INDUSTRIAL HERITAGE ASSESSMENT—BOILERS, BOILER HOUSE AND CHIMNEY, MUDGEE HOSPITAL
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REPORT BY JCIS CONSULTANTS

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1 INTRODUCTION

Part of the proposed redevelopment of the Mudgee Hospital includes the demolition of all existing buildings on site, with the exception of the residence; and, as part of the redevelopment process, TSA Management, on behalf of Health Infrastructure, commissioned Eric Martin & Associates to undertake the preparation of a Statement of Heritage Impact.

The Statement of Heritage Impact noted that:

“The equipment in the Boiler House may have scientific value. Furthermore, the existing steel chimney stands as a monumental feature on site. Further research by an experienced archaeologist and/or industrial moveable heritage specialist should be done to understand the significance of the Boilers, and determine the scientific value of it…” (Eric Martin and Associates, Architects 2017:21)

and

“The industrial heritage value of the boilers and steel chimney of the Boiler House should be researched further by a specialist to determine significance and if found, retention and interpretation of those features be incorporated to the new development.” (Eric Martin and Associates, Architects 2017:22)

In March 2018 TSA Management (the project managers) on behalf of Health Infrastructure, engaged JCIS Consultants to undertake an assessment of the heritage significance of the boiler equipment and the steel chimney located in the Old Boiler House at Mudgee Hospital.

1.1 Property Description

The project study area is the former Boiler House and Chimney located at the Mudgee Hospital which is bounded by Church Street on the west, Meares Street on the south, Lewis Street on the east and a vacant site to the north (see Figure 1).

1.2 Heritage Listings

Mudgee Hospital has not been listed on the State Heritage Register or the Mid-Western Regional Council LEP (2012), although the Hospital part of the ‘Mudgee Heritage Conservation Area’ is identified under the LEP.

The Hospital building is, however, included under NSW Department of Health Section 170 Register but the project study area, i.e. the Boiler house, is not specifically listed.

Although the term “industrial archaeology” is mentioned in Eric Martin and Associates, Architects report, this does not mean the “relics” as defined under the NSW Heritage Act have been identified in the project study area.

1.3 Methodology

The methodology used in the preparation of this report is broadly consistent with the guidelines of the NSW Heritage Office and the principles outlined in the Australia
ICOMOS Charter for Places of Cultural Significance (the Burra Charter) and the ICOMOS-TICCIH Dublin Principals

1.4 Limitations

This report is based on historical research and field inspections. It is possible that further historical research or the emergence of new historical sources may support different interpretations of the evidence in this report.

The maps in this report are for informational purposes only, are not to scale and are not suitable for and were not prepared for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

The register searches undertaken for this report are current only to the date a particular register was searched. In the normal course of events, items are added to or removed from heritage registers and users of this report should check that sites have not been added to or removed from a particular register since the date the register was searched.

The Significance Assessment made in this report is a combination of both facts and interpretation of those facts in accordance with a standard set of assessment criteria. It is possible that another professional may interpret the historical facts and physical evidence in a different way.

A summary of the statutory requirements regarding heritage is provided in Section 5. This is made on the basis of our experience of working with the NSW heritage system and does not purport to be legal advice. It should be noted that legislation, regulations and guidelines change over time and users of this report should satisfy themselves that the statutory requirements have not changed since the report was written.

1.5 Authorship

This Industrial Heritage Assessment was prepared by Dr Iain Stuart of JCIS Consultants.

Dr Stuart has over thirty years of professional experience; initially with the Victorian Government where he worked at the Victoria Archaeological Survey for 10 years. After moving to NSW in 1993, Dr Stuart worked as Principal, Archaeology and Heritage Management, with HLA-Envirosiences, where he established and developed a successful consulting practice in Aboriginal and Historical Archaeology as well as the broader areas of Industrial Archaeology, Heritage Assessment and Management and Cultural Landscape Assessment. In 2005, he moved to Godden Mackay Logan heritage consultants, as a Senior Consultant. In 2006, he established JCIS Consultants in partnership with his wife, Jane Cummins Stuart.

Dr Stuart is one of Australia’s leading specialists in the area of industrial heritage and is on National Trust (NSW) Industrial Archaeology Advisory Committee and the Board of the International Congress for the Conservation of Industrial Heritage (TICCIH).
2 HISTORICAL BACKGROUND

This section briefly outlines the history of Mudgee Hospital and then discusses the Boiler House in more specific detail.

There have been a number of hospitals in Mudgee – an original building constructed in 1855 and a new Hospital constructed by Silas Warner, which opened with due pomp and ceremony in December 1875.

By the 1940's plans were afoot to replace this earlier hospital with a new modern Hospital. Judging by the newspaper reports in TROVE, there were a large number of country hospitals in the same position – outdated/over-worked facilities and the requirement to have new technology (such as X-ray) – but funding was limited to what could be raised locally, fees from patients, and grants from State and Local authorities ("The Hospitals", Northern Star Thursday 23 July 1931, p4).

To elaborate on the history of the post-War Mudgee Hospital, it seems from the newspaper reports that the Hospital was constructed in stages. After a considerable amount of agitation the Mudgee Guardian and North-Western Representative reported the local member, Captain William Fraser Dunn, as stating that "he had been advised by the Minister for Works that sketch plans and estimates of costs of the new hospital were forwarded to the Hospitals Commission on February 29" (Monday 27 March 1944, p 3).

