

*A comparative analysis of the Old Administration Area  
(including Building 3H) with prefabricated buildings in the  
Canberra region*



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For  
The Australian National University

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## Contents

Executive Summary .....	4
Project background .....	5
Project methodology .....	6
Overview of the Old Administrative Area .....	7
Summary history	
Description	
Heritage status	
Australia’s post-war reconstruction and prefabricated buildings .....	10
Post war building industry, prefabrication and new materials and systems	
Prefabricated buildings in the Canberra region	
The ANU’s temporary buildings	
Migrant workers, builders and architects	
Comparative analysis of OAA with the wider Canberra region .....	19
Class of place/type profile	
Demonstration of principal characteristics	
General type: post WWII prefabricated buildings	
Subtypes, discussion and analysis of OAA including Building 3H	
Potential significance under criterion (d) representative qualities .....	22
OAA prefabricated buildings	
Building 3H as extant representative example	
Interpretive capacity	
Findings and recommendations .....	23
References .....	24

## Executive Summary

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This report provides a comparative analysis of the OAA, including Building 3H, with prefabricated buildings in the Canberra region. The story of post-WWII reconstruction and the building of towns and settlements in Australia forms the wider context. The post war building industry relied extensively on prefabrication and new material and systems to overcome the shortages of materials and labour. This is an important national theme which is played out in a distinctive way in the Canberra region.

The ANU's temporary buildings of the OAA from the later 1940s and 1950s are part of this national and local story. However, the former OAA complex and the extent Building 3H are not significant as a representative example of this class of places. However, the findings of this report are that the structural system of pre-cast concrete portal frames used as a consistent theme in these temporary ANU administrative and research buildings is an innovative approach to engineering buildings in a period of post-war shortages of steel and other more traditional materials. While this area needs further research and the advice of structural engineers, it appears to be an early use of pre-cast concrete as a portal framing system, at least in the Canberra region and possibly in a wider Australian context.

This report makes recommendations to further research this aspect of heritage significance in relation of heritage criteria (f) creative or technical achievement, so that the ANU's heritage inventory for the OAA can be revised and updated to provide a well-founded assessment of significance. It also briefly comments on opportunities to present and interpret this significance to the public.

## Project background

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In 2012, The Australian National University (ANU) proposed an action under the *Environment Protection and Biodiversity Conservation Act 1999* to demolish and/or remove all buildings and structures (with the exception of Building H) within the Old Administrative Area of the ANU, Acton ACT, and construct a new landscapes precinct containing heritage interpretive elements in its place [See EPBC Act referral 2012/6627].

One of the conditions of approval was that a suitably qualified person must be engaged to prepare a report providing:

*A comparative analysis of the Old Administration Area with other prefabricated buildings in the Canberra region, particularly regarding the Old Administration Area's potential significance under Commonwealth Heritage Criterion d) representative qualities.*

This report is provided to satisfy this condition. All work has been undertaken by Dr Sandy Blair, Historian and Heritage Management Professional, CV available on request.

## Project methodology

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### Project Tasks:

1. Undertake background report reading and meet with client to confirm tasks, outputs and requirements
2. Comparative research in libraries, archival collections, unpublished reports, oral history collections
3. Search heritage registers and inventories especially ACT, NSW and Commonwealth for comparative examples
4. Contact key people in my heritage network to target expert knowledge of key examples, geographic range, type variation, historical and cultural context and themes
5. Analysis of evidence and testing of findings relating to comparative assessment of OAA's potential significance under Commonwealth Heritage Criterion d) representative qualities
6. Consider interpretative approaches and materials to highlight this aspect of significance
7. Prepare high quality professional report in plain English with illustrative material - draft for comment by client
8. Revise as needed and finalise project report to client.

All aspects of the work have been undertaken to be consistent with the Australia ICOMOS Burra Charter and Australian Government Department of the Environment's Environment Protection and Biodiversity Conservation Act 1999 

## Overview of the OAA

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Construction began in the early 1950s on temporary accommodation for the administrative headquarters and early research facilities and laboratories for the University. The siting of these temporary structures was away from the south of the Acton campus where the majority of the permanent University buildings were planned. The complex was built in two phases, with the administrative buildings, a store and workshop for the University completed in 1949-1952, and the 'temporary' laboratories for the Medical School and the Department of Geophysics from 1952-1954. These structures were designed to be temporary, and served the University while permanent facilities were under construction. They also provided office space for key Commonwealth Government Departments involved in planning the National Capital before permanent offices were built.

Except for Building 3H, which has been retained as a representative sample, and the retention of some sets of precast concrete portal frames, these buildings have been demolished. The remaining structures are physical evidence of the earliest administration complex of the newly-established University. Professional archival recording has been undertaken for all of the buildings in the OAA and is stored at the ANU Heritage Office (Extent Heritage Advisors for the ANU, 2016).

### Summary history

There is a brief historical overview of the OAA presented in the *ANU Acton Campus Site Inventory* and a comprehensive history of the site and its individual buildings as an appendix to the *1950s Prefabricated Buildings Acton Campus ACT Heritage Study* (ANU, 2011).

The brief historical overview has been taken from the *Acton Campus Site Inventory* for the OAA:

*Construction of the original administration area of the ANU, now referred to as the OAA, commenced in the early 1950s and the complex served as the administrative headquarters and early research facilities, or laboratories, for the University. The OAA, while not containing the oldest buildings on campus, does contain the oldest buildings purpose-built for ANU use. It was designed to be a temporary complex of buildings to be replaced at some point in the future.*

*The complex was built in two phases, with the administrative buildings (Blocks A, B, C and D and two staff cottages) for the early University administration and the temporary laboratories which included the early Medical School and the Department of Geophysics (Blocks E, F, G, H, I and J). It was important that the siting of the temporary administration and research facilities be located away from the south of the ANU Acton Campus, where Brian Lewis' grand University design had proposed the majority of permanent buildings to be constructed. Together, these temporary buildings formed the earliest administration complex of the fledgling University, and served to properly establish the institution in the heart of the Capital. It was to be some time before the permanent facilities for the research schools would be constructed and ironically the temporary facilities continued to serve the ANU for more than 40 years.*

*Other buildings introduced later to the OAA complex include L Block (~~referred to as Caterina's Café and now proposed for removal~~), K Block and Fellow's Lane Cottage. L Block was transferred to the site in 1967 from its original position as the kitchen and dining block of the Old Hospital Buildings at Acton; K Block, a prefabricated transportable*

~~building was attached to the northern end of J Block in 1986; and Fellows Lane Cottage a transportable building, was brought to the site from the Australian Institute of Sport, Belconnen, in 2005.~~

This provides a snapshot of understanding of the OAA in 2012. In the context of the wider story of post-WWII buildings in Australia and the Canberra region, it is worth highlighting some key points in relation to the history of the OAA. This is done in the next section, Post WWII Reconstruction in the Canberra region.

