled with due care, keeping them away from food, drink and dust. Never handle the underside of the disc and use the utmost care when handling the disc so as not to scratch the surface in any way. Gloves are recommended for the handling of archival discs;
- CD-R discs should never be bent or flexed and must be kept away from direct sunlight and stored vertically in their cases after use.

LODGEMENT OF FINAL FILM AND DIGITAL PHOTOGRAPHIC RECORDS

There should be three sets of the photographic report and film materials or digital materials. The place in which the material is lodged depends on whether the photographic project was requested by the NSW Heritage Council or local government. The following table summarises the lodgement details for photographic records.

Material	**Minimum requirements**	**Repository**	
		For Records Required by the Heritage Council of NSW	**For Records Required by a Local Council**
Black & White Film (plus any supplementary colour film)	Three copies of photographic report One set of negatives Three sets of proof sheets and catalogue	Report + negatives + 1st set of proof sheets: Heritage Office Report + 2nd set of proof sheets: State Library of NSW Report + 3rd set of proof contact sheets: Owner/client	Report + negatives + 1st set of proof sheets: Local Council Report + 2nd set of proof sheets: Local Council Library Report + 3rd set of proof sheets: Owner/client
Colour Transparencies or Slides	Three copies of photographic report One set of original transparencies and two sets of duplicates OR Three sets of original images taken concurrently	Report + original transparencies: Heritage Office Report + duplicate/concurrent transparencies: State Library of NSW Report + duplicate/concurrent transparencies: Owner/client	Report + original transparencies: Local Council Report + duplicate/concurrent transparencies: Local Council Library Report + duplicate/concurrent transparencies: Owner/client
Digital Materials	Three copies of photographic report – paper copy Three sets of thumbnails Three CD-Rs One set of selected 10.5x14.8cm prints	Report (paper) + thumbnails + CD-R + prints: NSW Heritage Office Report (paper) + thumbnails + CD-R: State Library of NSW Report (paper) + thumbnails + CD-R Owner/client	Report (paper)+ thumbnails + CD-R + prints: Local Council Report (paper) + thumbnails + CD-R: Local Council Library Report (paper) + thumbnails + CD-R: Owner/client

APPENDICES

APPENDIX A - MODEL BRIEF FOR HERITAGE PHOTOGRAPHY

FILM RECORDING

PHOTOGRAPHER'S DETAILS			
Name			
Address			
Phone:	**Mobile phone:**	**Facsimile:**	
Email:			
Recent Heritage Jobs:			
Contact/s (re recent heritage assignments**)**			
Name:			
Contact Details:			
PHOTOGRAPHIC ASSIGNMENT DETAILS			
Assignment Outline:			
ASSIGNMENT REQUIREMENTS			
Public Liability Insurance	**Yes/No**	**Amount:**	
Additional Requirements:			
Copyright/Image Ownership:			
FILM REQUIREMENTS			
Start:	**Finish:**	**Report:**	
Camera/s:			
Lenses:			
Accessories:			
Film:	**Black & White**		
	Colour Transparency		
Processing:	**Black & White**		
	Colour Transparency		
Archival Materials:	**Boxes**		
	Sleeves		
	Paper		

Signatures (agreeing to above requirements and/or conditions**)**

Photographer **Client**

SAMPLE MODEL BRIEF FOR HERITAGE PHOTOGRAPHY FILM RECORDING

PHOTOGRAPHER'S DETAILS			
Name	Allan Person		
Address	PO Box 000 Suburb NSW 2000		
Phone: 02 0000 0000	**Mobile Phone**: 0000 000	**Facsimile**: 02 0000 0000	
Email: john.smith@server.com.au			
Recent Heritage Jobs:	Federation House 2006		
	Wooden Rail Bridge 2005		
	Sewerage Pumping Station 2004		
Contacts [regarding recent heritage assignments]			
Name:	Kate Individual		
Details:	Sydney Archival Agency		
	Phone: 02 0000 0000		
PHOTOGRAPHIC ASSIGNMENT BRIEF			
Assignment Outline: Weatherboard House [a] Photography of house prior to demolition [b] Photographic requirements include cameras, wide angle, standard and telephoto lenses; film - black & White & colour transparencies required [c] Final report to use approved archival standard materials			
ASSIGNMENT REQUIREMENTS			
Public Liability Insurance	**Amount:** $5 000 000		
Additional Requirements: [a] completion & signed Heritage Office Client Checklist; [b] adherence to contract details unless changes agreed to by requisitioning authority; [c] work safety plan; [d] on-site induction; [e] confined spaces training or accompanied by qualified person			
Copyright/Image Ownership:	Images property of client		
FILM REQUIREMENTS			
Start: date/month/year	**Finish**: date/month/year	**Report:** date/month/year	
Camera/s: Camera type/s – Single Lens Reflex			
Lenses: 21, 24, 35, 50, 85, 135, 200 & 300mm			
Accessories: filters, tripods, measuring sticks, flash			
Film:	Black & White	Ilford Delta 100 & Ilford delta 400	
	Colour Transparency	Fuji Velvia 100	
Processing:	Black & White	negatives & proofs sheets to archival standard	
	Colour Transparency	E6 – professional laboratory	
Archival Material:	Boxes	Approved archive storage boxes	
	Sleeves	Approved archival protector pages	
	Paper	Acid-free	