A more formal announcement from the Minister was also made at the same time and reported in the Press:

"I am pleased to be able to advise you that it has been decided to erect a new hospital along the lines recommenced by Mr. Digby as a result of his survey of the hospital requirements and that I have been able to arrange the necessary funds for, and will be in a position shortly to start on, the first section of the new hospital.

In anticipation of being able to raise the necessary funds the Public Works Department was asked to prepare similar plans of the Proposal and such plans are now to hand and will be forwarded to the Board for consideration at an early date.

As a first section it is proposed to erect additional accommodation for the nursing staff, to house the ultimate number of nurses which will be required for the completed new hospital, and also to erect a new laundry and boiler house. Any work that will be carried out will conform to the ultimate scheme of development, in which provision is being made for a new hospital with a bed capacity of a hundred beds and the conversion of the old hospital into a home for aged and infirm people".

(Gilgandra Weekly, Thursday 23 March 1944, p2)

It seems that there was an overall site plan, that sections of the Hospital were designed separately, and that construction was similarly separated (see Figure 2). This may have been standard practice or it may have been a result of wartime shortages of trained personnel and, of course, funding.

Tenders for the new Nurses' Home were called in 1944 and, in 1946, it was noted that the "fine new nurses' quarters at the Mudgee Hospital are nearing completion (Mudgee Guardian and North-Western Representative, Thursday 21 March 1946, p 4)."
The Laundry and Boiler House were the next facilities to be constructed. The plans for the Boiler House indicate that the Boiler, Laundry and Mortuary were all designed by the Public Works Department as their officers signed off on the plans. The plans are dated to 1945 and 1946. The fitout of the boilers, and associated steam lines and pumps, seems to have been standard Public Works Department specifications checked by Consulting Engineers, W.E. Bassett and Associates of Barrack Street, Sydney, and implemented under their supervision by the Public Works Department.

Walter Eric Bassett was an engineer and former pilot in the RFC during World War I, who lectured at the University of Melbourne and, later, in aeronautical engineering at the University of Sydney. In 1928 he established an engineering consultancy, W.E. Bassett and Associates. In the inter-war period the consultancy worked on a number of major hospital projects and, post-World War II, “Bassett's office was responsible for building services in country hospitals and in numerous factories that sprang up or were relocated in the outer suburbs. W.E. Bassett also provided large, high-pressure, hot-water boilers for General Motors-Holden Ltd and the bagasse incinerator boilers for the Queensland sugar industry” (Hardy 1993).

The underlying concept of the boiler was to provide steam and hot water to the laundry and then also to provide steam to the Hospital building itself (it seems the Nurses' Home had its own boiler for room heating). This arrangement makes sense, as the laundry had an important role in providing clean – and in many cases sterile – items to the Hospital, and the proximity to the source of steam reduced the loss of heat due to the distance it had to travel in the steam pipes.

In February 1946, the Mudgee Guardian and North-Western Representative announced that Captain Dunn MLA had received a letter from the Minister for Health:

“I refer to your personal representations on behalf of the board of directors of the Mudgee District Hospital in regard to the invitation of tenders for the boiler house, laundry and mortuary block.

I wish to advise that the Commission has asked the Department of Public Works to accept the tender of W. Fuller, involving the total expenditure of £7766 for the building work in connection with this block. The Commission is meeting the full cost involved in the acceptance of this tender.

Tenders for the engineering services have not been invited; but it is anticipated that everything will be in readiness to invite tenders on 1st April, 1946, on the basis of an estimated expenditure of £8000.’

(Monday 25 February 1946, p3)

Tenders were called on 1st June, 1946 by the Public Works Department for “the Mudgee District Hospital—(Separate Contracts): (a) Supply, Installation, etc., of Self-supporting Steel Boiler Stack, (b) New Laundry Plant, (c) Steam Raising Equipment, etc.in Boiler Station.” (Government Gazette of the State of New South Wales, Friday 7 June 1946)

In August 1946 the construction industry journal, Construction, announced the successful tenderers for the Boilers and chimneys as follows:

Supply, delivery installation, testing and maintenance of steam raising equipment in the boiler station at Mudgee District Hospital, Mudgee, N.S.W.—Engineering and Combustion Co. Pty. Ltd, Kent Rd., Mascot, £4,275/-/-.
Supply, installation and maintenance of a self-supporting steel boiler stack at Mudgee District Hospital, Mudgee, N.S.W.—Engineering & Combustion Co. Pty. Ltd., Kent Rd., Mascot £795.

Construction did not start immediately however. The Mudgee Guardian and North-Western Representative reported:

“The contract for this building was let some months ago but the work has been delayed because of the shortage of bricks. Further delay has been caused because of the re-designing and priding to.

The building, which was to have an overall length of 116ft. 4in. and a total width at widest part of 50ft. 4in. will now have the length increased by the addition of 10ft. x 10ft. pump room.

Various alterations to the original plan include fuel bins, trading ramp, male and female change rooms and other structural alterations, involving an extra cost of approximately £2,000.

Now that bricks are available, the contractor is hopeful of making a fresh start on the work about 13th January, subject to final approval of the proposed variations stated above being received by that date.

(Thursday 9 January 1947, p 3)

Surprisingly though, fresh tenders were called for “Supply, Installation, etc., of a Self-supporting Steel Boiler Stack and Steam Raising Equipment, etc., in the Boiler Station, at Mudgee District Hospital” (Government Gazette of the State of New South Wales, Friday 6 June 1947). It is not clear why the tenders were called for but presumably they were as a result of alterations to the building.

