



Narrabeen Education Precinct Historical Archaeological Assessment

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1 Background

AMBS Ecology & Heritage (AMBS) has been commissioned by OCP Architects on behalf of Johnstaff to prepare a *Historical Archaeological Assessment (HAA)* to inform the master planning for the redevelopment of the Narrabeen Education Precinct. The Narrabeen Education Precinct in the Northern Beaches of Sydney comprises the Narrabeen North Public School (NNPS) and the Narrabeen Sports High School (NSHS).

1.1 Study Area

The study area, the Narrabeen Education Precinct, is located in North Narrabeen NSW on a combined site of approximately 9.8 hectares encompassing Lot 3 DP 1018621 and Lot 12 DP 1119562 comprising the Narrabeen North Public School and the Narrabeen Sports High School respectively (Figure 1.1). Both schools are accessed via the no-through Namona Street, off Pittwater Road. The study area is approximately 21 kilometres north-east of the Sydney CBD, within the Northern Beaches LGA and Narrabeen Parish in Cumberland County.

NNPS is bound by:

- The Warriewood Valley Sports Ground (WVSG) to the north
- Residential dwellings addressing Oak Street to the east
- Namona Street to the south and,
- The Northern Beaches Indoor Sports Centre (NBISC) to the west

NSHS is bound by:

- Namona Street to the north
- Pittwater Road to the east
- Pittwater Sports Centre (PSC) to the south and,
- Mullet Creek (a tributary of the Narrabeen Lagoon) to the west.

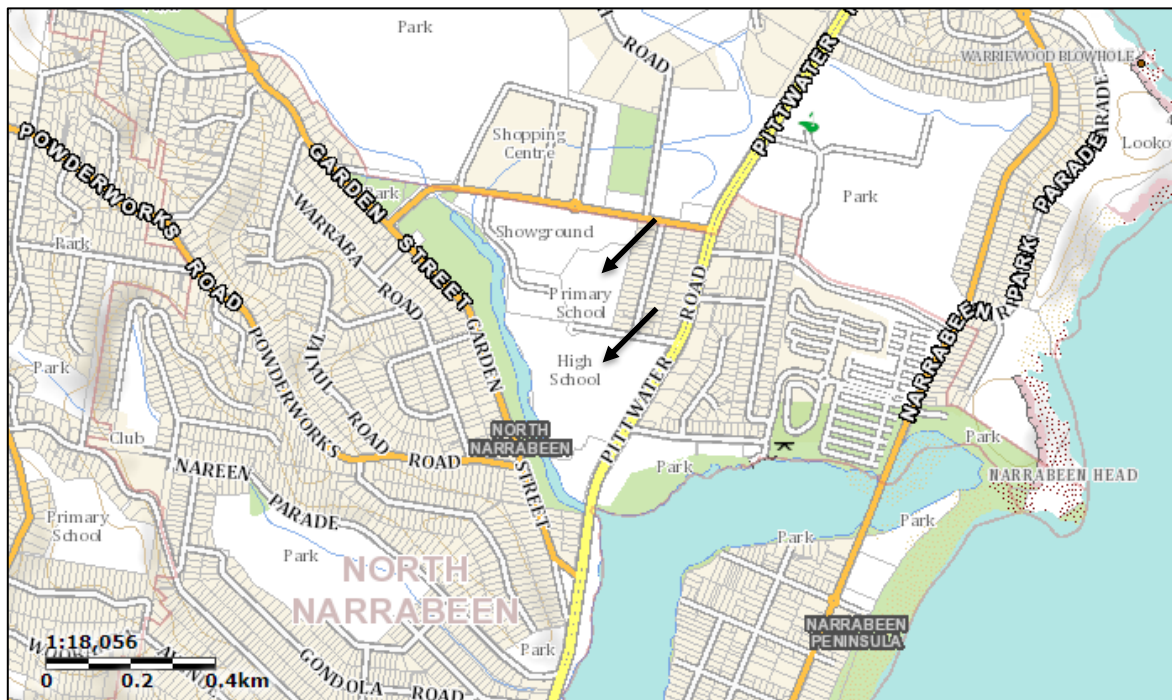


Figure 1.1 Location of the NNPS and NSHS within the study area are arrowed (Source: <https://maps.six.nsw.gov.au/>).

1.2 Statutory Context

The *Heritage Act 1977* (Heritage Act) provides protection for heritage places, buildings, works, relics, moveable objects, precincts and archaeological sites that are important to the people of NSW. These include items of Aboriginal and non-Aboriginal (historic) heritage significance. Where these items have particular importance to the people of NSW, they are listed on the State Heritage Register (SHR).

On 2 October 2019, the Heritage Council of NSW gave notice of its intention to list *The Binishell Collection (Department of Education)* on the SHR, of which three are located at North Narrabeen Public School (Figure 1.2). Public submissions for the potential listing opened on 9 October 2019 and close on 5 November 2019. The Binishells at Narrabeen are also listed on the Pittwater Local Environmental Plan 2014 as *Concrete geodesic domes (North Narrabeen Public School)* (Item 2270341).

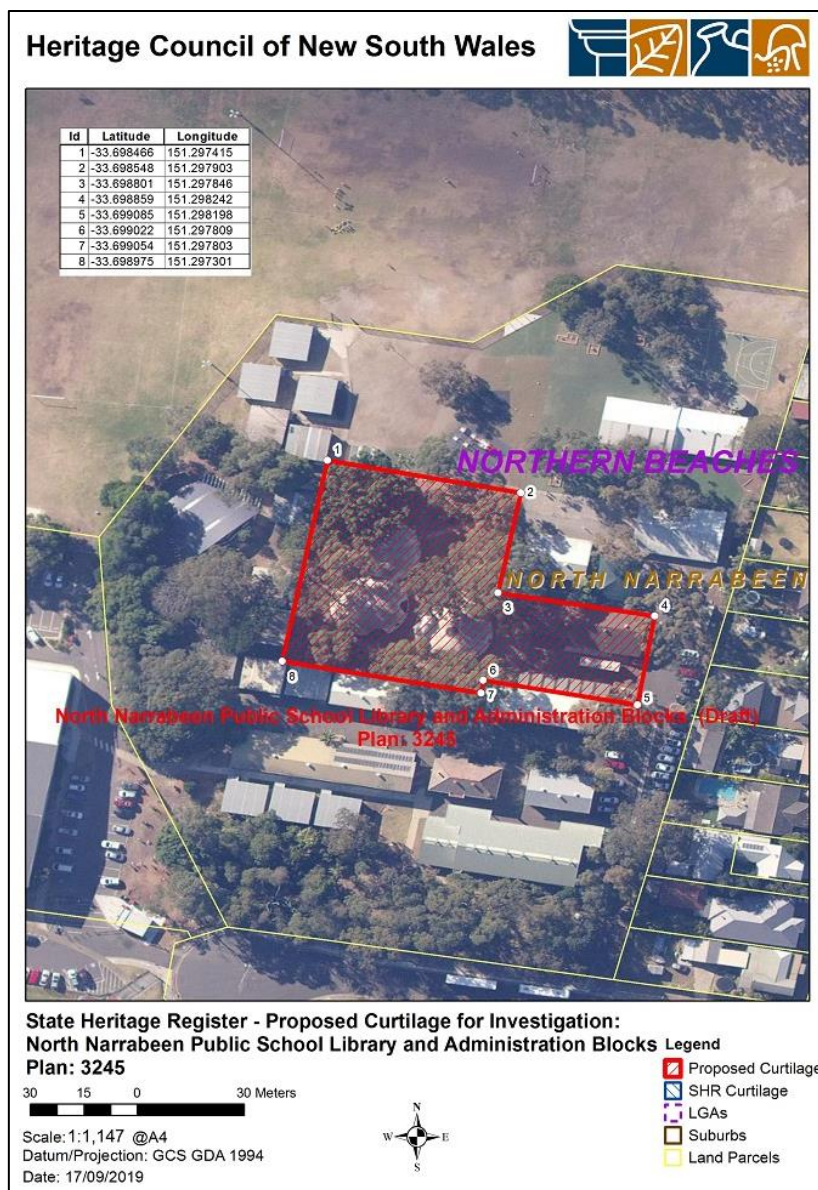


Figure 1.2 Proposed SHR curtilage (drawn 17 September 2019) for the Binishell buildings at Narrabeen North Public School within Lot 1 DP1018621. The curtilage encompasses the buildings with some contextual space surrounding them to enable sight lines (Source: SHI, <https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5066940>)

Part 4 Sections 57 to 69 of the Act address the statutory requirements for items and places listed on the SHR. Works which include demolition, damage or alteration of a heritage item or place require the approval of the Heritage Council of NSW or its delegates.

There are no historical archaeological sites identified or listed within the footprint of North Narrabeen Public School; however, sections 139 to 146, Divisions 8 and 9 of Part 6 of the Heritage Act refer to the requirement that excavation or disturbance of land that is likely to contain, or is believed may contain, archaeological relics is undertaken in accordance with an excavation permit issued by the Heritage Council (or in accordance with a gazetted exception under Section 139(4) of the Act). An archaeological relic is defined as meaning *any deposit, artefact, object or material evidence that:*

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
- (b) is of State or local heritage significance.*

In particular Section 139 refers to the need for a permit in certain circumstances:

- 1. A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*
- 2. A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*

1.3 Methodology & Authorship

This report is consistent with the principles and guidelines of the *Burra Charter: The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance 2013* and current best practice guidelines as identified in the *NSW Heritage Manual* (1996), published by the Heritage Office and Department of Urban Affairs and Planning, and associated supplementary publications including *Assessing Significance for Historical Archaeological Sites and Relics* (2009).

This HAA aims to identify the archaeological potential and significance associated with the study area to assist in the master planning and ensure the protection of the historical archaeological values of the Narrabeen Education Precinct.

This report has been prepared by Victoria Cottle, AMBS Historic Heritage Consultant, with assistance from Madeleine Rodwell, AMBS Historic Heritage Consultant. Jennie Lindbergh, AMBS Director of Historic Heritage has provided technical input and reviewed the report.

A site inspection was undertaken on 10 October 2019 by Lian Crisp, Victoria Cottle and Madeleine Rodwell. All photographs in this report were taken by Madeleine at this time unless otherwise identified.

2 Historical Context

2.1 The Northern Beaches

The Indigenous heritage of the Northern Beaches is unclear, while it was generally understood that the Guringai occupied the land, the term Guringai was a term coined in the nineteenth century and does not accurately represent the region (Aboriginal Heritage Office 2015:41). Prior to the amalgamation of Manly, Pittwater and Warringah councils into the Northern Beaches in 2016, Narrabeen was located within the shire of Warringah, an area occupying the Northern Peninsula from Manly to Palm Beach, the shire was created in 1905 (Kennedy 1982:136). The first explorations into the region occurred in March 1788 by Captain Phillip when he sailed north to the bay now known as Brisbane Water on the Central Coast. In June 1792, the waters of Bayview, Newport, around Church Point and McCarrs Creek were surveyed by William Dawes when he walked from Manly to Barrenjoey (Kennedy 1982:137; Thorp 1988b:6).

The settlement of Warringah Shire was constrained by steep slopes and the lack of arable soil which limited agrarian pursuits; it was the lower slopes which were settled and cleared for farming and grazing (Figure 2.2) (Thorp 1988a:4). The earliest evidence of settlement occurs along the northern portion of the peninsula where there was access to the Hawkesbury River and the ocean (Thorp 1988b:6). Settlement in the southern portion of the shire occurred between 1810 and 1820 (Thorp 1988b:6). While large land grants were made in the region, a lack of transportation and difficulties with the topography meant settlement was sparse and *farms were few and far between* (Thorp 1988a:4). Built structures during the early development of the region were simple with a mixture of timber structures and huts of slab and bark (Thorp 1988a:12). The first road was roughened out by James Jenkins, a key landholder in the region, in the early 1820s which went from Manly to Long Reef, this was later extended to Newport in the 1880s (Figure 2.1) (Kennedy 1982:137). It was not until the late nineteenth century with the establishments of roads and of a port at Newport when small pockets of the region were settled (Thorp 1988:4).

The first industries in the region focused around agrarian pursuits and exploitation of natural resources such as timber-getting and shell gathering (Thorp 1988b:44). Heavy industry did not flourish in the region, attempts were made to mine coal in the late nineteenth century; however, this did not prove to be profitable (Thorp 1988b:44). The twentieth century saw further exploitations of natural resources, in sand dredging and oyster leases, and a shift to urban businesses (Thorp 1988b:45).

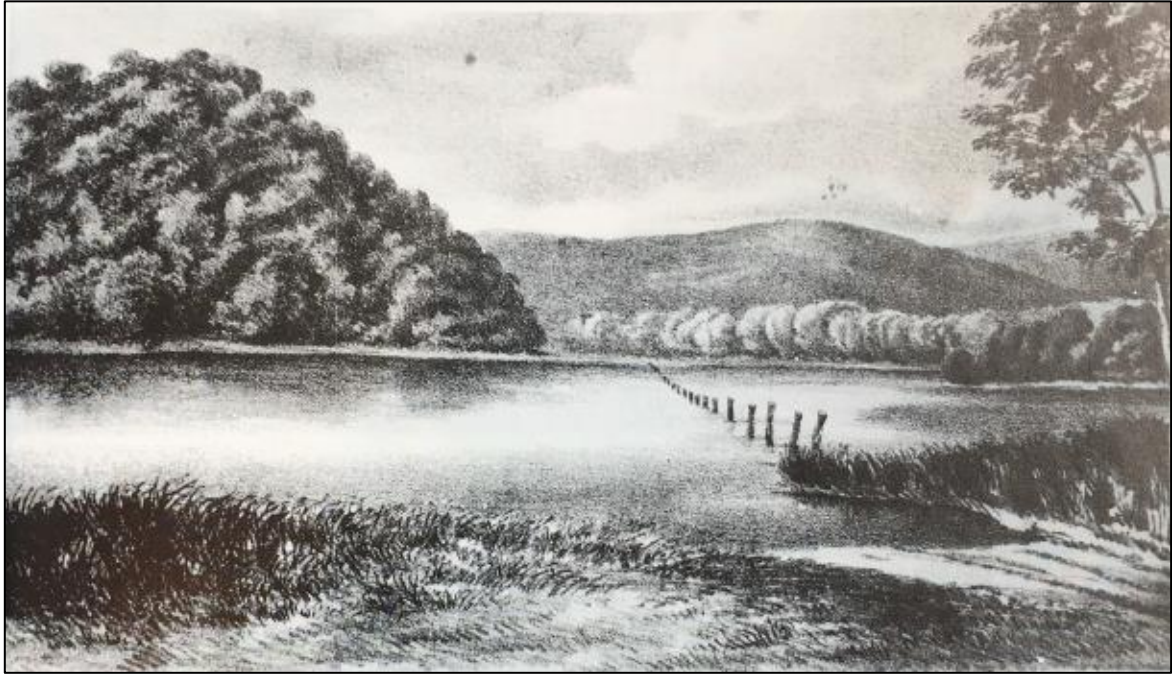


Figure 2.1 The first ford across Narrabeen Lakes, used to guide carriages, the first bridge was constructed in the 1880s (Source: Sharpe 2004:89).

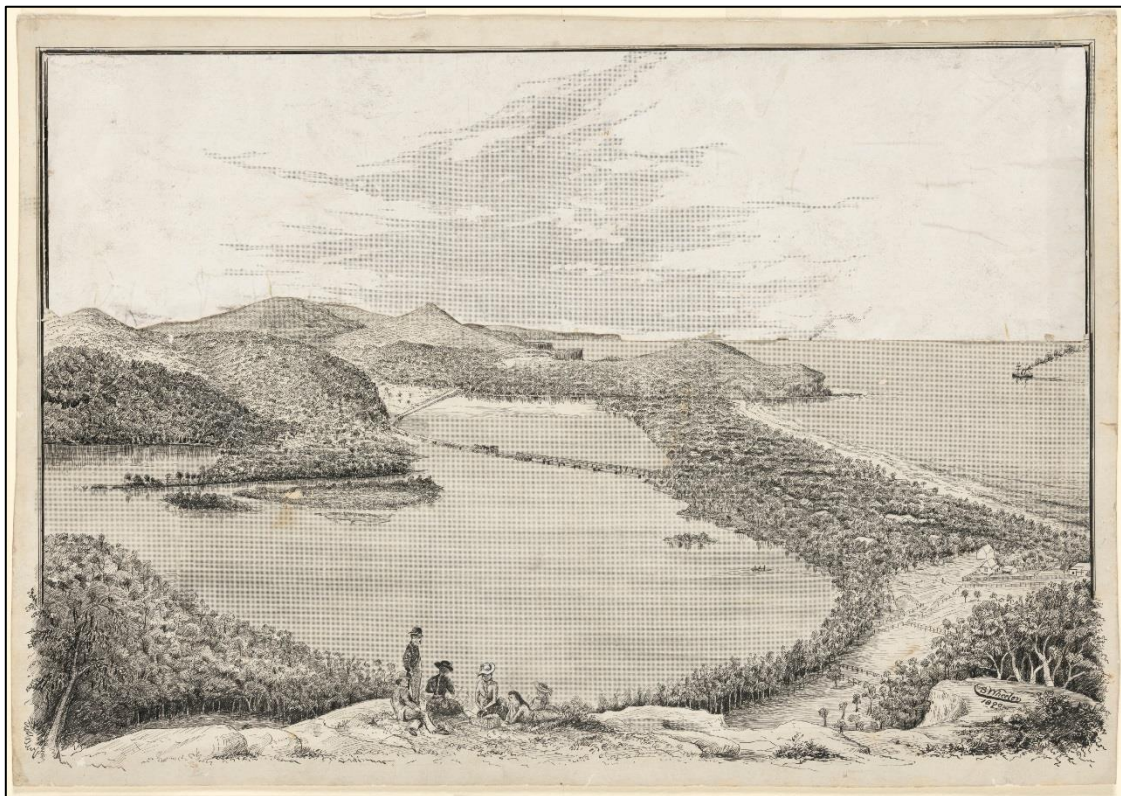


Figure 2.2 Narrabeen Lagoon 1890 (Source: State Library of NSW, Dixon Library, IE8795087).

2.2 Narrabeen

The first record of Narrabeen appears in 1814 – 1815 on the maps of Surveyor James Meehan. The earliest land grants in the area was made to John Ramsay in 1818. James Jenkins received multiple grants in the area during 1824 – 1831, eventually holding over 600 acres (Pollen 1988:184). In 1882, *Finding Narrabeen* appeared in *Sydney Punch* describing the area with *rugged rocks and sterile slopes, and bramble, briar, and thorn* reaffirming the isolation of the region prior to reliable

transportation (Sydney Punch 1882:3). Another article describes *the scenery... on the Narrabeen Lagoon... is exceedingly fine in a broken, sterile, and uninteresting country* (Figure 2.3) (Colonist 1838:2).

Despite advertising land allotments during the 1820s and 1830s, the 1856 census only records five houses and 30 people permanently residing in the Narrabeen parish (Empire 1856:5). 1861 saw a substantial decrease in the population with only 18 people recorded (SMH 1862:4). When allotments were first being sold around Narrabeen, they were going for £5 to £10; however, by 1886 prices increased to between £25 to £60 (Figure 2.4) (Evening News 1886:3).

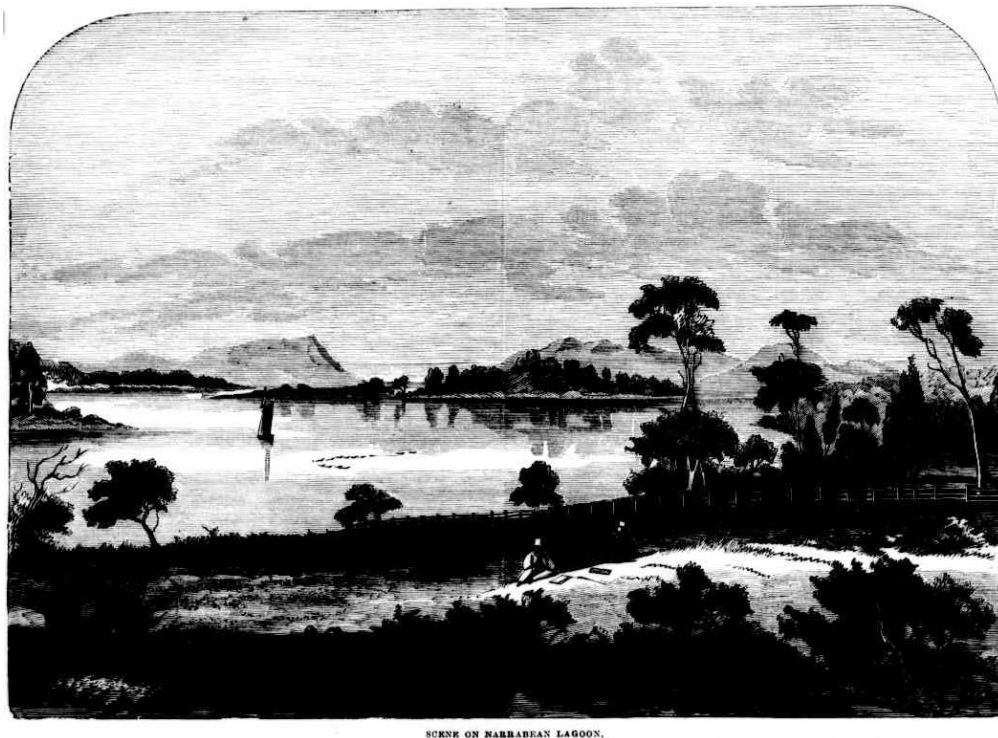


Figure 2.3 "Scene on Narrabeen Lagoon" sketch (Source: Australian Town and Country Journal, 1877:20).

