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RUDDERS BOND STORE / FORMER SYMONDS FACTORY

Comparative Analysis

Final

August 2016

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PROJECT NAME: 53-57 Campbell Road Comparative Analysis

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1 INTRODUCTION

1.1 Project Description

EXTENT Heritage Pty Ltd has been commissioned by CPB Dragados Samsung Joint Venture to prepare a Comparative Analysis for the Rudders Bond Store, also referred to as the Former Symonds Factory. The purpose of the report is to establish significance values prior to the proposed demolition of the building. Alongside this assessment an archival recording of the site has also been prepared that serves as a permanent record of the place prior to that work being undertaken.

1.2 Approach and Methodology

The methodology used in the preparation of this report is in accordance with the principles and definitions as set out in the guidelines to *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* and the latest version of the Statement of Heritage Impact Guidelines (2002), produced by the NSW Office of Environment and Heritage.

The preparation of this report has included:

- Historical research, including access to the Ralph Symonds collection held at the Mitchell Library;
- Establishment of significance values for the building based on previous heritage assessments and updated to include comparative values;
- Heritage Database searches for comparative items;
- Review and update of previous relevant comparative studies.

1.3 Limitations

The historical overview provides sufficient historical background to provide an understanding of the place in order to assess the significance and provide relevant recommendations, however, it is not intended as an exhaustive history of the site.

This report has been prepared as a desktop study and relies on existing documentation and photographs.

1.4 Authorship

The following staff members at EXTENT Heritage Pty Ltd have prepared this report:

[redacted] Heritage Advisor

1.5 Ownership

The subject site is owned by TNT Rudders.

1.6 Heritage Listings

The subject building is included on the following heritage registers:

- City of Sydney Council Local Environmental Plan 2012: *Warehouse 'Rudders Bond Store' including interiors* (#I1405)

The building is included on the LEP as an item of Local significance, however recent assessments of the building have assessed it as being of significance at a State level.

1.7 Site Identification & Location

The subject property is located at 53-57 Campbell Road and the intersections of Lots 101 and 102 DPs 845651 and 871150. It is bounded by Campbell Road to the north-east and Burrows Road to the south-east. The area to the north of the Rudders Bond Store contains Sydney Park, while the streetscapes to the south of the area are characterised by warehouses.

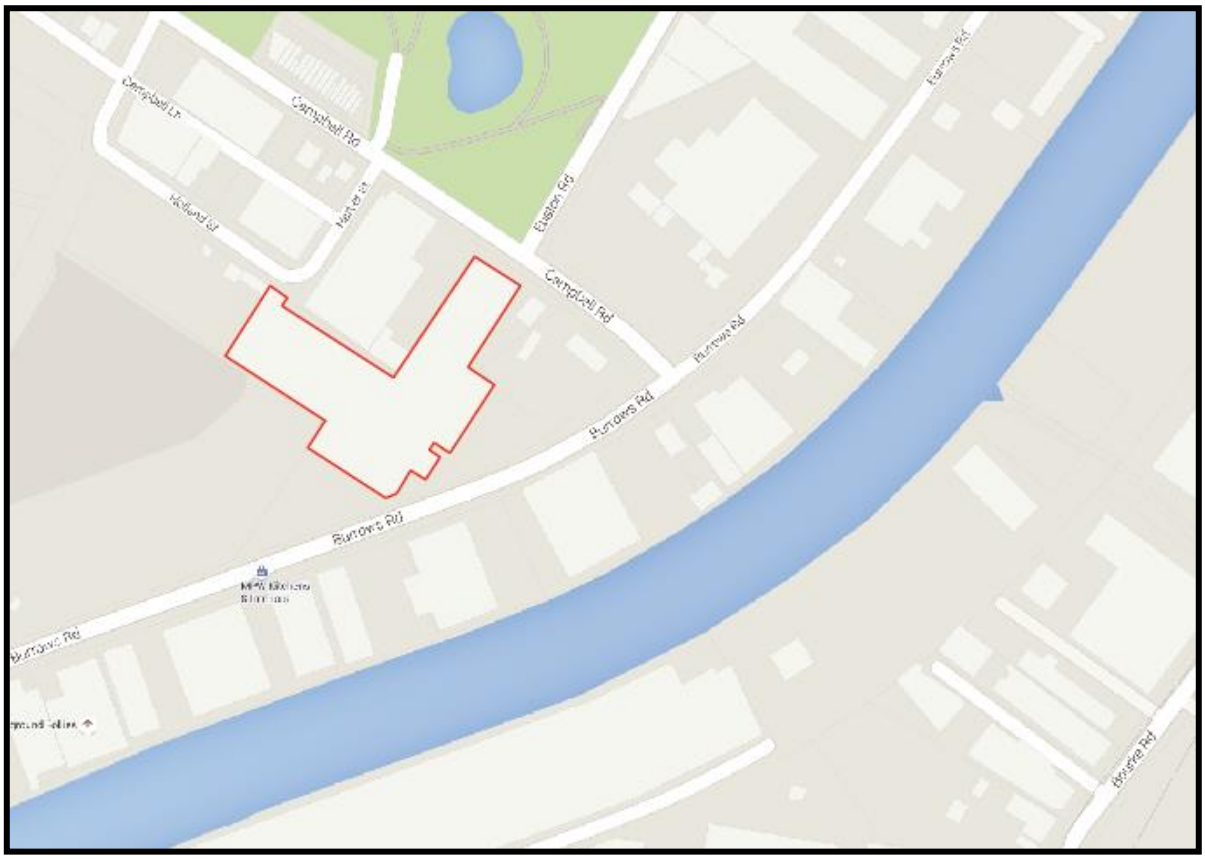

Figure 1 - Map indicating location of 53-57 Campbell Road Building outlined in red (Google Maps29/2/16).

Figure 2 - Aerial view with subject property (Source: Dept. of Lands SIX viewer 29-2-16).

2 HISTORY

A number of previous histories have been prepared in relation to Ralph Symonds and Australian timber structures. This report makes use of the information included in these reports. The following historical overview has been principally sourced from:

- Nolan, G. (1994). *The Forgotten Long Span Timber Structures of Australia*, A Thesis for the Degree of Master of Architecture Department of architecture University of Tasmania Launceston.
- Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
- Honchcroft, Y. (1987). *Company History of Ralph Symonds Australia Ltd* (unpublished), Mitchell Library, Sydney.

2.1 Local History

St Peter's Cooks River Anglican Church was consecrated in 1839 and was the third Anglican Church in Sydney. When St Peters became a municipality in 1871 it had 500 residents, and seven years later built its own town hall. Before the district's famous brick works St Peters had been home to around 20 dairies. Juggling the demands of these two quite different industries proved a trial for the council and in 1888 it set up a Standing Committee on Dairies. The council finally disappeared in the spate of local government amalgamations in 1949. [1]

Brickmaking gradually overtook dairying as the major local industry and council regulated for the construction of tall chimneys to reduce air pollution. One of the most significant brickmakers was Josiah Gentle, who began operating in Waterloo and during the 1870s ran a number of brick works in St Peters. His Bedford Brick Works was established beside the Princes Highway in 1893. In 1933 the firm was later taken over by Austral Bricks, one of the largest brick companies in NSW, and continued operations on this site until 1979. The area is now Sydney Park, with part of the brick works and its distinctive chimneys preserved on the corner of Sydney Park Road.[2]

2.2 Site & Building Development

The former Symonds Warehouse is located at 53-57 Campbell Road, St Peters. Various histories of the site provide a conflicting timeline of events. Given the conflicting accounts found in the documentation, this history primarily relies on aerial photographs and historic maps and plans to present a history of site development.

It is presumed that Ralph Symonds acquired the site at some stage in the early 1940s. A 1943 aerial photograph (Figure 3) shows a large rectangular building on the site fronting Campbell Street, perpendicular to Euston Road. The building looks to have an arched roof and appears to be an igloo style of building and records indicate in may have been used for aircraft works. There is evidence of arched timber in the yard to the west indicating Symonds may have had a presence here at this time.

[1] Whitaker, A. M., (2002), *Pictorial History of South Sydney*, Kingsclear Books, pp. 99.
[2] Whitaker, A. M., (2002), *Pictorial History of South Sydney*, Kingsclear Books, pp. 99.

By 1949 this building has been demolished and a new factory along Holland Street constructed (Figure 5). This is also shown in a plan dated 1950 (Figure 6). Reportedly this first section was built c1946 at which point the Symonds factory is believed to have begun operating at the site. A fire also occurred here in 1946. A 1951 aerial photograph (Figure 7) shows the Holland Street pavilion extended to near the juncture with Woodley Street.

A plan dating c1953 (Figure 8) shows the Holland Street building along with another pavilion added fronting Campbell Street, the establishment of which is shown in building surveyors plans dated 1956 (Figure 9). The full building at its largest extent and as it stood for approximately 40 years is shown in a 1970s aerial photograph (Figure 11). This is the layout of the the building as it was documented in 1994 (Figure 12), however at some stage since then the original c1946 section at the west end of Holland Street has been removed, leaving the c1953 sections of the structure. This can be seen in the recent aerial photograph (Figure 13).

Shortly after construction was completed, the council granted permission for the premises to be used for general storage by Rudders with the property being leased to them by Symonds.[3]

Figure 3 - 1943 aerial of the subject site showing building fronting Campbell Street (red outline) and arch timber in yard (red arrow). (Source: SIX Maps, NSW Land and Property Information)

[3] AECOM Australia Pty Ltd (November 2015) *WestConnex New M5 Environmental Impact Statement*

Figure 4 – The Austral pit which was shared by The Central Brick & Tile Co Pty Ltd. The first building on the subject site can be seen in the background (indicated by red arrow).

Figure 5 - 1949 aerial photograph of the subject site. Former Campbell Street building is no longer extant (green oval). New building can be seen on Holland Street (red outline). (Source: Sydney Historical Atlas).

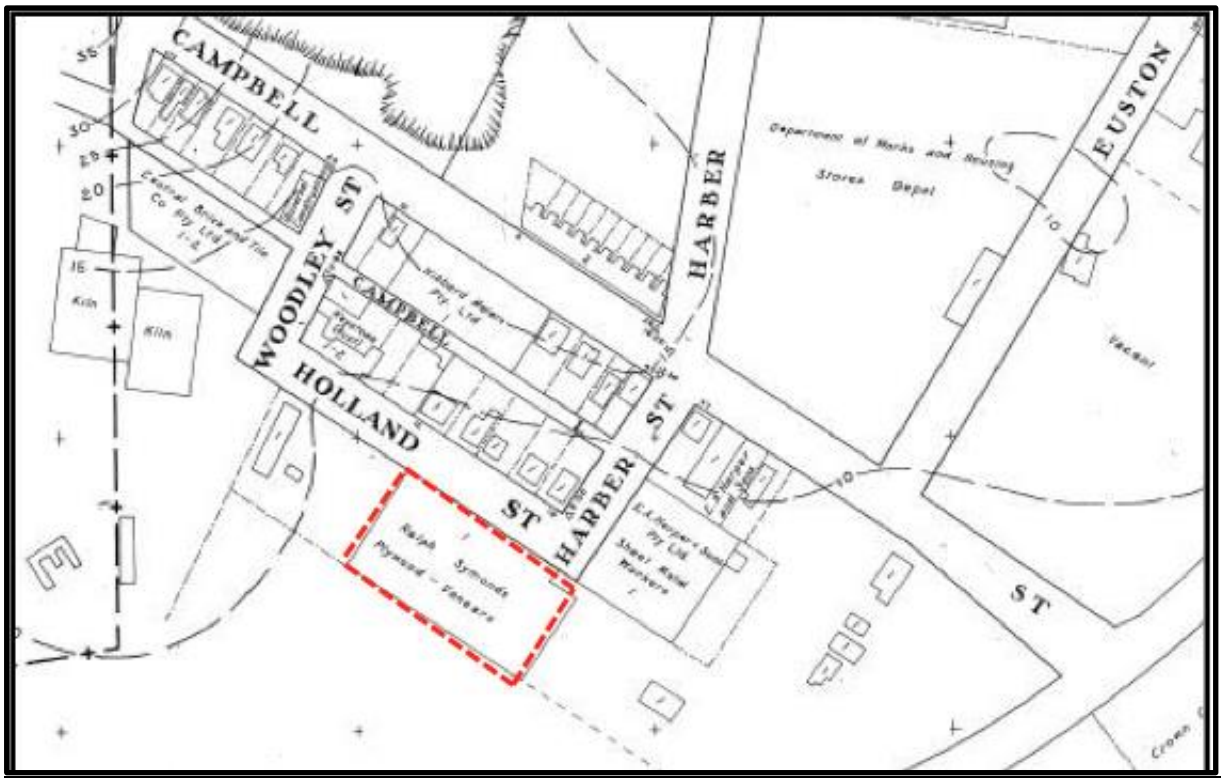

Figure 6 - Excerpt of Civic Survey, c1950 – Alexandria West (Source: City of Sydney Archive). Ralph Symonds Factory highlighted (red outline).