Construction noted that the following tenders were accepted:

Supply and installation of a self-supporting steel boiler stack at Mudgee District Hospital, Mudgee, N.S.W.— W. Edwards, 52 Murriverie Rd., Bondi, £1150.
(Construction Wednesday 27 April 1949, p 13)

Steam raising equipment in the boiler station, Mudgee District Hospital — J. Sainsbury & Co., 281 Princes Highway, St. Peters, £7,901
(Construction Wednesday 1 June 1949, p 13)

There was a considerable price rise, and the call for fresh tenders may be due to changes in the scope of works or consideration that the successful tender may have been too cheap due to rising costs. Edwards seems to have been a small time contractor; however J. Sainsbury and Co were a more established engineering contractor (for example, the supplier of steam heating and other mechanical services to the King George V Memorial Hospital in Camperdown).

It is not really clear when the Boiler House was completed and began operations. At the Annual Meeting of the Mudgee District Hospital Board on the 15th September 1953, the Chair, Mr Pack, was quite critical of the slow construction of the Hospital project. It seems that the laundry building had been completed some two years earlier but not equipped and “Mr. Pack added that recently the chimney stack for the laundry boiler was erected and the boiler set into action for checking purposes. He hoped it would not be long before
the new laundry plant was placed into operation. ("Mudgee District Hospital Services Show Increases Despite Handicaps Under Which Staff is Working", *Mudgee Guardian and North-Western Representative* 17 September 1953: 5).

It is presumed that the Boiler House was operational by the time the new Hospital opened in October 1955.

The original boiler arrangement was for one boiler to be installed, but the design was for two boilers – presumably as a standby in case of failure or when a boiler needed maintenance. Plan PH 125-2/11 shows the installation of a boiler ex. Hornsby Hospital and dates to June 1957. Tenders were called for the "Overhaul, Repair and Be-install one (1) Horizontal, Under fired, Multitubular Steam Boiler" in late 1957 (Government Gazette, Friday 4 October 1957) which presumably covers the installation of extra boiler. Unfortunately no further information is currently available about who undertook the work.

The Eric Martin and Associates, Architects, SoHI provides little information about the use of the boiler and none on the laundry except that "The boiler equipment was made redundant in 2000" (2017:15).

2.1 Summary

To summarise – the Boiler house was designed in 1945 – 1946 as part of the larger Boiler – Laundry and Mortuary Block. The boilers were to provide steam and hot water for the Laundry. The successful tenderer for the building was W. Fuller. Construction, at least of the Boiler House, was delayed due to a redesign of the coal bunker arrangements and an additional pump room in late 1946. Fresh tenders for the boilers and the steel chimney were called in June 1947, and the tender for the Boilers and other equipment was awarded to J. Sainsbury & Co. of St. Peters, for £7,901 and for the chimney to W. Edwards, of Bondi, for £1150.

Construction was slow but the boilers seem likely to have been working by the end of 1953. In 1957-58 a second boiler was relocated from Hornsby Hospital and installed as an emergency standby. The boiler equipment was made redundant in 2000.
3 DESCRIPTION

The project study area was inspected by Dr Iain Stuart, from JCIS Consultants, on 4th April 2018.

The interior of the Boiler House was inspected and – where possible and safe – the boilers and associated items were inspected. In the absence of clear identification, the Boilers were named No 1 Boiler – which was the boiler first installed – and No 2 Boiler, which was the boiler relocated from Hornsby Hospital in 1957-58.

The orientation of the building was determined by the longest axis of the whole building (Boiler house, Laundry and Mortuary) and the description and dimensions are expressed with regard to this orientation.

After the site inspection relevant drawings of the Boiler House were obtained from Plan Services, Information Management Government & Corporate Services Department of Finance, Services and Innovation (see Section 7.1 for a list). The description of the Boiler House, therefore, includes information from these drawings.

3.1 Boiler House building

It is clear from the design plans that the Boiler House was designed and constructed as part of the larger Laundry and Mortuary buildings as a single entity. However, whereas the functions that these parts of the building were used for – namely Laundry and the Mortuary – were expressed by their interior subdivision and fitout, the Boiler House was physically different and, to some extent, the building's fabric reflected the nature of the function within.

The Boiler House is a brick building approximately 9.9m long and 15.5m wide and orientated approximately 11º from north. The roof of the Boiler House is pitched, with gable ends and ventilation louvers projecting approximately 0.6m along the main ridge – a feature which is carried on to the abutting laundry (now workshop) building. The roof of the Boiler House is 12.48m high which is notably higher than the roof of the Laundry and the Mortuary.

The eastern elevation of the Boiler House (Figure 3) shows an interesting form of brickwork – two sections were left unconnected to the surrounding brickwork so that they can be easily demolished to allow the boilers to be moved in and out as required (as shown on PH-125-35).

The southern and western elevations of the building show the ramp and how coal was brought into the Boiler House. The design of the coal handling system changed in late 1946 – one of the reasons for the delays in construction. Drawing PH 125/40 documents the new system which involved taking the coal to an upper level rather than bunkering it on the same level as floor of the Boiler House as shown in the 1945 design (e.g. PH 125-35).

3.2 Ramp, coal discharge and bunker facilities

The ramp was constructed from reinforced concrete and has a gradient of 15% over a short 6.8m section until it enters the Boiler House where the grade is level. Coal is
discharged into a v-shaped bunker through the floor of the bunker which is 3.084m above the ground floor of the Boiler House with coal being discharged by gravity into a small pit below the Boiler House floor.