Signatures:
Photographer: **Client:**

MODEL BRIEF FOR HERITAGE PHOTOGRAPHY DIGITAL RECORDING

PHOTOGRAPHER'S DETAILS			
Name			
Address			
Phone:	**Mobile phone:**		**Facsimile:**
Email:			
Recent Heritage Jobs:			
Contact/s (re recent heritage assignments**)**			
Name:			
Contact Details:			
PHOTOGRAPHIC ASSIGNMENT DETAILS			
Assignment Outline:			
ASSIGNMENT REQUIREMENTS			
Public Liability Insurance	**Yes/No**	**Amount:**	
Additional Requirements:			
Copyright/Image Ownership:			
DIGITAL REQUIREMENTS			
Start Date:	**Finish Date:**		**Report Due:**
Camera/s:			
Lenses:			
Accessories:			
Storage Media:			
Proof Sheets:			
Archival materials:	**Boxes**		
	Sleeves		
	Paper		

Signatures: (agreeing to above requirements and/or conditions**)**

Photographer: **Client:**

SAMPLE MODEL BRIEF FOR HERITAGE PHOTOGRAPHY DIGITAL RECORDING

PHOTOGRAPHER'S DETAILS			
Name	Allan Person		
Address	PO Box 000 Suburb NSW 2000		
Phone: 02 0000 0000	**Mobile Phone**: 0000 000 000	**Phone**: 02 0000 0000	
Email: allan.person@server.com.au			
Recent Heritage Jobs:	Federation House 2006		
	Wooden Rail Bridge 2005		
	Sewerage Pumping Station 2004		
Contacts [regarding recent heritage assignments]			
Name:	Kate Individual		
Details:	Sydney Archival Agency		
	Phone: 02 0000 0000		
PHOTOGRAPHIC ASSIGNMENT DETAILS			
Assignment Outline: Weatherboard House [a] Photography of house prior to demolition [b] Photographic requirements include cameras, wide angle, standard and telephoto lenses; sufficient on-site storage media cards. [c] Digital report to consist of paper copy, proof 'thumbnail' sheet/s, prints stored on approved electronic storage media [d] Paper copy, proof sheets & digital storage media in approved archival materials			
ASSIGNMENT DETAILS			
Public Liability Insurance	**Amount:** $5 000 000		
Additional Requirements: [a] completion & signed Heritage Office Client Checklist; [b] adherence to contract details unless changes agreed to by requisitioning authority; [c] work safety plan; [d] on-site induction; [e] confined spaces training or accompanied by qualified person			
Copyright/Image Ownership:	images property of client		
DIGITAL IMAGING REQUIREMENTS			
Start:: date/month/year	**Finish**: date/month/year	**Report:** date/month/year	
Camera/s: Brand Name Digital Camera - Single Lens Reflex [minimum 8.0 MP]			
Lenses: 21, 24, 35, 50, 85, 135, 200 & 300mm [35mm equivalent]			
Accessories: filters, tripods, measuring sticks, flash			
Storage Media:	Approved CD or DVD		
Proof Sheets:	Brand name archival ink/Brand name archival photographic paper		
Archival material:	Boxes	Approved archive storage boxes	
	Sleeves	Approved archival protector pages	
	Paper	Acid-free	