Figure 7 - 1951 aerial photograph of the subject site. Holland Street pavilion has reached its extent (red outline) and Campbell Street site is still vacant (green oval).

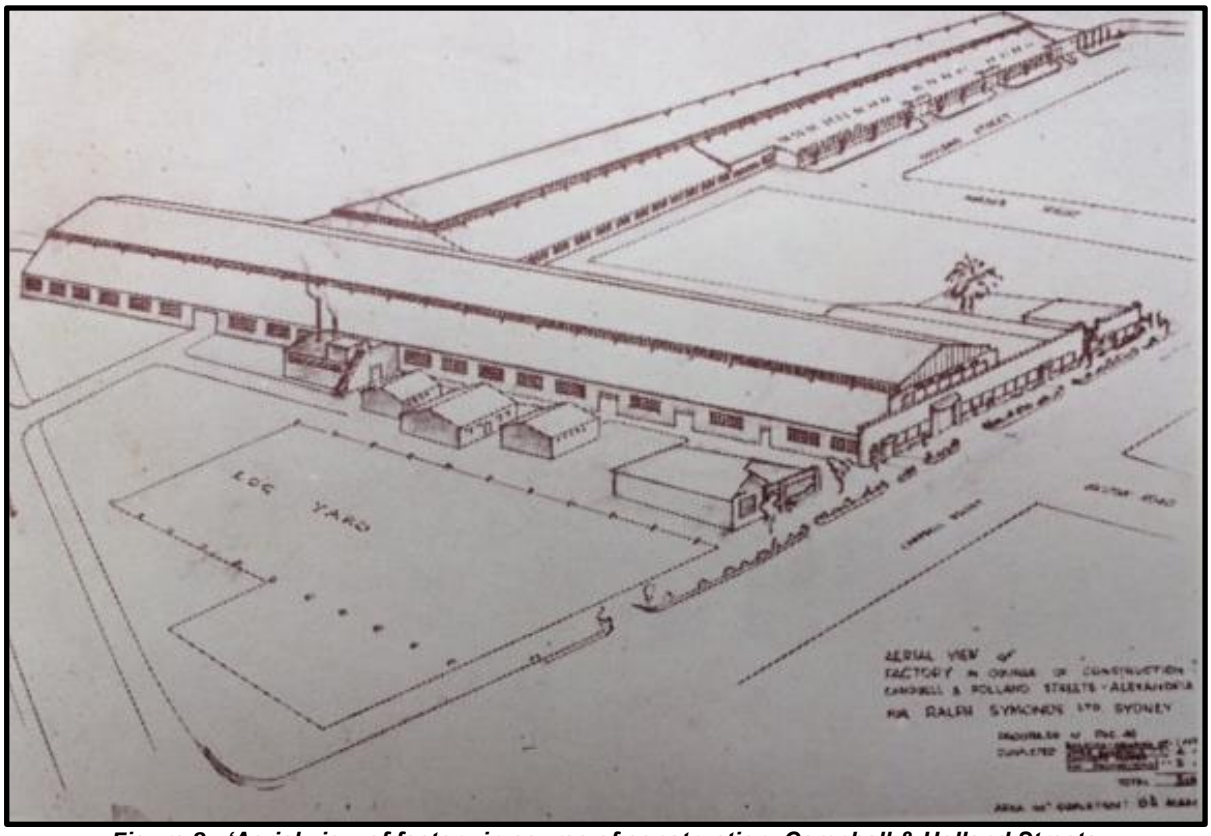

Figure 8 - 'Aerial view of factory in course of construction, Campbell & Holland Streets – Alexandria for Ralph Symonds Ltd, Sydney' c1953. (Source: NSW State Library).

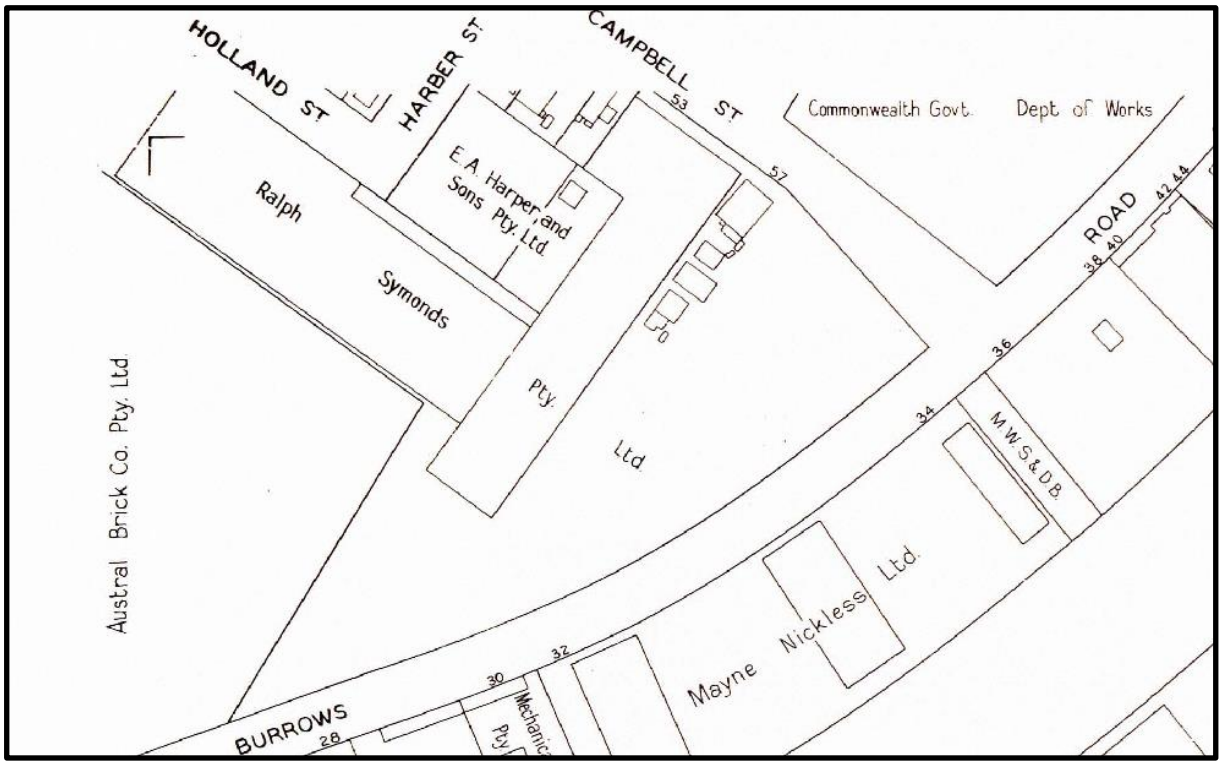

Figure 9 - City Building Surveyors Detail Sheets, c1956, Sheet 26. Shows Ralph Symonds Pty Ltd with building fronting both Holland and Campbell Streets. (Source: City of Sydney Council Historic Maps).

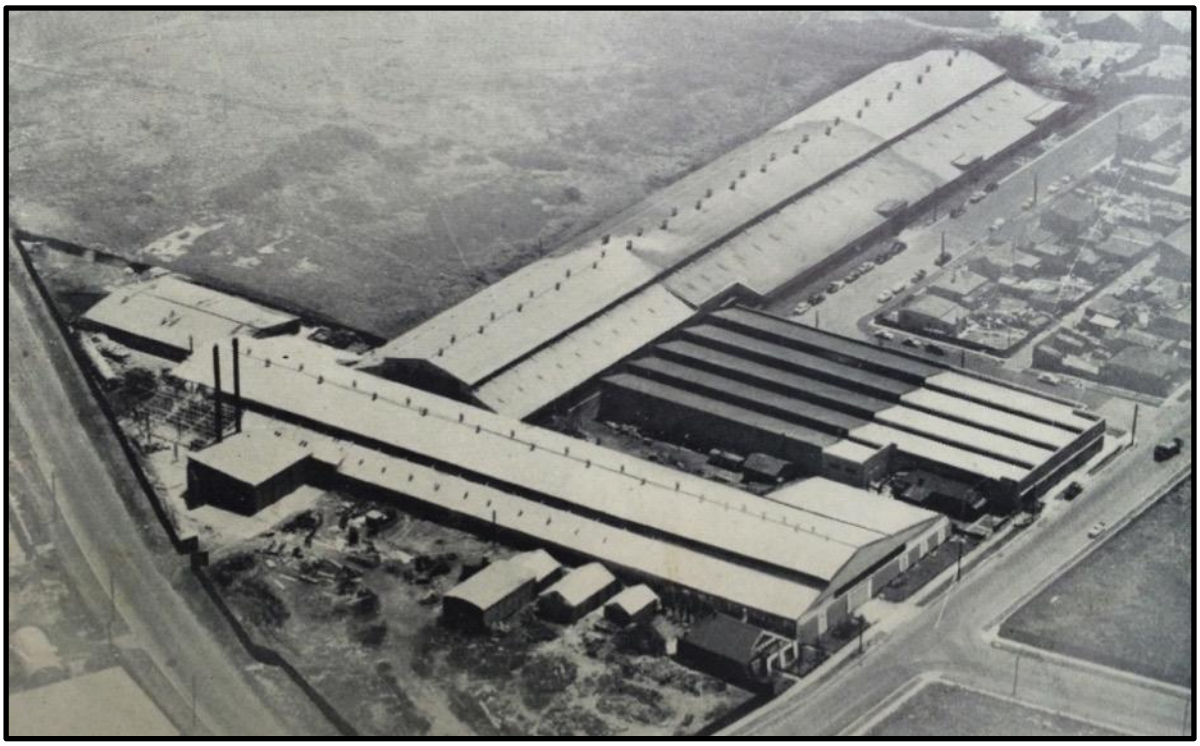

Figure 10 – Undated photograph of Symonds St Peters factory (now Rudders Bond Store), showing full structure as per 1950s layout. (Source: Ralph Symonds promotional material, NSW State Library).

Figure 11 - Aerial photograph, 1970. Shows full building as per early 1950s planned layout. (Source: NSW Department of Lands).