Sir Henry Parkes established the Casual Labour Board in May 1887 and created a register in which the particulars of the applicant were recorded and relief work was found (SMH 1888:4). Within the first 18 months of the board's establishment, 8119 men sought work; the average daily wage for these men, after their rations were paid, averaged between three and four shillings (The Daily Telegraph 1888:5; SMH 1888:4). In October 1888, there were 250 men employed in Narrabeen to clear the land and build roads, originally work had started in August 1887 with 900 men; however, this number was gradually reduced (The Daily Telegraph 1888:5). The relief works provided for the *unemployed* ceased in 1889 with the Government deciding the work was *a serious drain upon the public revenue* (Newcastle Morning Herald and Miners' Advocate 1889:2).

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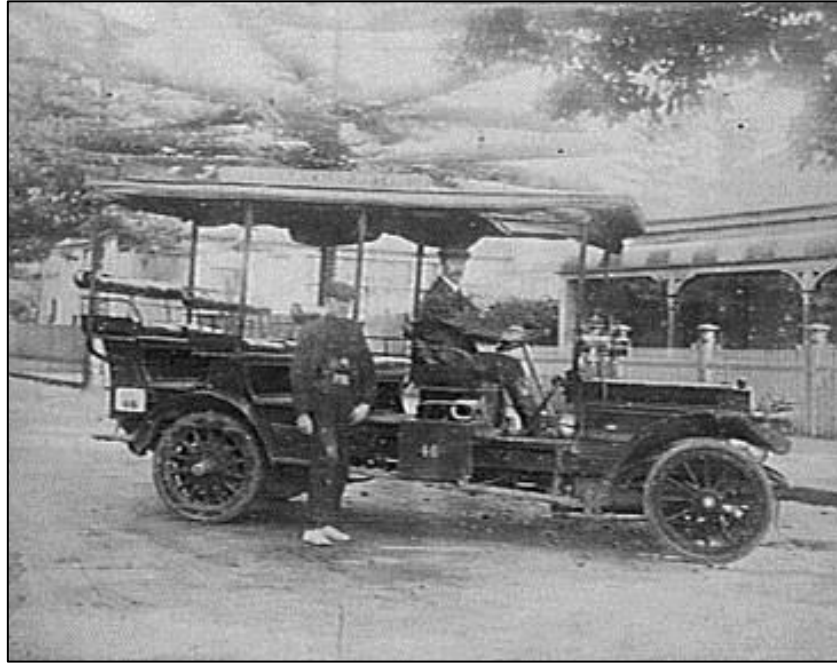


Figure 2.5 The Narrabeen Rock Lily Pittwater bus, c.1900, one of the coaches to offer tours around the Narrabeen region, along with E.J. Black Coach Proprietor (Source: Northern Beaches Council, Manly Local Studies Image Library, MML/288).



Figure 2.6 Narrabeen and Lakes aerial 1962, tram terminus arrowed (Source: National Library of Australia, Call Number: PIC FH/7114 LOC Cold store PIC HURL 217/10).

Narrabeen attracted the less affluent compared to more exclusive areas within the peninsula such as Palm Beach, with more affordable fibro cottages being built near the tram terminus (Figure 2.6) (Thorp 1988b:20). The tram terminating at Manly was extended to Collaroy Beach, in the southern portion of Narrabeen, in August 1912 with the route proposed to extended to Narrabeen Lake (The

Sun 1912:10; Clarence and Richmond Examiner 1912:5). In February 1912, during the tram line's construction into the district, a strike occurred, affecting 60 men involved in the work and delaying the opening of the line (Northern Star 1912:5). The tram terminus was extended to Narrabeen, running parallel with Pittwater Road, in December 1913 where it was met by coaches and buses that were used to access the rest of the peninsula (Figure 2.7 and Figure 2.8) (Daily Telegraph 1913:7; Thorp 1988b:37). The opening of the tram line was said to boost the development of the district and to grow as an easily accessible tourist territory (The Sun 1912:10). In the 1920s, the area was advertised to potential residents as *being 7 miles from Manly by tram, with a good hotel and the usual week-end accommodation cottages* with one of the best surfing beaches in the state. *The district is eminently suited for Orchards, Flower and Vegetable Gardens and Poultry Farms* (Pollen 1988:184). In 1938, the tram to Narrabeen ceased and buses ran directly from Manly (Thorp 1988b:26). Prior to the closure of the tram line, the service had begun to see a loss in profit, this was attributed to a number of reasons including the opening of the Harbour Bridge to bus services, an increase in wages and the rising costs of power – these combined, it was no longer financially viable to maintain the trams (The Sun 1938:13).



Figure 2.7 Opening of the Narrabeen Tramway 1913 (Source: State Records of NSW, ID: 17420_a014_a0140001165).



Figure 2.8 Narrabeen tram sheds, Pittwater Road, Narrabeen 1925, with waiting coaches (Source: Northern Beaches Council, Warringah Image Library, Acc: 285206).

Besides being a popular tourist destination, natural resources were found in Narrabeen which were subsequently mined. Coal mining began in the region in the late 1800s with the discovery of coal seams. In 1890 two diamond drill bores had been put down by Mr J Coghlan with natural gas discovered during the boring (Newcastle Morning Herald and Miners' Advocate 1890:3). In 1904, a bore was drilled into the edge of Narrabeen Lagoon (The Capricornian 1904:35). In the beginning of August 1884, the first powder works in Australia was opened in Narrabeen for the manufacture of blasting powder and gunpowder by Carl Von Bieren (Figure 2.9) (Newcastle Morning Herald and Miners' Advocate 1884:2; SMH 1884:3). The high import rates of gunpowder proved the necessity of establishing a powder works in Australia, its opening would provide employment within Narrabeen as well as cheapen the costs of *blasting compounds* (Illawarra Mercury 1884:4). However, gunpowder would never be produced at Narrabeen, Carl Von Bieren declared insolvency in 1885 and attempted to leave the country before he was caught and tried for embezzlement (Sharpe 2004:91). After serving only a part of his sentence, Von Bieren was released and he disappeared (Sharpe 2004:91).



Figure 2.9 Powder works factory at Narrabeen (Sharpe: 91).

The first water supply was reticulated during the opening of the tram line to Collaroy Beach in August 1912, with a display made by the local fire department (The Sun 1912:10). A new water pumping station opened up in Ryde in September 1921 to service the northern suburbs of Sydney, including Narrabeen, this increased the supply of water into the district (The Daily Telegraph 1921:4). The Northern Suburbs sewer began construction in 1920, a system which proposed to

service 186 square miles including the peninsula and was said to be *one of Australia's greatest engineering undertakings* (Sydney Mail 1920:15). Electricity was extended to the district surrounding Narrabeen in 1923 (SMH 1923:14). In March 1925, it was announced that works would begin in connecting Narrabeen and other towns on the peninsula to gas with 12 to 13 miles of mains to be connected, the work was expected to take 12 months (Evening News 1925:14).

The second half of the twentieth century saw the region develop as a commuter district as well as an exclusive residential area, the development was aided by reliable transport and the connection of services in the region (Thorp 1988a:8). The construction of the Warringah Expressway, commencing in 1965, and regular ferry services, commencing in 1955, connected the Northern Beaches region to the city allowing for the development of a commuter suburb (Thorp 1988b:31). Between 1947 and 1961, Warringah saw a 187% increase in population from 32,856 to 94,440 with spikes in population during holiday periods (Thorp 1988b:31).

2.3 Development of the Narrabeen Education Precinct

The earliest schools in the Northern Beaches region were built in the late nineteenth century with Bay View and Newport hosting the first school in 1884 and 1889 respectively (Thorp 1988b:21). The first school in the Narrabeen area, Narrabeen Public School, was proposed and opened in 1889, changing its name to Narrabeen Lakes in 1995 and continues to operate today (Newcastle Morning Herald and Miners' Advocate 1889:2; NSW Department of Education 2019).

The Narrabeen Education Precinct is located within William Bernard Rhodes original 50 acres, Portion 47 of the Narrabeen Parish, granted on 16 December 1836 (Figure 2.10) (Primary Application 17427). Rhodes was a merchant from Wellington, New Zealand and sold his land to Thomas Collins in September 1849 (Champion 1996:14). Throughout the nineteenth century, the land was owned and leased by numerous individuals including James Blair and John Thomas Collins (Primary Application 17427). In February 1903, when Edward Augustus Macpherson owned and occupied the study area, part of the original 50-acre grant was resumed under the Public Roads Act 1902, to deviate the road from Manly to Pittwater through Portion 47 (Figure 2.11) (Crown Plan R7580.1603R).

On 26 March 1912, 55 acres 1 rood and 28 perches were transferred to Septimus W. Macpherson (Crown Plan R7580.1603R; Certificate of Title Vol 2239 Fol 168). The associated Certificate of Title includes a 100 feet wide reservation along the Main Creek; the purpose of this reservation is unknown (Figure 2.12) (Certificate of Title Vol 2239 Fol 168).

By 1912, the north-eastern section of the original 50-acre portion has been separated for a subdivision, with Oak Street established to service the new residential area (Figure 2.14). Between the time of Rhode's original purchase and 1912, when this subdivision occurred, the study area remained largely undeveloped, occupied by natural bushland (Figure 2.13). The development which did occur in the area following the subdivision was focused on Oak St where there had been allotment sales since 1912 (Figure 2.15).

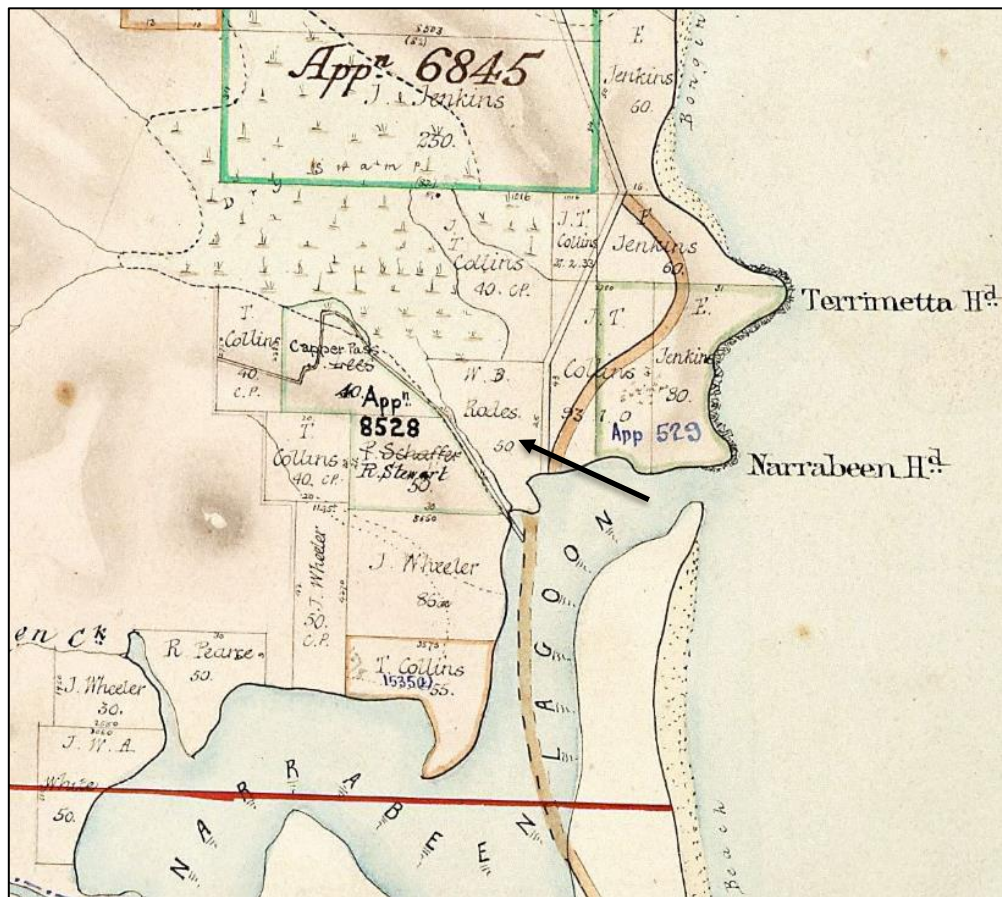


Figure 2.10 Detail of Narrabeen Parish Map (23 October 1867) with study area (Part of Portion 47) arrowed (HLRV: <https://hlrv.nswlrs.com.au/>).

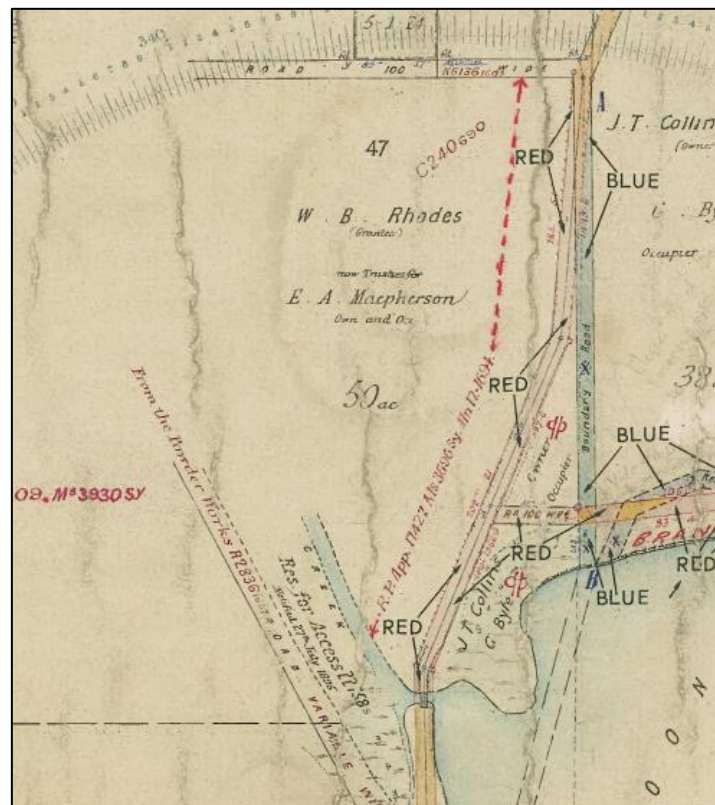


Figure 2.11 Detail of Crown Plan showing land coloured red (through Portion 47) resumed under the Public Roads Act 1902, to deviate the road from Manly to Pittwater (Crown Plan R7580.1603R).

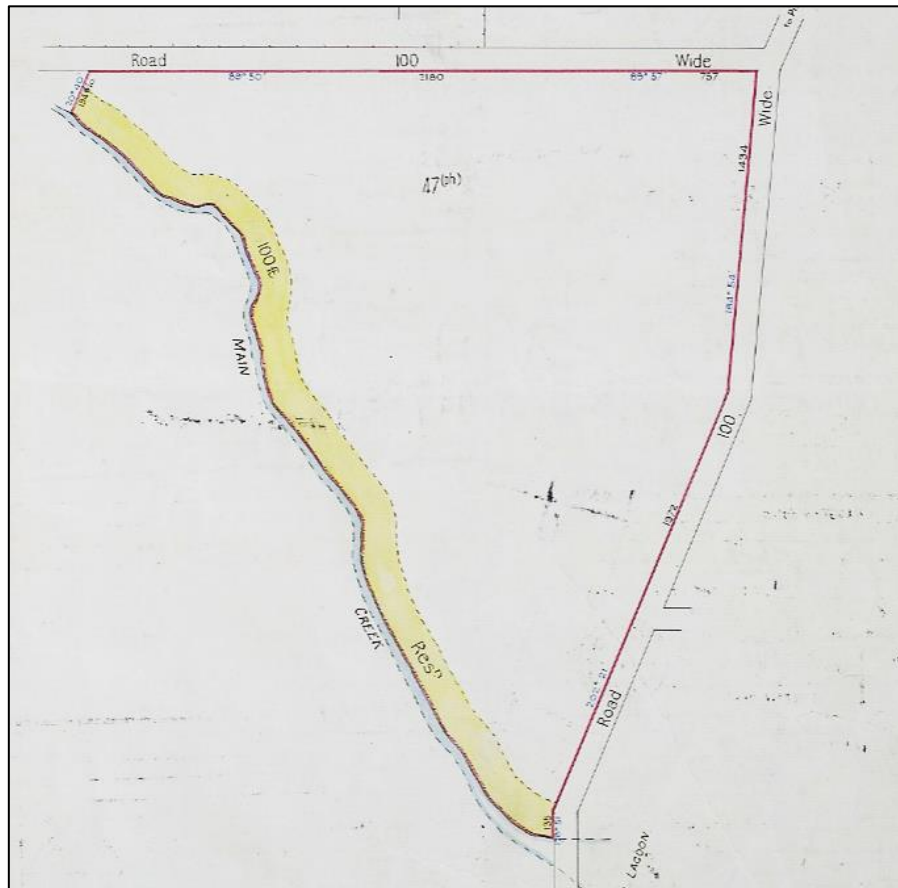


Figure 2.12 Map of Portion 47 (55 acres 1 rood 28 perches) transferred to Septimus W. Macpherson on 26 March 1912. Note the 100-ft wide strip of land west of the Main Creek, coloured yellow, was reserved (Certificate of Title Vol 2239 Fol 168).

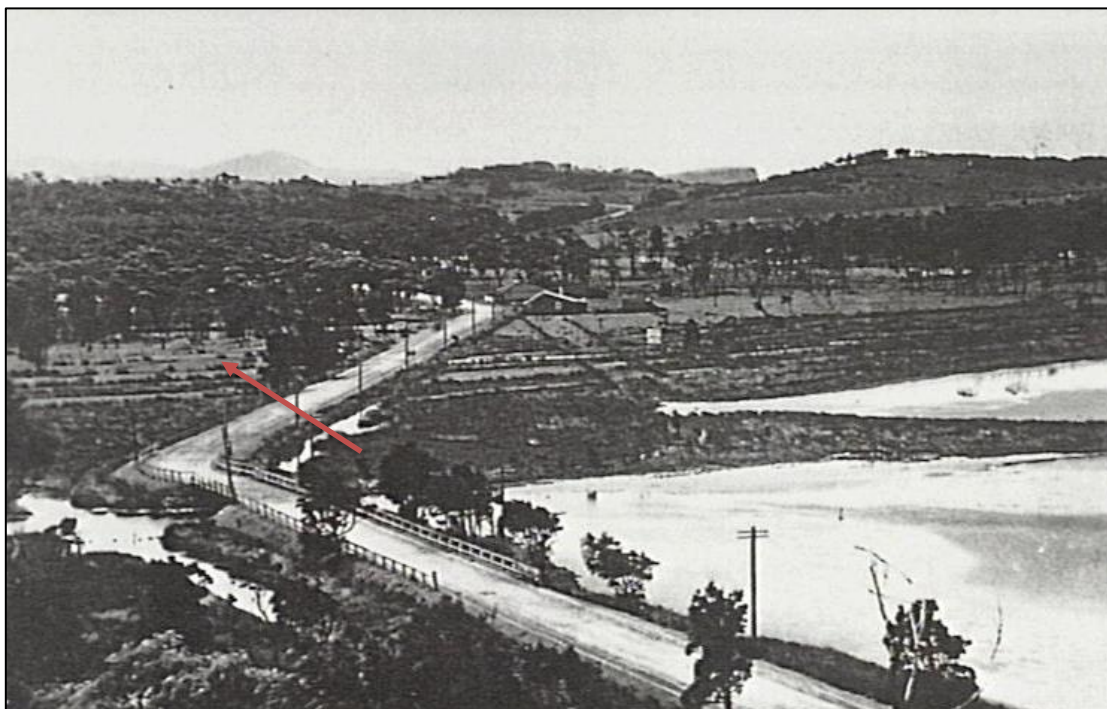


Figure 2.13 Photograph c.1910 facing north towards bridge on Pittwater Road across Mullet Creek and Narrabeen Lagoon, showing the south-eastern portion of the study area as undeveloped (arrowed), as well as dense vegetation further north (before the Oak Street subdivision) (Source: Pittwater Image Library, NNAR-050).