Signatures:
Photographer: **Client:**

APPENDIX B - CHECKLIST FOR PHOTOGRAPHIC REPORT

PROJECT NAME:		
FILM-BASED PROJECTS		
	Yes	**No**
Is there a hardcopy report?		
Does the B&W report contain:		
[a] a set of B&W negatives and proof sheet/s?		
[b] negatives & proof sheets sleeved in archival protective pages?		
[c] B&W prints [if required] sleeved in archival protective pages?		
[d] cameras, lenses, and accessories details?		
[e] film types and archival processing details?		
[f] map showing photographic location and direction of images?		
[g] list of all images, correctly numbered and described?		
Does the colour image report contain:		
[a] a set of colour transparencies, correctly numbered & described		
[b] each set stored in archival protective pages?		
[c] cameras, lenses, and accessories details?		
[d] film types and archival processing details?		
[e] map showing photographic location and direction of images?		
[f] list of all images, correctly numbered and described?		
Is the photographic material and report labelled correctly?		
Are the boxes/folders/containers made of archivally acceptable material?		
Are there two separate containers for B&W and colour material?		
Were the B&W negatives, proof sheets and prints archivally processed?		
Is the paper used in the report acid-free?		
DIGITAL PROJECTS		
Is there a hardcopy report?		
Does the hardcopy report contain:		
[a] thumbnail proof sheet processed in an archivally acceptable method?		
[b] proof sheet properly sleeved in archival protective pages?		
[c] appropriate electronic storage media with report and images?		
[d] cameras, lenses, and accessories details?		
[e] map showing image location and details?		
[f] list of all images, correctly numbered and described?		
Is there an electronic report?		
How is the information stored?		
[a] CD Rom – what type		
[b] DVD – what type		
[c] Other		
Can the storage media be opened?		
Is the information the same as that contained in the hardcopy report?		
Are the images saved as TIFF files, contain metadata and follow guidelines?		
If not, what is the file format & where have they diverted from guidelines?		
Is the storage media filed in an acceptable container?		
Is there a back-up copy stored with the hardcopy report?		
Is there a full set of 10.5 x 14.8 (A6) images processed with archivally stable inks and paper?		
Comments for either film and/or digital reports:		

APPENDIX C - FILM CATALOGUE SHEET

Project Name:	
Camera:	**Film Type:**
Film No.	**Photographer:**
Comments:	

Image No.	Date	Lens	Details (1)

1. include details of the structures and/or object captured on film and direction from which image was photographed

DIGITAL IMAGE CATALOGUE SHEET

Project Name	
Camera:	**Lenses**
Sensor size:	**35mm lens equivalent (1):**
Image Folder:	**Photographer:**
Comments:	

Image File No. (2) & (3)	Date	Site (4)	Details (4)

1 35mm-equivalent focal length is the relation between the digital sensor and 35mm film coverage.
2 file numbering systems vary between various camera brands.
3 image file number, date, lens focal length, exposure compensation, flash and other details are recorded in the metadata file which must be included with or linked to the image file.
4 relates to the site or position from which image was taken as recorded on the Photographic Plan Sheet.
5 this information is not recorded on in the metadata.

APPENDIX D - PHOTOGRAPHIC PLAN SHEET

Project Name:		
Date:		**Photographer:**
Camera:		**Lens/es:**
Film No/s.	**Frame Nos:**	**Film Type:**

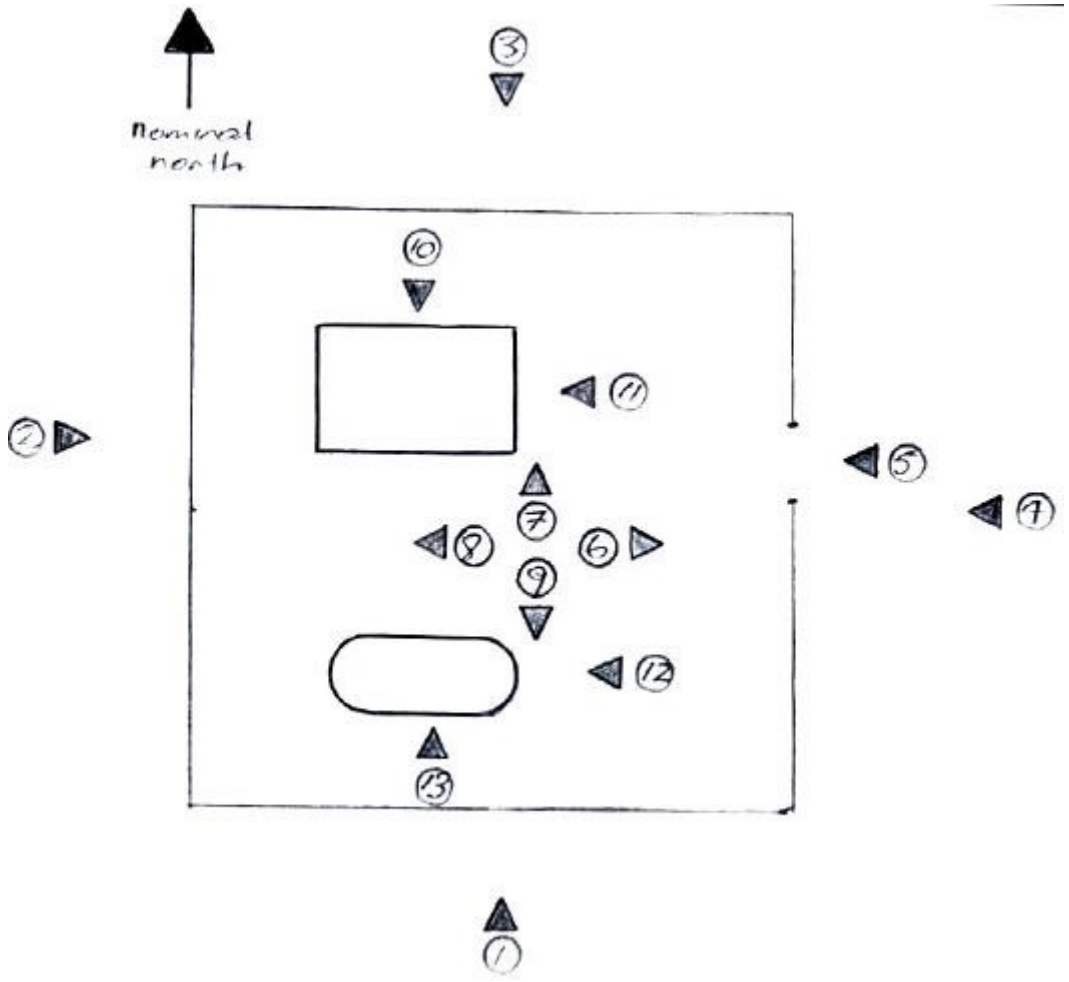
1. The Photographic Plan Sheet can be used for both black & white and colour film images. Many photographers will have their own established system which will be satisfactory provided all the information can be cross-referenced to the Photographic Catalogue Sheets.