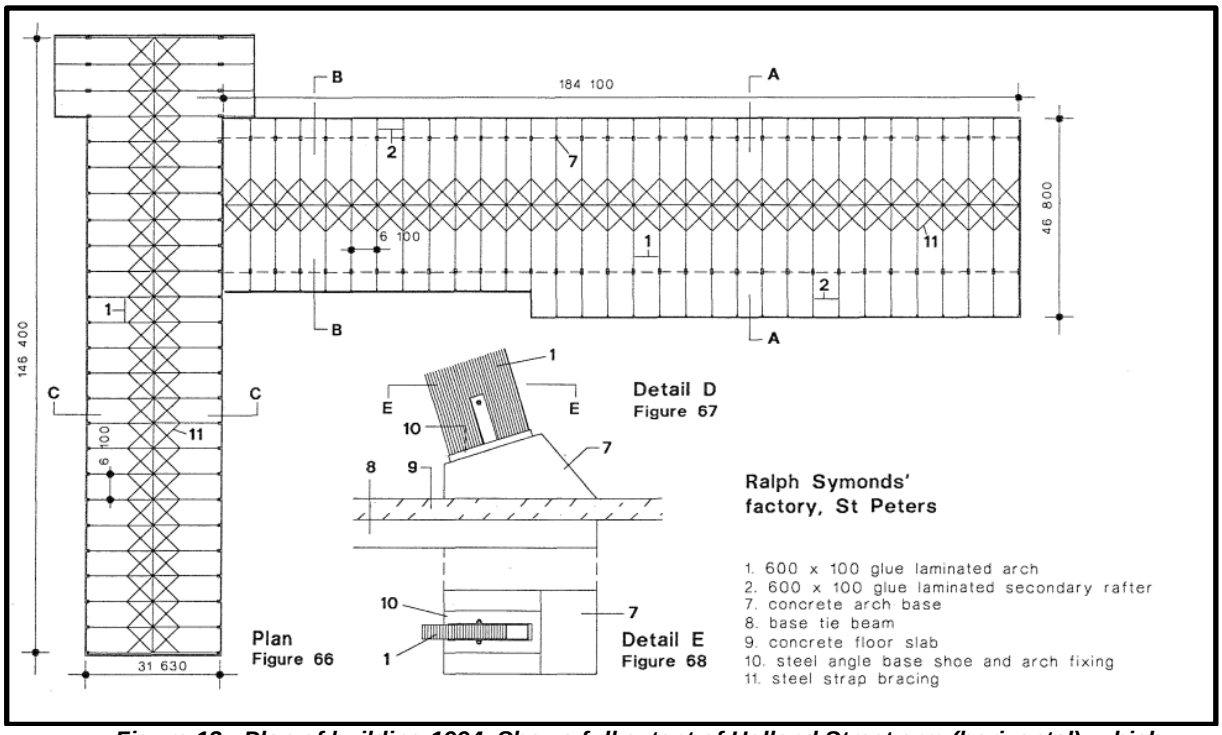

Figure 12 - Plan of building 1994. Shows full extent of Holland Street arm (horizontal), which has since been shortened. (Source: Nolan, 1994).

Figure 13 - Subject site 2016. Shows current extent of the building. The Holland Street arm has been shortened, reducing it in length by half. (Source: Nearmaps, 2016).

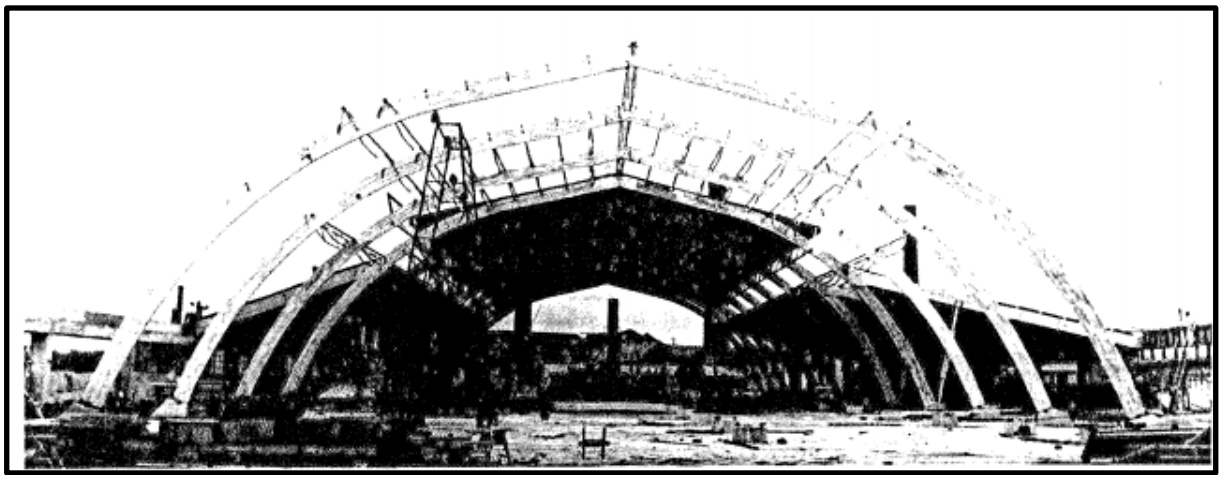

Figure 14 - Arches under construction at Symonds St Peters Factory (Holland Street section), c1946. (Source: Nolan, 1994)

Figure 15 – South end of the Holland Street section, Symonds St Peters Factory, c1946. (Source: Nolan, 1994).

2.3 Ralph Symonds and his Company

Ralph Symonds commenced his lifelong association with timber fabrication in 1924 with the foundation of Standardised Furniture at Marrickville in Sydney, which specialised in sliced veneer faced plywood panels.[4] By 1942 he had registered as a proprietary company and became a public company in 1950. He moved into the design of machines for the manufacture of large sheets and incorporated these into his factories where he produced some of the first durable and fire-resistant plywoods.[5]

In 1935 Symonds rented a factory in Moreley Avenue, Rosebury and set it up with machinery for his wood manufacture. By 1943 he had added to this to have other premises at Lilyfield as well as occupying two small spaces on Regent Street, Redfern.[6] Symonds then began construction on his own factory building at St Peters (Rudders Bond Store), which commenced operations in 1946, though the Morley Avenue plant continued to be the main site of operations until 1958.[7]

Symonds was renowned as a master of plywood who specialised in doing things that most people said could not be done. He went bankrupt more than once and built a series of one-off timber and plywood structures. He regarded these projects as essential aspects of product development and company promotion.[8] Symonds maintained "that glue laminated factories were most economic for spans greater than 90ft (27.4 m). Anything less than that and it was cheaper to build in steel."[9] Symonds was reportedly considered a larrikin and clashed with the dominant engineering establishment.[10]

The shortage of steel during WWII created an ideal environment for the use of laminated timber and it was widely used until steel became more available following the close of the war. The advantages of laminated timber were quick construction times and the ability to create wide spans, which was suited to the war-time conditions. Symonds applied this technology for the construction of buildings as well as other projects over the WWII and post-war eras.

Thought to be Symonds' first building venture is the extant former National Springs igloo building at 52-54 O'Riordan Street in Alexandria, constructed in 1941 and used for the engineering and construction of aircraft during the war.[11] This building is credited with being the first use of glue laminated timber for large-scale building construction in Australia.

In 1959 the Symonds company moved to a new structure purpose built by Symonds at Homebush Bay. The new factory covered an area of over 14 acres and made use of a waterside location for transport. It consisted of three parallel rows of tied three pin glue laminated arches. The arches were glue laminated on the ground slab of the building and erected by Symonds' own work force. The immense structure took only 18 months to construct. Each row of arches is at 52 m centres while

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[4] Cochrane, J. *Ralph Symonds Pty Ltd and the Sydney Opera House*, Faculty of Architecture, The University of Newcastle.
[5] Wyatt, Ken (2000) Ralph Symonds Plywood Factory. In: Lowe, PG (Editor); Hill, RF (Editor). Second Australasian Conference on Engineering Heritage, Auckland: Proceedings. Auckland, N.Z.: Institution of Professional Engineers New Zealand: 243-248.
[6] Honchcroft, Y. (1987). *Company History of Ralph Symonds Australia Ltd* (unpublished). Mitchell Library, Sydney.
[7] Honchcroft, Y. (1987). *Company History of Ralph Symonds Australia Ltd* (unpublished). Mitchell Library, Sydney.
[8] Cochrane, J. *Ralph Symonds Pty Ltd and the Sydney Opera House*, Faculty of Architecture, The University of Newcastle.
[9] From an address entitled Facts & Fallacies of Timber Design; Reported in Australian Timber Journal; January, 1957; p. 103. In Noland G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[10] Nolan G. (October 1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[11] AECOM Australia Pty Ltd (November 2015) *WestConnex New M5 Environmental Impact Statement*

each arch spans 43 m. Glue laminated rafters span between. There are 46 arch bays in each row at 7.6m centres. This gives a building over 156m wide and 350m long. This is the largest timber building constructed in Australia. [12]

Symonds work was used in other notable structures, including the Sydney Opera House. The technology developed by Ralph Symonds Limited was essential to architect Joern Utzon's method of design development for the structure. Utzon was an ally to Symonds in his willingness to technically develop Symonds ideas about the creative potential for plywood in architecture. Symonds and Utzon appear to have worked in collaboration, with Symonds solutions being applicable to the irregular plan and form of the building. Ralph Symonds died prematurely in 1961 and Ralph Symonds Ltd carried on the work on the Opera House under the direction of Mr Ellis Ezra. [13]

Symonds' entrepreneurship and creative experimentation in plywood lead to a number of interesting commissions. During the war, he made plywood landing craft for the Army and decoy Kittyhawk aircraft for the Air Force. Constructed specifically for a singular event was the 'Ceremonial Arches' commemorating Queen Elizabeth II's visit to Sydney in 1954. Six arches were constructed for the event for display in Sydney as well as an additional arch manufactured for Melbourne. They were named: 'The Timber development Association's Log Arch'; 'The City Council Boomerang Arch'; 'The Insurance Companies' Arch'; 'The Bankers' Arch'; 'The Retail Traders' Arch'; The Agricultural Society's Arch'.[14] Only documentary evidence of these arches remains.

Symonds other projects included a diverse range of structures including prefabricated schools for the NSW Department of Education, roofing for the Myer music bowl, the curved copper awning for the Wentworth Hotel, Sydney, framing for the Leonard French glass ceiling at the National gallery of Victoria and an enclosure for the astronomical telescope at Mt Stromlo.[15]

Symonds produced at least one other major arch building before 1958. This was a 120 ft (36.6 m) span factory for Neon Industries in Melbourne. The arches for this building appear very similar to those used in Symonds' St Peters factory. They were 28 x 4ins (710 x 100mm) members glue laminated from oregon. Symonds shipped them from St Peters to Melbourne on a special truck and bogey. He is also responsible for another Victorian building, the Turner & Burge factory built in 1945.

It is possible that Symonds constructed other glue laminated timber arch buildings in Sydney and other cities between 1942 and his death in 1961.[16]

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[12] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[13] Cochrane, J. (1998) *Ralph Symonds Pty Ltd and the Sydney Opera House*, Faculty of Architecture, The University of Newcastle.
[14] Nolan G. (October 1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston, p.34-7
[15] Cochrane, J. (1998) *Ralph Symonds Pty Ltd and the Sydney Opera House*, Faculty of Architecture, The University of Newcastle.
[16] Noland G. (October 1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.