## Description

A description of the OAA as contained in the 2012 site inventory record is as follows:

*The individual buildings in the OAA complex are basic prefabricated structure, typical of the post-World War II era. A Block and D Block were timber-framed structures clad in narrow rusticated weatherboard and fibro sheeting. D Block, the administration garage, was a long, timber-framed building clad with narrow rusticated weatherboards. Originally open to the north, it has been enclosed with weatherboards and fibro panels and windows have been added. Some alterations and repairs have been undertaken.*

*Blocks B, C, G, H, I and J, the research laboratory buildings, are elongated weatherboard-clad timber buildings and constructed using heavy reinforced concrete portal frames. The concrete frames were a substitute for steel which was in short supply at the time and the final form of the buildings relied heavily on the availability of materials. The buildings have a raised timber floor and corrugated-iron roof.*

*E and F Blocks, both extant, are elongated brick buildings with sash windows on the long facades. E Block, originally constructed as the Medical School store, was designed by Kenneth Oliphant. It has external portal frames on the upper half of the building. An adjoining weatherboard structure links E and F Blocks together. F Block, also designed by Oliphant as the Medical School Workshop, has a small brick incinerator and chimney on the eastern end which was a later addition to the building to dispose of the packing crates and other rubbish from the workshop.*

*G Block, originally referred to as the 'Rock Preparation Laboratories', consists of two attached small brick buildings. It is the only building of this 'double' type with its original roof, the roofs of the other 'doubles' having been filled and covered by single pitched roofs. H Block, a 'double' building, was built as the Physiology Laboratories, originally with a northern courtyard which has since been filled.*

*I Block, the Biochemistry and Microbiology Laboratories, and J Block, the Experimental Pathology Laboratories, are also 'double' buildings which have had been altered considerably including new roofs and extensions.*

*The old boiler house is a small brick building located to the west of D Block. Originally proposed to provide heating to A, B and C Blocks, the boiler house is currently being used for storage. The chimney was replaced in 1961 and the flue has since been removed.*

*L Block, Caterina's café, is a long weatherboard structure and displays many original features of the Old Hospital Buildings, of which it was originally a part. It has a large central room and a series of smaller rooms to serve as a kitchen, store and servery. A deck has been constructed on the western side in two stages and other alterations include the replacement of some of the sash windows, doors, new paint and the addition of modern facilities including air conditioning and lighting. It is proposed for removal and possible relocation.*

*K Block, constructed in 1986 and referred to as the 'MSID', is a transportable building which adjoins J Block to the south. The building is sympathetic in its massing to the other laboratory buildings, but the galvanised fenestration contrasts with the other OAA weatherboard structures.*

*Fellows Lane Cottage and the associated tennis courts are located to the north-western side of the OAA laboratory buildings and Caterina's café. They overlook the south oval of the Acton campus. It is located on the site of the original University tennis courts. These tennis courts were removed in the 1990s and replaced with new tennis courts constructed to the south of Fellows Lane Cottage. The only evidence of the earlier recreation period is a hit-up wall in the Fellows Lane Cottage carpark. The Fellows Lane Cottage is not like the OAA laboratories and is a single-storey flat roof box-like aluminium clad building.*

## Heritage status

The OAA is not individually listed on the Commonwealth Heritage List although it has been assessed in an ANU report as meeting the criteria at a high level ~~(excluding Fellows Lane Cottage)~~. The following statement of significance is from the 2012 ANU Acton Campus Site Inventory:

*The buildings of the OAA, as the first purpose-built administrative and research buildings of the ANU, provide insight into the early campus site planning, provision of research facilities and the evolution of architecture and landscaping at the ANU. The buildings of the OAA complex were the location of important scientific research undertaken by a number of significant early ANU researchers, especially Sir John Eccles. The use of prefabricated building sections and concrete trusses is indicative of the general shortage of building materials and labour experienced in the post-war years. They are an example of a prefabricated building precinct representative of those built by the Commonwealth Government in Canberra and the use of concrete portal frames is of note. The landscaping of the OAA includes relic native trees from original Yellow Box-Red Gum woodlands, and exotic plantings associated with occupation by the Garden and Grounds Division under Lindsay Pryor.*