2. With digital photography each location can be labelled as a site which should then be included in the appropriate Photographic Catalogue Sheet cross-referenced to the appropriate digital file number. In this case remove the text File No/s and Frame Nos and substitute Site No.

3. The side of the building or structure closest to true north can be used as 'nominal north' for the purpose of describing the directions in which the images were taken. This is easier than trying to work out exact directions in relation to true north.

SAMPLE PHOTOGRAPHIC PLAN SHEET

Project Name: Sample		
Date:		**Photographer:**
Camera:		**Lens/es:**
Film No/s.	**Frame Nos:**	**Film Type:**



1. The Photographic Plan Sheet can be used for both black & white and colour film images. Many photographers will have their own established system which will be satisfactory provided all the information can be cross-referenced to the Photographic Catalogue Sheets/.

2. With digital photography each location can be labelled as a site which should then be included in the appropriate Photographic Catalogue Sheet cross-referenced to the appropriate digital file number. In this case remove the text File No/s and Frame Nos and substitute Site No.

3. The side of the building or structure closest to true north is used as 'nominal north' for the purpose of describing the directions in which the images were taken. This is easier than trying to work out exact directions in relation to true north.

APPENDIX E - USEFUL CONTACTS

Pro Labs – film and print processing

The list below includes some of the major photographic labs that undertake film and digital processing in NSW and is intended as a directory only. The inclusion of a person or business should not be taken to imply their endorsement by the Heritage Office, Department of Planning, or the Heritage Council of NSW.

Photographers should check the specifications and archival quality of services provided. Rural photographers can also check company websites for details on mail order services.

Campsie Digital Lab* †
Unit 3/9 Elizabeth Street
Campsie NSW 2194
Ph: 02 9718 8667‡
Fx: 02 9789 1564
www.digitalprolab.com.au

Created for Life Print Studio
2/14 Barralong Road
Erina NSW 2250
Ph: 02 4365 1488
Fx: 02 4367 0850
www.createdforlife.com

Icon Imageworks*
3/52 Champion Road
Tennyson Point NSW 2111
Ph: 02 9966 8781
Fx: 02 9966 87 86
www.iconcom.com.au

Photo King Professional
173 Alison Road
Randwick NSW 2031
Ph: 02 9310 0340
Fx: 02 998 5199
www.photking.com

The B&W Lab Big Image*
71 Palmer Street
Cammeray NSW 2062
Ph: 02 9957 4933
Fx: 02 9957 1828

The Lighthouse BPS Pty Ltd*
2/219 Bondi Road
Bondi NSW 2066
Ph: 02 9365 6063
Fx: 9365 6013
www.thelighthousebps.com.au

Vision Graphics
88 Pitt Street
Redfern NSW 2016
Ph: 02 9319 3300
www.visiongraphics.com.au

Vision Graphics
2B Northcote Street
St Leonards NSW 2065
Ph: 02 9902 4000
www.visiongraphics.com.au

* Black & white processing services provided

ARCHIVAL MATERIAL SUPPLIERS

[archival photographic sleeves and storage boxes]

Albox Australia Pty Ltd
56 North Terrace
Kent Town SA 5067
Ph: 08 8362 4811
Fx: 08 8362 4066
www.albox.com.au [retailer supplier list for all states and territories]

Archival Survival Pty Ltd
Ph: 1300 781 199
email: info@archivalsurvival.com.au

Prints & Images
77 Keppel Street
Bathurst NSW 2795
Ph: 02 6332 4410
Fx: 02 6332 6770
email: cottagegate@bigpond.com