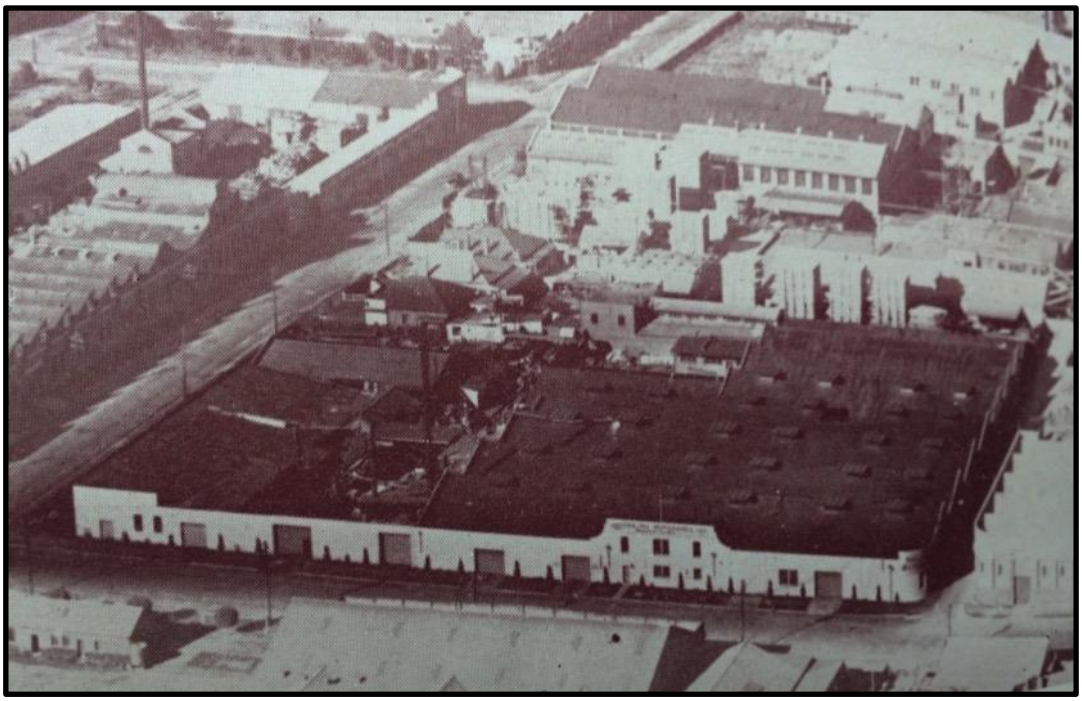


Figure 16 – Photograph of Ralph Symonds Morley Avenue factory. (Source: A School Is Born, Ralph Symonds Ltd, Sydney. c1950. NSW State Library).

Figure 17 – Symonds' Homebush Bay factory. (Source: Ralph Symonds Promotional Pamphlet, NSW State Library).

Figure 18 – One of Symonds' ceremonial arches, Martin Place (1954). (Source: NSW State Library)

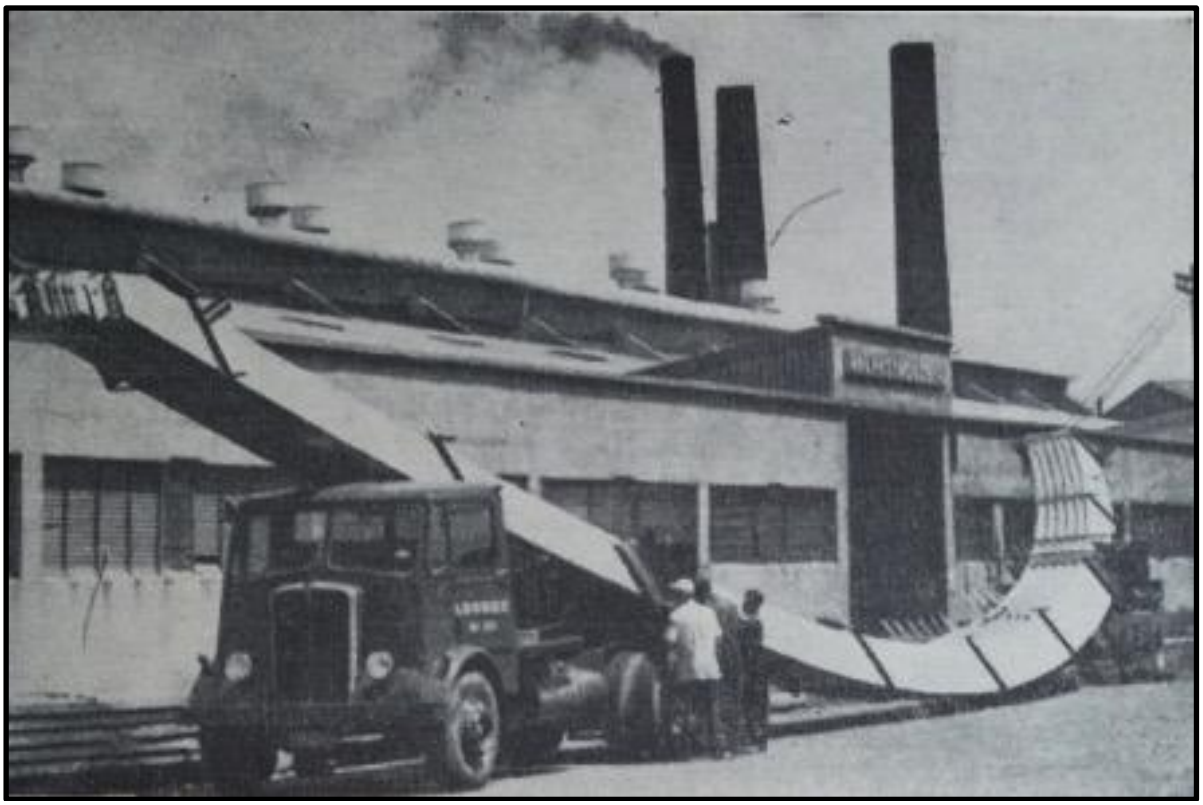


Figure 19 – Laminated timber arches manufactured by Ralph Symonds Ltd, Sydney, for transportation to Melbourne for the Neon Industries building. (Source: "120ft Laminated Timber Arches, Transported from Sydney to Melbourne. Building Lighting Engineering, 24 March 1955 p.33. NSW State Library).

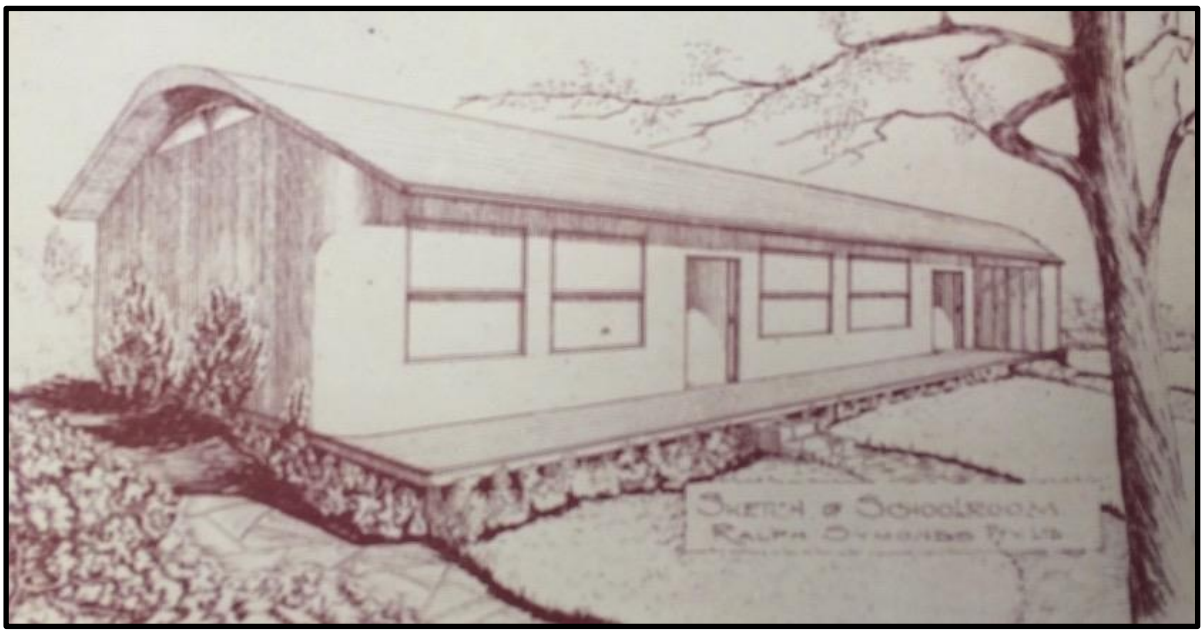
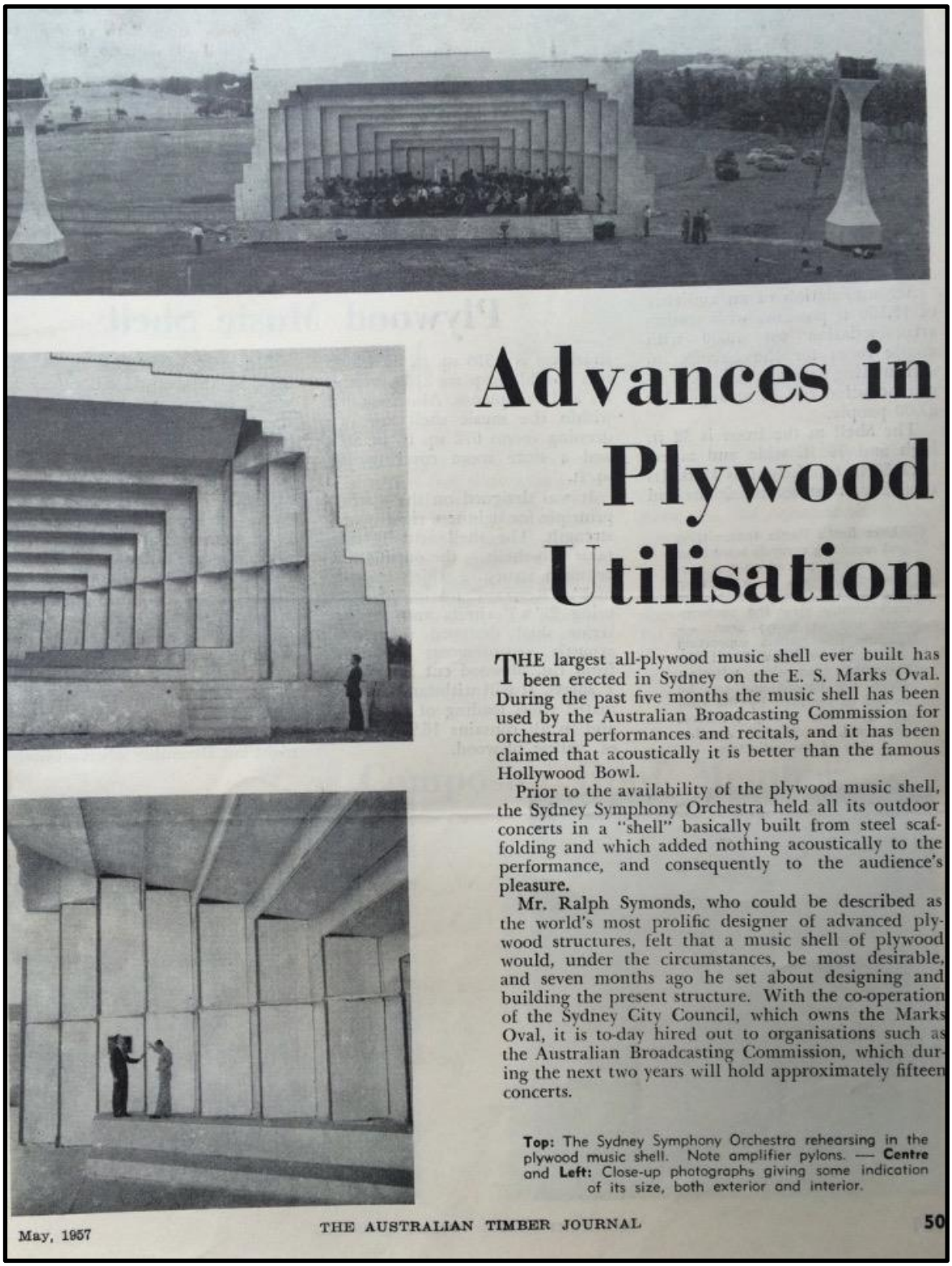


Figure 20 – Sketch of moulded school room designed by Ralph Symonds. (Source: A School Is Born, Ralph Symonds Ltd, Sydney. c1950. NSW State Library).