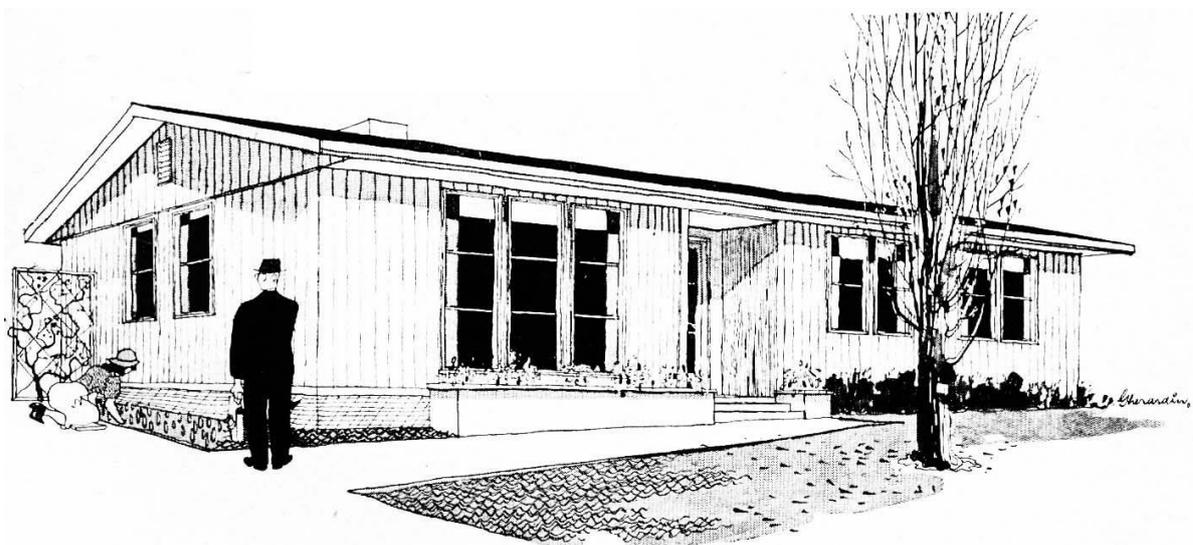
Note the discussion in this report of the general type of post WWII prefabricated buildings. The OAA was technically not a prefabricated building precinct, rather it was a precinct of temporary buildings including demountable or relocatable buildings and others constructed on site with some prefabricated components, including a characteristic feature of precast concrete portal structural frames.

## Australia's post WWII reconstruction and prefabricated buildings

### Post war building industry, prefabrication and new materials and systems

The Australian Historic Themes framework highlights the building of settlements, town and cities as a key theme in our history, with significant phases that have influenced the different regional stories and the heritage places that help to illustrate Australia's history (Australian Heritage Commission 2001). Widely researched and written about, Australia's post WWII reconstruction has been **recognized** as a significant phase in the life and fabric of our towns and cities (Powell with Macintyre 2017). It produced as a distinctive type of place, prefabricated buildings, as a response to severe shortages of building materials and labour in the post war building industry. As a result of these shortages, new structural systems and materials such as cement and concrete were more widely used as steel was in short supply (Cowen 1998, p.103). Prefabrication was not new to Australia, with examples before the war, but it was given a new lease of life by the demands of WWII and the post-war reconstruction period.

As a general type, the prefabricated building has been widely used in Australia in the post-war period. Prefabricated houses using factory-made components that are transported and assembled on-site to form the completed building were considered the way of the future. Housing was one of the main pillars of post-war reconstruction, as well as the anticipated high demand for industrial, commercial and public buildings after the war (Powell with Macintyre 2017). Government led the way, especially the Commonwealth Housing Commission and State Housing Trusts. Prefabricated houses were sourced from Britain, Western Europe and Scandinavian countries, with 10,000 imported into Australia in 1951 (Docomomo Australia Fiches 2004). Wartime factories were converted to peacetime needs, with the prefabricated steel 'Beaufort Home' produced in a converted aircraft factory in Victoria (Beaufort House Ainslie ACT, *Register of Significant Twentieth Century Architecture*). The Commonwealth Government used prefabricated buildings on many of its own large sites, such as Australian Defence Force bases and migration centres. At Amberley RAAF Base, for example, 30 timber Riley Newsum prefabricated cottages were imported from Lincoln in the United Kingdom in the 1950s in response to a lack of building materials and workmen in the immediate post war years. Econo Steel and Monocrete prefabricated building systems were also considered (Amberley RAAF Base Group, Amberley QLD, Commonwealth Heritage List).



The Riley-Newsum house, Australian Home Beautiful, April 1951, from Miles Lewis 2016 *The Australian Aftermath*

In southern NSW, the Snowy Mountains Scheme used prefabricated buildings imported from Europe from at least 1952. The 60,000 displaced people who migrated to Australia from post war Europe to work on the project were housed in 120 camps and temporary towns. By 1954 portable houses were being manufactured at nearby Cooma, transported on low loaders and assembled on site in one day. Several of these houses survive in Tumut (Lewis pers comm.).

Post war investigations into the building industry and building materials and labour shortages painted a very **somber** picture. The Department of National Development undertook a review of the Portland Cement Industry which highlighted a big rise in demand mainly from large infrastructure projects but also increasingly for housing and predicted serious shortages in some states (National Archives of Australia A692, D136 Pt I). The Commonwealth set up an Experimental Building Station in Ryde, NSW to test new building materials and systems, and also produced a draft code of practice and recommended standards for prefabricated houses (National Archives of Australia A461, A325/1/5 Attachment A).

In 1957, the Cement and Concrete Association of Australia were promoting the benefits of structural precast concrete as a replacement for steel, and they advised that 'a pre-cast, prefabricated concrete portal frame can be ordered from the factory as a complete entity, transported to site and erected with much speed' (The Cement and Concrete Association of Australia 1957).

### Prefabricated buildings in the Canberra region

Prefabricated and relocatable housing was widely used by the Commonwealth Government in the building of Canberra in the post WWII era. In 1947, Federal Cabinet approved 5-7-year construction program to build 3,500 houses in Canberra (Report by the Interdepartmental Committee on Canberra Development, National Archives of Australia A6006 1946/06/04; Wright 2000). The following year, Cabinet decided to recommence the program of transferring the public service from Melbourne to Canberra (Report by the Interdepartmental Committee on Canberra Development, National Archives of Australia A6006 1946/06/04; Wright 2000, p. 28).

From 1947, demountable houses for construction workers consisted of rebuilt Army huts as a form of temporary housing and war-time camp buildings transferred to Canberra were used in the early hostels. Disused sleeping huts at the war-time air station at Tocumwal in southern NSW were transferred to Canberra and erected in O'Connor and Ainslie to become known as the "Tocumwals". A prototype prefabricated house of steel built by the Beaufort aircraft factory was erected in Cowper Street Ainslie. In another experiment, a wooden prefabricated house was imported from Finland and erected in Ebdon Street, Ainslie, in 1948 (Wright 2000 pp.29-36).