Figure 2.15 c.1920 photograph facing north-east showing development on Oak Street (arrowed). This photo was taken during a flood event; water can be seen across the southern portion of the study area (Source: Historic Photographs, Photo ID: S127).

On 18 January 1928, a 5-acre portion of the original 50-acre grant (north of Namona Street) was purchased for Public School Purposes at Green Hills, "Narrabeen North"; this purchase was vested on 4 September 1929 in the Education Department (Figure 2.16) (Crown Plan 7018.3000). On 8 April 1932, the Narrabeen Beach Estates Limited became the proprietor of a 123-acre estate encompassing the study area; the associated Certificate of Title makes mention to '*reservations in the Grants of Portions 2 (2 of Parish/and Portion 96 of minerals and in the Grant of 50 acres (Portion 47 of Parish) of all mines of gold and silver*', suggesting that mining activities occurred in the vicinity of the study area (and possibly in the 100 feet wide reserve within Portion 47) (Figure 2.17) (Certificate of Title Vol 4525 Fol 219). The study area at this time, prior to the commencement of construction of the Narrabeen North Public School, remained undeveloped, as can be seen in aerial photographs of the area (Figure 2.18-Figure 2.20).

On 17 January 1946, a plan was approved for part of the estate owned by Narrabeen Beach Estates Limited to be acquired for the Narrabeen North Secondary School; these 38 acres 2 roods and 16 perches of land (excluding the 100 feet reservation) were purchased by the Department of Education on 27 June 1947 (Figure 2.21). On 22 March 1948, King George VI became the proprietor of the estate acquired for the Secondary School, inclusive of the 100 feet reservation (Certificate of Title Vol 5802 Fol 236). The land in the 100 feet reservation was resumed for the Secondary School by Government Gazette on 24 August 1956 (Crown Plan 11903.3000). One acre 1 rood and 22 ½ perches of the study area were appropriated for the widening of Pittwater Road to the, gazetted on 6 June 1958, for the purposes of the Main Roads Act 1924-1957 (Certificate of Title Vol 5802 Fol 236).

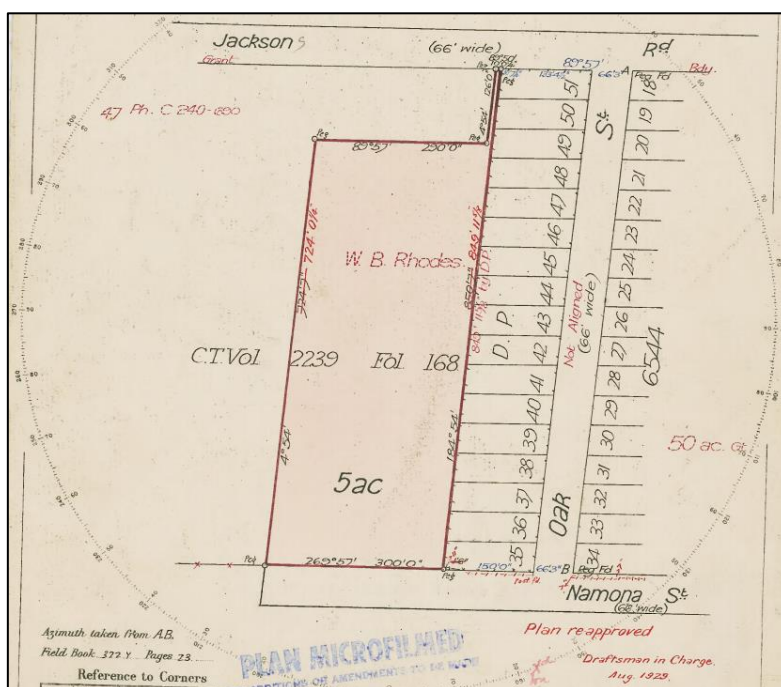


Figure 2.16 5-acre portion of the original 50-acre grant purchased on 18 January 1928 for Narrabeen North Public School (Crown Plan 7018.3000).

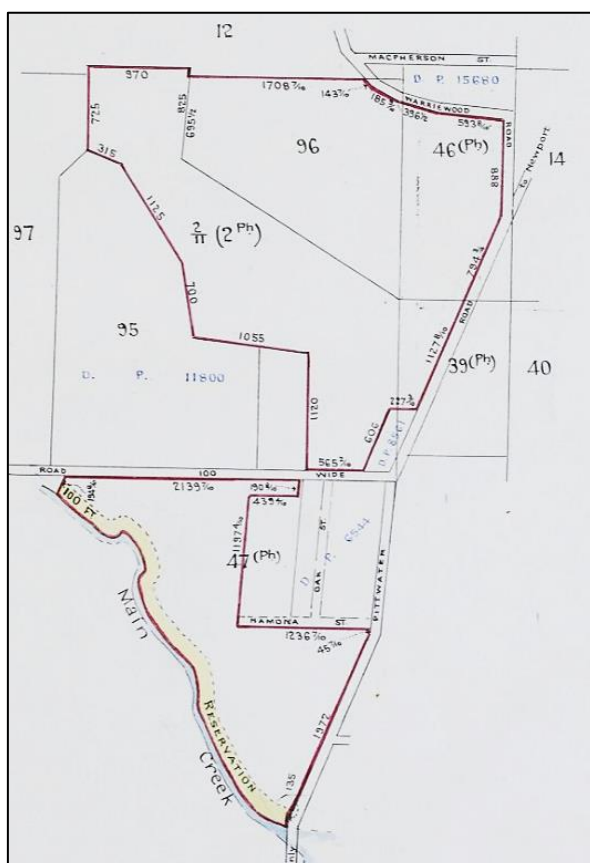


Figure 2.17 Estate of 123 acres 3 roods and 3 3/4 perches transferred to the Narrabeen Beach Estates Limited on 8 April 1932. Note the 5-acre portion of the study area that was reserved for Narrabeen North in 1928 (Certificate of Title Vol 4525 Fol 219).



Figure 2.18 1930 aerial of study area. While this aerial is of poor quality, it can be seen that there was little activity within the study area at this time. The location of the current NNPS is arrowed in red and NSHS is arrowed in white (Source: NSW Department of Customer Service, Spatial Services, spatialservices.nsw.gov.au. Image CAC_01_1134).

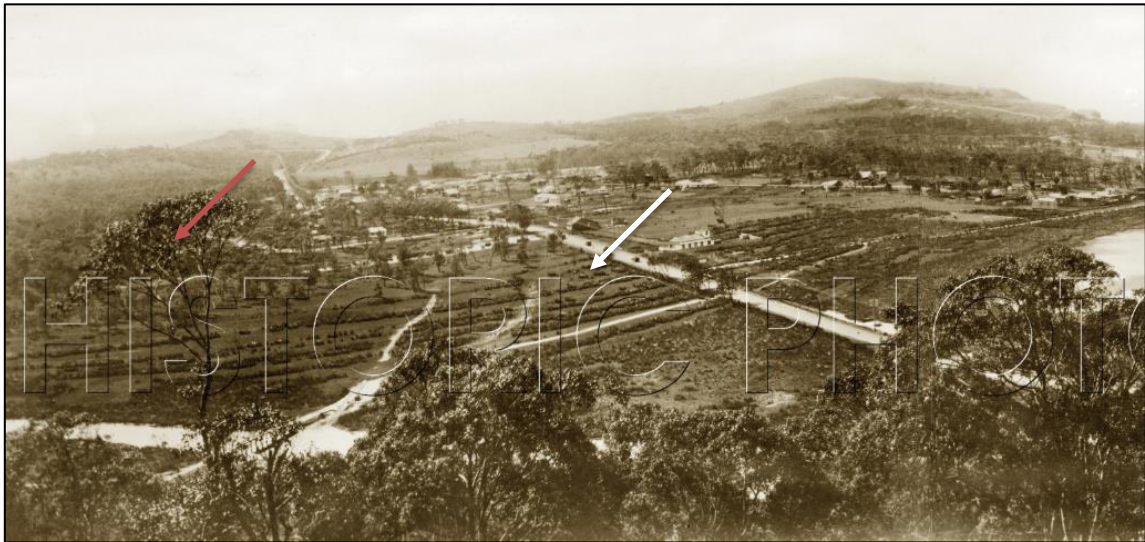


Figure 2.19 c1930 aerial photograph of the study area facing north-east towards Warriewood, showing study area as undeveloped. The location of the current NNPS is arrowed in red and NSHS is arrowed in white (Source: Historic Photographs, Photo ID: P18).



Figure 2.20 1943 aerial of southern portion of study area, Narrabeen Sports High School (Source: SIX, <https://maps.six.nsw.gov.au/>).

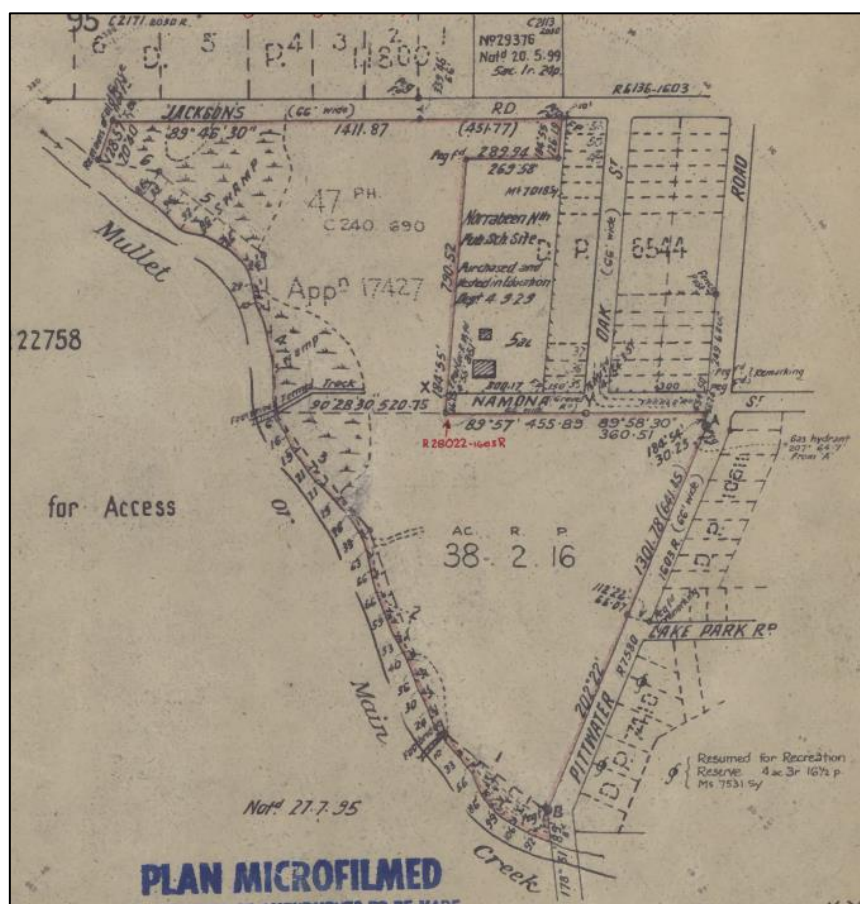


Figure 2.21 Crown Plan dated 17 January 1946 detailing land resumed for The Narrabeen North Secondary School, later purchased in June 1947. Note two buildings present in the 5-acre lot occupied by the Narrabeen North Public School site (Crown Plan 11903.3000).

2.3.1 North Narrabeen Public

The North Narrabeen Infants' School was built on the 5-acre lot purchased for Public School purposes in 1928, as seen in the 1946 Crown Plan, two buildings were located on the site which could be the buildings referred to in the Sun article (Figure 2.16 and Figure 2.21). The North Narrabeen Infants School was officially opened in 1939; however, it had its beginnings in 1935 (Department of Education, 2019: North Narrabeen Public School 1989:9). Mrs V E Norman ran the first school out of the nearby Welfare Hall, later converted to a wire factory, from 1935 until the new school was constructed in 1938 (North Narrabeen Public School 1989:9). During the time the school operated out of the Welfare Hall, the Sun records floods in 1936 reporting that *at the North Narrabeen Infants' School, the children's playing area was under water. The house adjoining the school hall was surrounded by water...* (The Sun 1936:12). A tender was placed in the Government Gazette in 1938 for new building at North Narrabeen and new brick closets in 1942 (Figure 2.22) (Government Gazettes 1938:2016; 1942:2937). Transport in the region for school children was poor, demonstrated by a strike in 1948 with parents protesting the lack of transport, highlighting the fact that some children were walking four miles to get to school; however, little improvements were made and another strike was held the following year (The Riverine Herald 1948:1; Daily Telegraph 1948:7).

North Narrabeen School attained Primary status in 1953, the Infants school was closed and was reopened as North Narrabeen Public School (North Narrabeen Public School 1989:11). Soon after the opening of the North Narrabeen Public School, a tender was put forward for the building of a four roomed timber classroom, demonstrating the growth of the school and the need for more

teaching space (Government Gazettes 1954:2912). In 1956 another timber framed building was erected that was also supplied with electricity (Government Gazettes 1956:2111).



Figure 2.22 Students at Narrabeen North Public School 1939, in front of the original brick school building (current K Block) (Source: Pittwater Image Library, NNAR-051).

In 1974 a three concrete shell dome complex, was constructed at Narrabeen North Public School. This was achieved using the method devised by an Italian architect Dr Dante Bini; the domes are often referred to as Binishells, after Bini. The domes were 18 metres in diameter; two interconnecting domes were used as a library, and the third dome served as an administration office for the school.

2.3.2 *Narrabeen Sports High School (NSHS)*

The Narrabeen Girls High School, established in January 1954, and the Narrabeen Boys High School, established in January 1959 (Figure 2.23), were both closed in Dec 1975. In January 1976 they were merged to form the co-educational Narrabeen High School (Figure 2.24), known as the Narrabeen Sports High School (NSHS) since 2000 (NSW Department of Education, 2019; Louise Anne Wilson, 2018:).

The buildings associated with the Narrabeen Boys High School are no longer extant; these buildings were likely located where the current sports oval is situated in the north-eastern corner of the school. The original Narrabeen Girls School were located in the southern half of the study area; the only building associated with the former remains extant is the former gymnasium (Louise Anne Wilson, 2018). The Hawksley prefabricated aluminium gymnasium was completed in June 1955, there were four other schools across Sydney where the same style of gymnasium was constructed at the same time (Government Gazette of the State of New South Wales 1955:1581).



Figure 2.23 South-western view of Pittwater Road, from near entrance to Namona Street, 1962. Narrabeen Boys High School on the right (arrowed) (Source: Pittwater Image Library, NNAR-155).



Figure 2.24 Aerial view of Narrabeen (1982) facing north-west, showing the study area. NSHS (then Narrabeen High School) is arrowed in white and NNPS is arrowed in red. Note the buildings associated with Narrabeen Boys High School have been demolished (Source: Pittwater Image Library, NNAR-011).

3 Environmental Context

The Narrabeen Education Precinct comprises two portions; the Narrabeen North Public School (NNPS) stands in the northern portion and the Narrabeen Sports High School (NSHS) in the southern portion (Figure 3.1). Both schools are accessed via Namona Street, off Pittwater Road (Figure 3.2 and Figure 3.3). NNPS is bound by the Warriewood Valley Sports Ground (WVSG) to the north, residential dwellings addressing Oak Street to the east, Namona Street to the south and the Northern Beaches Indoor Sports Centre (NBISC) to the west (Figure 3.4). NSHS is bound by Namona Street to the north, Pittwater Road to the east, Pittwater Sports Centre (PSC) to the south and Mullet Creek (a tributary of the Narrabeen Lagoon) to the west (Figure 3.35). The following encompasses all external aspects of the Narrabeen Education Precinct.



Figure 3.1 Current aerial of the study area, annotated to show the various institutions surrounding the Education Precinct (Source: <https://maps.six.nsw.gov.au/>).



Figure 3.2 View south of Pittwater Road from corner of Namona Street.



Figure 3.3 View west of Namona Street.

3.1 Narrabeen North Public School (NNPS)

Pedestrian and vehicular access to the Narrabeen North Public School and staff car park is provided from Namona Street via separate gates (Figure 3.5 and Figure 3.6). The school site is delineated by black metal security fencing.

The buildings on the site are a combination of brick, timber and demountable structures; all of the buildings are single-storey except V Block which is two storeys. The oldest building on the site is the brick K Block, the original 1938 school house (Figure 3.7 and Figure 3.8). There are 14 demountable buildings at the school; these buildings stand on brick piers, and as such, do not have sub-surface foundations (Figure 3.9-Figure 3.12). The Binishells stand in a central area; there is one stand-alone dome to the east and two interconnected domes to the west (Figure 3.13-Figure 3.16). There is a bricked pathway running north-east from the northern Binishell, that features engraved names of individuals associated with the school (including former original students and the school's first principal in 1953, Mr Alan Robb (Figure 3.17). A small covered theatre, or odeon, stands in the western part of the study area, featuring a concrete stage area and asphalted seating area consisting of rows of metal bench seats (Figure 3.18 and Figure 3.19).

The main open playground at the school is located in the northern part of the study area, whilst other small play areas are located amongst the class rooms (Figure 3.20). The northern part of the study area encompasses both natural and synthetic grasses and surfaces. Two metal play equipment structures stand in this area, as well as a sports field in the north-eastern corner of the school (Figure 3.21-Figure 3.23). The areas surrounding the buildings in the north-eastern part of the school are concreted with painted games (Figure 3.24). New concrete paths connecting some of the northern buildings were being laid during the site visit; one of these paths led to a small covered outdoor learning area (COLA) with synthetic grass north of the R Block. (Figure 3.25 and Figure 3.26).

The grounds of the school feature natural grassed areas, synthetic grassed areas, asphalted areas and concreted areas. The landscaping at the school encompasses planter boxes containing both mature trees, small shrubs and plants, as well as stumps of former mature trees at various locations, particularly where there are asphalted or synthetic grass surfaces (Figure 3.27 and Figure 3.28). There are some natural grassed areas with mature trees and shrubs on the site, as well as densely vegetated areas delineated by concrete, timber or stone edging (Figure 3.29-Figure 3.32).



Figure 3.4 Current aerial of the Narrabeen North Public School (NNPS), annotated to show various structures on the site (Source: <https://maps.six.nsw.gov.au/>).



Figure 3.5 View south of pedestrian access to NNPS from Namona Street.



Figure 3.6 View north of car park from vehicular access gate from Namona Street.



Figure 3.7 Southern elevation of K Block, 1938 Original brick school house.



Figure 3.8 Northern elevation of K Block.



Figure 3.9 View east of pathway between timber building (J Block) and demountable buildings on brick piers.



Figure 3.10 View north under J Block (timber building) on brick piers showing sand beneath).



Figure 3.11 View north of demountable buildings



Figure 3.12 View east showing demountable buildings.



Figure 3.13 View south-west of pathway between demountable buildings and connected Binishells (B Block).



Figure 3.14 View east of Binishells (A and B Blocks), administration and library buildings of the school.



Figure 3.15 View east of Administration Binishell (A Block) between R and P Blocks. This sight line is encompassed in the proposed SHR curtilage.



Figure 3.16 View south of Binishells



Figure 3.17 View north-eastern elevation of interconnected Binishells (B Block)



Figure 3.18 View south-west of small theatre showing concrete stage.



Figure 3.19 View south-west of theatre showing covered asphalted area with metal bench seating.



Figure 3.20 View east of asphalted playground area between H and J Blocks, with basketball hoop.



Figure 3.21 View east across the playground area, to the sports field in the north-east corner of the study area.



Figure 3.22 View south of the playground area.



Figure 3.23 View south-east of the playground area to the U, T & S Blocks



Figure 3.24 View north from the S Block, across concreted area west of T Block, to U Block (canteen)



Figure 3.25 View east of freshly laid concrete path network connecting U, T & S Blocks.



Figure 3.26 View west of COLA north of brick R Block with freshly laid concrete path in background.



Figure 3.27 View north-east to northern corner of study area showing timber plant boxes (containing stumps) and fenced area with trees in the background.



Figure 3.28 View south-west of timber plant boxes north of H Building.



Figure 3.29 View south of U and T block, showing large _ tree and small greenhouse area in foreground between T block and eastern boundary.



Figure 3.30 View east of grassed area north of Administration Binishell.



Figure 3.31 View south across grassed area south of J Block, showing densely vegetated area to south of study area along Namona Street.



Figure 3.32 View west across grassed area south of V Block, along Namona Street.

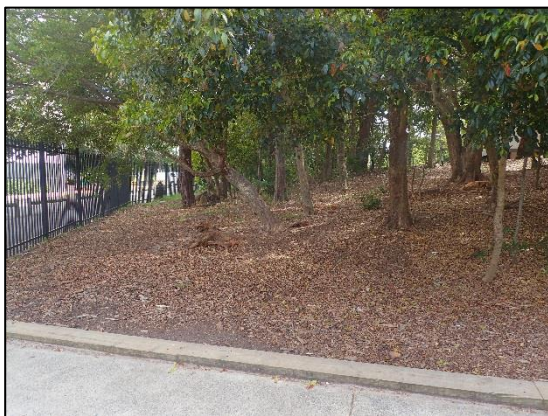


Figure 3.33 View north of densely vegetated area in the western portion of the study area, west of demountable buildings and south of amphitheatre.