Advances in Plywood Utilisation

THE largest all-plywood music shell ever built has been erected in Sydney on the E. S. Marks Oval. During the past five months the music shell has been used by the Australian Broadcasting Commission for orchestral performances and recitals, and it has been claimed that acoustically it is better than the famous Hollywood Bowl.

Prior to the availability of the plywood music shell, the Sydney Symphony Orchestra held all its outdoor concerts in a "shell" basically built from steel scaffolding and which added nothing acoustically to the performance, and consequently to the audience's pleasure.

Mr. Ralph Symonds, who could be described as the world's most prolific designer of advanced plywood structures, felt that a music shell of plywood would, under the circumstances, be most desirable, and seven months ago he set about designing and building the present structure. With the co-operation of the Sydney City Council, which owns the Marks Oval, it is to-day hired out to organisations such as the Australian Broadcasting Commission, which during the next two years will hold approximately fifteen concerts.

Top: The Sydney Symphony Orchestra rehearsing in the plywood music shell. Note amplifier pylons. — **Centre** and **Left:** Close-up photographs giving some indication of its size, both exterior and interior.

May, 1957 THE AUSTRALIAN TIMBER JOURNAL 50

Figure 21 – Article in The Australian Timber Journal, May 1957, on Sydney music shell constructed by Ralph Symonds. (Source: NSW State Library).

2.4 Timber Construction - World War II and Post War

Following the commencement of WWII, the Government began to order the resources of the Commonwealth for the nation's defense and it recognised that timber was now an essential construction material. As a consequence, it established an office of the Controller of Timber and placed all the timber resources of the nation under its control. To co-ordinate this mass of construction work associated with defense building, the government established the Allied Works Council (AWC) and from 26 February 1942, it assumed control for all defense projects for the Allied Armies.[17]

With the huge war building program and with the necessity to conserve steel, the AWC recognized the advantages of the use of Australian timber as a building material for large engineering structures.[18] The AWC made departures from accepted design practices in timber and the war removed major factors that had previously restricted design and construction in timber. Timber design technology and experience became available from elsewhere and an urgent demand existed for large structures. As a result largely untried timber technologies became the foundation of most major building construction in the period 1942-45, during which time the AWC built thousands of structures, many timber, throughout Australia. The longest span, most numerous, most diverse and most widely spread examples of timber buildings seen in Australia were all built at this time.[19] However, little reliable information regarding war time timber structures is available. This is partly due to war time censorship which meant that records do not indicate the extent and location of buildings.[20]

In the post-war period a major cycle of building was underway by 1950 and all building materials were in short supply. Following 1945, all forms of manufacturing increased enormously for the next two decades. This represented the strongest period of Australia's industrial history.[21] Timber design and engineering re-emerged to take advantage of this opportunity with an expansion in long span industrial timber structures. During this time, timber was used as a comparable alternative to steel by several dedicated engineering practitioners. However, while it held economic advantages it was still not seen as a favoured choice by the dominant professional groups.[22]

The war time shortage of materials demanded experimentation with timber building solutions. During the war and post-war period, the manufacturer Ralph Symonds along with the engineer Malcolm Stanley were two of major practitioners using long span timber construction in the form of glue laminated timber. The conditions allowed for experimentation with timber structures and both used glue laminated timber in their work.

Other buildings constructed contemporary to the Symonds period include aircraft hangers and other large scale war buildings, though these buildings differ in their construction as they did not use timber lamination.[23]

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[17] Noland G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[18] Allied Works Council Report (1942-43), p354. In Noland G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[19] Nolan G. (1994). *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston
[20] Nolan G. (1994). *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston
[21] City Plan Heritage (2014). *City of Sydney Warehouses and Industrial Buildings Heritage Study Report*
[22] Nolan G. (1994). *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston
[23] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.

2.5 Glue Laminated Timber

Glued laminated timber is a type of structural engineered wood product comprising a number of layers of lumber bonded together with adhesives. By laminating a number of smaller pieces of lumber, a single large, strong, structural member is manufactured. Using this technology creates freedom in shaping the timber, which can include curved and arched shapes. This methodology can also produce long span beams and arches due to its high strength.

Use of glue laminated timber is recorded in use in Europe in the sixteenth century and was widely used in Europe before WWII. German Otto Hetzer obtained the first patent for glue laminated wood members in 1906, though his system (Known as the Hetzer System) may have been used as early as 1890.[24] The Hetzer system was also used to some extent in Austria, Czechoslovakia, France and Italy and had been introduced to the USA by the 1920s.[25]

Following on from growing use in the USA, glued laminated timber arches were discussed in print for the first time in the 1942 supplement to Langlands & Thomas's *Handbook of Structural Timber Design.*[26] There has been a claim that glue laminated arches were used in the Methodist church in Hesse St, Queenscliff, Victoria, in 1868, and though the appearance of arches is consistent with this, it is unconfirmed.

There are records of glue laminated timber being in use as a technology in Australia in 1938 and the first documented application using glue laminated rafters was a store building designed by H. Garnet Alsop, Architect in 1941. It used 325 x 90mm beam laid up from 105 x 18 floor boards to span 6m with a 3m cantilever.[27] Additionally laminated wood was used in bridges in Australia in the 1850s, with the earliest in Australia possibly being Edmund Blackett's Wallis Creek bridge at Maitland NSW built in 1851. A variety of bridges built in this period used laminated timber but without glue.[28] In the 1850/60s laminated timber was used in a number of structures in Western Australia and Victoria, including the Fremantle Prison Chapel, the Perth Town Hall, in a cell block in Melbourne Gaol, Melbourne Metropolitan Meat Market and in the Maldon market house, though these were shorter spans. The Sydney Exhibition Building (1878-9) also has laminated arches.[29]

Though not the first use of the material, Ralph Symonds Ltd is credited with the first large-scale building constructed using glue laminated timber as its principal structural members in Australia. It was for the National Springs Ltd building in O'Riordan Street, Alexandria in 1942. The building is a three pin parabolic arch structure for which Symonds fabricated the arches from 29 laminations of low grade rimu. The building's construction demonstrates an early and innovative structural use of laminated timber to achieve the quick construction, efficient use of materials and wide spans needed for wartime factories at a time of materials and labour shortages.[30] There is reference to another building, called the ETC Building, designed by Tate and Turner with arches made by Ralph Symonds, constructed in the same period but demolished in 1990, however no records of this building have been located.

The timber, according to Symonds, was dried and accurately machined to exact thickness prior to gluing, and: "*After the glue is prepared it is mechanically applied and placed under pressure by the use of this Company's patents which makes possible a time lag not exceeding 45 minutes. Our*

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[24] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[25] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[26] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[27] Nolan G. (October 1994). *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston
[28] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[29] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[30] Former National Motor Springs Igloo Building, State Heritage Inventory Listing #5062448, City of Sydney Council.

system of using compressed air enables the required pressure of 90 lbs per sq. inch to be applied and maintained simultaneously over the whole area of the arch and such pressing is done in one operation."[31]

Previous methods had involved progressive cramping of the laminated arch in four or five operations, taking several days, but during the war Symonds had developed and patented a method, using thousands of 'metal hangers', together with air pressure, to complete the whole operation in forty-five minutes. The radius of curvature was never less than eighty times the thickness of the laminate, and the number of laminations in an arch never less than twenty-four.[32] Symonds's patent application for his 'purlin' or lateral bracing system appears to date from 1944.[33]

Another practitioner that used laminated timber technology was Symonds friend Malcolm Stanley. He was involved with glue laminated arch structures from at least 1943. Then as senior partner of the consulting engineering firm of Stanley and Llewellyn, he designed a steady stream of long span industrial structures in timber from 1950 to 1955. He and his office developed the flat pier to pier two pin tied arch form to such an extent that by 1952, they had patented a stiffened tied arch. The arches became known as 'Stanley' arches. They were site laminated from a variety of timbers using casein-based glues. Stanley's work was widely reputed in the building and timber literature of the day. It greatly interested the CSIRO and they struggled to keep up with his developments. The clients for Stanley's timber buildings were major companies. At least one was so satisfied with their timber product that they had a second larger building constructed. Also being a respected engineer, Stanley had credence in intellectual and professional circles.[34]

Stanley used stitch bolts through the arches at about 900mm centres to guarantee adhesion.[35] Symonds' three pin glue laminated arch form and Stanley's pier to pier two pin tied glue laminated arch form can be traced directly from both men's earliest work with glue laminated timber construction and were developed during the War. Neither Stanley nor Symonds exploited nailed joints and their work showed sophistication in aesthetics, construction and amenity. Post war design used glue laminated arches derived from circular arcs for the main structure with bolts and shear connector joints fixing secondary members. Besides the construction in Sydney, buildings of this form were built in Adelaide, Melbourne and in various parts of Queensland.[36]

In 1951 architect Frank Zipfinger published an article on laminated timber. He was involved with a project (Rheem Factory, Rydalmere) that used bow truss laminated arches made of Swedish fir and treated with xylamon to resist pests, imported from Dutch fabricators NV Nemano-Holland.[37] Walter & Morris of Port Adelaide also manufactured glue laminated beams from the 1950s.[38]

In late 1954, several major South Australian timber merchants, including Geddes, Lloyds and Wadlows, established a new company called Laminated Timber Products Limited to exploit the developments in glue laminated technology.[39] During 1955, they constructed at least four major glue laminated buildings: a 32ft (9. 75m) span steep three pin portal church, a 32ft (9. 75m) span three pin gothic arch church at Kurralta Park, a 130ft (39.6m) semi-circular three pin foundation arch factory in

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[31] Ralph Symonds, Managing Director, Ralph Symonds Pty Ltd, Rosebery NSW, to H Burge Bros, Carlton, 6 June 1945, MCC building application file no 23118. In Lewis, M. (2015). Timber Engineering and Lamination.
[32] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[33] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[34] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston, p49.
[35] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[36] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[37] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[38] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.
[39] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.

Hanson Road, Adelaide, and a large factory at Kalangadoo. Though the company was reported to have further orders for 1956, it went out of business before 1963.

True foundation arch industrial buildings proved impractical as large areas at the sides were too low to be used effectively. They were also very difficult to light and heat. These problems were resolved with the introduction of the pier to pier, two pin tied arch form in 1943 and the use of secondary rafters with the foundation arch form in 1946[40].

After Stanley's death in 1955, evidence of further long span timber structures reduces considerably. Though Symonds and other practitioners continued to design or produce glue laminated structures, the concentrated construction of successful timber structures seen in Sydney in the early 1950's was not repeated. The cycle that began with Symonds' St Peters Factory in 1946 ended with his death in 1961.[41]

Laminated timber was also used in a number of churches in Australia in the c1950s, though these were smaller spans less that 15-20m. The Mormans are recorded as building twenty-three churches throughout Australia in the 1950s using laminated timber manufactured by John Sharp's joinery works using Tasmania hardwood, scarf jointer, dowelled and pressed.[42]

[40] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[41] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[42] Lewis, M. B. (2012). *Australian building a cultural Investigation* http://www.mileslewis.net/australian-building/.

3 PHYSICAL DESCRIPTION

3.1 Building

The following building description is included from the WestConnex New M5 Environmental Impact Statement (November 2005), AECOM Australia:

> The former Rudders Bond Store is 'L' shaped in plan, oriented in a north-east/south-westerly direction and having a second frontage on Burrows Road. The arm of the store extends from the north western side of the building. The Store is currently divided into three tenancies, the one on Campbell Road being vacant, the central portion being leased by Sita Pty Ltd as a recycling centre and the third, southern most section is used by Dial-a-Dump.
>
> Externally, the store is constructed of brick (painted cream) to the first storey height. The front is distinguished with round-edged brick supporting columns evenly spaced. The central span contains almost full height access doors. The other spans (eight in all) contain vertically arranged louvres over windows. The roof is of a complex clerestory style, with the pitched corrugated iron and corrugated clear fibreglass roof covering the four central spans. The fall containing the windows is angled in the opposite direction to the pitch of the roof. The final pitch of the roof extends to the walls. The gable is filled with rectangular aluminium windows. In faded paint across the windows is the word 'RUDDERS'.
>
> On the interior, the roof structure is supported on arched struts of laminated timber. The timber segments are around 15 millimetres thick and of variable length. The timber is held together with bolted 'D' shaped brackets held by welded bolts on either side. The arched structure leaves the interior space free of columns.