Beaufort 'Steel House' Canberra 1947, National Library of Australia, Canberra. Reproduced from Peter Cuffley 1993 *Australian Houses of the Forties and Fifties*.

A new type of Monocrete house was also tested and built, with 100mm thick precast panels fitting between grooved precast posts. As early as 1945, the Commonwealth Department of Works began experimenting with concrete walls to overcome the shortage of bricks. In 1946, 100 of these concrete houses were constructed in Turner and O'Connor, then in 1948, another 45 in Yarralumla (Wright 2000, p32). However, by 1959 there had been 270 complaints of dampness from occupants of the 945 Monocrete houses at Canberra, built for the Commonwealth Housing Department. In some cases, a black fungus had grown and six houses had been evacuated. The parent company of Monocrete Pty Ltd, Concrete Industries (Aust.) Ltd began producing 'packaged factory buildings' using centre-pinned precast concrete portal frames and precast infill wall panels and purlins (Lewis, '7.08 Cement & Concrete: Forms & Systems' 2017).

Yet, as Bruce Wright writes, 'despite the international search for prefabricated houses that could be erected quickly, despite the resort to old service quarters and alternative materials, despite the mass import of construction workers, the building program fell further and further behind' (Wright 2000, p.37-38). Three years into the program to build 3,500 houses, only 700 had been built and there were 2,800 new applications for government housing registered. The construction of schools, shops, and other community facilities had also fallen far behind the needs of the population (Wright 2000, p.37).

Through the early 1950s, there were further attempts to increase the rate of construction of public housing through prefabrication and the use of alternative materials. The first timber Riley Newsum prefabricated houses were built at Duntroon in 1951, and then in large numbers in Ainslie, Deakin, **Narrabunda**, O'Connor, Mt Stromlo, Harman and Fairbairn. In all, about 500 Riley Newsum houses were built in Canberra between 1951 and 1955, of which many examples remain. They are easily identified by their distinctive external walls of vertically fixed weather board. Although fully fabricated and shipped to Australia in crates, they use traditional materials of timber frame and external cladding, plasterboard wall cladding internally and metal roof (Wright 2000; Leeson 2011).



Riley Newsum prefabricated homes being erected on the Canberra Plain in the early 1950s by AV Jennings Construction Company (Canberra) Pty Ltd: Peter Cuffley 1993 *Australian Houses of the Forties and Fifties*.

Tenders were let for more monocrete houses and a couple of 'no fines' concrete houses in Yarralumla. 'No fines' concrete was popular in the post war period, made with coarse aggregate which used less cement. The Commonwealth Government's Experimental Building Station at Ryde had tested it as a low-cost alternative to brick (Lewis '7.02 Concrete' 2017).

By far the majority of the prefabricated and demountable buildings erected in Canberra at this time were houses, or occasionally hostels. It is of interest, for example, that the allocation of huts from the RAAF Base at Cootamundra went to the ANU, Acton Offices, Westridge, the Brickworks, Forrest Hostel and Eastlake (National Archives of Australia, C22309, Pt I). Some observers decried the housing as sub-standard. The President of the NSW Master Builders Association declared that Canberra 'seemed to be nothing but temporary structures in preparation for the main building to be constructed in the new millennium' (Gibbney 1988).

Canberra's prefabricated and demountable houses and buildings form a distinctive type of place, though with considerable variation of features and materials. The story of prefabrication is an important part of the history of building the national capital and represents a significant phase in Canberra's development.

### The ANU's temporary buildings

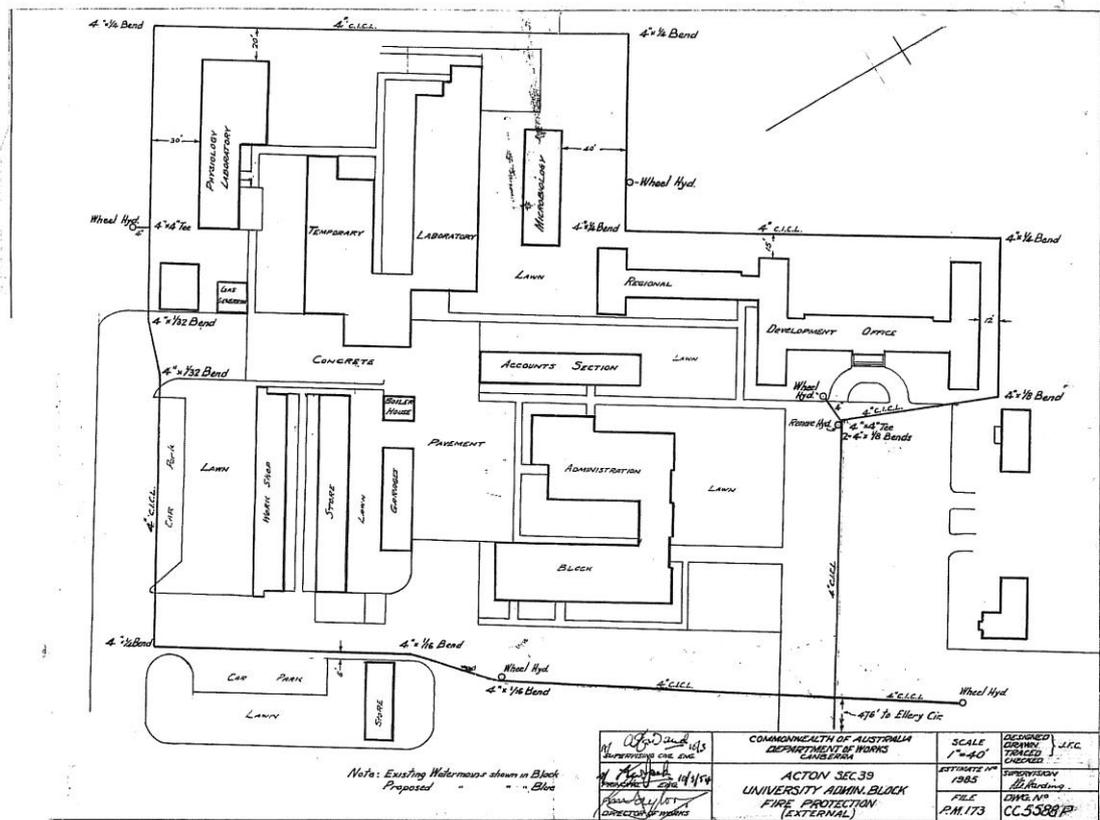
In the ANU Heritage Study Acton Campus the Old Administration Buildings are identified as being developed in Phase 2 (1948-1954) and characterized as the 'Age of Masters, Academic Advisers & Brian Lewis' (Godden Mackay Logan 2012). Brian Lewis, Professor of Architecture at the Melbourne University, prepared the first ANU 'masterplan' in 1948. Lewis' grand landscape plan of formal planted avenues held vistas overlooking the West Basin of the proposed Lake Burley Griffin and buildings designed along Griffin's water axis. It did not eventuate.