Figure 3.34 View of vegetation in southern portion of study area, with series of pathways.

3.2 Narrabeen Sports High School (NSHS)

The main pedestrian and vehicular access to the Narrabeen Sports High School is provided from Namona Street and Pittwater Road, via separate gates. The staff and trade car park is located to the north of the site; the driveway into this park is bordered on the eastern side by a row of mature paperbark trees, and the surrounding area contains natural grassed areas with mature trees as well as garden areas delineated by timber board edging or concreted paths leading to the northern buildings (E & A). It is in this northern area of the school that some commemorative plaques are located. The public car park is situated in the south-east of the school, and is delineated by built up gardens and black metal fencing. A pedestrian footbridge across Mullet Creek also provides access to the south-western corner of the school; this corner of the site is occupied by rabbit warrens. The school site is bordered by metal security fencing.

The buildings of the school are mainly clustered in the centre of the lot, with only two buildings located in the southern section (Buildings K and F). The majority of the buildings are constructed of brick and have two storeys; there are only two single storey buildings (Buildings G and K) and there is one three storeyed building (Building E). Covered concrete pathways connect all of the buildings at the school.

Some of the buildings have been constructed around courtyards. A grassed area between Buildings B and C includes some trees and a few raised metal garden beds; some trees also stand in the centre of Building C. Additionally, there is a concreted area with some trees and seating in the area between Buildings A and B. South-west of Building A, adjacent to the concreted courtyard is a basketball court. There is a concreted COLA north of Building D; east of which is a concreted seating area.

The outer areas of the school are generally open, either occupied by sports fields or grassed areas, with the exception of the densely vegetated eastern bank of Mullet Creek. There is a full-sized synthetic sports oval at the north-eastern corner of the school. West of the oval is a small grassed hill planted with numerous trees. A natural grassed sports field is situated in the north-western corner; a large L-shaped storage shed stands to the north-east of the field. South of the field is a permanent covered seating area, and to the west of the seating is an enclosed wire mesh sports field. Four tennis courts are situated further south of the sports field and seating area. There are several concreted rectangular drains located within the grounds; two of the drains are located west of Buildings B and C and one is located at the south-west corner of Building G. A bricked rectangular structure, likely electricity substation, is located to the west of the staff car park.

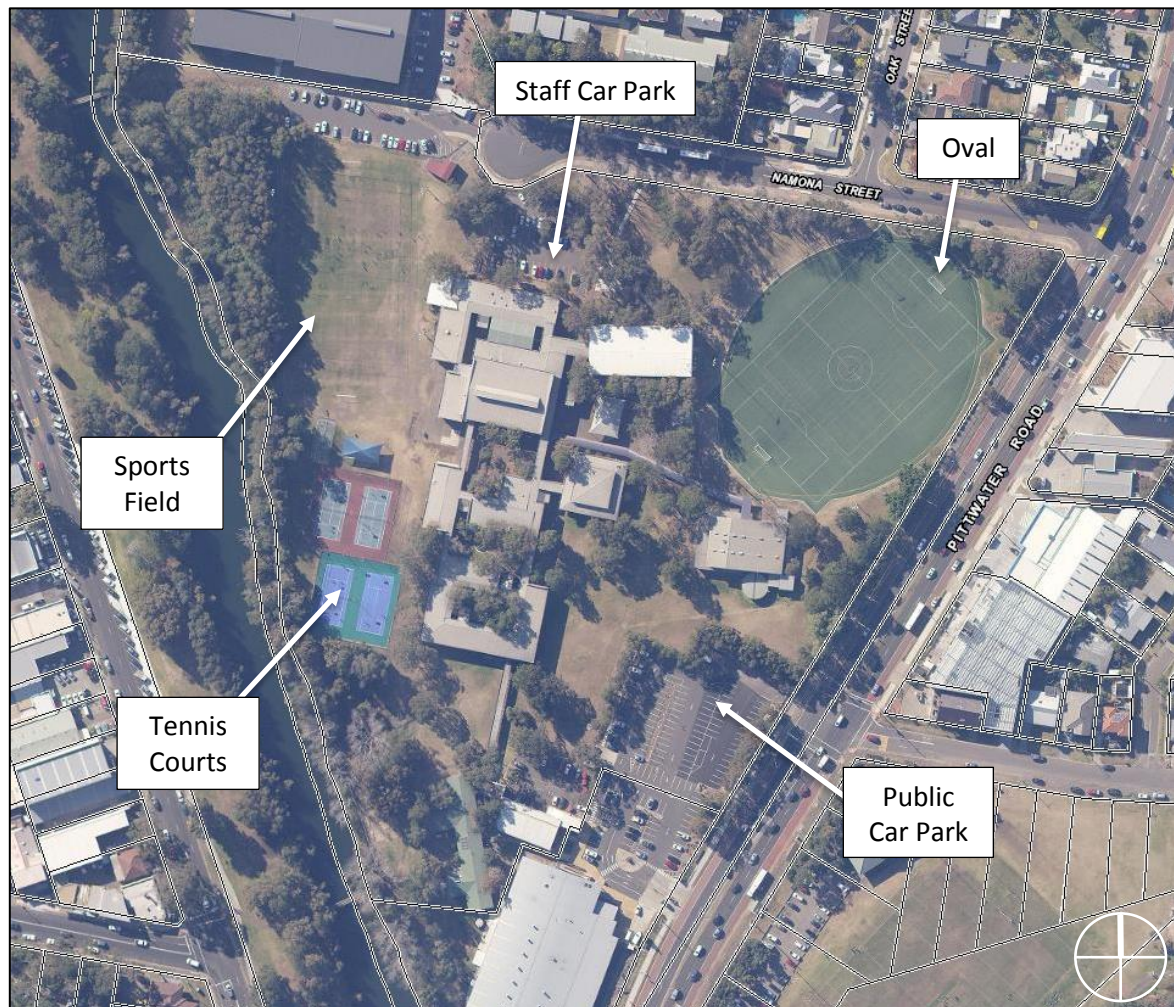


Figure 3.35 Current aerial of the Narrabeen Sports High School (NSHS), annotated to show various structures on the site (Source: <https://maps.six.nsw.gov.au/>).



Figure 3.36 South-western view from northern portion of the school, across pedestrian path to Building E and staff and trade car park.



Figure 3.37 North-western view across staff and trade car park, showing some landscaped areas.



Figure 3.38 Southern view of pedestrian path to Building E, showing some landscaped areas.



Figure 3.39 View east of commemorative plaques mounted in sandstone adjacent to staff car park. Top plaque states: *'The Hon. Eric Bedford SA M, Minister for Education, unveiled this plaque to mark the official opening of Narrabeen High School on 3rd May 1979'*. The bottom plaque states: *'This plaque marks the designation of Narrabeen High School as a Sports High School on 21st February, 1994 unveiled by the Hon Jim Longley MP, Minister for Community Services, Minister for Aboriginal Services, Minister for the Ageing and Member for Pittwater.'*



Figure 3.40 Small plaque (arrowed) mounted adjacent to tree in the northern car park area, stating *'This tree was planted by Clr Paul Couvret President of Warringah Shire Council to commemorate Earth Week 1980'*.



Figure 3.41 View south to Building F, showing the western fence of the public car park in the south-eastern corner of the school.



Figure 3.42 View south to pedestrian access from Mullet Creek (to right of photo), showing rabbit warrens in the south-western corner of the school.



Figure 3.43 View of southern buildings of the school (F and K), showing covered pathway to these buildings.



Figure 3.44 View east of grassed area and covered pathway between Buildings B and C. Note: concrete drain is visible in foreground.



Figure 3.45 Eastern view of the concreted courtyard area between Buildings A and B, as well as concreted basketball court in foreground.



Figure 3.46 North-eastern view of basketball court area to the west of Buildings A and B.



Figure 3.47 North-eastern view of COLA area north of Building D, as well as seating (seen in right of image).



Figure 3.48 South-western view across open grassed area south of the main cluster of buildings. Building G can be seen in the left of the image.



Figure 3.49 North-eastern view across open grassed area in southern portion of the school. Building C can be seen in the foreground.



Figure 3.50 Northern view of densely vegetated corridor along Mullet Creek.



Figure 3.51 Eastern view of synthetic sports oval in north-eastern corner of the school from small grassed hill area.



Figure 3.52 South-eastern view across sports oval. Building G can be seen in foreground.



Figure 3.53 View north-west from sport oval, showing small hilled area, with established trees.



Figure 3.54 Northern view of sports field in north-western corner of the school.



Figure 3.55 View north of storage shed to the north of the sports field.



Figure 3.56 Eastern view of covered seating area, south of sports field, as well as enclosed mesh structure in background.



Figure 3.57 Southern view of northern tennis courts.



Figure 3.58 Northern view of southern tennis courts.



Figure 3.59 View east along the rear of Building C, showing small concrete drain.



Figure 3.60 View east along the rear of Building G, showing concreted drain, and large water tank.



Figure 3.61 View west of bricked electricity substation, with sports field in background.

4 Evaluation of the Archaeological Resource

The archaeological resources of any site are finite but have the potential to provide insights into everyday life that are not available from any other resource. Archaeological resources may provide evidence that will enhance the historical record and, as such, make a contribution to an understanding of the history and settlement of a local region. In view of the substantial costs involved in archaeological excavation of a site, a clear justification for any archaeological excavation needs to include the following considerations:

- What is the likely integrity of the archaeological resource? Is it likely that largely intact physical evidence would be exposed during excavations such as structural features, artefacts from underfloor deposits, rubbish or cess-pits, wells or other features with an ability to contribute meaningfully to an understanding of the development of the site as part of the wider development of Sydney?
- What is the research potential of the archaeological resource? Is it likely that the results of the excavation make a significant or important contribution to an understanding of wider research issues regarding the early settlement and development of Sydney?

4.1 Archaeological Integrity

The historical context of the study area indicates that it has had a short period of occupation, dating from the early twentieth century. Before the schools were established on the site in the late 1930s, the study area was undeveloped (Figure 2.13 and Figure 2.18). As such, the potential archaeology within the study area would be associated with the schools established in the twentieth century.

The foundations of the buildings associated with the former Narrabeen Boys High School (est. 1959) are likely beneath the synthetic oval in the north-eastern corner of the Narrabeen Sports High School, and the foundations of buildings associated with the former Narrabeen Girls School (est. 1954) are located in the southern portion of the study area. The integrity of the archaeological resource associated with these former schools is likely to be present with good integrity, as the former buildings are located in open areas of the present Narrabeen Sports High School that have undergone little disturbance.

4.2 Research Potential

If archaeological resources are present in the study area, they will be associated with the former Narrabeen Boys and Narrabeen Girls High Schools (present Narrabeen Sports High School). These resources likely have limited potential to provide a new understanding of the history of the local area that is not available from other sources. Therefore, any extant archaeological resources in the study area would have no archaeological research potential, and as such do not have archaeological heritage significance.

5 Managing Archaeological Values

Heritage places contribute to an understanding and character of a community by providing tangible evidence of its history and identity. At times of change, they help to preserve a connection to the past, and can provide a point of reference for interpreting the past to future generations. Article 15 of the Burra Charter refers to managing *change*, which should be guided by the *cultural significance* of the *place* and its appropriate interpretation. The Burra Charter process also recognises that the development of preferred conservation options requires consideration of a range of other factors which could affect the future of a place. These include:

- requirements of the owner, in this case the Department of Education NSW;
- the physical condition and safety requirements of the place; and
- heritage statutory obligations and other issues related to heritage

The primary consideration for the Department of Education NSW is the protection of the heritage and archaeological values of the Narrabeen Education Precinct.

5.1 Conclusion

The historical research undertaken for the proposed upgrade of the Narrabeen Education Precinct at Namona Street, has determined that it is unlikely for archaeological remains with research potential or significance to be present in the site. This report has concluded that should any archaeological remains be present; these would be associated with the twentieth century development of the school and would not make a substantive contribution to research questions relevant to the early history of the site or local area, that is not available from other sources. As such, the Narrabeen Education Precinct has no archaeological significance.

As such, there are no requirements for approvals under the provisions of the *Heritage Act 1977*.

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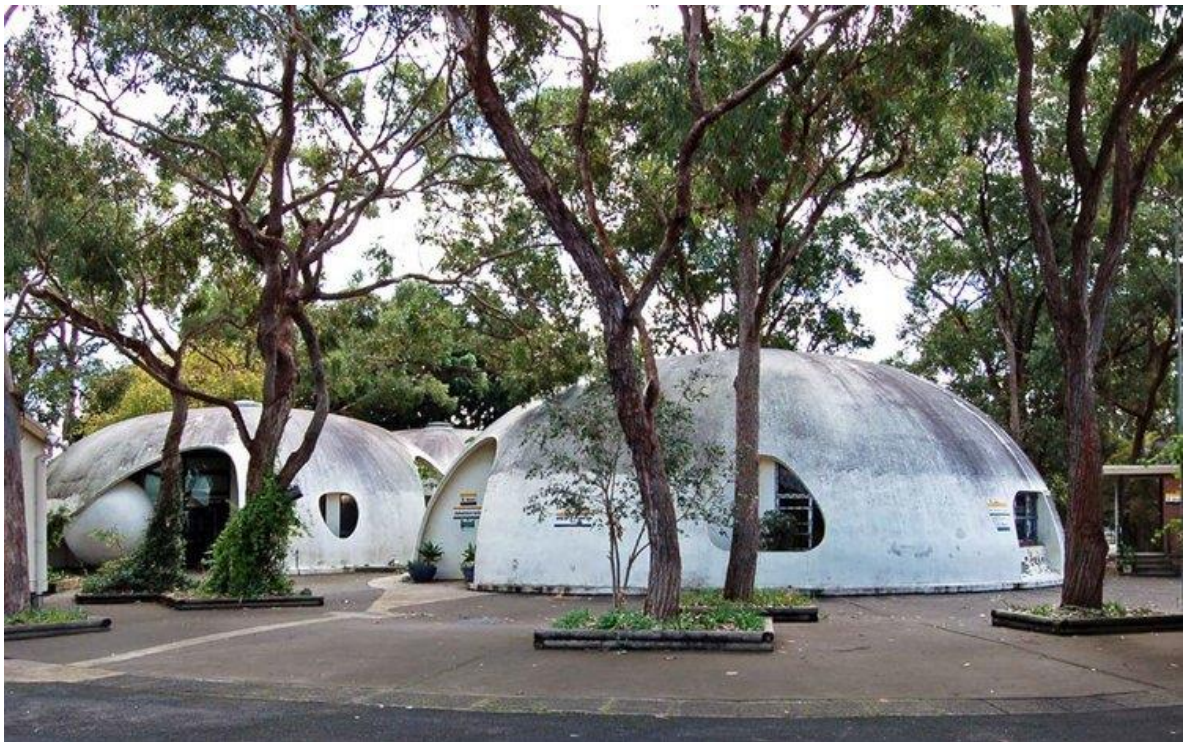
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O C P A R C H I T E C T S

NARRABEEN EDUCATION PRECINCT

NAMONA STREET, NORTH NARRABEEN



HERITAGE REPORT FOR MASTERPLAN

For SCHOOL INFRASTRUCTURE NSW
c/o JOHNSTAFF

Job No 19042

Issue C – 5 November 2019

Cover Image

The three binishells at Narrabeen North Public School

Photograph by Alberto Pugnale

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1 INTRODUCTION

This report has been prepared for School Infrastructure NSW and Johnstaff to provide a heritage assessment to inform the development of a precinct wide masterplan and concept plan for a state significant development application (SSDA) for the Narrabeen Education Precinct. The Precinct comprises the Narrabeen Sports High School and Narrabeen North Public School.

Within North Narrabeen Public School are Binishell structures, which are locally listed heritage items in the Northern Beaches LGA. In addition, a submission has been made to NSW Heritage to list the North Narrabeen Binishells on the State Heritage Register as part of a collection (along with Binishells and Ashbury Public School and Ku-ring-gai Creative Arts High School). Assessment of the proposed listing is in progress and it is the intention of NSW Heritage to nominate the collection for listing on the SHR at the December 2019 meeting of the NSW Heritage Council.

This heritage report includes a heritage assessment and will provide a basis to identify heritage design issues that will influence redevelopment of the site.

1.1 Site Identification

The precinct comprises the Narrabeen Sports High School (NSHS) and Narrabeen North Public School (NNPS), co-located with the Narrabeen Indoor Sports Centre. The schools are a part of the Dee Why Primary and the Northern Beaches Secondary SC Groups. Both schools have the street address of Namona Street, a no through road accessed by the main arterial Pittwater Road. The legal description of the sites are: NNPS - Lot 3 DP 1018621 and NSHS - Lot 12 DP 1119562.

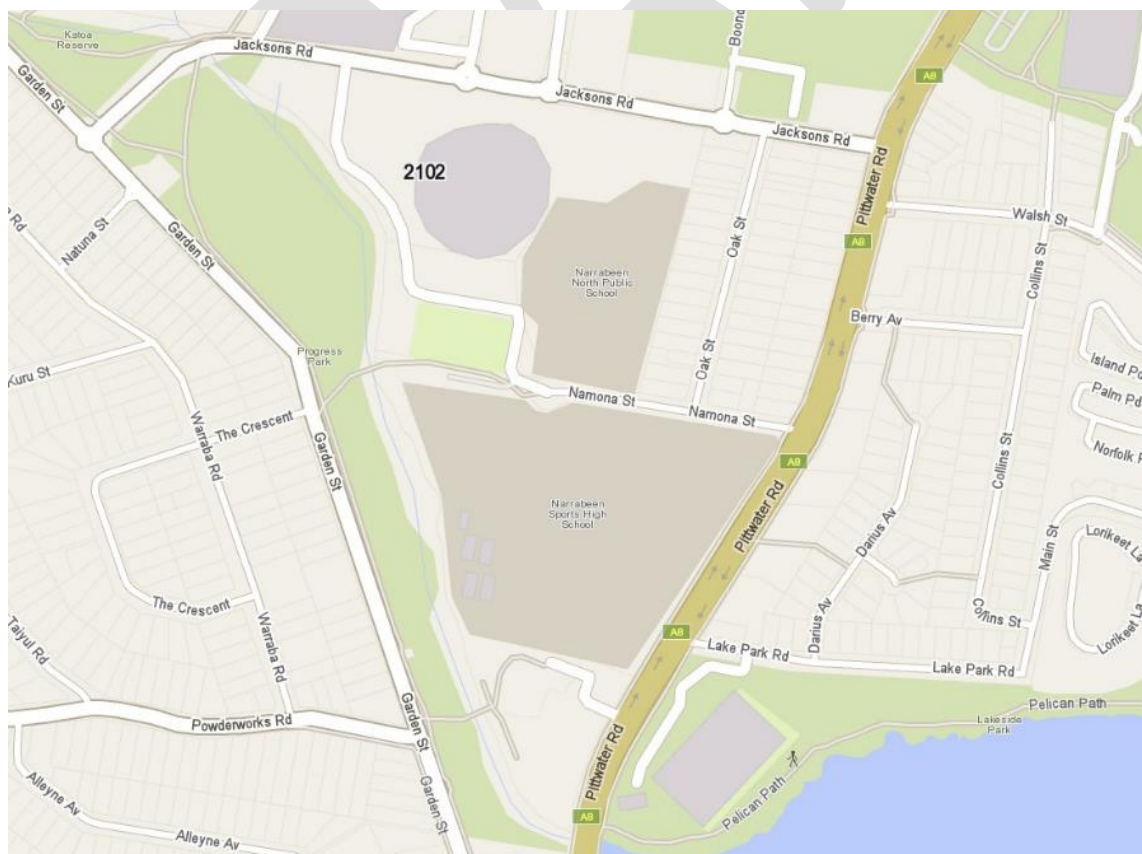


FIGURE 1.1: LOCATION PLAN OF NORTH NARRABEEN PRIMARY SCHOOL AND NARRABEEN SPORTS HIGH SCHOOL.

SOURCE: WHEREIS MAPS, 2019

The School Precinct is in close proximity to Narrabeen Lagoon, and is bordered on the western boundary by the tributary Mullet Creek. The Precinct is within one kilometre of Narrabeen Beach and is located approximately 20 kilometres north-east of the Sydney CBD (30km by road).



FIGURE 1.2: AERIAL VIEW OF NORTH NARRABEEN PRIMARY SCHOOL AND NARRABEEN SPORTS HIGH SCHOOL (NARRABEEN EDUCATION PRECINCT), RESPECTIVELY OUTLINED IN RED.