Additionally, a description of the building was made along with plans in 1994 prior to the removal of the western section of the Holland Street pavilion, which provides they following additional details:

> The complex has two perpendicular wings of three pin foundation arches. The larger wing consists of 32 bays at 6.1 m centres while the smaller is of 24 bays at 6.1m centres. The arches used throughout are identical and span 31m. Each is a 610 x 100 mm member of 29 laminations, fabricated with casein glues. The 24 arches to the west end of the long arcade are fabricated from mixed hardwoods while the remainder of the arches are radiata or oregon.
>
> Secondary rafters run from the line of the arches to form aisles of varying width throughout the building. Purlins are standardised trussed oregon members. These are propped above the arches on each side to form a longitudinal roof light. Elsewhere, they are simple supported over the arches. The floor is concrete on flll with tie beams cast in between the concrete bases of each arch pair. The roof is corrugated AC sheeting.
>
> The principal framing to the end walls is 450 x 110 mm plywood box beams at 3 m centres, with vertical fixing to the slab and to the outside faces of the arches.[43]

Symonds began the first pavilion extended it progressively until it consisted of 32 bays, making a building over 195m long. He built the second pavilion perpendicular to the first, totaling 24 bays of 31m span arches and is over 148m long.[44]

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[43] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston, p.165.

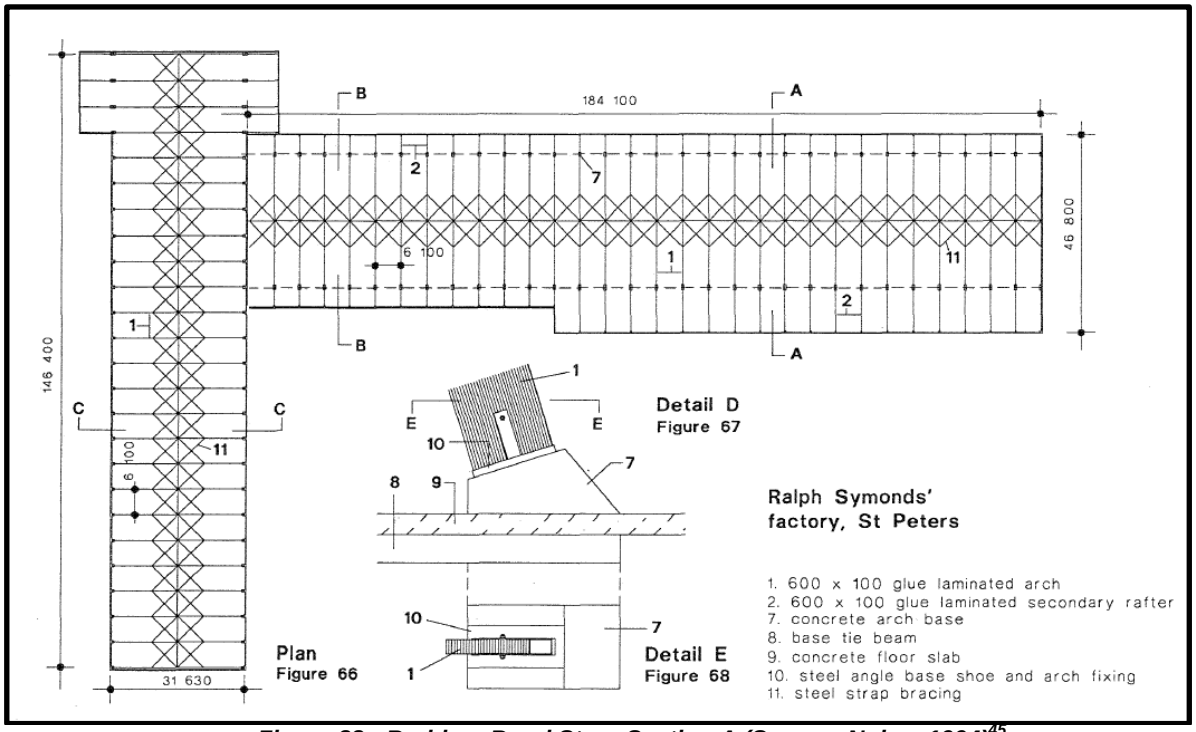

Figure 22 - Rudders Bond Store Section A (Source: Nolan, 1994)[45]

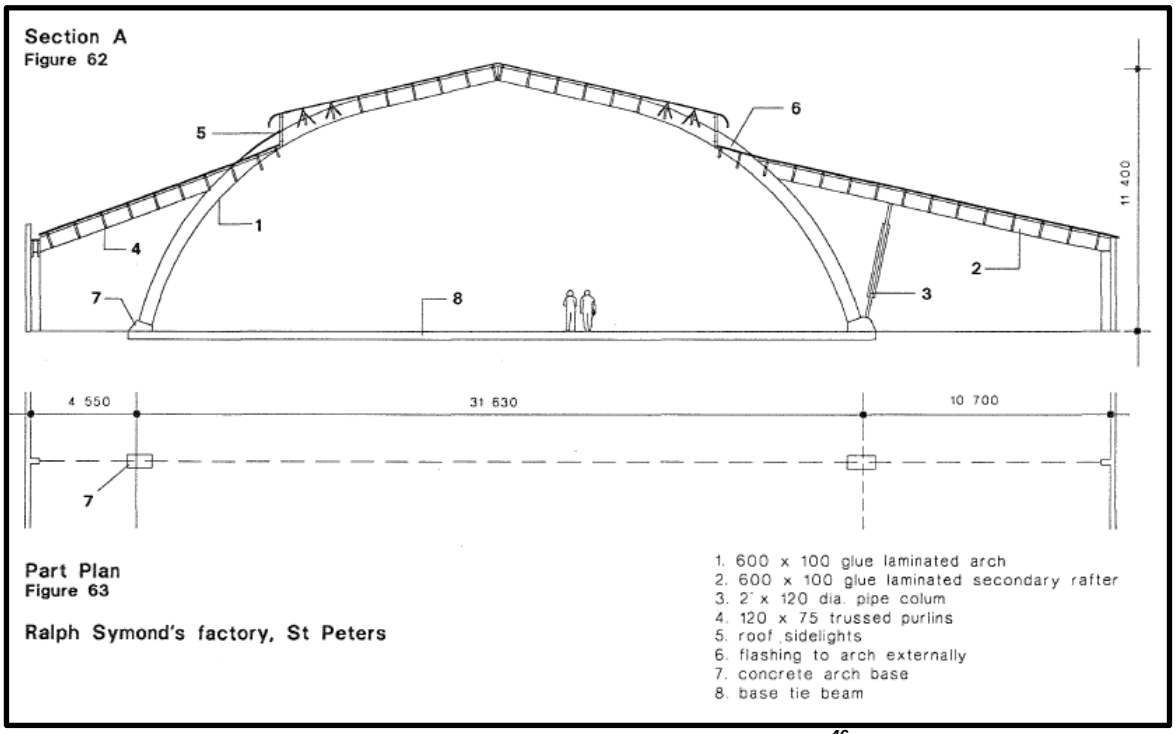

Figure 23 - Rudders Bond Store Section A (Source: Nolan, 1994)[46]. Most of this section has now been demolished.

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[44] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[45] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[46] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.

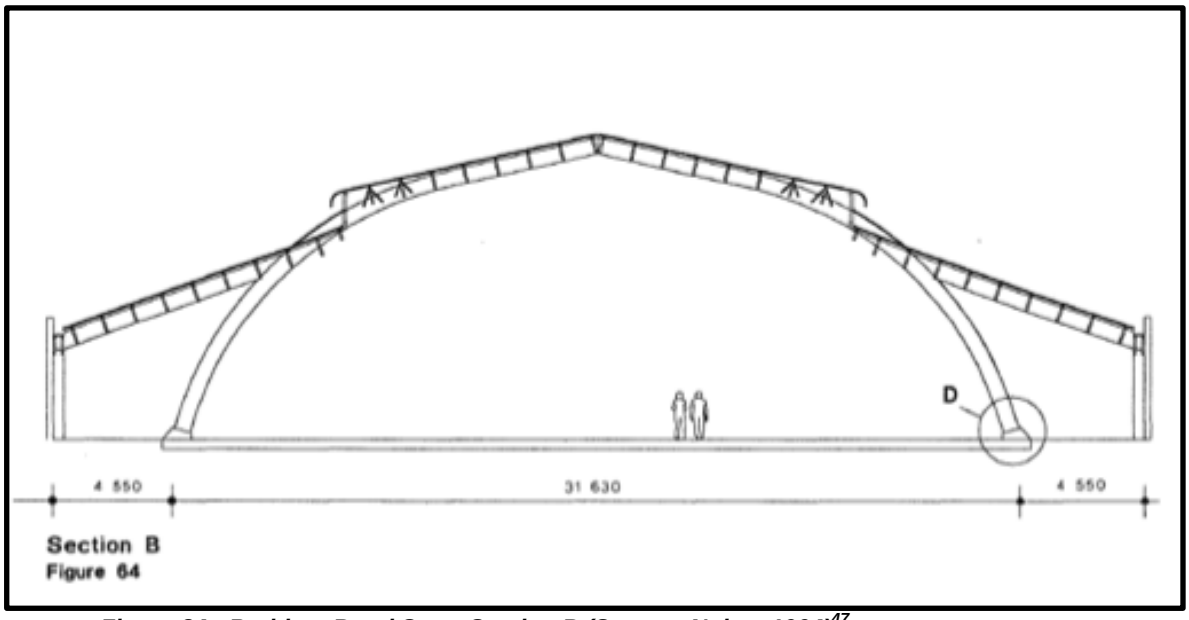

Figure 24 - Rudders Bond Store Section B (Source: Nolan, 1994)[47]

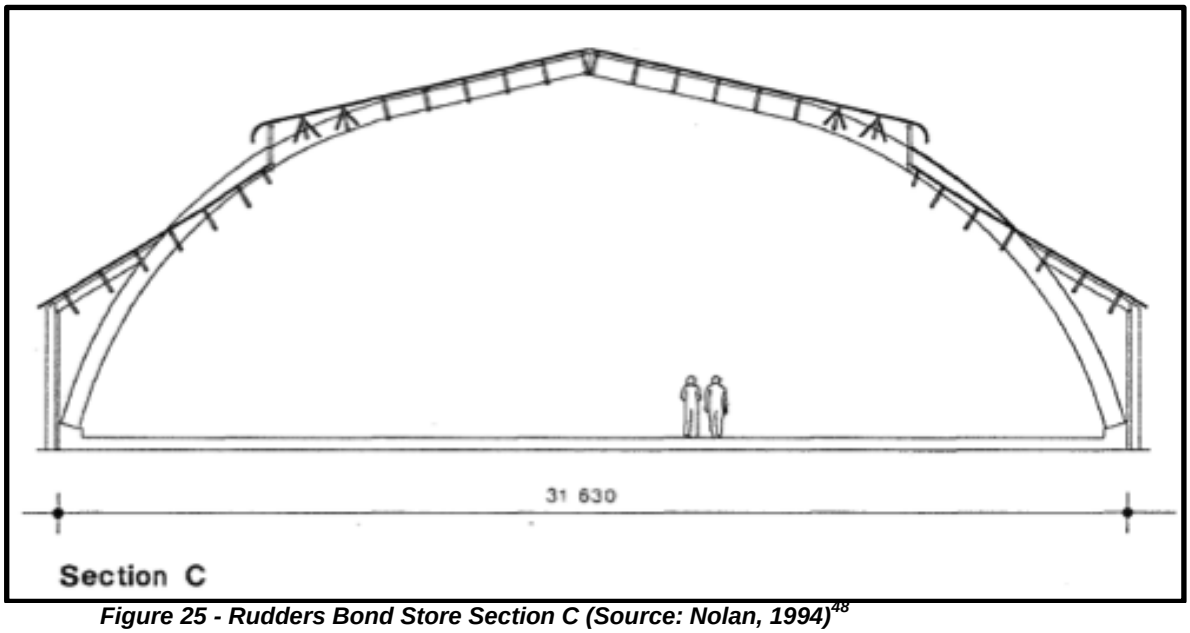

Figure 25 - Rudders Bond Store Section C (Source: Nolan, 1994)[48]

3.2 Condition

Overall the building is in good condition.