Conflict with the University's Academic Advisers (Florey, Oliphant, Hancock and Firth) and delays caused by lack of funding and material shortages during the early post-World War II period meant that little progress was made in university planning and design. A temporary building program was to provide administrative offices and basic research laboratories so that university staff could begin work while permanent buildings were under construction.

On 11 January 1947, the Buildings and Grounds Committee, a sub-committee of the ANU Interim Council, approved sketch plans of buildings proposed to be erected from the RAAF Officers Mess at Cootamundra. Three buildings were to be dismantled, transported to Canberra and re-erected

as administrative offices, store and general purposes, and conference and projector room. Two huts were also to be obtained for staff housing. At the same time, the committee was investigating obtaining pre-fabricated steel houses from Sydney and Melbourne (ANU Advisers on Building and Grounds, Minutes 11 January 1947-21 /December 1956, ANU Archives 196 /1).

The discussions of this committee over the next few years while the ANU was being established are a fascinating insight into the post war shortages of labour and building materials. In early 1950, the committee was worried about the acute shortage of bricks in Canberra and in May that year they had discussions with representatives of Elder Smith and Co Ltd about the possible use of 'no-fines' concrete blocks. The ANU Buildings and Equipment Officer was sent to the Commonwealth Experimental Building Station at Ryde in Sydney to further investigate this technology and as a result of these talks it was agreed that 'no fines' concrete blocks might provide the means of accelerating the ANU's building program. As the construction of University House was being held up by the shortage of bricks, Lewis suggested replacing bricks with 'no fines' concrete blocks for construction other than the outside walls. This led to a reduction of about 60% in brick requirements (Building and Grounds Committee, 11 May 1950, ANU Archives 196/1).



Site plan of OAA 1954 ANU Heritage Office

During 1950 the ANU also purchasing and erecting houses for university staff in Braddon, Barton, Turner and Forrest, including prefabricated houses of various types. There were discussions about inviting overseas contractors to tender for the John Curtin School of Medical Research (JCSMR) building, as it was a large project felt to be beyond the manpower available locally. The ANU wrote to 12 large building contractors in the United Kingdom asking if they were interested in tendering for university buildings. At that time a local shortage of carpenters was holding up

progress on the Research School of Physical Science (Building and Grounds Committee 17 August 1950, ANU Archives 196/1). The follow year, the committee agreed to the erection of temporary accommodation near the present administration block for the Departments of the Medicine school and Departments of Microbiology and Biochemistry. This would enable most of the Departments of JCSMR to begin work in Canberra well before the completion of the permanent building. Construction time was estimated at three months at a cost of 25,000 pounds excluding interior fittings, which would in any case be transferred to the new building when completed. The temporary buildings would be reused after the transfer of the Medical Department to its permanent laboratories (Building and Grounds Committee, 4 October 1951, ANU Archives 196/1).

The Commonwealth Department of Works and Housing supervised the construction of the temporary buildings for the ANU, though competing priorities on other projects seem to have caused many delays. Their records held in the National Australian Archives provide some indication of how the program was managed, though records are patchy. Local shortages meant that contracts for materials were often let to Sydney-based firms and factories, and trainees from the Commonwealth Reconstruction Training Scheme, set up to provide much needed training in the building trades after the war, were contracted alongside day labourers (Commonwealth Department of Works and Housing, Australian National University Temporary Buildings, National Archives of Australia, A292, C22309 Parts I & II).



Research Laboratories under construction, 1952. Note sections of portal frames ready to be erected. The Administration building is in the background. UN 88, ANU Heritage Office.

These temporary buildings were not fully prefabricated, such as the Riley Newsum or Beaufort cottages, as they were erected on site from a mix of locally sourced and factory produced components, rather than fully manufactured in a factory and then transported and assembled on site to form a complete building. The most notable component was the use of a structural system of precast concrete frames that was used in many of the buildings including all of the research laboratories. After WWII, precast concrete that could be mass produced became more

common, especially with the shortage of steel (Cohen 1998). Canberra-based architect Kenneth Oliphant drew up the plans for most if not all of the temporary buildings and local builder Karl Schreiner undertook the on-site construction (ANU 2011). Karl Schreiner had arrived from Austria in 1949 and is typical of the many post war migrants from Europe arriving in Australia in this period to start a new life (Gibbney, 1988, p. 240).



~~ANU Medical School (later John Curtin School of Medical Research)~~ Temporary Laboratories 1952. Note concrete portal frames. Department of Territories Pictorial Record of Canberra 1951-1953, ACT Heritage Library.