SOURCE: SIX MAPS, ACCESSED SEPTEMBER 2019

1.2 Report Objectives

While the Narrabeen Education Precinct comprises two distinct sites, this heritage report is particular to the North Narrabeen Public School, with particular consideration for the heritage listed Binishell structures on that site. The primary objective of this report is to inform and assess the masterplan options being developed for the site with consideration for its heritage significance. A historical archaeological assessment of the two sites comprising the Narrabeen Education Precinct has been undertaken separately by AMBS Ecology+Heritage.

To inform an understanding of the place to enable heritage assessment, this report includes a brief historical overview of the site and Binishell structures, drawn from existing studies as identified in Section 1.8, and a physical assessment of the place. An assessment of the heritage significance of the Binishell structures is provided in Section 4.

The information in this report is then used to develop heritage design principles that need to be considered in developing design and masterplan proposals for the site (refer Section 6). These

principles relate to the development of the Narrabeen Education Precinct, specifically the Narrabeen North Public School component, in a way that responds appropriately to the heritage context of the Binishells and address such factors as:

- scale and architectural form;
- views;
- architectural detailing, materials and finishes;
- curtilage and landscape setting.

Assessment of masterplan options being developed for the site is provided in Section 7.

1.3 Statutory Heritage Context

Schedule 5 Environmental Heritage of Pittwater Local Environmental Plan 2014 (PLEP 2014), lists heritage items identified within the Pittwater area of Northern Beaches Council that are protected under the LEP in accordance with the *Environmental Planning and Assessment Act 1979*. The 'Concrete geodesic domes (North Narrabeen Public School)' are currently listed under this instrument as an item of local significance (Item No. 2270341). The listing applies to the whole site, not just the house, as indicated on the accompanying heritage map (refer Figure 1.3).

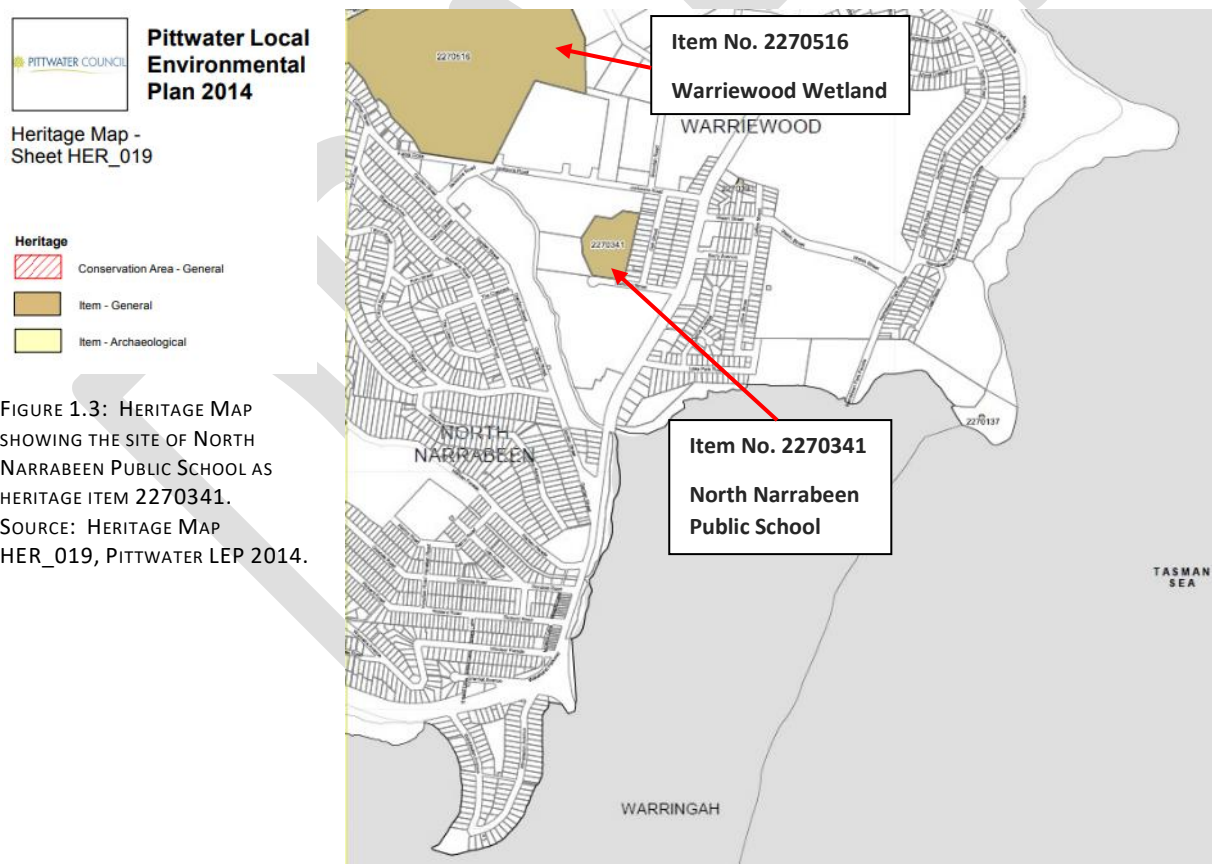


FIGURE 1.3: HERITAGE MAP SHOWING THE SITE OF NORTH NARRABEEN PUBLIC SCHOOL AS HERITAGE ITEM 2270341. SOURCE: HERITAGE MAP HER_019, PITTWATER LEP 2014.

The Warriewood Wetland, with street address of 14 Jacksons Road, is a locally listed heritage item under PLEP 2014 (Item No. 2270516), located approximately 500 metres north west of NNPS. The wetland is visually remote from the NNPS site, with Jacksons Road being lined with mature vegetation alongside the street boundary and the two storey scale Warriewood Square development also being situated between the two heritage items.

The site is not located in a heritage conservation area and there are no heritage conservation areas in the vicinity of the site. Heritage items in the adjoining Warringah area identified in Warringah LEP 2011 area are remote from the site, in particular being located across the lagoon.

In addition to the LEP listing, on 2 October 2019, the Heritage Council of NSW gave notice of its intention to list *The Binishell Collection (Department of Education)* on the SHR, which includes the three domes located at North Narrabeen Public School (refer Section 5).

1.3.1 Summary of Statutory & Non-Statutory Heritage Listings

The statutory and non-statutory heritage listings for the Binishells at North Narrabeen Public School are summarised below:

STATUORY HERITAGE REGISTERS	
<i>Environmental Protection and Biodiversity Conservation Act 1999</i>	
World Heritage List	N/A
National Heritage List	N/A
Commonwealth Heritage List	N/A
<i>Heritage Act 1977 (NSW)</i>	
State Heritage Register	Not presently listed. Nominated for listing on the SHR by the NSW National Trust, September 2018 (Collective nomination for Binishell buildings at Ashbury Public School, Ku-ring-gai Creative Arts High School and North Narrabeen Public School – the latter erroneously described as North Narrabeen High School).
Department of Education S170 Heritage and Conservation Register	Yes (#5065693)
<i>Environmental Planning and Assessment Act 1979 (NSW)</i>	
Pittwater LEP 2014	<i>Concrete geodesic domes (North Narrabeen Public School)</i> (Item 2270341)

NON-STATUORY HERITAGE REGISTERS	
Register of the National Estate	The Binishells are not listed on the RNE
	Narrabeen Lagoon Catchment (Item No. 15880) Catchment of approximately 5000 hectares including Narrabeen, Terry Hills, Ingleside, Oxford Falls, Belrose,

NON-STATUORY HERITAGE REGISTERS	
	Cromer, Warriewood, North Narrabeen, Elanora Heights, Wheeler Heights, Collaroy, Frenchs Forest & Beacon Hill.
National Trust Register (NSW)	Not individually listed. NT listing pertains to Ashbury Public School and Ku-ring-gai Public School.
RAIA NSW Chapter Register of Significant Buildings (April 2018)	N/A
Engineering Heritage Register Aust.	TBC

1.4 Methodology

This heritage assessment Impact has been prepared in accordance with the requirements of:

- NSW Heritage Manual, former NSW Heritage Office (now Heritage, Department of premier and Cabinet)
- Methodology of Heritage, DPC guideline *Assessing Heritage Significance*.
- Methodology of Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter), 2013

1.5 Authorship

This report has been prepared by OCP Architects Pty Ltd, written by conservation architect Karen Urquhart. Unless otherwise noted in the report, photographs were taken by OCP Architects.

1.6 Terminology

1.6.1 Conservation Terminology

The terms *place*, *cultural significance*, *fabric*, *maintenance*, *compatible use*, *preservation*, *reconstruction*, *restoration*, *adaptation* and *conservation* used throughout this report are as defined in the *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* (the Burra Charter) 2013, Article 1.1 to 1.17 as follows:

- 1.1 **Place** means a geographically defined area. It may include elements, objects, spaces and views. Places may have tangible and intangible dimensions.
- 1.2 **Cultural Significance** means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. *Cultural significance* is embodied in the *place* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related places* and *related objects*. Places may have a range of values for different individuals or groups.
- 1.3 **Fabric** means all the physical material of the *place* including elements, fixtures, contents and objects.

- 1.4 **Conservation** means all the processes of looking after a *place* so as to retain its *cultural significance*.
- 1.5 **Maintenance** means the continuous protective care of a *place*, and its setting. Maintenance is to be distinguished from repair, which involves *restoration* or *reconstruction*.
- 1.6 **Preservation** means maintaining a *place* in its existing state and retarding deterioration.
- 1.7 **Restoration** means returning a *place* to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.
- 1.8 **Reconstruction** means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material.
- 1.9 **Adaptation** means changing a *place* to suit the existing *use* or a proposed use.
- 1.10 **Use** means the functions of a *place*, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.
- 1.11 **Compatible use** means a *use* which respects the *cultural significance* of a *place*. Such use involves no, or minimal, impact on *cultural significance*.
- 1.12 **Setting** means the immediate and extended environment of a *place* that is part of or contributes to its *cultural significance* and distinctive character.
- 1.13 **Related place** means a *place* that contributes to the *cultural significance* of another place.
- 1.14 **Related object** means an object that contributes to the *cultural significance* of a *place*, but is not at the place.
- 1.15 **Associations** mean the connections that exist between people and a *place*.
- 1.16 **Meanings** denote what a *place* signifies, indicates, evokes, or expresses to people.
- 1.17 **Interpretation** means all the ways of presenting the *cultural significance* of a *place*.

1.6.2 Abbreviations

AHC	Australian Heritage Council
BCA	Building Code of Australia
CMP	Conservation Management Plan
DPC	Department of Premier and Cabinet (formerly Office of Environment and Heritage)
DPIE	Department of Planning, Industry and the Environment
EP&A	Environmental Planning and Assessment (Act)
HAA	Historical Archaeological Assessment
HCA	Heritage Conservation Area
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
NLA	National Library of Australia
No	Number
P21 DCP	Pittwater 21 Development Control Plan
SHR	State Heritage Register

PLEP 2014	Pittwater Local Environmental Plan 2014
RAIA	Royal Australian Institute of Architects
SLNSW	State Library of New South Wales
SMH	Sydney Morning Herald
SRNSW	State Records, New South Wales
SSDA	State Significant Development Application

1.7 Report Limitations

This report addresses heritage considerations for assessment of the proposal and does not address general planning or environmental management considerations. The assessment and recommendations have been made on the basis of available documentary evidence and inspection of existing fabric.

The following additional limitations are noted:

- Physical inspections of the site did not involve any physical intervention or removal of fabric.
- Historical archaeological assessment has separately and is not addressed in this heritage assessment.

1.8 Resources

The following sources have been consulted in developing this heritage assessment:

- *NSW Department of Education, Binishell Strategy Stage 1*, prepared by heritage Asset Advisory, NSW Public Works Advisory, Revised May 2019.
- Nomination of Binishells for listing on the State Heritage Register, NSW National Trust, 18 September 2018.
- *Dante Bini's "New Architectural Formulae": Construction, Collapse and Demolition of Binishells in Australia 1974 – 2015*, paper by Ablerto Pugnale, proceedings of the Architectural Historians Australia and New Zealand, Vol. 32, 2015.
- *Binishells in NSW Schools*, Rebecca Hawcroft, Architecture Bulletin, Autumn 2015.
- *Skill: Inflatable Concrete Domes*, Will Mclean, The Architectural Review, 31 January 2013.
- *Binishells in NSW Schools, Condition Survey*, NSW Department of Services, Technology and Administration, 7 May 2010.
- Department of Public Works NSW Annual Report 1974-1975, p. 11-13.
- Department of Public Works NSW Annual Report 1973-1974, p.11

2 HISTORICAL OVERVIEW

2.1 Brief History of Bini Shells

This information was included in the National Trust SHR nomination form, dated 18 September 2018.

Dr Dante Bini built his first hemispherical, thin shell structure in 1964, constructing this prototype Bini shell in 60 minutes ("Binisystems"). The technique gained wide recognition in 1967 after Bini used a gigantic balloon and a robot to build a 50-foot tall concrete Binishell dome at Columbia University in less than two hours. He described the construction process as "Pressing a button. That's it".

The house that Bini built in 1969 for film director Michelangelo Antonioni in Gallura (Costa Paradiso), Sardinia, was...a pragmatic synthesis that only an architect-builder who was capable of inventing and exporting both architectural stylistic features and effective construction methods worldwide could realise. It was a business system which, at that time, had already proved to be successful in Italy, Japan and possibly even in Australia.

Bini's invention was the perfect, as well as obvious synthesis of three construction techniques that developed independently. First, the one for in-situ reinforced concrete shells; second, the inflatable and pneumatic membrane technology for air structures; third, the self-shaping steel reinforcement.

Bini's merit not only consists in having developed a construction technique which has met with success almost all over the world in the erection of round domes of large diameter (up to 300 feet) for schools, gymnasiums, and halls, but mainly in having generated "nuove formule architettoniche", that is new architectural formulae, as Bini himself defined them.

It is estimated that more than 1,500 Bini shells were built in 23 countries throughout the world, used as houses, schools, libraries, gyms and shopping centres.¹ The advantages of the Bini shells form of construction included the speed of construction and the relatively low cost in comparison to other forms of construction. The exterior walls and roof are erected in one completed operation, and the only materials required are steel and concrete.

...

From the first 'inflations', the Binishell system was gradually perfected. For example, the technique for the reinforcing bars was optimised by the addition of metal springs, permitting better control over the folding and position of bars during erection. The inflatable structure went from a single layer, placed beneath the cast concrete, to two layers, enveloping the shell both above and below during the phase of forming. Further, for the first commissions outside Italy, Bini prepared the membrane in Italy so that it was brought to the site ready for use; he sometimes brought it with him on the airplane. This was the case of the Binishell demonstration in America, performed for Salvadori at Columbia University. That experience taught him that jumps in temperature due to flights neutralised the effects of the glue, causing the PVC strips of the membrane to come apart. With the growing number of commissions from abroad, the preparation of the pneumatic formwork had to be radically reconsidered; this began with understanding that PVC sheets were easily available near the various work sites. Thus all of the pneumoforms in Australia were assembled with square PVC sheets 3m wide.

¹ Future – The Architect of Now Dante Bini addresses our immediate and timely need – moveable, self-erecting shelter, San Francisco Chronicle, 20 February 2005 (quoted in Context 2010).

2.1.1 Binishells in NSW State Schools

Bini reported that he first got in touch with Australian authorities in Autumn 1971 because NSW Minister Leon Punch was seeking a rapid system to build multi-purpose centres, schools and libraries to fulfil election promises.² In 1973, Dr Dante Bini was invited by the NSW Government to introduce the Binishell concept to Australia. NSW Department of Works described the Binishells as ‘A revolutionary “wet” building concept, which allows a layer of concrete to be blown up into a dome-shaped building.’³ The advantages of the construction type were recognised as being the considerably reduced construction time and economic use of labour and materials and it was considered that these advantages warranted an experimental program in NSW school buildings. In addition to minimising materials and labour, the sustainability of Binishells also related to reuse of the pneumoform to build more Binishells.⁴

The first Binishells constructed as part of the State’s school building program were the three Binishells constructed at Narrabeen North Public School and one at Killarney Heights Public School, all of which comprised 18 metre diameter domes. Subsequent planning by the Department was for ‘six shells of 36-metre diameter, which will be erected at selected high schools and used as school centres’⁵ (Peakhurst, Randwick Girls, Fairvale, Ingleburn, Pittwater and Ku-ring-gai High Schools) following which the system was to be evaluated for suitability for a range of further applications.

By 1975, the NSW Department of Public Works and Department of Education jointly decided to adopt the system ‘as part of the programme to provide multipurpose centres, or libraries, at selected schools.’⁶ Dr Dante Bini held the patent rights to the system and entered into an agreement with the Department of Public Works to supervise the design, construction and fitting-out of the 18-metre and 36-metre Binishells. Binishells or multi-shell complexes were erected at fourteen schools in NSW, with the three-dome complex at Narrabeen North remaining as one of Bini’s career favourites.

Enthusiasm for Binishells in Australia waned following collapse of the first 36-metre diameter structure at Fairvale High School on 4 January 1975. This event raised major concerns about their safety given their use as school facilities. While the situation deescalated when the reasons for the collapse were revealed (an exceptional temperature gradient of 25 degrees overnight when the shell was still uninsulated and unfinished) a second collapse at Pittwater High School on 4 August 1986 sealed the fate for use of Binishells in Australia, despite the installation of precautionary support towers in the other 36-metre domes (which affected the functionality of the interior spaces due to the introduction of columns). Other issues relating to leakage and maintenance costs led to a range of schools planning replacement of their Binishells with more conventional structures.

There are currently 11 remaining Binishells in NSW Public Schools, located on 9 separate school sites, including the 18-metre dome at Killarney Heights Public School which has received demolition approval early in 2018. As described by Margaret Betteridge:

Their loss can be attributed to their ageing, lack of or deferred maintenance, poor quality repairs, the deterioration of concrete, the presence of asbestos, work, health and safety issues— and the ever-growing pressure for shiny new, improved school facilities.⁷

² Bini, Dante, *Building with Air*, published by Bibliotheque McLean, June 2014.

³ Department of Public Works NSW Annual Report 1973-74, p.11.

⁴ Betteridge, Margaret, *Binishells, Their Context and Significance in School Architecture in NSW*, March 2018, p. 16; included in Heritage Asset Advisory, NSW Public Works Advisory, *NSW Department of Education Binishell Strategy Stage 1*, revised May 2019.

⁵ Ibid.

⁶ Department of Public Works NSW Annual Report 1974-75, p.12.

⁷ Betteridge, Margaret, *Binishells, Their Context and Significance in School Architecture in NSW*, March 2018, p. 3; included in Heritage Asset Advisory, NSW Public Works Advisory, *NSW Department of Education Binishell Strategy Stage 1*, revised May 2019.

2.2 The Binishell at North Narrabeen Public School

The Binishells at North Narrabeen Public School (NNPS) were constructed in mid 1974. While a number of other Binishells were constructed for the NSW Department of Education, those at Narrabeen North are notable as being the first complex completed for the NSW government. The complex was officially opened in November 1974 by NSW Premier, Sir Robert Askin.

The two interconnected domes (Building B) were designed to be used as a library, while the third Binishell served as an administrative office for the school. Each of the three Binishell buildings at North Narrabeen are 18 metres in diameter. Only two other Binishells of this diameter were constructed in NSW schools, at Killarney Heights Public School and Ashbury Public School, with other Binishell complexes being 36 metres in diameter.

A photograph of this building was the initial (promotional) image in the Building Centre, London video - Dante and Nic Bini - Shell Structures produced in 2013. In that video, when Dante Bini is asked to nominate his favourite buildings, he nominates two buildings. His first favourite was the Sardinia La Cupola house he built in the late 1960s for the movie director Michelangelo Antonioni and his partner, actress Monica Vitti. His other favourite building was the North Narrabeen Binishell with the "oyster" at the opening of the "shell". He goes on to explain that he worked with the NSW Government Architect, JW (Ian) Thomson and he was requested by the then NSW Minister for Education, Sir Eric Willis "to do something that represents the knowledge of the world for the kids. So, first of all, I cut this shell, like a shell that was opening. And, when the pearl of the shell, which was representing to me the knowledge of the world, was exposed to the kids, this was something that everyone approved, the kids loved it. And also I used the concept of Michelangelo Antonioni to have a space which was not flat, underneath the shell."



FIGURE 2.1: NORTH NARRABEEN PRIMARY SCHOOL BINISHELLS, 1975.