Preservation Australia
PO Box 210
Enmore NSW 2042
Ph: 1300 651 408
Fx: 1300 651 406
www.preservationaustralia..com.au

Shared Memories
PO Box 6
Sans Souci NSW 2219
Ph: 1300 554 229
www.sharedmemories .com.au

The Photo Album Shop
105 Hunter Lane
Hornsby NSW 2077
Ph: 9476 2610
Fx: 9476 5192
www.photoalbumshop.com.au

APPENDIX F - REFERENCES

Personal contacts

Murray Fagg – Australian National Botanical Gardens
Erica Ryan - National Library of Australia
Andrew Long – National Library of Australia
Sheryl Jackson – National Archives of Australia
Richard Neville – State Library of NSW
Scott Wagon – State Library of NSW
Tony Sillavan – Sydney Water
Jon Breen - Sydney Water (retired)
Chris Cane – The Lab
Alan Ward – Vision Graphics

National and State Guidelines

Australian National Botanical Gardens
- Photograph Collection Policy

National Archives of Australia
- Digital Preservation Guidance Note 3 - Care, Handling and Storage of Removable Media
- Archives Advice 6 - Protecting & handling optical discs
- Archives Advice 7 - Protecting & handling photographs
- Archives Advice 7 - Protecting & handling objects

NSW Heritage Office
- Guidelines for Photographic Recording of Heritage Items 2004

National Library of Australia
- Still Image Digitisation at the National Library
- Traditional Format Library Materials

State Library of New South Wales
- Digital practice: Guidelines for digitising images in NSW public libraries

State Library of Queensland
- Digitisation Policy

Victorian State Government
- Electronic Records Strategy – Forever Digital

Magazines

Australian Photography
Better Pictures
Outdoor Photography
Practical Photography
Photography Monthly
ProPhoto

Books, Press Releases and Information Sheets

Fujifilm Professional Complete Film Line-up for Professionals
Kodak 2004 Press Release – Kodachrome Film Availability
Ilford Fact Sheet 2001 Processing B&W Fibre Based Paper
Ilford Fact Sheet 2002 The Ilford Black & White Photographic Chemical Range
Ilford Fact Sheet 2002 Processing B&W Resin Coated Paper
International Digital Enterprise Alliance Inc.2004. DISC Metadata for Digital Image Submission
Photograph Australia with Steve Parish – Film and Digital Photography Steve Parish Publishing Pty Ltd 2003
The B&W Lab Big Image 2006 Price List

Websites

Guidelines and Policy

www.anbg.gov.au Australian National Botanical Gardens Photograph Collection Policy
www.archives.com National Archives (USA)
www.asmp.org The Universal Photographic Digital Imaging Guidelines
www.cr.nps.gov. National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion March 2005
www.diglib.org Technical Guidelines for Digitizing Materials for Electronic Access
www.nmnh.si.edu CoPAR Bulletin 14 – Creating Records That Will Last
www.montana.edu Experts Give Tips for Preserving Photos
www.prov.vic.gov.au Victorian Electronic Records Strategy – Forever Digital
www.nla.gov.au National Library of Australia
www.naa.gov.au National Archives of Australia
www.tasi.ac.uk Basic Guidelines for Image Capture and Optimisation
www.williamsphotographic.com Archival and Storage Issues

Archival Albums and Storage Materials

www.photoalbumshop.com
www.preservationaustralia.com.au

Archival inks, papers, printers and image longevity

www.epson.com.au Epson's New Ultrachrome Ink
www.epson.com.au Technical Brief – Epson Archival Inks
www.fineartgicleeprinters.org Discussion on the color gamut of the new UV pigmented inks from Hewlett-Packard for HP DesignJet 5000 and 5500ps for photorealistic and fine art giclee prints
www.inksupply.com MIS archival Pigments
www.photoreview.com.au The Test of Time
www.wilhelm-research.com Permanent care of colour photographs: traditional & digital, colour prints, colour negatives, slides & motion pictures

Digital storage media www.cdmediaworld.com
CD-R Quality www.disctronics.co.uk CD-ROM Specification www.melbpc.org.au How long will a CD-R last?
www.sro.wa.gov.au Preservation Notes – Keeping CDs Safe
www.cdmediaworld.com CD-R Quality

Digital photography – working with images
www.arisedition.com Creating a Digital Master
www.gbbc.org.uk Bit Depth and File Size, File Size and Resolution www.pictureaustralia.org Australian Heritage Photo Library; ACT Heritage Library www.scantips.com A Simple Way to Get Better Scans
www.wildlifephoto.net Digital Workflow

Cameras - film and digital
www.canon.com.au
www.hasseblad.com.com
www.horsemanUSA.com
www.konicaminolta.com
www.kyocera.co.jp www.linhof.de
www.nikon.com www.olympus.com
www.pentax.com www.sigma.com
www.sinarcameras.com www.tamron.com

Software
www.adobe.com

Printers and inks
www.digitalfilm.com
www.epson.com.au
www.fujifilm.com www.hp.com.au
www.lyson.com

Film and digital processing and printing
www.icon.com.au
www.imx.nl Kodak Kodachrome: a critical appraisal and its role in the future
www.visiongraphics.com.au
www.thelabsydney.com

Annex G - Do's and Don'ts Guide

DOS AND DON'TS HANDBOOK

The following Do's and Don'ts guide relates to historic heritage values of the Yarralumla site, and outlines advice regarding appropriate and inappropriate materials and techniques which may be considered in future.