The precast system of concrete structural frames is described in detail in a report on building 3H by heritage architect David Hobbes (ANU 2013):

*Building 3H, like its neighbours in the Old Administration Area is built using a structural system of precast concrete portal frames, each c. 5500mm wide and spaced at 2750mm intervals. Each frame was cast in four pieces and erected on site by hand. The supports are 500 x 500mm off form concrete piers, into which the portals were set c. 300mm and then more concrete formed around their bases. The portals are joined at the apex by a 20mm steel rod, and otherwise appear to be braced by the timber roof purlins. The floors are conventional 100 x 75mm hardwood bearers supported on 230 x 230mm concrete / brick piers, 100 x 50mm hardwood joists and 150 x 20mm pine floor boards. External walls consist of prefabricated timber frames with timber-framed casement windows and rusticated pine weatherboards to below the sill level and on gable ends. Walls are painted cream and windows white.*

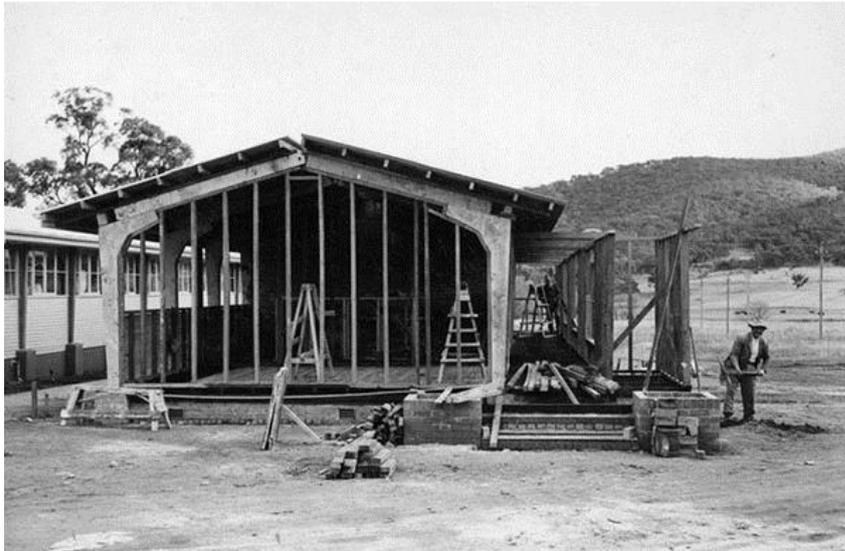
*Below floor level the building perimeter is enclosed by a concrete brick wall with natural Tyrolean cement render. The floor level is c. 500mm above the ground on the eastern (entry) end and c. 1200mm above the ground on the western end. The original roof consisted of corrugated asbestos cement roof sheeting on 100 x 50mm timber purlins bolted to the portals. The roof consisted of two gables with a central box gutter drained by several internal downpipes. The sheeting was later changed to galvanised steel. Anecdotal evidence suggests the box gutter was the*

*source of numerous leaks over the years, brought to a head by a severe hail storm in 2007. Following that event a new single gable roof with corrugated colorbond sheeting was constructed over the twin gables, completely covering the box gutter. The outline of the original twin gables can be seen at each end as overhanging soffits.*

*Internally the building is divided into two wings with a central corridor. There is a small store room adjacent to the front door with external access only. The corridor is defined by the prominent concrete portal frames. Internal walls are timber frame with fibrous plaster linings and simple 12mm splayed timber mouldings.*

*Doors are painted flush panel timber. The original ceiling was raked, following the portal line and lined by fibrous plaster sheet. This remains largely intact but is covered by a suspended panel system ceiling which was erected in 2007. The original radiator units are intact.*

Portal frames are typically seen in warehouses, barns and other places where large, open spaces are required at low cost and where a pitched roof is acceptable. Its use fits in with the emphasis by the Building and Grounds Committee on cheap practical buildings **utilizing** available materials. ANU's preeminent building designed by Brian Lewis, University House, was to have precast concrete frames on its covered ways, originally planned from staircase doors to the common room block, but these were not proceeded with (Pegrum 2001, p.18). The only other use of concrete structural frames at the ANU is in the original section of the Applied Mathematics Building, which was constructed in 1953 to accommodate the first Department of Geophysics at the ANU (ANU, 2011).



School of Physical Sciences under construction June 1953, note characteristic thickened haunch (moment joint) where column meets rafter. Canberra Times Collection, Australian Heritage Library.

Portal frames are a rigid structure, commonly made from welded steel. In the ACT, the former Transport Depot in Kingston was listed in the ACT Heritage Register in 2010 for its heritage significance as 'the engineering and construction of the 1940-41 fully welded rigid portal frame which exhibits a high degree of technical achievement and design quality, demonstrating new invention and application in Australia at the time. The design of the fully welded rigid portal

frame is of exceptional interest as the earliest notable example of a steel fully welded rigid portal frame in Australia' (ACT Heritage Register, Former Transport Depot, Kingston, 2010). The building was nominated by the Australian Institute of Architects (ACT Chapter).

A later Canberra office building, the 1968-70 NRMA House in Braddon, was also nominated by the AIA for its distinctive design through 'its use of a structural system of load bearing precast concrete wall panels supporting long span precast prestressed floor beams'. However, the ACT Heritage Council decided not to list the building as they argued that 'the use of precast structural systems was and remains a relatively common form of construction in the ACT and there is no evidence to suggest that the building style has been important in influencing the course or pattern of the ACT's cultural history'. The ACT Heritage Council also concluded that the extent of examples of buildings using pre-cast elements in the ACT has not been studied (*ACT Heritage Council, Statement of Reasons Decision not to provisionally register NRMA House in the ACT Heritage Register, 2015*).

Other research buildings constructed in Canberra at the time include a group of buildings of the former Council for Science and Industry Research (CS&IR). The Main Entomology Building in Acton is one of at least five scientific buildings established in the ACT by the Commonwealth up to 1950. Listed on the ACT Heritage Register for its significant association with the history of Commonwealth scientific research, the main 1950s building is of rendered and painted brickwork in the Inter-War Stripped Classical Style. Some of its original timber laboratory furniture exists in room G79 (ACT Heritage Register, CSIRO Main Entomology Building, Acton; pers. comm. Duncan Marshall, Heritage Architect). Buildings of the former CS&IR Experiment Station at Downer were also registered in 2011. As at the ANU, these buildings were erected slowly, due to constraints on funding and materials imposed by WWII. A small animal laboratory was constructed in 1952 following an agreement with the ~~ANU's~~ JCSMR. The buildings are single-story painted brick with corrugated roofing. They were used as the Downer shops and are now the Downer Community Association (ACT Heritage Register, Buildings of the former CS&IR Dickson Experiment Station, Downer).