SOURCE: NSW STATE ARCHIVES AND RECORDS, GPO 2 – 47287, FILE NO. FL2347486

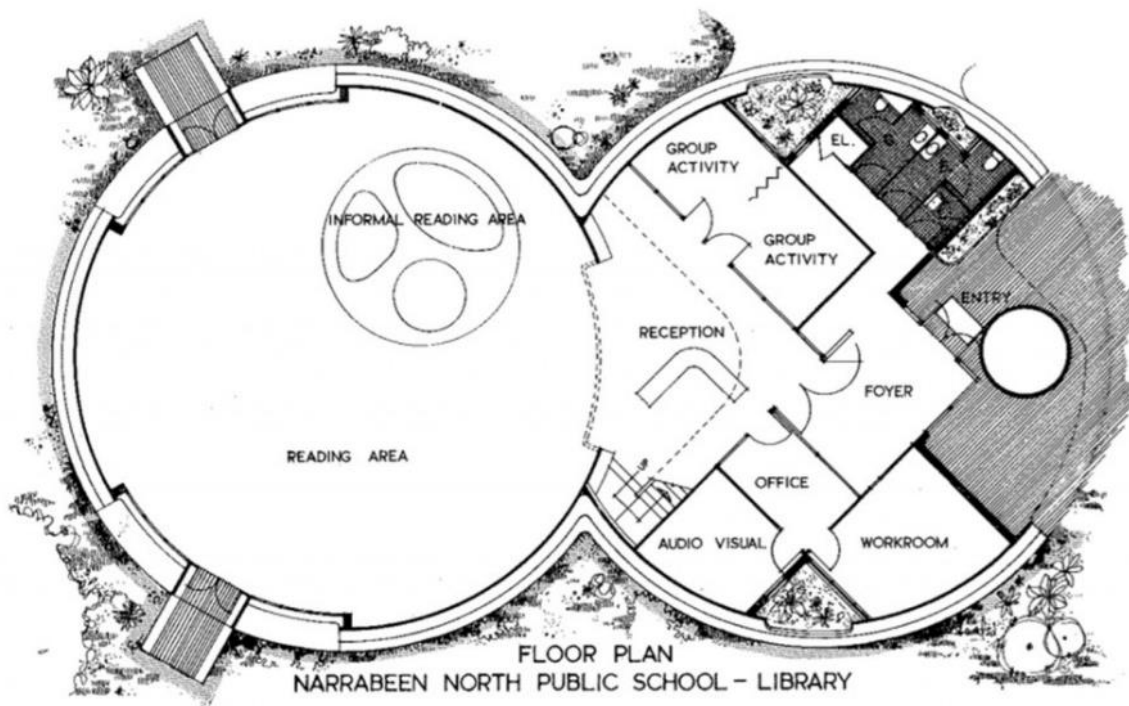


FIGURE 2.2: NARRABEEN NORTH PRIMARY SCHOOL LIBRARY, FLOOR PLAN 1974 (BINISHELL B).
SOURCE: BINISYSTEMS.COM

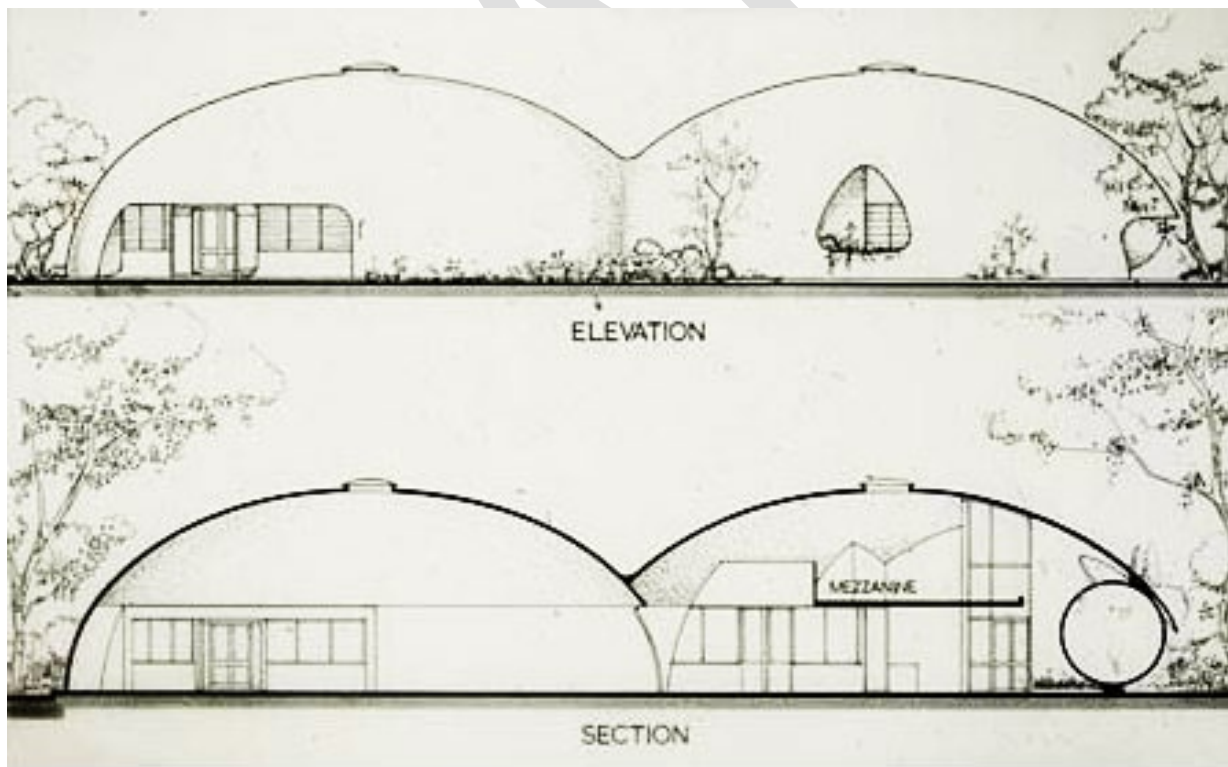


FIGURE 2.3: NARRABEEN NORTH PRIMARY SCHOOL LIBRARY, ELEVATION 1974 (BINISHELL B).
SOURCE: BINISYSTEMS.COM

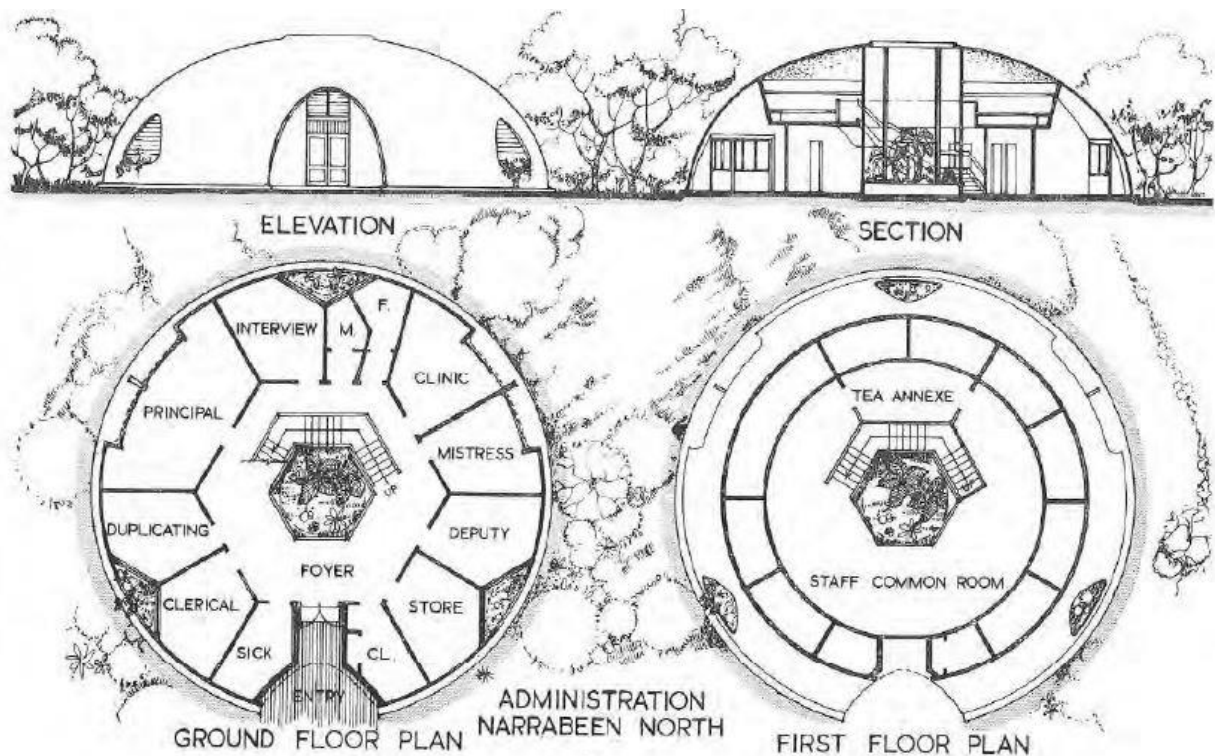


FIGURE 2.4: PLANS AND ELEVATIONS FOR THE ADMINISTRATION BUILDING, NARRABEEN NORTH PUBLIC SCHOOL (BINISHELL A).
SOURCE: REPRODUCED IN CONSTRUCTION OF BINISHELL REINFORCED CONCRETE DOMES, DEPARTMENT OF PUBLIC WORKS, 1978, p. 9,
CITED IN BETTERIDGE, 2018, p.22.



FIGURE 2.5: THE THREE BINISHELLS AT NARRABEEN NORTH PUBLIC SCHOOL.
SOURCE: PHOTOGRAPH BY ALBERTO PUGNALE, MAY 2014.

A video, *How to Blow up a Bubble that won't Burst*, by Zanny Begg, headlining the Narrabeen Binishells and their construction was commissioned by the New Landscapes Institute for the exhibition *Groundwork: From the Archives Up* at Gaffa Gallery in Sydney 2015. Prepared in collaboration with students from the school, it was subsequently shown at RMIT, Melbourne and included in the exhibition *Imagine a City* held at the State Library of NSW in 2016 to celebrate 200 years of public architecture in NSW.

2.3 Chronology of Comparative Examples in Australia

The following table, derived from article by Alberto Pugnale⁸ and updated where relevant information available, identifies Binishell structures constructed in Australia in chronological order. It is considered to be the most complete survey of Australian Binishells. It is notable that the fourteen Binishell complexes erected at NSW schools preceded other examples, including those constructed in other states of Australia. Binishells that are no longer extant are highlighted in the table; structures pending demolition are highlighted a lighter shade.

Date of Construction	Name	Address	Coordinates	State	Typology	Construction Company	Client	No. of Domes	Dia. (m)	Major alterations, notes	Current Status
30th May 1974 - opened June 1974	Narrabeen North Public School	6 Namona St, North Narrabeen, 2101	33°41'56" S, 151°17'51" E	NSW	School library	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	2	18	Removal of Asbestos, 1983	Existing, one dome now used as before and after school care
Mid-1974	Narrabeen North Public School	6 Namona St, North Narrabeen, 2101	33°41'56" S, 151°17'51" E	NSW	Administration block	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	18	Removal of Asbestos, 1983	Existing
18th July 1974	Killarney Heights Public School	10/2 Tralee Ave, Killarney Heights, 2087	33°46'29" S, 151°12'56" E	NSW	School Library (later multi-purpose centre)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	18	-	Demolition approved 2018
Mid-1974	Georges River College, Peakhurst Campus	1 Rona St, Peakhurst, 2210	33°58'03" S, 151°03'20" E	NSW	Multi-purpose Centre (Scheme 1)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	Removal of Asbestos, started 2nd January 1985	Demolished, May 2014
Mid-1974	Pittwater High School	1668 Pittwater Road, Mona Vale, 2103	33°40'06" S, 151°18'12" E	NSW	Multi-purpose Centre (Scheme 1)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	-	Collapsed 4th August 1986
October 1974	Randwick Girls' High School	Baker St, Randwick, 2031	33°55'20" S, 151°14'19" E	NSW	Multi-purpose Centre (Scheme 1)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	Structural loading test, 24h June 1976	Demolished
October 1974 (original) Late 1976 (replacement)	Fairvale High School	Thorney Road, Fairfield West, 2165	33°52'27" S, 150°55'49" E	NSW	Multi-purpose Centre (Scheme 2)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	Precautionary support tower, major leaks and vandalism	Collapsed 4th January 1975, due to a 25 degree temperature gradient. Replaced 1976
Late 1974	Ingleburn High School	Oxford Rd, Ingleburn, 2565	34°00'19" S, 150°52'16" E	NSW	Multi-purpose Centre (Scheme 1)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	Waterproofing 1981-82. Supporting tower after 1986	Demolition approved, 15th November 1988
Mid-1975	Kur-ring-gai Creative Arts High School	Bobbin Head Rd, North Turramurra, 2074	33°41'27" S, 151°09'10" E	NSW	Multi-purpose Centre (Scheme 2)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	?	Existing
1975 ?	Georges River College, Hurstville Boys High School	Kenwyn St, Hurstville, 2220	33°57'45" S, 151°06'37" E	NSW	Multi-purpose Centre	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	-	Existing
Inflated in late 1976, completed in 1977	Fairvale High School	Thorney Road, Fairfield West, 2165	33°52'27" S, 150°55'49" E	NSW	Multi-purpose Centre (Scheme 2)	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	36	Waterproofing, insulation and façade membrane, early 2010	Existing, used as multi-purpose centre
1977	Ashbury Public School	Trevenar St, Ashbury, 2193	33°53'54" S, 151°07'11" E	NSW	School library	NSW Dept. of Education BC&M Branch	NSW Dept. of Education	1	18	?	Existing
1977	Jesmond Senior Campus - Callaghan College	Janest St, Jesmond, 2299	32°54'01" S, 151°41'45" E	NSW	Multi-purpose Centre	Jennings Industries	NSW Dept. of Education	1	36	-	Existing
1977	Richmond High School	Lennox St, Richmond, 2753	33°36'01" S, 150°44'46" E	NSW	Multi-purpose Centre	Jennings Industries	NSW Dept. of Education	1	36	Waterproofing, insulation & façade membrane c.2008	Demolished 2019
1977	Greenwood Recreation Centre	27 Penistone St, Greenwood, 6024	31°49'51" S, 115°48'39" E	WA	Community Centre	Jennings Industries	Shire of Wanneroo	1	?	?	Demolished, 1989
22nd April 1978	Whitford Recreation Centre (Padbury)	21 Giles Avenue, Padbury, 6025	31°48'12.8"S, 115°45'25.7"E	WA	Community Centre	?	Shire of Wanneroo	1	?	?	Demolished, 11th October 1993
1978	Hunter Sports High School (Gateshead)	Pacific Highway, Gateshead, 2209	32°59'09.0"S 151°41'26.5"E	NSW	Multi-purpose Centre	Jennings Industries	NSW Dept. of Education	1	36	?	Demolished 2015
1st December 1978	Space City Shopping Centre	1477 Anzac Avenue, Kallangur, 4503	27°15'03" S, 152°59'57" E	QLD	Major Shopping Complex	Jennings Industries	Kallangur Supermarkets Pty Ltd	7	3x18 4x18	?	Demolished, 1991 (already abandoned in 1990)
Completed in 1978, opened 24 th February 1979	Phil Renkin Recreation Centre (Yanchep/Two Rocks)	59 Lisford Avenue, Two Rocks, 6037	31°29'46" S, 115°35'19" E	WA	Community Centre	Jennings Industries 1979 Desway Constructions 1989	Shire of Wanneroo	1	36	A more conventional second storey replaced the top of the dome in 1988, officially reopened in December 1989	Partially demolished, April- December 1988
May 1979	Hunter School of Performing Arts (Broadmeadow)	109 Lambton Rd, Broadmeadow, 2292	32°55'26" S, 151°43'37" E	NSW	Multi-purpose Centre	Jennings Industries	NSW Dept. of Education	1	36	?	Demolished 2018
Inflated in 1979	Diamond Creek/Watsonia	?	?	VIC	Sports Pavilion	Jennings Industries	Shire of Diamond Valley	1	?	?	Demolished during late 1990s
March-June 1980, opening 19 July 1980	Federation University Australia (Gippsland)	Northways Road, Churchill, 3842	38°18'42" S, 146°25'36" E	VIC	Multi-purpose Centre	Jennings Industries Limited	Gippsland Institute of Advanced Education	1	36	Supporting tower, 13th June 1986, Load tests November 1987, 1988 tower removal	Demolished, 14th February 2009

⁸ Pugnale, Alberto, *Dante Bini's "New Architectural Formulae": Construction, Collapse and demolition of Binishells in Australia 1974 – 2015*, Architectural Historians Australia & New Zealand, Vol. 32, 2015.

3 PHYSICAL DESCRIPTION

3.1 Narrabeen North Public School – General Description

Access to the Narrabeen North Public School is available from Namona Street via separate gates for pedestrian and vehicular entry. The school grounds include an open play area to the north and on the western side, a small covered area featuring a concrete stage and asphalted seating area with rows of metal bench seats.

The buildings on the Narrabeen North Public School site are representative of its earliest stage of development through to more recent development which includes a series of individual demountable classrooms (fourteen in total). The buildings are a combination of brick, timber and demountable structures all of which are single-storey except for the two storey V Block, which is located towards the front of the school orientated parallel to Namona Street.



FIGURE 3.1: TWO STOREY V BLOCK (LEFT) ADJACENT TO SINGLE STOREY CLAD BUILDING (N BLOCK) ADJACENT TO CARPARKING AREA.



FIGURE 3.2: SINGLE STOREY WEATHERBOARD CLASSROOM.



FIGURE 3.3: SCHOOL CANTEEN (U BLOCK) LOCATED IN THE NORTH OF THE SITE.



FIGURE 3.4: DEMOUNTABLE CLASSROOMS IN THE NORTH EAST CORNER OF THE SITE.

The oldest building on the site is the original 1938 school house, currently known as K block. It is a tidy face brick building of small scale that is well built and largely intact, although minor modifications are evident internally and externally. K Block essentially comprises one primary interior space, currently being used as a music room, with a couple of ancillary spaces.



FIGURE 3.5: NARRABEEN NORTH PUBLIC SCHOOL NEW BUILDING FOR INFANTS (K BLOCK - ORIGINAL DRAWING DATED 10 MARCH 1938).
SOURCE: SUPPLIED BY DJRD



FIGURE 3.6: ORIGINAL SCHOOL BUILDING, SHOWING FRONT (SOUTH) ELEVATION



FIGURE 3.7: ORIGINAL SCHOOL BUILDING, LOOKING SOUTH EAST.



FIGURE 3.8: MAIN INTERIOR SPACE IN K BLOCK LOOKING TOWARDS ORIGINAL FIREPLACE IN THE SOUTH EAST CORNER.

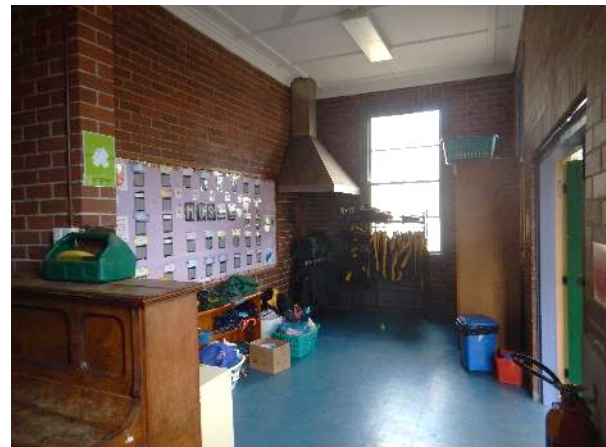


FIGURE 3.9: REAR ENTRY SPACE TO K BLOCK.

The Binishells are located centrally on the site, comprising a three-domed complex, two of which are interconnecting. The Binishells are each 18 metres in diameter, constructed of steel and concrete with glass windows. They are sited within a park-like setting in the centre of the school grounds, within a grove of mature native trees and landscaped mounds of lawn.



FIGURE 3.10: VIEW NORTH EAST TO THE BINISHELLS, WITH BINISHELL A IN THE FOREGROUND.



FIGURE 3.11: VIEW ACROSS LANDSCAPED LAWN LOOKING SOUTH WEST TOWARDS THE BINISHELLS. THE INTERCONNECTED BINISHELL B IS ON THE RIGHT.

The interconnecting domes (Binishell B) were designed to be used as a library, with group activity, office, audio-visual work room and recreation areas provided, along with toilets and a mezzanine floor (refer Figure 3.12 and Figure 3.13). The two domes are presently used for before and after school care. Original light fittings are present throughout the space.



FIGURE 3.12: BINISHELL B ON THE GROUND FLOOR, LOOKING INTO THE OPEN SPACE AREA OF THE OOSH.



FIGURE 3.13: INTERIOR OF BINISHELL B LOOKING TOWARDS THE MEZZANINE. NOTE ORIGINAL SPHERICAL LIGHT FITTINGS.

The third dome (Binishell A) provided administrative offices for the school and this function continues today. It features an open air, central glazed atrium garden surrounded by an upper mezzanine level. Refer Figure 3.14 to Figure 3.17.



FIGURE 3.14: GROUND FLOOR CIRCULATION AREA IN BINISHELL A, WITH GLAZED ATRIUM ON THE RIGHT.