[47] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.
[48] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.

4 ASSESSMENT OF SIGNIFICANCE

4.1 Assessment Criteria

The following assessment pulls out the key significance values of the building to allow for comparison with other structures with the same or similar significance values.

Criterion (a) An item is important in the course, or pattern, of NSW's cultural or natural history

- Demonstrates historical phase associated with WWII use of timber and development of timber technologies at this time as a result of a combination of materials shortages and large-scale development.
- Demonstrates local development of St Peters representing the move from brick pits to the warehouse industrial use of the area.

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

- Associated with Ralph Symonds, as a structure built by his company using the technology he pioneered and being the premises of his company prior to its relocation to Homebush Bay. Ralph Symonds was responsible for the first large-scale glue laminated timber building in Australia and a number of other structures using this technology during the WWII and post war era. The methodology allowed quick construction of long span structures suited to wartime conditions and his works include structures used in the Sydney Opera House, Melbourne Myer Music Bowl, Warragamba Dam.

Criterion (c) An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW

- Demonstrates technical achievement in the early use of glue laminated timber arches in large-scale construction, presenting an innovative and responsive form of construction for the wartime era.
- Aesthetically significant for its impressive large scale and long span timber arch design.

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 Rudders Bond Store does not have special associations with a particular group or community.

Criterion (e) An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history

- The building can demonstrate the use and development of glue laminated timber arches for large-scale industrial constructions. Together with the former National Spring Store at Alexandria (1941) and the company's later warehouse in Homebush (1958-59), the bond store shows a progression and perfecting of the use of glued laminated timbers in form and function.

Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history

- The Rudders Bond Store is rare as one of five known remaining Ralph Symonds large-scale industrial buildings constructed using glue laminated timber in Australia, with three of these (including the Rudders Bond Store) being in NSW.
- The building is rare as a large-scale glue laminated timber arch building, which are are becoming increasingly rare in Australia. This study has found nine of a possible eighteen similar structures extant in the whole of Australia.

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 Rudders Bond Store is a good representative example of c1950s glue laminated timber construction methodology.

4.2 Statement of Significance

The following Statement of Significance is provided from the City of Sydney LEP Heritage Item Inventory Sheet:

> The site is of historical significance for its role in the production of engineered timber in Australia from c1946 to 1958. Symonds was a pioneering manufacturer of such timbers and the building contains a good example of the companies work in the timber frame of the building. The building has strong associations with Ralph Symonds a pioneer of laminated timber construction in the post-war era in Sydney and Melbourne whose factory this site was and who designed the laminated timber structure supporting the roof. This building is of State and Australian significance as a surviving example of the laminated arches pioneered by Ralph Symonds. As a physical example of these structures the building has great research potential for studying this innovative building technology and to some extent the production processes. Surviving early laminated timber buildings are rare. The site is significant for its role in the history of engineered timbers across Australia and is of state level of significance.[49]

Additionally this comparative analysis has identified that:

The Rudders Bond Store is rare as one of five remaining Ralph Symonds industrial buildings in Australia. It is one of three located within NSW. The building is rare as one of less than 18 known large-scale glue laminated timber structures identified as possibly remaining in Australia.

[49] City Plan Heritage and JCIS Consultants (2013). *Former Ralph Symonds Factory, State Heritage Inventory Form.*

5 COMPARATIVE ANALYSIS

5.1 Comparison Methodology and Framework

This comparative analysis seeks to identify items with comparative significance values to the Rudders Bond Store. In doing so it has considered the significance values of the item and sought examples of items with comparable values. Comparative examples have been sought that demonstrate the one or more of the following:

- Examples constructed by Ralph Symonds. These have been separated into two categories: 1) Large scale industrial buildings (similar to the Rudders Bond Store) and 2) other items.

- Examples constructed using glue laminated timber. Again two categories are used: 1) Large scale industrial buildings and 2) other items.

In selecting suitable examples, the following guidelines and parameters have also been employed:

- Large-scale items are categorised as having spans of 20 metres or more. These are usually large warehouse or factory buildings.

- The study has been limited to Australian examples. Glue laminated timber has been in wide spread use internationally. It was popular in the USA in the period immediately prior to Ralph Symonds adoption of the technology. It is possible Symonds' work may be found outside Australia, as his company had a South African base where they were involved with railway carriage construction in the 1950s. There is also record of plans Symonds had to enter into a Scottish partnership including construction of a factory at the port of Leigh, Edinburgh using prefabricated timber made at the Homebush factory and shipped to Scotland to build the structure.[50] It is unknown as to if construction of this building eventuated and if so, if the structure still exists.

- Generally examples focus on items built c1940-c1960, which coincides with the era of Symonds' work as well as the WWII and post-war period that saw the rise and fall of use of glue laminated timber, though examples outside this period are also included.

5.2 Ralph Symonds - Large Scale Industrial Buildings

Ralph Symonds and his company constructed a number of large-scale industrial buildings similar to the Rudders Bond Store in the period c1940-1960. A total of five large-scale industrial buildings are credited to him, all of which remain extant. Additionally it is reported that there may have been further similar structures built by him, however evidence of these structures has not been able to be established to date. The known remaining Ralph Symonds structures are as follows:

- Alexandria, NSW - National Springs Pty Ltd (1941)
- Flemington, VIC - Turner & Burge (1945)
- St Peters, NSW - TNT Rudders (1953)
- Ascot Vale, VIC - Neon Industries (c1958)
- Homebush Bay, NSW - Ralph Symonds Factory (1959)

[50] Sydney Morning Herald, 30 October 1959. *Sydney Company to Ship Factory to UK.*

These buildings are all constructed using glue laminated timber and use a structural system of three pin foundation arches. Various timbers are used for the buildings, including radiata, oregon, and NSW coachwood. The arch spans vary in size with the smallest being the 30m span Turner & Burge building in Victoria. The largest in arch span and overall size is by far Ralph Symonds own factory at Homebush, which has three pavilions with spans reaching 43m. Not only is this building Symonds' largest structure, it was the largest industrial building in Southern Hemisphere when constructed and remains the largest timber building constructed in Australia. The Homebush factory along with the Rudders Bond Store, were purpose built factories to accommodate Symonds' business, while the others were external contracts.

Of the two Victorian structures, one is listed on the Victoria Heritage Register as an item of State significance (the Turner & Burge building). Within NSW, the National Springs building is included on the City of Sydney Council LEP and as part of a recent study of Sydney's industrial warehouse buildings, is recommended for nomination for listing on the SHR. The Rudders Bond Store is included on the LEP but has been identified for demolition. The Homebush building is not included on any heritage lists.

It is reported that the National Springs building is in good condition with high integrity, though possibly it has been reclad. The Rudders Bond Store is also in good condition however the demolition of a portion of the western pavilion has impacted its integrity due to the loss of the earliest portion of the structure. The Homebush structure has had a number of condition issues including a major structural collapse that occurred in 1990 due to fungal attack. Most areas now have supplementary support structures in place and it is not anticipated the building would meet modern engineering standards.[51] The building's overall form has been impacted by the division of the structure into three parts by creating two transverse streets through parts of the building, as well as a number of central portions of the building having been demolished. The condition, integrity and intacness of the two Victorian structures is unconfirmed, however both structures remain in use and so could be presumed to be in fair to good condition. The façade of the Neon Industries building has been reclad however and its unknown if changes have occurred internally.

The basic comparative values of the five structures are shown in the table below.

[51] Wyatt. *Ralph Symonds Plywood Factory.*

NAME	STATE	DATE	LISTINGS	CONSTRUCTION	SPAN	CONDITON	INTEGRITY	COMMENTS	ADDRESS
Ralph Symonds Factory/Industrial Equity Limited Bennelong Bridge Road, Homebush Bay	NSW	1958/59	None	GLT (radiata); Three pin tied arches	43m (x3)	Fair	Moderate	Largest industrial building in Southern Hemisphere when constructed. Remains largest timber building constructed in Australia. Removal of building sections has impacted integrity and structure has condition issues.	
TNT Rudders Campbell St, St Peters	NSW	c1946-1953	LEP. Rec for SHR 2016	GLT (radiata, oregon); Three pin foundation arches	31m	Good	Moderate	Use of side rafters removed wasted space from the pure arch form and increased useable floor area. A straight section at the top of arches eliminated need for curved roofing.	
National Motor Springs Pty Ltd, 52 O'Riordan Street, Alexandria	NSW	1941	LEP. Rec for SHR 2016	GLT (rimu); Three pin foundation arches	29m	Good	High	First large scale building in Australia to use glue laminated timber as its principle structural members.	
Neon Industries, 325 Mount Alexander Road, Ascot Vale, Melbourne	VIC	1945?	None	GLT (oregon); bowstring arches tied on concrete columns	36.6m	Fair – Good? (Unconfirmed)	Moderate? (Unconfirmed)	Designed by architects Stephenson & Turner. Timber freighted from Sydney. Now a liquor store.	
Turner & Burge, 135-157 Racecourse Road, Flemington, Victoria	VIC	1945	VHR - State	GLT (coachwood)	30m	Fair – Good? (Unconfirmed)	High? (Unconfirmed)	Façade of dichromatic brickwork with steel framed windows. Improdex has occupied the site for over 20 years.	

5.3 Ralph Symonds – Other Works

Ralph Symonds was involved with numerous and varied projects over two decades and as a result his work can be found in may different locations, using his glue laminated construction materials. Additional to the large building structures discussed in this report, the company's products were also used for a variety of smaller tasks including for railway purposes such as features on the Eastern Suburbs Railway Stations (1970s) as well as all manner of train carriages (1950s), caravans, boats, and shower cubicles. Other more major works include sections of the Sydney Opera House (1973), Ceremonial Arches (1954) and Warragamba Dam.

5.4 Glue Laminated Timber – Large Scale Industrial Buildings

In addition to the five Ralph Symonds large-scale industrial glue laminated timber buildings, another eighteen large-scale industrial buildings that were constructed using this methodology have been identified. These are mostly factory buildings constructed in the post-war period, with nine of these credited to Ralph Symonds contemporary and friend, Malcolm Stanley, and his company Stanley & Llewellyn. These buildings all have timber spans reaching over 20 meters and include the longest clear span arch timber laminated building known in Australia, the SEAS Saphor Timber Mill at 46.2 metres. This building is one of four that are believed to still stand, with another four known to no longer be extant. The status of nine of the items is unknown. Of the four extant structures, one is located within NSW, the Enfield Motor Auction building in Enfield, with two in South Australia and one in Victoria.

In consideration of the four known remaining examples, the nine potentially remaining examples and the five Ralph Symonds structures, this indicates that the Rudders Bond Store is one of up to eighteen known remaining large-scale glue laminated timber buildings in Australia.