As an aside, the usable space under the bunker was utilised as toilets and change rooms for both the Boiler House and Laundry staff. A hot water service to supply these rooms was located in the north-west corner of the Boiler House about half way up the wall.

The ramp and access to the top of the bunker was undertaken, but it was impossible to see into the coal bunker as the floor surface was covered with pigeon droppings and, in any case, seems likely to have been blocked off to avoid accidents. The toilets underneath are both intact. The hot water system is in situ.

3.3 Interior of the Boiler House

The interior of the Boiler House is a single open space (9.1m by 10m) containing two multi-tube boilers, stoking arrangements and flue to the steel chimney. There is also piping to take feed water to the boilers from the adjacent pump room and for steam to be distributed to the laundry and elsewhere.

Coal from the bunker was discharged into a small pit where was elevated 9.45m by a bucket lift to the top of elevator (8.7m from the Boiler House floor). From the top of the elevator coal was distributed into two smaller bunkers attached to the western wall and from there the coal was distributed by metal chute. Coal going to the southern or No 1 Boiler was distributed to the hopper of the mechanical stoker while coal going to the No 2 Boiler simply was distributed down a chute to the floor or a wheel barrow as the boiler was manually stoked. This chute was installed when the No 2 Boiler was installed (see PH125 2/11)

The boilers installed are both under-fired 2 pass multi-tube boilers. No 1 Boiler is the original and No 2, which is slightly smaller in dimension, was installed in 1957. According to King, this type of boiler was “immensely popular in Australia” (1949:16). “The furnace or firebox is located under the boiler [at the western end at Mudgee] and the hot gasses flow to the opposite end then back through the boiler tubes, located inside the boiler shell to the exhaust” (King 1949:17).

The furnace is constructed from firebrick and has a metal external covering. The brick section of Boiler 1 is 3.02m at the front and 3.35 at the rear and 2.36m wide. The structure is supported by two steel columns with one vertical and two diagonal braces on either side. The tops of the columns are linked by two horizontal steel beams. The boiler shell of No 1 Boiler is set into the brickwork and partially covered by steel sheeting. The diameter of the boiler is 1.62m and 4.01m long. The boiler shell sits about 15cm out from the brick section (see PH 125 2-1, 2-2 and 2-3)

Details of the set up for No 2 Boiler are similar but no plans are available.

No 1 Boiler was fired using an “Automatic Underfeed” mechanical stoker either made by Vale or called “Vale”. This sort of stoker was quite widely used to reduce smoke and provide a more economic use of fuel, but there is little information about “Vale”. No 2 Boiler was hand stoked. Both boilers had square access holes at the furnace end to remove ash and clinker.
At the eastern end both boilers have access ports to allow removal of ash, and they shared a common set of piping to a blowdown trough outside the building which allowed the boilers to be cleaned and for the steam and hot water to be emptied from the boilers for maintenance purposes.

No 1 Boiler has a large smokebox projecting from the boiler and then attaching to the exhaust flue. No 2 Boiler has a much smaller smokebox which again connects to a common exhaust system which vented up the external chimney. There are plans documenting the installation of a grit removal system (PH 125-2/12, 1975) but there is no evidence that this was installed.

Numerous steam and water pipes run from the boilers and then around the eastern and northern perimeter of the Boiler House (these would have taken steam into the Laundry).

### 3.4 Pump rooms

At the south-east corner of the Boiler House is an internal room containing the feed water pumps, and adjacent to this is another room of similar dimension but accessible only from an external door on the eastern elevation of the building. Both rooms are square, being 3.05 by 3.05m. This space was expanded in the new design (PH 125 3/8) in 1946 from one room to two.

The internal pump room contained an elevated water tank to store feed water and pumps and piping to allow feed water to be pumped to the boilers. Clearly this was an important function – as without feedwater the boiler would be damaged or even explode. The original tank may be still “in situ”; however, the pumping equipment and controls appear to be relatively modern.

The external pump room contains equipment but nothing in relation to the boilers.

### 3.5 Steel Chimney

The steel chimney is attached to a square base, 4.6m each side and 1.2m deep, of reinforced concrete. The base diameter of the chimney is 2.79 m and the chimney tapers upwards to 6.55m where the flue from the boilers joins and thereafter the diameter of the chimney is 1m. The chimney is 21.33m high.

### 3.6 Sub-surface Evidence

The evidence in the Boiler House is largely above ground. There are some steam lines shown as running underground on the historical plans, notably PH 125-2/44 of 1947, which shows a steam duct running from the Boiler House to the new hospital building. No evidence of this duct was observed during the inspection.

### 3.7 Conclusions

This section discusses some aspects relating to the site inspection and the significance of the Boiler House, boilers and chimney.
3.7.1 Industrial processes on the site

The industrial process on the site was the raising of steam for use in the hospital laundry and possibly elsewhere in the hospital. The process of generating steam involved fuel – coal – from the bunker and feed water, and the output was ash, smoke and steam. The generation of steam, however, cannot be seen in isolation but needs to be seen in the context of the workings of a hospital and the medical practices within which emphasise cleanliness and sterilising as a way of combating germs and infection. Thus, the Boiler House is part of an overall system of infection control and, as such, integral to the functioning of the Mudgee Hospital.

The inspection of the Boiler House revealed that most of the key elements of the industrial process are still extant and the process is legible in that the flow of materials, work areas and machinery involved are all intact. What is not intact is the adjoining Laundry and, consequently, the overall process of cleaning and sterilisation is not able to be interpreted by the physical evidence in the form of plant and equipment.