FIGURE 3.15: VIEW INTO TYPICAL OFFICE, BINISHELL A.



FIGURE 3.16: STAIR TO MEZZANINE WRAPPING AROUND THE ATRIUM AND GARDEN.



FIGURE 3.17: VIEW WITHIN MEZZANINE, BINISHELL A.

3.2 Condition

3.2.1 Department of Education Binishells Generally

The following information pertinent to NSW Department of Education Binishells generally is provided in the Binishell Strategy (May 2019):

There is a general misconception the Binishells are in poor structural condition. This is incorrect. The appearance of the poor condition of the external membranes covering the concrete domes may contribute to the misunderstanding of the condition of the structures.

The findings of the condition assessment undertaken by Shreeji Consultants structural engineers for this report are consistent with the 2010 report 'Binishells in NSW Schools, Condition Survey', NSW Public Works. All Binishells are structurally sound and present no public safety risks.

The conclusions of the 2010 report remain unchanged. In summary, there are no stress cracks, evidence of movement or structurally compromising corrosion to the collection of Binishells inspected. As is the case for all assets, maintenance is required to provide a watertight serviceable building. Despite the poor condition of the external waterproof membranes covering the Binishells there is no evidence of water ingress through the domes. Internal rising damp conditions are largely caused by poor ground water conditions (blocked drains & water directed towards the buildings rather than sloping away).

The useful life of waterproof membranes is dependent on the materials selected, appropriate detailing and proper installation (approx. 20 years). Low quality membranes and poor quality patching will result in a shorter life. The 2010 report states “Based on incorporation of the recommendations in this report and regular maintenance, the Binishells should continue to remain functional well into the future.”⁹

3.2.2 Condition of Narrabeen North Binishells

The following information on condition is specific to the Binishells at North Narrabeen PS, also obtained from the Binishell Strategy (May 2019)¹⁰:

STRUCTURE

Assessment: *The Binishell appears sound, there is no evidence of cracking or movement in the dome or footings. Some surface carbonation and oxidation of the non-structural steel coils was evident.*

Recommendation: *The internal surface should be painted where exposed to prevent condensation in the cooler months, on the concrete and steel.*

EXTERIOR

Assessment: *Records show new membrane installed 2002 and patched in 2004. This implies faulty application of new membrane. Plant growing out of the membrane (reported in 2010 structural report) indicates no maintenance for at least 10 years. Holes in membrane and signs of water ingress at dome junction of Library Binishell. No evidence of internal water ingress.*

Some adjacent tree roots are causing water drainage problems. The finished ground line falls towards the structures. Existing drains are blocked with plant debris and ground level is higher than floor level due to built up soil. Open planter areas are full of plant debris, causing blocked drainage outlets and damp walls.

Recommendation: *The whole membrane should be replaced and painted. Clearing drains and lowering ground levels is required.*

INTERIOR

Assessment: *95% original interior extant including furnishings (curtain, chairs, bins, lights, library desk, shelves and fire escape). Damp caused by poor site drainage has promoted rising damp and termite activity and damage.*

Additions: *Carpet has been replaced, bathrooms have been refurbished.*

Recommendation: *Sprayed ceiling is flaking, dirty and an over spray has dribbled on walls - it is unsightly and a dust hazard. It should be removed and replaced with a stable white coloured lining which utilises the light dispersal qualities of the dome.*

The above issues were evident at recent site inspection as illustrated below.

⁹ Heritage Asset Advisory, NSW Public Works Advisory, NSW Department of Education Binishell Strategy Stage 1, revised May 2019.
¹⁰ Ibid.



FIGURE 3.18: PATCHING OF MEMBRANE AROUND INTERSECTION OF DOMES, BINISHELL B. NOTE ALSO BUILD-UP OF PLAT DEBRIS.



FIGURE 3.19: PLANT GROWING FROM MEMBRANE AND SHELL OF BINISHELL A.



FIGURE 3.20: EXAMPLE OF GROUND BUILT UP AROUND THE BASE OF THE BINISHELLS. NOTE RING BEAM ONLY PARTIALLY EXPOSED ON THE RIGHT, BUT LARGELY COVERED ON THE LEFT.



FIGURE 3.21: SPRAY VERMICULITE CEILING IS FLAKY, CREATING A DUST HAZARD. EMBEDDED PAPER PLAN DEMONSTRATES HOW SOFT THE INSULATION LAYER IS.

3.2.3 Modifications to Narrabeen North Binishells

The Binishells are largely intact. Externally, however, a number of modifications have occurred that impact on the presentation of the buildings. These include electrical and mechanical installations and associated conduits typically located within openings in the shells but also externally attached to the buildings, and security screens to openings.



FIGURE 3.22: EXAMPLE OF EXTERNAL SERVICE ADDITIONS WITHIN BINISHELL OPENINGS AND SECURITY SCREEN TO WINDOW.



FIGURE 3.23: EXTERNAL UNIT ATTACHED TO SHELL AND ADDITIONAL SERVICE PENETRATIONS LOW TO THE GROUND.

Internally, the buildings retain their general form, original planning and a number of original features. Modifications include updated kitchen and bathroom fitouts and replacement of the original carpet, which was reportedly shag pile.



FIGURE 3.24: KITCHEN FITOUT, MEZZANINE LEVEL IN BINISHELL A.



FIGURE 3.25: KITCHEN FITOUT, GROUND FLOOR LEVEL IN BINISHELL B.

4 HERITAGE SIGNIFICANCE OF NARRABEEN NORTH BINISHELLS

4.1 Summary Statement of Cultural Significance

The following statement of significance for the Narrabeen North Binishells is provided in the inventory data sheet prepared in association with the listing of the structures in the Pittwater LEP 2014, as available from the NSW Heritage database.

The concrete geodesic domes are one of a very limited number of Binishells in Australia and one of the few remaining constructed as part of the NSW Department of Public Works building program for schools in the 1970s. This program sought to construct 10 binishells across the state to provide large open floor spaces for schools, using the new construction method invented by Italian architect, Dr Dante Bini. This method of construction has been used around the world, mainly to build houses. These buildings are aesthetically and technically significant as they represent a new method of public building construction in the 1970s. The North Narrabeen Binishells were the first 18 metre domes built in NSW and were one of the first such buildings in NSW public schools.

4.1.1 Sub Statements of Cultural Significance

The following sub-statements of cultural significance are structured to first address the significance of the Binishells overall, including statements pertaining to individual Binishells that are not part of the Narrabeen North Public School complex, and second specific statements for the Narrabeen North PS Binishells. .

CRITERION A - HISTORICAL EVOLUTION

An item is important in the course, or pattern, of NSW's cultural or natural history (State significance); OR

An item is important in the course, or pattern, of the local area's cultural or natural history (local significance).

Binishells

Binishells have historical significance of their representation of a style that reflected popular culture and society's fascination for futuristic designs at a time of focus on the 'Space Age'.¹¹

The Binishells are significant as a group for demonstrating their historical values relevant to their place in school architecture. The collection is associated with the NSW Department of Public Works school building program, which sought to rapidly respond to the sudden growth of public schools in NSW during the mid-twentieth century.

Narrabeen North Public School Binishells

The Binishells at Narrabeen North Primary School have historical significance as the first Binishells constructed as part of the school building program implemented by the NSW government and the first of Dante Bini's structures constructed in Australia.

The Narrabeen North Binishells satisfy Criterion A at a STATE level.

¹¹ Betteridge, Margaret, 2018, op. cit.p.30

CRITERION B - HISTORICAL ASSOCIATIONS

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 (State significance); OR

An item has strong or special association with the life or works of a person, or group of persons, of importance in the cultural or natural history of the local area (local significance).

Binishells

Binishell structures are associated with Italian architect Dante Bini who had designed and built low-cost structures, capable of being erected in a very short period using a construction technique which he had pioneered in Italy. It is estimated that more than 1,500 Bini shells were built in 23 countries throughout the world, used as houses, schools, libraries, gyms and shopping centres.

The Binishells are significant for the architectural and technical innovation developed by Dr Dante Bini and refined by the NSW Department of Public Works and their Building Construction and Maintenance Branch. Dante Bini was responsible for the oversight of the program of constructing Binishell school buildings and provided training for the NSW Public Works Building Construction and Maintenance Branch in the construction of the shells.

Binishell structures are historically significant for their association with the NSW Government initiative to fast track an economical, labour effective and speedy program of building to accommodate the developing curricula and student population increase in NSW public schools in the late 1960s and 1970s.

Narrabeen North Public School Binishells

The North Narrabeen Binishell Library (interconnected Binishell B) has particular significance as one of Bini's two favourite buildings, the design of which responded to a design challenge posed by the then Minister for Education, Sir Eric Willis.¹²

The Narrabeen North Binishells satisfy Criterion B at a STATE level.

CRITERION C - AESTHETIC VALUES

An item is important in demonstrating aesthetic characteristics and/or high degree of creative or technical achievement in NSW (State significance) OR

An item is important in demonstrating aesthetic characteristics and/or high degree of creative or technical achievement in the local area (local significance).

Binishells

The Binishells, including those at North Narrabeen PS, demonstrate high aesthetic and technical significance as examples of Modernist architecture that departed from the traditional rectilinear forms in school architecture. Their physical presence on various sites have landmark qualities.

¹² NSW National Trust, SHR Nomination, 18 September 2018, p.3.

Narrabeen North Public School Binishells

The Narrabeen North PS Binishells have aesthetic significance for their presentation as a collection within a single site. In addition the layout of the shells frame a natural landscape setting to the structures, which contributes to their aesthetic significance and demonstrates a landscaped setting associated with the 1970s period of construction.

The Narrabeen North PS Binishells have aesthetic significance as largely intact examples of their kind, including interior spaces.

The **Narrabeen North Binishells** satisfy Criterion C at a STATE level.

CRITERION D - SOCIAL VALUES

An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (State significance); OR

An item has strong or special association with a particular community or cultural group in the area for social, cultural or spiritual reasons (local significance).

Binishells

Binishells are documented to have social significance for former teachers and employees, who associate the Binishells with a period of innovation and vision towards the future¹³

Social significance of Binishell structures for students, former and current, is likely embedded in school memories of sport, library, concerts, graduations, assemblies and even exams.

Demolition of the Hunter School of Performing Arts Binishell demonstrated latent social value of their Binishell, as reported in the Newcastle Herald:

"They turned the power off for the last time on Monday afternoon and I had a moment of realisation and was a little bit sad," Ms Gray said. "It's been here for almost 40 years of wonderful, joyful student achievements, celebrations and performances. It does have a long nostalgic value, even though the space leaves a lot to be desired." The school's 1176 students, who were "quite fond" of the structure, held a "bye bye bini bash" late last week and painted the inside and outside.¹⁴

There is documentary evidence to support the social significance of Binishells to researchers, academics, architects and engineers who recognise their historical, aesthetic, scientific and social cultural values.¹⁵

Narrabeen North Public School Binishells

The social significance of the Binishells at Narrabeen North is demonstrated by the school's involvement in the preparation of the video *Groundwork: From the Archives Up* about their Binishell structures, which was shown at a number of venues, including the State Library of NSW in 2016.

The **Narrabeen North Binishells** satisfy Criterion D at a LOCAL level.

¹³ Pugnale, Alberto, SAHANZ Conference Proceedings 2015, p.495

¹⁴ Principal Jo Gray, quoted in the Newcastle Herald, online, 12 December 2018 (accessed 3 October 2019)

¹⁵ Betteridge, Margaret, 2018, op. cit.p.3

CRITERION E - TECHNICAL VALUES

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

An item has potential to yield information that will contribute to an understanding of the area's cultural or natural history (local significance).

Binishells

The Binishell structures have technical significance as the remarkable synthesis of three separately developed construction techniques: in-situ reinforced concrete domes, inflatable and pneumatic membrane technology for air structures and self-shaping steel reinforcement.

Binishells have research potential for their place in architectural materials, design, technology and construction and sustainability – and for the lessons and improvements which the failures contributed to.¹⁶

Binishells have technical significance for their use of the patented technique developed by Bini using compressed air to inflate a large membrane covered in wet concrete, which could be erected in a matter of hours. Their design provided a large, uninterrupted floor space for multipurpose use.

Narrabeen North Public School Binishells

Interconnected Binishell B at Narrabeen North has technical significance as the only interconnected example known in Australia. The structure has the potential to provide additional information about the type of system employed for its construction.

The Narrabeen North Binishells satisfy Criterion E at a STATE level.

CRITERION F - RARITY

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (State significance) OR

An item possesses uncommon, rare or endangered aspects of the area's cultural or natural history (local significance).

Binishells

The Binishell collection is rare as a surviving example of the genre still in original use.¹⁷

Comprehensive use of the system by a single organisation, namely the NSW Department of Public Works, remains unique.

Narrabeen North Public School Binishells

The Binishells at North Narrabeen Public School are rare as examples of 18 metre diameter domes, of which the only other examples constructed as part of the NSW school building program were at Killarney Heights and Ashbury Public Schools. Of these, the dome at Killarney Heights PS has recently received demolition approval and as such, it is anticipated that the dome complex at North Narrabeen will be one of only two schools retaining 18 metre domes.

¹⁶ Betteridge, Margaret, 2018, op. cit.p.62

¹⁷ Heritage Asset Advisory, NSW Public Works Advisory, *NSW Department of Education Binishell Strategy Stage 1*, revised May 2019, p.9

The Binishells at North Narrabeen Public School are rare for the inclusion of an interconnected pair of domes. All of the other domes constructed as part of the NSW school building program comprised single domes. Beyond the school building program, the Space City Shopping Centre in Queensland comprised a complex of 3x18 and 4x18 metre domes, however this structure was demolished in 1991, making the interconnected domes at North Narrabeen one of only two and the last remaining example of interconnected Binishells.

The Narrabeen North PS Binishells are regarded as being unique in the collection of NSW state school Binishells for their design and 'flagship' qualities evoking a pearl in a shell, and for their presentation as a collection within a single site.

The Narrabeen North Binishells satisfy Criterion F at a STATE level.

CRITERION G - REPRESENTATIVENESS

An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (State significance); OR

An item is important in demonstrating the principal characteristics of a class of the area's cultural or natural places or cultural or natural environments (local significance).

Binishells

The structures are representative of Binishell architecture which was rolled out across the world during the late 1960s and 1970s.

Binishells in NSW schools are representative of the school building program initiated by the NSW Department of Public Works in the mid 1970s as a means to fulfil election promises by the then NSW Minister Leon Punch.

Narrabeen North Public School Binishells

The North Narrabeen Binishells are representative examples of Binishells constructed as part of the school building program, before the program was cancelled in 1979.

5 POTENTIAL LISTING ON THE NSW STATE HERITAGE REGISTER

Where items have particular importance to the people of NSW, they are listed on the State Heritage Register (SHR). On 2 October 2019, the Heritage Council of NSW gave notice of its intention to list *The Binishell Collection (Department of Education)* on the SHR, which includes the three domes located at North Narrabeen Public School. Public submissions for the potential listing opened on 9 October 2019 and close on 5 November 2019. The Binishells at Narrabeen are also listed on the Pittwater Local Environmental Plan 2014 as *Concrete geodesic domes (North Narrabeen Public School)* (Item 2270341).

Heritage Council of New South Wales



**State Heritage Register - Proposed Curtilage for Investigation:
North Narrabeen Public School Library and Administration Blocks
Plan: 3245**

Scale: 1:1,147 @A4
Datum/Projection: GCS GDA 1994
Date: 17/09/2019



Legend

- ▬ Proposed Curtilage
- ▬ SHR Curtilage
- ▬ LGAs
- ▬ Suburbs
- ▬ Land Parcels

FIGURE 5.1: PROPOSED SHR CURTILAGE (DRAWN 17 SEPTEMBER 2019) FOR THE BINISHELL BUILDINGS AT NARRABEEN NORTH PUBLIC SCHOOL WITHIN LOT 1 DP1018621.
SOURCE: NSW HERITAGE

Following consultation with NSW Heritage on 23 October 2019, which included discussion about sight lines to the Binishells and the Masterplanning approach, NSW Heritage have proposed to reduce the curtilage to the east of the Binishells. It is considered that the revised curtilage defines an appropriate area around the Binishells that provides for the retention of the major aspects of cultural significance for the property as identified within this report and also provides a good outcome for both the current project and the ongoing management of the place into the future.

Heritage Council of New South Wales



State Heritage Register - Proposed Curtilage for Investigation:
North Narrabeen Public School Library
and Administration Blocks (under consideration).
Plan:3245

6 Namona Street, Narrabeen

0 10 20 40 Meters

Scale: 1:1,000 @A4
Datum/Projection: GCS GDA 1994
Date: 30/10/2019



Legend

- Proposed Curtilage
- SHR Curtilage
- LGAs
- Suburbs
- Land Parcels

FIGURE 5.2: REVISED CURTLAGE PROPOSED TO ACCOMPANY SHR LISTING (DRAWN 30 OCTOBER 2019) FOR THE BINISHELL BUILDINGS AT NARRABEEN NORTH PUBLIC SCHOOL WITHIN LOT 1 DP1018621.

SOURCE: NSW HERITAGE

5.1 NSW Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides protection for heritage places, buildings, works, relics, moveable objects, precincts and archaeological sites that are important to the people of NSW. These include items of Aboriginal and non-Aboriginal (historic) heritage significance. .

Under the *Heritage Act 1977* any development proposal or works to a building, including in-ground disturbance of possible archaeological relics, requires the consent of the Heritage Council of NSW unless the works proposed are covered by Standard Exemptions, Agency-Specific Exemptions or Site Specific Exemptions under Section 57 of the *Heritage Act 1977*. Advertising requirements under the Act also ensures that community consultation occurs prior to determination of an application.

5.1.1 Standard Exemptions for Works requiring Heritage Council Approval

There are provisions for exemptions in the *Heritage Act 1977* which enables certain works to be carried out without the approval of the NSW Heritage Council. These exemptions include minor repair and maintenance works and painting to an approved colour scheme i.e. they are primarily intended to cover routine and periodic maintenance work rather than more significant proposals that includes adaptive reuse of buildings amongst other works.

5.1.2 Site Specific Exemptions

Site specific exemptions may be developed which relate to particular requirements of an item on the SHR. It is understood that SINSW are currently liaising with NSW Heritage to determine appropriate site specific exemptions for the Department of Education sites nominated for listing on the SHR.

5.1.3 Minimum Standards of Maintenance and Repair

Section 118 of the *Heritage Act 1977* also requires that owners of state heritage listed properties maintain the buildings they own at a minimum standard of repair and maintenance. The regulations of the Act may impose minimum standards with respect to the maintenance and repair of a building, work or relic that is listed or within a precinct that is listed on the State Heritage Register, but those standards can only relate to the following matters:

- (a) the protection of the building, work or relic from damage or deterioration due to weather (including such matters as the weatherproofing of roof, doors and windows),
- (b) the prevention of and the protection of the building, work or relic from damage or destruction by fire,
- (c) security (including fencing and surveillance measures to prevent vandalism),
- (d) essential maintenance and repair (being maintenance and repair necessary to prevent serious or irreparable damage or deterioration).

6 HERITAGE DESIGN PRINCIPLES

The heritage design principles described below have been prepared to guide new development on the site so that this does not have any unacceptable impacts on the heritage items. Accordingly, the principles have been developed following detailed analysis of the site and its surroundings and utilise the information contained in the preceding sections of this Heritage Report.

6.1 Scale and Architectural Form

- Based on the site and contextual analyses, new buildings on the site should be a maximum of two stories to respond appropriately to the scale of the Binishells and that of the surrounding residential areas.
- Where new two storey development in close proximity to the Binishells may exceed their height, articulating new development with height reference to the Binishells is not considered to be necessary, rather the architectural detailing of new development should be designed to allow the Binishells to be prominent features on the site.
- The architectural form of any new development must respond in a contemporary and sympathetic manner to the strong architectural forms evident in the existing Binishell structures.

6.2 Architectural Detailing

- New development should be compatible and not overwhelm the significant qualities of the Binishell structures, for example utilising minimal modulation. The Binishells should remain prominent by adopting a smart contemporary aesthetic for new work that is contextually fitting.

6.3 Transparency to Lower Level

- It is desirable for new development to establish a degree of transparency at the pedestrian level to facilitate views through to the Binishell structures, in particular where new development is in close proximity to the existing heritage buildings.

6.4 Setbacks

- Any future development should be carefully sited so that it respects the cultural significance of the place. There is scope for three dimensional spatial analysis to occur in conjunction with determining the best outcomes in terms of setbacks to the Binishell structures.
- The footprints of existing buildings provide a useful benchmark and new development should not be sited any closer to the Binishells. Opportunities to increase setbacks to the Binishells would contribute to enhancing the setting to the heritage buildings.

6.5 Views

The Binishell structures are located centrally on the site and largely concealed from views external to the site. While views to the Binishells are available from the north, existing play equipment in this area partially obscures these views. Regardless, the glimpse views are still notable.