Whilst intended for historic heritage buildings and landscape values, this handbook can also be used to inform best practice maintenance guidance for site maintenance personnel.

Table G.1 Do's and Don'ts - General

Do	Do Not
Do understand the physical fabric of the place as this in itself tells the story of the place's history and historical significance. Do ensure historic buildings have a compatible use.	Do not attempt to repair or conceal every knock or dent in the historic fabric as evidence of the use of a historic structure can be an important part of its history and contributes to its "patina" or quality of age.
Do understand significance when making decisions about changing the historic fabric. Do only repair as much of the historic fabric as is necessary rather than total replacement.	Do not replace existing elements with modern profiles as the significance of historic structures is linked to their traditional detailing.
Do carefully piece in new work respecting the original fabric. Original and early building elements tell us about past construction techniques and styles and are an irreplaceable resource.	Do not remove evidence of original or features such as paint colour schemes and brackets. Leave the evidence and work around it.
Do prepare records of the work undertaken and carry out all work in a logical order. Do ensure termite inspections are regularly undertaken and any activity treated appropriately. Do replace damaged glazing to match the original thickness and type of drawn glass.	Do not remove or replace original door and window furniture, light switches, power switches or light fittings. The significance of historic buildings is linked to their original fittings.
Do repair historic materials with the same or similar materials – "like with like". If the same material is no longer available or unsuitable seek the most compatible option. The introduction of a modern material into historic fabric may cause long term damage.	Do not remove evidence of original planning, construction systems, door and window furniture, or services (e.g. Closed off doorways, redundant door furniture or light fittings). Leave the evidence and work around it. Evidence of past building layout and technologies can tell us how a place was used.

Do	Do Not
Do maintain all fixings and hardware in clean and operative condition.	Do not remove historic building elements from site unless absolutely necessary. If removal is required ensure there is a process in place to ensure the physical care and security of the remained element is maintained. Historic building elements can be damaged in transit, lost or stolen.
	Do not leave buildings vacant as this will accelerate their decay.
Keep historic buildings clean internally and externally.	Do not use plate, float, tinted or laminated glass.
Do ensure that significant views to important historic buildings are retained.	Do not construct new buildings in locations that may impact on significant views.
Do replace missing elements to historic buildings.	Do not allow elements to deteriorate and break.

Table G.2 Do's and Don'ts – Landscape Elements

Do	Do Not
Do undertake necessary consultation prior to alterations to the landscape which involve removal of plants or changes to elements with heritage value.	Do not undertake changes including the removal of vegetation without referring to the HMP and undertaking the necessary consultation.
Do maintain open spaces and views to the Parade Ground and obstructing visual access to open spaces.	Do not build new structures or plant new vegetation that may impact on the setting and/or obstruct significant views.
Do maintain existing slopes, terraces and flat areas.	Do not introduce new elements into the landscape that may alter the distinct setting of the place.
Do maintain the current assemblage of plant styles, colours and shapes.	Do not introduce new species that may alter the character of the place.
Do retain groups of trees that contribute to the setting of the place.	Do not allow garden beds and surrounding paved or grassed areas to build up around the foundation walls and cover sub floor ventilation grills. Blocked ventilation to sub-floors can encourage dampness in these areas.
Do continue to conduct routine maintenance (mowing, pruning, watering etc) to ensure the gardens appear well maintained.	Do not neglect routine maintenance tasks, and do not leave grass clippings, branches, raked leaves or other material at the site after maintenance.