The nature of the process in the Boiler House – steam generation – is very common. All hospitals, big and small, had a steam plant to generate steam and hot water. A search of TROVE for tenders around this time indicates that the Public Works Department was tendering for the supply of multi-tube boilers and plant for hospitals such as Crown Street Women’s, the Lady Denison Home, Turramurra, Lismore Base Hospital, Royal South Sydney Hospital, and Wagga Wagga Base Hospital.

3.7.2 How typical was the Boiler and its installation?

The boiler and its installation were typical of others erected and put into use at the same time. There were standard multi-tube boiler designs developed by the Public Works Department, plans of which some are on the site at Mudgee, that show that boilers of a similar type were commonly used in Hospitals of inter-war and post-World War II period. It is likely that the Public Works Department adapted the standard plans to suit the requirements at Mudgee and that the Consulting Engineers, W.E. Bassett and Associates, checked the drawings and related calculations to make sure that they conformed to the standard specifications. There is no evidence that W.E. Bassett and Associates undertook anything more in relation to the boilers. Advertisements in Trove indicate that the Public Works Department looking for suppliers of underfired multi-tube boilers for various projects on a regular basis.

3.7.3 Did the boilers and Boiler House change over time?

As discussed above, the major change to the Boiler House was the addition of the elevated bunker and the additional pump room in 1946 which delayed the construction.

In 1957 No 2 Boiler was relocated and installed at Mudgee. This was a less significant change than might be imagined as the design for the Boiler House had, from the start, envisaged the installation of a second boiler.

Thus, the Boiler House, boilers and associated equipment and the steel chimney remain much as they would have been when the plant opened sometime in late 1953 or early 1954.
3.7.4 Asbestos

As was common at that time asbestos cement was used as insulation for both the boilers and the steam pipes. The inspection of the Boiler House suggests that the asbestos is still “in situ” and, of course, this poses a considerable risk once it is disturbed.

3.7.5 Comparison

As noted above this type of boiler was commonly used throughout Australia in the mid-1900’s. However, as new types of boilers were introduced and in particular as hospital laundries became regionalised, underfired multi-tubed boilers gradually went out of service. The question of how many remain either in service or, like the Mudgee ones, out of service is a difficult one to assess.

The first issue is that the comparison has to be made between similar types of boiler – not Cornish or Lancashire (typically to be found in earlier industrial settings such as mines or saw mills) or Water Tube (typically used in large industrial plans such as power stations) – and of a similar size. A search of the State Heritage Inventory was made under the keywords of “Hospital” (over 900 items) and then a separate search under “Boiler” (14 items). The results did not identify examples of specific boiler types, largely because machinery such as boilers typically is not identified in heritage listings and also because most heritage studies lack a focus on industrial heritage.

Consultation was undertaken with Mr Brassil of Extent Heritage, a colleague of the author on the Industrial Heritage Committee of the National Trust (NSW). Mr Brassil, like the author, has a practice covering industrial heritage. We both agree that the underfired multi-tubed boilers were quite common in industrial sites but could not identify specific comparative examples. We also agreed that it would be unlikely that the boilers were unique but that they were becoming increasingly rare as they came out of service.

A survey of country hospital sites in NSW to examine remaining boiler plant would, no doubt, provide more substantive information but would be outside the scope of this project.

It is, therefore, provisionally concluded that the boilers were a common installation in the late 1940s but other surviving examples of the type are becoming increasingly rare.

3.8 Summary

The results of the inspection, along with a detailed examination of the original site plans, have indicated that the existing fabric is as specified in the plans. The key elements of the industrial process are still extant and the process is legible in that the flow of materials, work areas and machinery involved are all intact.
4 HERITAGE SIGNIFICANCE

4.1 Principles

The concept of ‘cultural significance’ or ‘heritage value’ embraces the value of a place or item which cannot be expressed solely in financial terms. Assessment of cultural significance endeavours to establish why a place or item is considered important and why it is valued by the community. Cultural significance is embodied in the fabric of the place (including its setting and relationship to other items), the records associated with the place and the response that the place evokes in the community.

The project study area is part of the overall Mudgee Hospital site and will be assessed as an element of that site rather than being assessed as a separate item in isolation.

4.2 Basis for the Assessment

The NSW Heritage Manual, published by the NSW Heritage Office and Department of Urban Affairs and Planning, sets out a detailed process for conducting assessments of heritage significance. The Manual provides a set of specific criteria for assessing the significance of an item, including guidelines for inclusion and exclusion. The following assessment has been prepared in accordance with these guidelines.

The NSW Heritage Council has adapted specific criteria for heritage assessment, which have been gazetted pertinent to the Heritage Act 1977 (NSW). The seven criteria upon which the following significance assessment is based are outlined below:

Criterion (a) an item is important in the course, or pattern, of NSW’s cultural or natural history;
Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history;
Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;
Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;
Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history;
Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW’s cultural or natural history; and
Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW’s cultural or natural places or cultural or natural environments.
Each criterion of the NSW Heritage Manual is considered in regard to the history and physical evidence of the study area. The exact definitions of the criteria are also included. As the criteria of the Burra Charter are very similar to the Heritage Manual, they are not considered separately.

4.3 Overall significance of Mudgee Hospital

The overall significance assessment has been reproduced from the Statement of Heritage Impact by Eric Martin and Associates, Architects (2017:19-20).

4.3.1 Criterion A

An item is important in the course, or pattern, of NSW's cultural or natural history.