Staff at work in the OAA 1950s, ANU Archives.

## Comparative analysis of OAA with the wider Canberra region

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### Class of place/type profile

The gathering of comparative information about the type or class of places similar to that being assessed can be of critical importance in assessing significance. One use of comparative assessment applies to places thought to be significant examples or developmental landmarks of their type. Through gathering comparative data it may be possible to define the physical characteristics of the type, its historical and geographical spread. Another use is to identify places that are truly representative of the type of place and its range of variations. In many situations work is ongoing to establish good comparative data for a wide range of place types. What can be achieved now is informed assessment based on the best available information (Pearson and Sullivan 1995).

### Demonstration of principal characteristics

The Commonwealth Heritage List criterion (d) requires a case to be made that a place has significant heritage value because of the place's importance in demonstrating the principal characteristics of a class of Australia's cultural places. It must meet the significance threshold test against this criterion. Assessment guidelines to applying the criteria indicate that criterion (d) has a focus on exemplary examples, with not all examples of a place being listed. It would also be generally expected that a place would demonstrate its principal characteristics through its fabric or features and these characteristics should be to a high degree complete, coherent, authentic and have high integrity (Australian Heritage Council 2017).

Comparing places, even those of the same general type, is not easy – how similar do the places need to be for a comparison to be valid? How do different regional settings add to the significance of otherwise similar places? These issues are taken up in discussion in the following sections.

### General type: post WWII prefabricated buildings

As a class of place, prefabricated buildings have been well-researched and documented in the Australian post-WWII period and are in general well-represented on State and Commonwealth Government heritage registers and the Australian Institute of Architects Register of Significant Twentieth Century Architecture. The same is true for Canberra, including listings of the Tocumwal, Riley Newsum and Beaufort houses on the ACT Heritage Register, and a comprehensive history of public housing written by Bruce Wright (Wright 2000), as well as a heritage assessment of Housing ACT properties by Philip Leeson Architects Pty Ltd (Leeson for Community Services Directorate 2011).

### Subtypes, discussion and analysis of OAA including building 3H

The OAA's portable buildings were military camp buildings from RAAF Cootamundra, used not only at the ANU but also other construction workers camps and hostels across Canberra. The Tocumwal houses, disused sleeping huts at the war-time air station at Tocumwal in southern NSW, are heritage listed as the Tocumwal Housing Precinct in O'Connor (ACT Heritage Register, Tocumwal Housing Precinct, 2004).

Many more survive at internment and migrant camps, such as Bonegilla Migrant Camp in Victoria, entered on the National Heritage List in 2007, Villawood Immigration Centre in

Villawood NSW, included on the Commonwealth Heritage List in 2004, and Department of Defence sites such as Amberley RAAF Base Group at Amberley, QLD and the Old Army /Internment Camp Group at Holsworthy, NSW. As a group, or subtype, these demountable buildings are well-represented on heritage registers.



Construction of the Accounts Annex Block B OAA 1951 UN89 ANU Archives

The remaining temporary buildings are now represented by building 3H. The planning of these buildings was supervised by the Commonwealth Department of Housing, with local architect Kenneth Oliphant and builder Karl Schreiner undertaking the design and construction. Oliphant had his office upstairs in the Sydney Building on the corner of East Row and Alinga Street and was one of only two architects (the other was Malcolm Moir) in private practice Canberra in the 1950s. Oliphant constructed many buildings in Canberra, although he specialized in domestic architecture. A study of his output by Peter Freeman concludes that Oliphant was most comfortable with traditional forms and materials, working in conventional and borrowed architectural styles such as Georgian revival and Interwar Spanish mission, using locally made red brick and terracotta roof tiles, with external walls of rough-cast plaster (Freeman 1996, Vol 1).

Oliphant and Schreiner worked together on one other non-residential building, the Dairy Farmers Co-Operative in Griffith. Entered on the ACT Heritage Register in 2004, the 1938 Dairy building is an example of industrial architecture in the Inter-War Functionalist style (ACT Heritage Register Dairy Farmers Co-Operative, Griffith, 2004). None of this body of work is comparable with the OAA buildings.

As represented by building 3H, the OAA temporary administrative buildings (excluding the ex-military buildings) and research laboratories were consistent in style and form, with the precast concrete portal frame providing a common structural theme across the group. Except in a general sense of representing a response to providing buildings quickly in a period of post war shortages of labour and materials, these temporary university buildings were not strongly similar to the prefabricated housing types of post-war Canberra. While they share some common materials, such as weatherboard external cladding, prefabricated wall sections and corrugated asbestos cement roof sheeting, the element of significant interest is the use of precast concrete portal frames as a structural system, which appears to be a technically innovative response to the shortage of steel and using instead readily available materials.

There is very limited research on the use of this structural system of using pre-cast concrete to construct a portal frame, in the immediate post war period. Research to date has not identified other examples on heritage registers for the Canberra region. Further research drawing on the expertise of structural engineers knowledgeable about this technology and its historical evolution is needed before a well-founded assessment of significance can be made.

Research by Miles Lewis indicates that these forms were being used widely from at least the 1930s in other materials, especially laminated timber (pers. comm.). However, the use of precast concrete to construct a portal frame with the characteristic rigid joint at the haunch (moment joint) appears to be innovative for the time in Canberra (pers. comm. Structural engineer, Ron Rogers, Member Australian Institute of Engineers; pers. comm. Heritage architect Graeme Trickett, Member Australian Institute of Architects). Further research is needed to provide a wider regional and national perspective.

## Potential significance under criterion (d) representative qualities

### OAA temporary buildings

Overall, the temporary buildings of the OAA are not significant as representing prefabricated building in the post-war Canberra region. The ex-military buildings were commonly used for housing and hotel buildings in Canberra and at large Commonwealth sites such as migrant camps and Defence force bases throughout NSW and Australia. The remaining administrative and research buildings are not truly representative of the Canberra region prefabricated housing styles such as the Riley Newsoms and the Beaufort Houses. While they contained some prefabricated materials, the most significant structural elements are the precast concrete portal frames that were used consistently in many buildings of the OAA group. This structural element is not representative of other Canberra prefabricated housing styles, even though concrete and cement was used in the Canberra Monocrete houses and in 'no fines' concrete block construction including at University House. No other examples of this early use of pre-cast concrete portal frames are entered on heritage registers for the Canberra region. The nearest examples are the Former Transport Depot with its very early steel portal frame and NRMA House for its use of concrete in innovative ways in an office building of the 1960s.