NAME	ADDRESS	STATE	LISTINGS	CONSTRUCTION	DATE	ENGINEER	BUILDER	SPANS	EXTANT	CONDITION	NOTES
Enfield Motor Auction/TLarke Hoskins	Cosgrave Road, Enfield	NSW	None	GLT; Two pin tied arches	1953	Stanley & Llewellyn	Structural Services Pty Ltd	36.6m (x2)	Y (1994)	Satisfactory (1994)	Vehicle assembly plant for Larke Hoskins
Laminated Timber Products Limited Factory	Hanson Road, Adelaide	SA		GLT Arch	c1955	Unknown	Laminated Timber Products Limited	39.6m	Y (1994)	Fair (1994)	Fancis & Partner Pty Ltd Joinery Merchant?
SEAS Saphor Timber Mill	Kalangadoo (near Mt Gambier)	SA	None	GLT; Three pin foundation arches	1955	Unknown	Laminated Timber Products Ltd	46.2m	Y (1994)	Fair (1994).	The longest clear span glue laminated arch building known in Australia. The base of one of the arches has been replaced.
Beecham-Wright Factory	Blackshaws Road, Altona North (188?)	VIC	None	Bow string truss with GLT top chords	1958? 1962?	Unknown	Beecham & Co	30.5	YES (2015)	Good	
Cellucotton Ltd Factory	Sydney	NSW	None	GLT	c1953-54?	Stanley & Llewellyn	Unknown	Unknown	NO	N/A	
Larke Hoskins Factory	Riley Street, Surry Hills	NSW	None	GLT- oregon timber and steel Arch	1950	Unknown	Stanley & Llewellyn	40m	NO	N/A	Architect: David King & Associates Conventional timber bowstring truss building
C & C Engineering Factory	Ferndell Street, Granville	NSW	None	GLT; Tied arch	?	Stanley & Llewellyn	Unknown	39.6 (x2), 13.7	NO	N/A	First known use of Stanley's patented stiffened tied arches
Texada Mines Pty Ltd	Caper Cuvier, 995km north of perth	WA	None	GLT; Three pin foundation arches	1973	E.D. Piggott & Associates	Bunning Bros Pty Ltd	41m	NO	N/A	Intended for storage but never used. Largest hardwood structure in the world when constructed. Demolished late 1980's. Arches now used to make shelters in a caravan park near Perth (1994).
Rheem Australia Factory	Alan Street, Rydalmere	NSW	None	GLT; Swedish fir; Bow truss arches	1952	Unknown	NV Nemano-Holland	21m	Possible	Unknown	Architect: Stephson & Turner/Zipfinger.
Newcastle Wool Pressing Co.	Unknown, Newcaslte	NSW	None	GLT	c1953-54?	Stanley & Llewellyn	Unknown	Unknown	Unknown	Unknown	

Elder Smith & Co Factory	St Peters	NSW	None	GLT; Arch	c1953-54?	Stanley & Llewellyn	Unknown	30.5m	Unknown	Unknown	
Alan Crook Electrical Co. Factory	Herbert Street, St Leonards	NSW	None	GLT; tied arch saw tooth roof	1943	Unknown	Malcolm Stanley	Unknown	Unknown	Unknown	
B and S Electrical Factory	Unknown. Alexandria	NSW	None	GLT; tied arch saw tooth roof	?	Unknown	Malcolm Stanley	Unknown	Unknown	Unknown	
Clark Kilns Pty Ltd Factory	Nuwarra Rd?, Moorebank	NSW	None	GLT; arch and girder	1953	Stanley & Llewellyn	Unknown	28m (x2)	Unknown	Unknown	Largest laminated timber arch and braced girder structure in Australia when built.
Unknown Factory	Canterbury	NSW	Unknown	GLT; Span tied arch	c1953-54?	Stanley & Llewellyn	Unknown	30.5m	Unknown	Unknown	
Thomas Brown Factory	Cairns	QLD	Unknown	GLT; Arch	c1953-54?	Stanley & Llewellyn	Unknown	21.3m (x13)	Unknown	Unknown	
Stuart Walker & Co Factory	Unknown	Unknown	Unknown	GLT	1955	Stanley & Llewellyn	R Andrews	34.5m	Unknown	Unknown	

5.5 Glue Laminated Timber – Other Structures

Glue laminated timber was used for many purposes and for structures other than large industrial buildings. It is known to have been used in a number of churches, though these were smaller works under 20 metres. Two churches, at Kurralta Park and Meddons in South Australia, were constructed prior to 1955 by Laminated Timber Products Pty Ltd. Stanley & Llewellyn constructed the Rothmans Pavilion (c1954) at Sydney Showground, which is believed to remain. In 1967 glue laminated timber was used in construction of the Royal Showgrounds in Melbourne. It is reported that the Fremantle Prison Chapel, WA, (1856) is an early use of the technology (12.3m). It was used in the Revesby Pacific Hotel dome 1957.

Other early use of a similar construction technique has been used in early bridge construction, which made use of laminated timber held together with bolts rather than using glue. Approximately twenty such structures were built in South Australia after 1856 because they were economically and quickly constructed with readily available materials and could survive most floods with their large clear openings. However, only one remaining known structure of this type in Australia exists, the Angle Vale Bridge, Victoria (1876). Another bridge, that did use glue lamination, was the 1975 Plenty River Bridge, Greensborough Victoria.[52] At a span of 50 metres, its span is larger than the largest building examples. This bridge remains as a footbridge on a cycling trail.

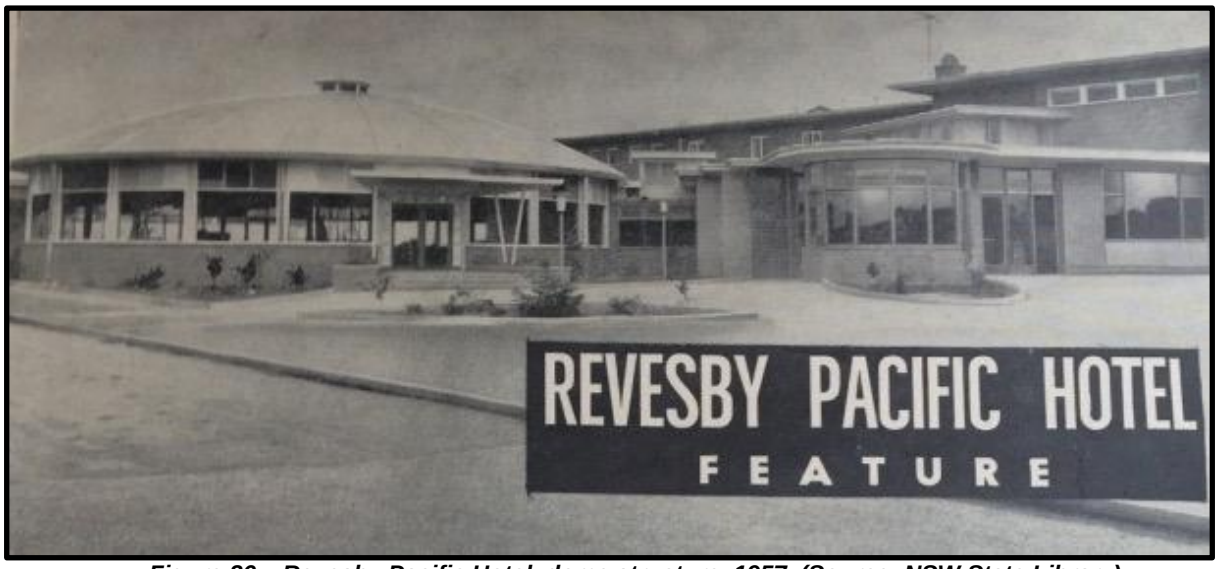

Figure 26 – Revesby Pacific Hotel, dome structure, 1957. (Source: NSW State Library).

[52] Nolan G. (1994) *The Forgotten Long Span Timber Structures of Australia*, *A Thesis for the Degree of Master Of Architecture,* Department of Architecture, University of Tasmania Launceston.

6 CONCLUSION

This analysis has compared the significance values of the Rudders Bond Store to other items with comparative significance values. It has found that there are five known extant large-scale industrial buildings extant in Australia that were constructed by Ralph Symonds using his glue laminated timber materials. It is possible that others exist however they have not been able to be identified to date. Of the five structures, three are located in NSW, including the Rudders Bond Store. Should the Store be demolished as planned, this will leave only two Symonds buildings remaining in NSW. Of these two buildings, the National Motor Springs building in Alexandria is in good condition and of high integrity. It is included on the LEP offering it statutory protection and has been recommended for nomination to the State Heritage Register (SHR). The Homebush Bay building has been divided into portions and has lost large sections though the majority of the structure remains. It appears to have a number of condition issues. It is not currently included on any heritage registers. The Rudders Bond Store is in good condition with reasonable integrity, despite the loss of a portion of the structure, making it a rare example of a Ralph Symonds glue laminated timber building in NSW and a good representative example of his work.

The historical record indicates that Ralph Symonds was involved with numerous projects from both small-scale items to large projects. Examples of his innovative work remains in such enduring structures as the Sydney Opera House and Warragamba Dam. There may also be other small-scale examples such as in residential or schooling structures.

In terms of other large-scale glue laminated timber structures similar to the Rudders Bond Store, records indicate that there may be up to only eighteen such structures remaining in the whole of Australia, with eleven of these being located in NSW. While others may exist they have not been identified and documented to date. Of these eighteen, only nine have been able to be confirmed as extant (four within NSW), meaning the total number could very well be less than eighteen. This will be reduced to seventeen with the loss of the Rudders Bond Store. This highlights the increasing rarity of such structures in NSW and in Australia.

In light of the findings of this report and the planned demolition of the Rudders Bond Store the following recommendations are made:

- That the National Motor Springs Pty Ltd, 52 O'Riordan Street, Alexandria is progressed for nomination for listing on the State Heritage Register.

- That the Ralph Symonds Factory, Bennelong Road, Homebush Bay, be further assessed to confirm integrity for potential heritage listing and that an archival record is made of the building before any further loss of the structure.

- That the Enfield Motor Auction building, Enfield is assessed for heritage significance and included on the relevant statutory heritage register.

- That, along with the archival recording already undertaken, salvage of the glue laminated timber structures from the Rudders Bond be considered, for re-use or interpretation purposes.

7 REFERENCES

AECOM Australia Pty Ltd. (November 2015). *WestConnex New M5 Environmental Impact Statement*

City Plan Heritage (2014). *City of Sydney Warehouses and Industrial Buildings Heritage Study Report*

City Plan Heritage and JCIS Consultants. (2013). *Former Ralph Symonds Factory, State Heritage Inventory Form.*

Cochrane, J. *Ralph Symonds Pty Ltd and the Sydney Opera House, Faculty of Architecture.* The University of Newcastle.

Heiss, A. "Aboriginal People and Place", Barani: Indigenous History of Sydney City http://www.cityofsydney.nsw.gov.au/barani

Honchcroft, Y. (1987). *Company History of Ralph Symonds Australia Ltd* (unpublished), Mitchell Library, Sydney.

Lewis, M. B. (2012) “Australian building a cultural Investigation” http://www.mileslewis.net/australian-building/

Listing Sheet for the property from *www.environment.nsw.gov.au/heritage*

Noland G., 1994, “The Forgotten Long Span Timber Structures of Australia”, A Thesis for the Degree of Master of Architecture Deparment of architecture University of Tasmaina Launceston.

Sydney Morning Herald, 30 October 1959. *Sydney Company to Ship Factory to UK.*

Whitaker, A. M., (2002), *Pictorial History of South Sydney*, Kingsclear Books.

Wyatt, Ken (2000) *Ralph Symonds Plywood Factory.* In: Lowe, PG (Editor); Hill, RF (Editor). Second Australasian Conference on Engineering Heritage, Auckland: Proceedings. Auckland, N.Z.: Institution of Professional Engineers New Zealand: 243-248.