“The Mudgee Hospital has been part of the history of Mudgee which is manifested in the use of the site rather than individual buildings. It is not considered to be of significance in cultural history of NSW.”

4.3.2 Criterion B

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history.

“The Hospital has not been associated with any people who have great significance to NSW cultural history.”

4.3.3 Criterion C

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;

“The Hospital has replaced the original hospital building in 1875. It was constructed in 1955 and has changed over the years through various additions and alterations. There is limited aesthetic value in the current hospital as it represents typical architectural design and details of its period with facebrick walls and hipped roof construction.

The Boiler House has some potential for scientific values for its existing equipment to demonstrate the boiler systems and their mechanics to supply steam to contribute to the functions of hospitals.

The Cottage, built in 1938, has some potential aesthetic values which have been compromised by later additions and alterations and more recently, due to lack of use and maintenance.”

4.3.4 Criterion D

An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons.
“The Hospital has had no specific or special association with any particular community group but has been an important part of the Mudgee community”.

4.3.5 **Criterion E**

*An item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history.*

“The Hospital is unlikely to yield little information that will contribute for NSW cultural history”.

4.3.6 **Criterion F**

*An item possesses uncommon, rare or endangered aspects of NSW’s cultural or natural history.*

“There is nothing rare, uncommon or endangered with the existing hospital.”

4.3.7 **Criterion G**

*An item is important in demonstrating the principal characteristics of a class of NSW’s cultural or natural places or cultural or natural environments.*

“The Hospital is an array of buildings and styles and does not demonstrate any particular class or type of building.”

4.4 **Summary Statement of Heritage Significance**

“The Mudgee Hospital is of local significance as it has been an important part of the Mudgee community since 1875 and is of historic and social importance to the people of Mudgee.

The Hospital replaced the original hospital building constructed in 1875. It was built in 1955 and has changed over the years through various additions and alterations. There is limited aesthetic value in the current hospital as it represents typical architectural design and details of its period with face brick walls and hipped roof construction.

The Boiler House has some potential for scientific values for its existing equipment to demonstrate the boiler systems and their mechanics to supply steam to contribute to the functions of hospitals.

The Cottage, built in 1938, has some potential aesthetic values which have been compromised by later additions and alterations and more recently, due to lack of use and maintenance.”

(Eric Martin and Associates, Architects 2017:20)

4.5 **Assessment of the Boiler House, boilers and associated equipment and the Steel Chimney**

As the Significance of Mudgee Hospital has been assessed by Eric Martin and Associates, the Boiler House, boilers and associated equipment, and the Steel Chimney have been assessed in relation to that assessment using the Grading of Significance

4.6 Grading of Significance

Different components of a place may make a different relative contribution to its heritage value. Loss of integrity or condition may diminish significance. In some cases it may be useful to specify the relative contribution of an item or its components. The grading criteria are as follows:

<table>
<thead>
<tr>
<th>Grading Criteria</th>
<th>Description</th>
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<tr>
<td>EXCEPTIONAL</td>
<td>Rare or outstanding element directly contributing to an item’s significance.</td>
</tr>
<tr>
<td>HIGH</td>
<td>High degree of original fabric. Demonstrates a key element of the item’s significance. Alterations do not detract from significance.</td>
</tr>
<tr>
<td>MODERATE</td>
<td>Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.</td>
</tr>
<tr>
<td>LITTLE</td>
<td>Alterations detract from significance. Difficult to interpret.</td>
</tr>
<tr>
<td>INTRUSIVE</td>
<td>Damaging to the item’s heritage significance.</td>
</tr>
</tbody>
</table>

(NSW Heritage Office 2001, Assessing Significance)

Within the overall assessment of Mudgee Hospital as being of Local significance, the boilers, Boiler House and Chimney would be graded as being of High for the following reasons:

- There is a high degree of original fabric present on the study area;
- The fabric demonstrated a key element of the item’s significance – that is the generation of steam and hot water to support the cleaning and sterilising function of the Hospital’s activities; and
- There are no alterations that detract from the project study area’s significance.

What this means is that the project study area (Boilers, Boiler house and Chimney) makes a high contribution to the overall heritage significance of Mudgee Hospital assessed in the Statement of Heritage Impact by Eric Martin and Associates, Architects.
5  STATUTORY OBLIGATIONS

The nature and level of relevant statutory controls to protect cultural heritage within the project study area have not been discussed in the Eric Martin and Associates’ Statement of Heritage Impact (2017).

In respect of the project study area for this report, we note that the site is not identified as an item of heritage value on NSW Heritage Register or the heritage schedule of the Mid-Western Regional Council LEP 2012 although the site is part of the ‘Mudgee Heritage Conservation Area’ identified under the LEP. The site is, however, included under the NSW Department of Health Section 170 Register.

5.1  Industrial Archaeological remains

Although the project study area may contain an underground element which could be argued as being “archaeological remains” these would not be considered to be archaeological ‘relics’ as defined by the Heritage Act 1977 (NSW) as amended.

The reason for this is that not all remains that would be considered “archaeological” are relics under the Act. Advice given in the Archaeological Significance Assessment Guidelines is that a “relic” would be viewed as a chattel and the Guidelines comment:

“In practice, an important historical archaeological site will be likely to contain a range of different elements as vestiges and remnants of the past. Such sites will include ‘relics’ of significance in the form of deposits, artefacts, objects and usually also other material evidence from demolished buildings, works or former structures which provide evidence of prior occupations but may not be ‘relics’.” (2009:7).