Do	Do Not
Do mow grass to required height only.	Do not allow any mechanical equipment such as mowers and whipper snippers to make contact with the bark of any trees, or buildings.
Do trim back plants and hedges to ensure that pathways are not obstructed and structures are not physically impacted on. Do ensure new vegetation is planted at an appropriate distance away from historic buildings to reduce any future potential impact.	Do not allow vegetation to physically impact on built heritage features including downpipes and gutters.
Do consult an arborist if a tree is cracking, dropping branches or appears in distress.	Do not ignore any potential problems.
Do employ an arboriculturalist to undertake appropriate treatment to trees.	Do not allow repairs to be undertaken by someone without relevant qualifications.
Do replace a dead or failing plant with the same species. For mature trees, if sufficient time is available organise the propagation of replacement plant.	Do not leave dead plants in ground. Do not remove plantings considered to be of heritage value without having a replacement available, and replace in the same location. Do not replace with a species that is listed as a weed in the ACT.
Do replace self-seeded weed species and check surrounding areas for more outbreaks.	Do not ignore the problem and allow greater weed growth.
Do clear walkways of debris, and ensure any potential trip hazards (e.g. potholes or cracked pavers) are flagged in DEMS for repair.	Do not allow obstacles to remain on or near walkways. Do not allow footpaths or walkways to deteriorate and form potential trip hazards.
Do ensure lawns and garden irrigation is either positioned or directed away from building foundations. Overwatering can cause foundations to settle or for the minerals in the water to corrode or rot building fabric.	Do not water more than is necessary to maintain the current landscape.

Table G.3 Do's and Don'ts - Services

Do	Do Not
Do remove redundant services to minimise any potential visual impact and install new services using existing cavities.	Do not run services in highly visible areas. Carefully consider the visual impact of the work you are proposing and conceal services and position new elements in the least obtrusive locations. Fixings may damage historic building fabric and the installation of new equipment may impact aesthetic values.
Do ensure services are regularly inspected for damage and maintained.	Do not allow faulty services to continue to function as this will lead to further damage and increased repair costs.
Do install appropriate drainage against buildings.	Do not have hard concrete surfaces abutting buildings.
Do ensure downpipes are connected to stormwater outlets.	Do not allow downpipes or overflows from plant and equipment to fall on the ground around a building or structure. Unobtrusively connect to the nearest underground stormwater reticulation system. Dampness is a major contributor to the deterioration of historic building fabric.
	Do ensure drains are cleared of debris
Do conceal services to minimise visual impact.	Do not locate new services along main elevations.

Table G.4 Do's and Don'ts Masonry Buildings

Do	Do Not
Do employ qualified tradespersons with experience in undertaking work on historic buildings.	Do not allow unqualified or inexperienced tradespeople to undertake work on Parade Ground buildings.
Do only clean masonry when it is absolutely necessary to reduce potential water damage.	Do not use harsh chemical cleaners or abrasive sand blasting and high-pressure water hoses.
Do use an appropriate lime-based mortar for all repointing of historic buildings. Only re-point where mortar has been weathered away, or where it is very soft or loose. Sound old pointing should not be removed. Even if the pointing is of a hard, cement-rich type, wait until it is easy to remove.	Do not use a cement rich mortar.
Do use hand tools to carefully remove damaged or decayed areas of mortar and replace with lime-based mortar.	Do not use power tools to remove mortar.
Do ensure that repairs match the existing finish, and non-ferrous fixings are used to minimise potential future corrosion.	Do not fix screws, bolts or nails into the masonry, instead fix into mortar joints where possible. When fixings are replaced or removed the brick surfaces likely to be irreparably damaged, whereas mortar joints are more easily repaired.
Do thoroughly investigate potential causes of rising damp in buildings (such as Building 26) by checking for ineffective damp proof course, and stormwater ponding around foundations.	Do not allow problem to worsen without seeking advice as problem will become more costly to repair and may require greater degree of intervention which will impact on the heritage values.
Do manage the causes of rising damp rather than attempting to treat the symptoms	Do not cover over rising damp with cement render or other impervious applied treatments as these are likely to simply force damp to rise higher. Do not initiate technological solutions to rising damp without first understanding the cause.
Do leave distance between a masonry building and hard surface such as concrete.	Do not construct hard surfaces immediately adjacent to masonry buildings as this may result in loss of pointing and damage to damp proof course.

Table G.5 Do's and Don'ts Render

Do	Do Not

Do	Do Not
Do replace loose or cracked render. Defective render can be found by tapping it. If there is a hollow sound, it may be loose. These areas can be patched.	Do not ignore cracked or loose render. Defective render might be letting water into the stone of the wall, causing deterioration and damp.
Do use traditional, soft lime-based render. This material is permeable and will absorb rainwater and dry out naturally. Soft renders also allow for movement in the wall (such as expansion due to warm summer weather) without being damaged. Apply render in three coats in order to obtain the required cover.	Do not use modern, hard cement-based render. As this material is impermeable and harder than the stone/brick behind it, any water entering the wall will be trapped behind the render, causing the deterioration of the stone and damp. Cement mortar is inflexible and will crack in cold or warm weather, letting moisture into the wall.
Do apply render to provide a smooth or lined finish to match the original wall appearance. Similarly, repair moulded profiles to match original detail.	Do not render features such as walls or base courses which traditionally have face brickwork. Rendering would rob them of their original character and appearance.
Use traditional and permeable lime wash finishes of rendered areas to retain permeability.	Do not coat render with modern impermeable or 'long life' paints. These will damage the render and potentially the wall behind it by not allowing the render to 'breathe'.
	Do not remove render all together where it is an original feature of the building. This will have a negative impact on the character and appearance of the building.