- New development must seek to enhance views to the Binishells, including views within the site.
- Opportunities to enhance views between the Binishells and the open space landscape to the north of the site should be explored.



FIGURE 6.1: EXISTING VIEW INTO THE SITE FROM THE OPEN SPACE AREA NORTH OF THE SITE.

- Retain significant views to the Binishell structures within the site, in particular the view to of the three shells available in the area north east of the Binishells.



FIGURE 6.2: VIEW SOUTH WEST TO THE BINISHELLS FROM WITHIN THE SITE.

- Wherever possible, retain and enhance the open space setting between the original school building (Building K) and the Binishell structures.



FIGURE 6.3: OPEN SPACE SETTING TO THE SOUTH OF THE BINISHELLS.

6.6 Materiality

- Any new development must utilise high quality, well-crafted materials that are durable.
- While neutral colouring of new materials is appropriate, excessive use of light / white coloured materials should be avoided. Some depth of colour is required for new materials, in particular where in close proximity to the Binishells, to encourage presentation of new buildings as a backdrop to the existing heritage buildings.
- Glazing should be neutral in its colour characteristics.

6.7 Curtilage

- An appropriate setting around the Binishell structures is required to ensure retention of their heritage significance. Maintaining a sense of the open space character around the north east setting for the Binishells would retain the traditional relationship between the buildings and the landscape setting and would preserve views south west to the three domes.
- The revised heritage curtilage developed by NSW Heritage is considered to be appropriate to ensure that the essential aspects that contribute to the heritage significance of the Binishells is retained. Any new development in this curtilage must be subject to additional controls and guidelines developed in consultation with an experienced heritage architect and regardless, if necessary, should be minor in nature.

6.8 Landscape

- Retain and enhance the natural landscape setting to the Binishells, which contributes to their aesthetic character.

7 MASTERPLAN OPTIONS

The site of Narrabeen North Public School, incorporating Binishells A and B, is proposed to be comprehensively redeveloped as an education precinct that also incorporates the site of Narrabeen Sports High School. The masterplanning has the opportunity to provide an architectural solution that celebrates and enhances the qualities of the heritage buildings that are located centrally on the public school site.

The design development process has generated a number of options for redevelopment of the overall Narrabeen Education Precinct. Various considerations influenced the development of these options, including:

- Requirements of SINSW
- Impact on views and vistas
- Bulk, scale and siting of new development
- Response to potential SHR heritage curtilage (NNPS) (refer Section 5)
- Response to heritage considerations associated with the Binishell Structures (NNPS)
- The yield required to make the proposal viable

While the options relate to development of the precinct overall, this report addresses heritage issues pertinent to the NNPS site and as such, only the masterplan options for this area of the precinct are shown on the following pages (refer Figure 7.1 to Figure 7.3). Each option for redevelopment of the site retains all three Binishells in recognition of their heritage significance. This is an appropriate response with consideration for both the heritage assessment undertaken for this report (refer Section 4) and the intention for their listing on the SHR, which has been actively supported by the NSW National Trust. In addition to the Binishells, each masterplan option also retains:

- an open space setting to the immediate north east of the Binishells;
- an open space area between the Binishells and the northern boundary of the site;
- the original 1938 school building; and
- opportunities to establish a visual relationship between the Binishells and the original school building.

Responding to the context of the residential development adjoining the east boundary of the site and the Pittwater LEP 2014 height restrictions, each masterplan option limits the height of development to two stories.

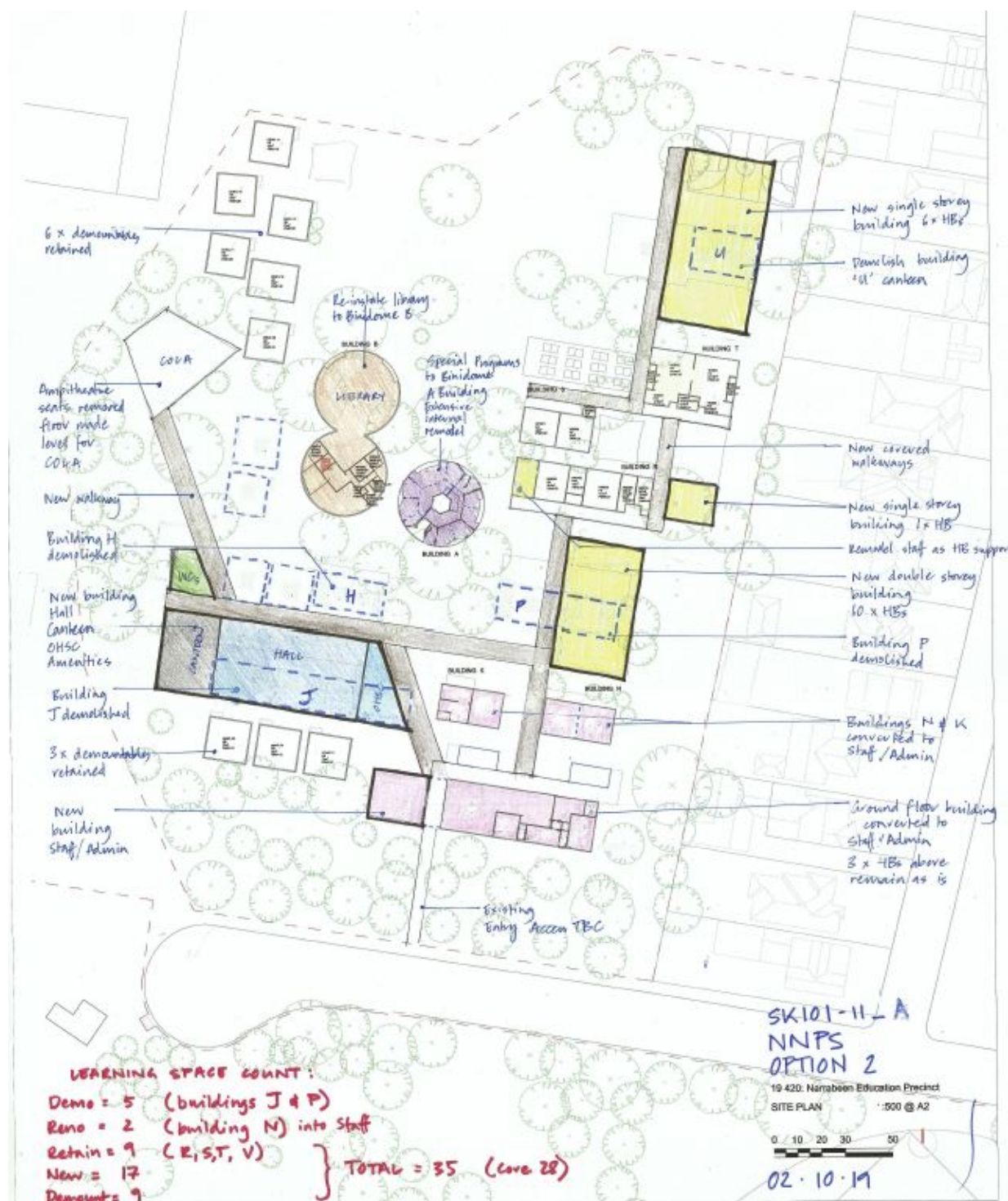


FIGURE 7.1: MASTERPLAN OPTION 2
SOURCE: DJRD

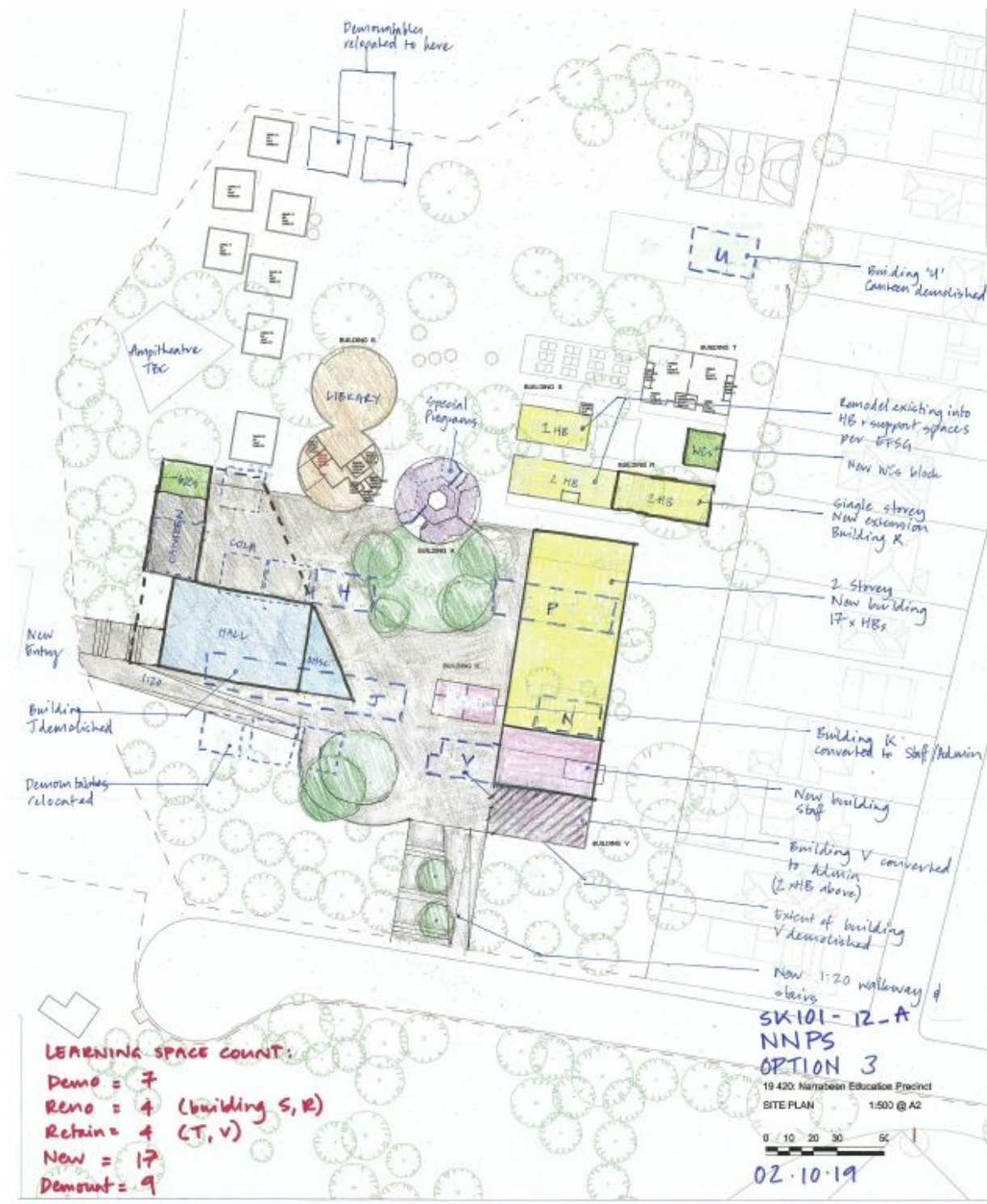


FIGURE 7.2: MASTERPLAN OPTION 3
SOURCE: DJRD



FIGURE 7.3: MASTERPLAN OPTION 5
SOURCE: DJRD

7.1 Assessment of Masterplan Options

In principle, each of the Masterplan options may be supported from a heritage perspective on the basis that all Binishell structures are retained, the original school building is retained and an open space setting around these buildings is retained in some form. In particular, each option retains an open space setting that extends to the north boundary of the site, which facilitates views towards the Binishells from the adjoining public open space area. The following comments are specific to each of the options presented. The common advantages identified here are not repeated below, however advantages and disadvantages from a heritage perspective specific to each option are described.

7.1.1 Masterplan Option 2

Masterplan Option 2 endeavours to work with the existing school buildings and infrastructure to a significant degree and retains a number of existing buildings, including the two storey V block and several demountable buildings in addition to those identified above. Proposals for new development are largely situated adjacent to the eastern boundary, comprising two single storey buildings and one two storey building. A new canteen, hall and OOSH facility is also shown in the southern part of the site. The buildings are spread out across the site in a similar manner to existing, with the major structures adjoined by a number of covered walkways, which also extend to the area of the existing amphitheatre, proposed for conversion to a level open space area sheltered by COLA.

Advantages:

- Removes existing buildings in the immediate vicinity to the south and west of the Binishells.
- Angled walkway leading to the COLA enhances the open space setting around the south west corner of the Binishells.

Disadvantages:

- Piecemeal approach that does not facilitate wholistic redevelopment of the site.
- Retains demountable buildings, usually introduced as temporary structures, that detract from the presentation of the site.
- Covered walkway in open space area between Binishells and Building K interferes with the visual relationship between these notable site elements.
- 35 learning spaces in total.

7.1.2 Masterplan Option 3

Masterplan Option 3 retains much of the existing development in the north eastern part of the site and demountable buildings in the north west in addition to the Binishells and Building K such that the layout in the northern half of the site remains largely unchanged with minor exceptions. New development is concentrated in the southern part of the site, largely south of the Binishells. As such, a number of buildings of different scales are dotted across the site, similar to Option 2.

Advantages:

- Develops a more open space character from the entrance through to the Binishells that may improve views from Namona Street and the pedestrian experience upon entry.
- Provides some degree of additional open space area around south west corner of the Binishells, noting however the presence of the COLA.

Disadvantages:

- Piecemeal approach that does not facilitate wholistic redevelopment of the site.
- Retains demountable buildings, usually introduced as temporary structures, that detract from the presentation of the site.
- 34 learning spaces in total.

7.1.3 Masterplan Option 5

Masterplan Option 5 retains the Binishells, Building K and an open space setting, and then provides for new development, effectively in a U-shape around the Binishell structures. It provides for a well-considered wholistic approach to the redevelopment of the site, providing for additional learning spaces to provide for the growing needs of the school into the future.

Advantages:

- Provides for wholistic development of the site that allows for a considered design response and establishes the Binishells as the centrepiece of the new development.
- Provides greater allowance for the growing needs of the school into the future - 48 learning spaces in total.
- Develops a more open space character from the entrance through to the Binishells that may improve views from Namona Street and the pedestrian experience upon entry.
- Strong oblong forms adjacent to the spherical domes enhance appreciation of the original forms and building character by contrast and frames the heritage buildings.
- Breaks up the bulk and form of the new development by inclusion of covered open areas that facilitate views through to the Binishells.
- Removal of demountable buildings.

Disadvantages:

- New development in close proximity to the west of the Binishells. The setback to the west is similar to that established by the existing buildings on the site and despite the two storey scale of the new structure, provides for open space COLA directly adjacent to Binishell B.

7.2 Demolition of Binishells

Previous consideration has been given to demolition of the Binishell structures in conjunction with site redevelopment. This includes partial demolition, for example demolition of one building only. This section discusses relevant issues from a heritage perspective.

7.2.1 Environmental Planning and Assessment Act 1979 - Pittwater LEP 2014

The Binishells are currently listed as items of local heritage significance in the Pittwater LEP. Listing as a heritage item in a local environmental plan per se does not prevent a council from approving a building's demolition, however the demolition should be adequately justified in accordance with current best practice (refer Section 7.2.3). Under the NSW standard instrument LEP, including Pittwater, the LEP provides that council must notify the NSW Heritage Council of its intention to approve the demolition of a nominated State heritage item and must take into account any objection made by the Heritage Council. Council is not prevented from granting consent even if the Heritage Council objects to the demolition, although the Minister may decide to intervene and issue an interim heritage order or a section 136 order over the property.

The Narrabeen North Binishells are currently a nominated State heritage item as part of a collection (along with Binishells and Ashbury Public School and Ku-ring-gai Creative Arts High School). As such, it would be expected that Northern Beaches Council would notify NSW Heritage Council in the situation as described above if a standard path to development consent was pursued.

In the event of a State Significant development pathway (SSDA), it is expected that the NSW Department of Planning, Industry and the Environment would refer the application to NSW Heritage owing to the nomination for listing of the Binishells on the State Heritage Register.

7.2.2 Listing of the Binishells under the NSW Heritage Act 1977

The nomination to list the Binishell collection, including those at Narrabeen North Public School, on the State Heritage register (SHR) was made by the NSW National Trust. The National Trust is a non-government community based organisation, established in 1945, and incorporated by an Act of Parliament in 1960, dedicated to the conservation of Australia's heritage.

Although the National Trust has no statutory power it has a strong influence based on community support, particularly with regard to a possible threat to a structure or place from insensitive development or the destruction of items of cultural or natural heritage significance. The National Trust monitors development applications and makes submissions when the development is considered to have a detrimental impact on the heritage significance of an item, streetscape or conservation area.

It is evident that NSW Heritage support the proposed SHR listing and they intend to provide a recommendation to the NSW Heritage Council accordingly at the December 2019 meeting. Demolition of a building listed on the State Heritage Register is prohibited (sections 63(2) and 70 of the Heritage Act 1977). It should also be noted that where demolition of an item of State heritage significance is proposed, NSW Heritage Council require as minimum supporting documentation preparation of a Conservation Management Plan.

The statutory protection of heritage items under the NSW Heritage Act 1977 is identified in Section 5 of this report.

7.2.3 General Considerations for Demolition of a Heritage Item

Given the identified statutory heritage significance of the Binishells, even if only at local level under the LEP, from a heritage perspective, proposed (whole or partial) demolition of the items would require consideration to be given to the following as part of a heritage impact assessment:

Demolition of a Building or Structure

- Have all options for retention and adaptive re-use been explored?
- Can all of the significant elements of the heritage item be kept and any new development be located elsewhere on the site?
- Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible?
- Has the advice of a heritage consultant been sought? Have the consultant's recommendations been implemented? If not, why not?

Major Partial Demolition

- Is the demolition essential for the heritage item to function?
- Are particular features of the item affected by the demolition (e.g. fireplaces in buildings)?

- Is the detailing of the partial demolition sympathetic to the heritage significance of the item (e.g. creating large square openings in internal walls rather than removing the wall altogether)?
- If the partial demolition is a result of the condition of the fabric, is it certain that the fabric cannot be repaired?

With consideration for the above questions, which have been derived from the NSW Heritage Manual, it is evident from the current masterplanning investigation of options that there are feasible alternatives for the ongoing use of the site that do not involve demolition of the Binishell structures and that it is possible for new development to be located in other areas of the site. In light of this, it may be concluded that demolition is not essential at this time, nor is major partial demolition essential for the heritage item to function and it has been envisaged through the masterplan process that original uses may be reinstated within the Binishells.

In terms of heritage advice, it is noted that the Narrabeen North Binishells in particular may be regarded as having state significance for the following reasons:

- they are the first examples on Binishell structures in Australia;
- they include the only extant example of interconnected Binishells;
- they are significant for their presentation as a collection within a single site.

In addition, they are amongst architect Dante Bini's all-time favourite projects, which is notable as the Binishell construction technique has met with success around the globe, with more than 1,500 Binishells having been constructed in 23 countries throughout the world.

In terms of repairs and maintenance, the NSW Department of Education have already commissioned a three stage Binishell Strategy which has concluded *"Based on incorporation of the recommendations in this report and regular maintenance, the Binishells should continue to remain functional well into the future."*¹⁸ (refer Section 3.2.1).

7.2.4 Conclusion

From the above, it may be anticipated that any proposal for demolition of the Binishells at Narrabeen North Public School would not be supported by statutory authorities. If this path were to be pursued regardless, it would be reasonable to anticipate significant delays in the approvals process, including potential delays that may be associated with authorities requiring more comprehensive heritage documentation such as a Conservation Management Plan, which typically require several months to prepare. This would not necessarily result in approval for demolition being granted.

¹⁸ Heritage Asset Advisory, NSW Public Works Advisory, NSW Department of Education Binishell Strategy Stage 1, revised May 2019.

8 CONCLUSION

The review of heritage considerations informed by documentary and physical evidence together with the contextual analysis undertaken by OCP Architects indicates that on this site, a number of options are feasible for redevelopment of the site.

Based on the three masterplan options that have been reviewed, Option 5 is preferred from a heritage perspective as it provides a considered design response to the whole site that will avoid the potential for cumulative heritage impacts to occur from ongoing incremental changes over an extended period. The proposed layout of the site for this option is compatible with and sympathetic to the established heritage character of the site and also the surrounding context. It provides for the increased demand for educational and support services via a cohesive design solution that respects the heritage structures and reinforces their essential characteristics by strong contrast of forms. The proposal facilitates a long term compatible use of the Binishells in their enhanced presentation as the centrepiece of the site, with a thoughtful response to enhancing views both internal and external to the site to maximise the ability for the structures to be appreciated by the school community and beyond.

Details of building proposals will be provided with relevant future Development Applications. Subsequent detailed design proposals should be developed with regard for the heritage design principles documented in this report. A design that responds to the principles described in Section 6 of this report has the ability to minimise adverse heritage impacts on the heritage items on the site and its broader setting and be contextually appropriate.