The likely underground remnants within the project study area have the nature of being a fixture and a work and, therefore, would not be considered to be archaeological “relics”.
6 NATURE OF THE PROPOSED WORKS

This section discusses impact of the proposed redevelopment of Mudgee Hospital.

6.1 The Current Proposal

The Eric Martin and Associates’ Statement of Heritage Impact identifies the following impact of the proposed redevelopment of the Mudgee Hospital:

“The proposed development at this stage relates to the proposed demolition of all hospital buildings on site. The new hospital building is proposed at the southwest corner of the hospital site with new public car parking located off Meares Street. Ambulance for emergency services and staff car park will be accessed off Lewis Street. The Helipad will remain in its current location. The existing vegetation along the northern end of Lewis Street is being retained”.

“The retention of buildings is not a feasible or prudent option given the condition and risks associated with the existence of hazardous materials including asbestos. To remove the asbestos would require substantial demolition. The existing materials and the condition would require substantial adaptation and upgrading to make it useful for current demands and requirements which means that it is not effectively feasible or viable” (2017:21-22).

The Statement of Heritage Impact concludes that demolition of virtually the whole site “will have a minor impact on the heritage value of the site, and the broader Mudgee General Conservation Area” (2017:22).

6.2 Impact of the Proposal

The question of whether the Boilers, Boiler house and Chimney are to be removed is unclear. It appears that the proposed development is to demolish and remove these items but the Statement of Heritage Impact comments “Retention and/or interpretation of the equipment and steel chimney should be considered as part of the new development” (2017:22).

While the Boilers, Boiler house and Chimney are considered to make a high contribution to the overall heritage significance of the Mudgee Hospital (which is considered to be of Local heritage significance), the Boiler House and boilers are heavily contaminated with asbestos cement insulation and lagging. Even if the proposed redevelopment of Mudgee Hospital did not proceed, the asbestos contamination would need to be remediated on public health grounds. As the plans of the boiler show, asbestos was used inside the boiler mountings and so remediation would inevitably require dismantling and, probably, removal of the boilers.

Given this issue around public health, retention of the Boilers, Boiler house and Chimney does not seem warranted. In order for the items to be retained as part of the new development they would still need to be remediated. The cost involved in remediating the items while retaining their heritage significance would seem difficult to justify given their level of significance.
There is also the question of on-going maintenance costs if the building were retained as it would have no function within the redeveloped Mudgee Hospital.

Finally it does seem odd that the Boiler house would be considered for retention when the Laundry building – which it is part of, both in functional and physical terms, is not to be conserved.

Relocating the boilers would be a possible option but the asbestos contamination issue would still be significant as the seal and joints within the boilers were lagged with asbestos fibre lagging and these would have to be removed, the boilers decontaminated and reassembled. From a heritage aspect removing the boilers would also reduce their heritage significance which relies on their context as part of the remains of a system.

There is also the question of where would the boilers go to? While a local history museum might take them, they would have to have appropriate resources to ensure their on-going conservation and display. Unfortunately the record of boilers in the care of local museums and similar societies is not good too often they are left outside to rust and corrode.

From an industrial heritage perspective relocation of boilers is not a realistic option.

An evaluation of options leads to the conclusion that the contamination issues surrounding the Boilers, Boiler house and Chimney are such that demolition is inevitable in order to remediate the health risk from the asbestos inside the items. Therefore demolition is supported as the inevitable outcome for these items with a consequential loss of heritage values.

A strategy to mitigation the loss of heritage values is proposed in Section 7
7 MEASURES TO MITIGATE IMPACT

The following works will mitigate the impact of the proposal on the project study area.

The Eric Martin and Associates report recommended that, if redevelopment proceeds, “A photographic archival recording of the buildings (excluding 1970s residence) should be prepared prior to demolition” (2017:20).

This would seem an appropriate approach to mitigation of the impact of the demolition of the project study area. The precise methods for the archival recording are outlined below. These follow Heritage Division guidelines and current industrial archaeological practice.

7.1 Requirements for Archival Recording

The first guideline to be complied with in undertaking an archival recording is, “How to Prepare Archival Recording of Heritage Items” issued by the NSW Heritage Office in 1998. The guidelines identify the level of recording to be undertaken depending on the nature of the items and their heritage significance.

The Mudgee Hospital’s level of significance is assessed as being “Local”. This means that Guideline A: Items of Local Significance would be appropriate. As the project study area is considered to be an industrial archaeological site, consideration should be given to the matters listed in Guideline E Items involving Industrial Archaeological Evidence as may be required in an archival record.

The guidelines specify what information should be in an archival recording, including such things as site history, location and base plans, locations for photographs as well as requiring for industrial archaeological sites that “archival recording of significant industrial archaeological items or sites should only be prepared by an experienced industrial archaeologist”.

The guidelines suggest photographic recording methods which, while valid in 1998, have been superseded by the later Guidelines for Photographic Recording of Heritage Items using Film or Digital Capture which date from 2006. It should be noted that suggested recording methods in 1998 are now technically obsolete; for example digital cameras had only just entered the market in 1998, and digital cameras have now largely replaced film.

The second guideline to be complied with is NSW Heritage Office Guidelines for Photographic Recording of Heritage Items using Film or Digital Capture, (NSW Heritage Office 2006).