### Building 3H as extant representative example

While building 3H is representative of the non-military buildings, and provides a good example of the use of the structural system using precast concrete portal frames, this aspect is better considered under criterion (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.

### Interpretive capacity

Building 3H has strong interpretive capacity to tell the story of this first phase of temporary building to establish the ANU's administrative and research capacity. It can well illustrate the technical challenges and innovative response to building with new systems and materials in the period of post-war shortages.

The archival recording has provided a complete record of the wider OAA complex that will be available to researchers of the future.

## Findings and recommendations

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This report has found through comparative analysis of prefabricated buildings in the post-war Canberra region that the OAA does not have representative value but rather is likely to satisfy criterion (f) creative or technical achievement as demonstrating the early use of pre-cast concrete in an innovative way to engineer a structural system at time when steel, which was commonly used for this purpose, was in short supply.

This report recommends:

1. That the heritage assessment of the OAA Building 3H be revised and updated to reflect these new findings and to assess criterion (f) 'creative or technical achievement at a particular period'.
2. That further research is undertaken into the use of precast concrete portal frames in NSW buildings of this era to identify other examples where they potentially exist. This might be done through a news item on the NSW Heritage Advisors Network electronic newsletter.
3. That the ANU Heritage Office seeks the views of structural engineers through the Australian Institute of Engineers and their heritage committee. A site visit to inspect Building 3H and the remaining portal frames would be one way to approach this.
4. That the ANUA central records series and digitized plan series are searched to locate the Oliphant drawings and any other specifications for these buildings and especially 3H.

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Department of Capital Territory albums 'Pictorial Record of Canberra 1951-1953' – numerous images, see copies in the ANU Heritage Office research files for OAA.

Images from the Canberra Times Collection – 001554, 001557, 001457, 001436, see copies in the ANU Heritage Office research files for OAA.

## Functional Analysis – Building 3H, ANU Old Administration Area

### Background

Building 3H has been retained as an important example of the type of building which once occupied the area of the ANU known as the Old Administration Area (OAA).

Due to their poor condition, restrictions on reuse opportunities and contamination, the other buildings in this area have been demolished to make way for an open park providing a strong connection between the ANU College of Law, Menzies Library and the Coombs Building.

Having been unoccupied for several years, ANU has undertaken an analysis of potential uses for building 3H.

### Building History & Description

Building 3H was constructed in 1953 as laboratories for the Department of Physiology for the John Curtin School of Medical Research (JCSMR) and the Medical School Library. Designed by Kenneth Oliphant, the building is a long rectangular weatherboard structure which has been more recently partitioned into office spaces flanking a long central corridor. An open courtyard section on the northern side of the building was later infilled. With several years of use as office accommodation, the building has little integrity as laboratory spaces, however the overall building form with its concrete portal frame construction is easily recognisable.

### Current Conditions

The building has been used primarily as a storage facility in recent years following the departure of the ANU Occupational Health and Safety branch in 2011. The building is in fair condition, however identified contaminants will need to be removed and replacement of worn carpets paint and services will also need to occur prior to proposals for reuse being implemented.

### Analysis of Use Proposals

During the planning phases of this project, several options were floated for reuse of the building.

#### *Museum/Interpretive Centre*

Due to the widespread nature of the ANU and the disciplines here, there is not an acknowledged need for a central museum or interpretive centre on the campus. Museum style interpretation at ANU is undertaken by the individual research schools and faculties of the University in their individual buildings. There is also not a central collection in the University of historical artefacts or objects. The University archives hold a central collection of photographs and documents; however they undertake their own exhibits to interpret the archival collection. The artworks collection of the ANU is managed by the Drill Hall Gallery who undertake exhibitions and interpretation of the art collection.

The layout of the building, (small rooms flanking a central corridor), is also restrictive in terms of use for display purposes and visitors venturing in and out of small rooms would interrupt the flow of any exhibits. This option is not considered appropriate in the short term, but may be reassessed in the future if a need for display space is identified.

### *Office Accommodation*

In its current configuration, Building 3H is highly suited to open plan office accommodation, with substantial refurbishment work. The ANU College of Law has expressed interest in the refurbishment of the building to accommodate overflow office accommodation from their nearby buildings. This proposal meets several key objectives, including providing a sympathetic use which is consistent with the building's history as office accommodation (from the 1970s), ensuring like functions (College of Law) are kept in close proximity and providing an opportunity for the building's condition and current configuration to be conserved. This proposal also means the building will remain accessible to the ANU community.

### *Continued Use as a Storage Facility*

The building has been used more recently as a facility to store furniture and other effects awaiting the implementation of projects. The building's central location has meant this has provided easy access to storage for project managers and ensure the building's condition was maintained as it was accessed and cleaned regularly. While this is functional, it does not provide a sympathetic use for the building which is consistent with its heritage values. As the building can only be accessed by few people, it does not meet the requirements of the project's approval.

### *Reinstating Original Use - Medical Laboratories*

The building was constructed to house physiology laboratories and the Medical School Library. In line with its historic use, the building could be reinstated to its original use. This proposal is however considered to be unfeasible for several reasons, including its location apart from the ANU Medical School and the JCSMR, the recent refurbishment of the former JCSMR building included new physiology labs, and the stringent requirements and standards for modern laboratories which would mean that much of the original building fabric would be lost in the implementation of this use.

### **Preferred Option**

Based on the analysis of options, it is proposed that the building be used as office accommodation for the nearby College of Law. This option is easily reversible, require little change to the building fabric and provides convenient accommodation within the existing College of Law Precinct. The proposal is considered sympathetic to heritage values of Building 3H as it continues an administrative use of the area.