Table G.6 Do's and Don'ts - Roofs and Rainwater Goods

Do	Do Not
Do inspect the condition of the roof every year for minor problems such as lifting of flashings, loose fixings, and damp roof timbers internally.	Do not ignore minor problems, as they can lead to larger and more costly problems if left unattended.
Do continue to use tiles or slate matching the existing profile and colour of the original.	Do not replace roofs with new material such as Zincalume or Colorbond as this will alter the appearance and will impact on the heritage values of the Parade Ground.
Do ensure that roofs, gutters and downpipes are regularly painted and metal elements not exposed.	Do not allow failed paintwork to expose metal elements.
Do vegetation growing behind the rainwater pipes or underneath or behind the gutters is cut back or removed altogether. The vegetation can help trap	Do not allow vegetation growth to impact on the fabric of historic buildings.

Do	Do Not
moisture against the rainwater goods and speed up their deterioration. Growing creepers can dislodge or damage gutters and pipes. In some cases it might be a good idea to fit leaf guards over gutters and the tops of pipes to prevent them being blocked.	
Do be proactive and check externally in wet weather for places where the wall of the building is getting saturated. This is a sign that the rainwater system is leaking or blocked. In dry weather, there will be stains or marks left where water has been seeping into the wall. Rain leaking into the wall speeds up the deterioration of the mortar, can cause rot in internal timberwork, and can damage internal decoration and fittings.	Do not ignore potential leakages.
Do replace existing rainwater goods with galvanised steel to match the existing profile	Do not introduce new materials or profiles.
Do regularly clear gutters and downpipes.	Do not allow leaf litter to accumulate on roofs of building.

Table G.7 Do's and Don'ts – Timber Windows and Doors

Do	Do Not
Do retain original doors and windows	Do not remove or alter original doors and windows as these contribute to the heritage value of the Parade Ground buildings.
Do hire experienced joiners who can provide local examples of work with historic windows and doors.	Do not use joiners with no experience in repairs to historic doors and windows.
Do retain as much of the original joinery as possible and remove as little of the original timber as is practical in repairs. New pieces of timber or joints can be spliced into existing windows and doors by a skilled joiner.	Do not use a new timber which is a different species to the old timber. A window or door made up of different sorts of timber will fall apart as the different types of wood expand and contract at different rates due to heat and moisture.
Do use well seasoned timber which as closely matches the line, grain (number of growth rings) and density of the existing timber as possible.	Do not use timber with shakes, fissures, warping, sapwood (the well spaced outer rings of the trunk) or numerous or large knots.
Do use fixings such as timber pegs/dowels, or nonferrous screws/pins to link splice repairs to the window, as well as glue. This will ensure that the splice will remain tightly fixed.	Do not replace rotten parts of windows or doors without also tackling the cause of the rot. This could be because of defective rainwater goods, defective pointing, the way water runs on the sill or the levels of moisture condensing inside the window.
Do retain as much sound old glass as possible, particularly decorative glass.	Do not replace sound glass or glass with small hairline cracks. Modern replacement glass will appear noticeably different to the old glass and can detract from the character of the building.
Do ensure that replacement glass in a sash window is the same thickness (and therefore weight) as the original glass, so that it is balanced by the sash weights.	Do not replace decorative glass with plain glass. Such glass is often a historic detail and in many cases is an important decorative feature.
Do ensure that repairs are well painted with oil based primers including end grain and that glass is set in linseed oil putty and that frames are properly set in mastic.	Do not repaint in new colour scheme without research into historic colour schemes including paint scrape analysis.
Do mark and record the components of a window before dismantling it for repair, especially if there are several windows to be repaired. Similarly number the glass panes before removal.	

Annex H – Heritage asset works record

HERITAGE ASSET – WORKS/MAINTENANCE RECORD

Heritage Asset – Works/Maintenance Record

A copy of this form is to be e-mailed to PropertyManager@csiro.au for reporting purposes.

HERITAGE ASSET – WORKS/MAINTENANCE RECORD	RESPONSE COLUMN
1. ASSET NUMBER	
2. DETAILS OF WORKS	
Commencement Date	
Completion Date	
Description of Works	
Cost	
Comments	
Before/After photo's attached (if required)	Yes/No
3. CONTRACTOR DETAILS	
Company Name	
Contact Name	
4. HERITAGE COMPLIANCE	
CBIS Officer Name	
CBIS Contact Phone Number	
Were the heritage values, protocols and HMP provided to the Contractor before commencing work	
Have the HMP's policies and guidelines been complied with?	
5. CBIS STAFF MEMBER DETAILS	
Name :	
Phone Number:	
E-mail Address:	

1