The NSW Heritage Office Guidelines for Photographic Recording of Heritage Items using Film or Digital Capture (NSW Heritage Office 2006) were last revised a decade ago and, since then, many aspects of the guidelines have become technologically obsolete. In particular, certain types of film are out of production and the capability of digital cameras has rapidly advanced. Therefore, while the guidelines for photographic method have been utilised, some aspects of the guidelines cannot be followed.

According to the NSW Heritage Office Guidelines for Photographic Recording of Heritage Items using Film or Digital Capture, (NSW Heritage Office 2006), the following are required in a photographic record: A Description of Methods; Catalogue Sheets;
Photographic Plan(s) and Images (which are to be printed on archivally-stable paper with archivally-stable inks).

The images must be captured using the camera’s RAW format (different cameras and manufacturers have different RAW formats as RAW is the data directly from the camera’s sensor) and stored in an archival format. Adobe DNG format, which is an open source format that stores RAW and EXIF information, is the accepted archival format for photographic images.

The completed archival record should be lodged in an appropriate archive such as The State Library of NSW, the Heritage Division Library, and the Local History collection of the Mid-Western Regional Council.
8 CONCLUSION

The project study area, namely the Boiler House, boilers and Chimney were designed in 1945-1946 as part of the larger Boiler, Laundry and Mortuary Block. The boilers were to provide steam and hot water for the Laundry. The successful tenderer for the building was W. Fuller. Construction – at least of the Boiler House – was delayed due to a redesign of the coal bunker arrangements and an additional pump room in late 1946. Fresh tenders for the boilers and the steel chimney were called in June 1947, and the tender for the Boilers and other equipment was awarded to J. Sainsbury & Co. of St. Peters, for £7,901 and for the chimney to W. Edwards, of Bondi, for £1150.

Construction was slow but the boilers seem likely to have been working by the end of 1953. In 1957-58 a second boiler was relocated from Hornsby Hospital and installed as an emergency standby. The boiler equipment was made redundant in 2000.

The results of the inspection, along with a detailed examination of the original site plans, have indicated that the existing fabric is as specified in the plans. The key elements of the industrial process are still extant and the process is legible in that the flow of materials, work areas and machinery involved are all intact.

Technologically the underfired multi-tubed boilers were common items on industrial sites in the 20th Century but not are increasingly rare as they are decommissioned.

Within the overall assessment of Mudgee Hospital as being of Local significance, the boilers, Boiler House and Chimney have been graded as being of High as there is a high degree of original fabric present in the study area which demonstrates a key element of the item’s significance – that is, the generation of steam and hot water to support the cleaning and sterilising function of the Hospital’s activities. There are no alterations that detract from the project study area’s significance.

What this means is that the study area of this report (boilers, Boiler House and Chimney) makes a high contribution to the overall heritage significance of Mudgee Hospital which assessed as being of Local significance.

An evaluation of options for the retention of the times on the Mudgee site leads to the conclusion that the asbestos contamination issues surrounding the Boilers, Boiler house and Chimney are such that demolition is inevitable in order to remediate the health risk from the asbestos inside the items. Therefore demolition is supported as the inevitable outcome for these items with a consequential loss of heritage values.

8.1 Recommended Mitigative Measures

The proposed redevelopment of Mudgee Hospital will involve the demolition of all items in the project’s study area. The recommended mitigation measures are an archival recording of the Boiler House, boilers and associated items, and the Steel Chimney following the following Guidelines:

- How to Prepare Archival Recording of Heritage Items” (Heritage Office1998), and
- Guidelines for Photographic Recording of Heritage Items using Film or Digital Capture, (NSW Heritage Office 2006).
The completed archival record should be lodged in an appropriate archive such as The State Library of NSW, the Heritage Division Library and the Local History Collection of the Mid-Western Regional Council.
9 BIBLIOGRAPHY AND REFERENCES


ICOMOS – TICCIH, 2011, 'Joint ICOMOS – TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes « The Dublin Principles ».


NSW Heritage Office 2006, Photographic recording of Heritage Items using Film or Digital capture.

NSW Heritage Branch Department of Planning and Heritage Council of New South Wales (2009). Assessing significance for historical archaeological sites and 'relics'. Parramatta, Heritage Branch, NSW Dept. of Planning.

9.1 Maps and Plans

The following plans of the Boiler house were obtained from Plan Services, Information Management Government & Corporate Services Department of Finance, Services and Innovation.

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### Industrial Heritage Assessment: Boilers, Boiler house and Chimney — Mudgee Hospital

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10 MAPS, PLANS & IMAGES

Figure 1: Location of the project study area at Mudgee Hospital

Figure 2: Site Plan showing New Hospital and Project Study Area (1947)
Figure 3: Boiler house, eastern elevation, showing how the brickwork was arranged so it could be removed to allow boilers to be moved in or out.

Figure 4: Detail from Plan PH 125 35 (1945) showing eastern elevation prior to the extra pump room being added (note the design to allow the boilers to be removed).
Figure 5: Looking North into the top of the coal bunker

Figure 6: Detail from Plan PH 126-2_6 showing bunker and stoker arrangements
Figure 7: Looking at the wall of the boiler room showing the coal elevator and chutes to the small elevated bunkers attached to the northern wall.

Figure 8: Chute taking coal to No 1 Boiler.
Figure 9: Automatic stoker to No 1 Boiler

Figure 10: Detail from Plan 125-2_1 showing the installation of No 1 Boiler, looking at the southern elevation
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Figure 11: Detail from Plan 125-2_5 showing the layout of the Boiler House with one boiler installed and space for a second boiler

Figure 12: Space between the Boiler House wall and the southern side of No 1 Boiler