THIRD EDITION

SYDNEY OPERA HOUSE

A REVISED PLAN FOR THE CONSERVATION OF THE SYDNEY OPERA HOUSE AND ITS SITE

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SYDNEY OPERA HOUSE TRUST

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UNDERSTANDING THE PLACE

Bennelong Point, 1788–1795

Following Governor Arthur Phillip's decision to locate the settlement at Sydney Cove, the first ship to arrive from Botany Bay was HMS *Supply,* with Phillip on board. The *Supply* anchored at nightfall on Friday 25 January 1788—about a cable's length from what was later to be known as Bennelong Point. The rest of the fleet arrived the following day.

The government cattle and horses were landed on the point the following Monday and it received the immediate but unofficial name of cattle point (Collins, I, 5; Stephenson and Kennedy, 94). Being a headland it made the beasts easier to contain. Such large and novel mammals would have made the point a place of particular interest to the Guringai people but there are only incidental European references to their visits to the place (Bradley, 84; Collins, I, 27). The livestock remained until they had cropped what little pasture the point provided and they were then removed to a spot at the head of the cove to the east where a government farm was established (Collins, I, 5).

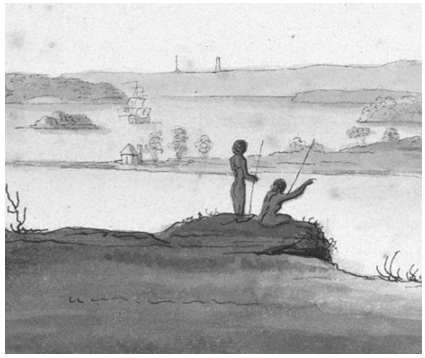
Isabel McBryde notes that the peninsula was known to the Aboriginals as 'Tyubow-gule' (McBryde, 17), but most early correspondents simply referred to the place as 'the east point of the cove' and in common usage it became East Point. Its permanent name, however, arose indirectly from Phillip's attempts to understand and come to terms with the local Aboriginal people. In November 1789, because of his limited success, he took the drastic step of seizing two men: Coleby and Bennelong (Bradley, 181). Coleby soon escaped but Phillip spent considerable time endeavouring by 'kind treatment' to 'reconcile' Bennelong to the Europeans (HRNSW, I, part 2, 300).

Relaxed surveillance allowed Bennelong to decamp in May the following year (1790) but he appears to have retained some affection for Phillip. When the two met farther down the harbour in September, Bennelong made an ill-fated attempt to introduce Phillip to his compatriots. Phillip was speared in the shoulder by 'Wil-le-mer-ring', probably because he interpreted Phillip's advance to shake hands as an attempt to capture him (Collins, I, 110–112).

Despite this, Bennelong subsequently re-appeared at government house with three companions. David Collins, the judge advocate of the settlement, reported:

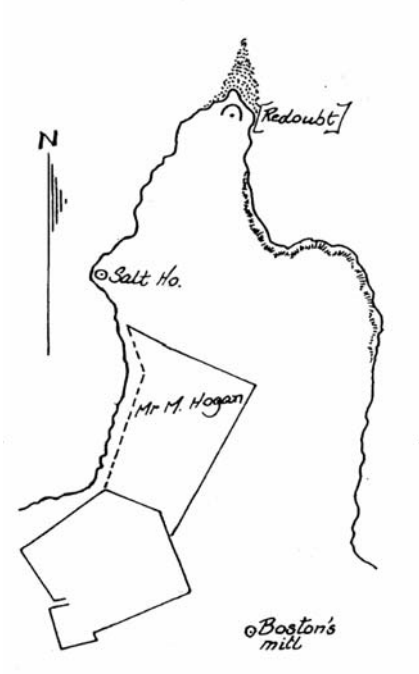
> The welcome reception they met… inspired the strangers with such a confidence in us, that the visit was soon repeated; and at length Bennillong solicited the government to build him a hut at the extremity of the eastern point of the cove. This, the governor, who was very desirous of preserving the friendly intercourse which seemed to have taken place, readily promised, and gave the necessary directions for its being built (Collins, I, 113).

The hut was built of brick, twelve feet square and was roofed with tiles (fig.1). Bennelong chose the site and took possession of it about the middle of November 1790 (Collins, I, 117 & Tench, 200).



1. Thomas Watling, detail of 'View taken from the Rocks' showing Bennelong's hut on the east point of Sydney Cove, 1793–95. Dixson Gallery.

All contemporary sketches show the house in splendid and exposed isolation on the point and from this time the headland was increasingly known as Bennelong's Point—initially with almost as many spellings as there are letters in the name. There is no evidence to suggest that Bennelong spent much time in the dwelling; when in the vicinity he preferred to sleep at government house and seems to have regarded his own house more as a symbol of his importance than a place of residence. The place did, however, have occasional use as a social centre for those Aborigines that were about the settlement (McBryde, 17). William Bradley gives an account of an evening 'entertainment' in March 1791 provided by Bennelong at his house for the governor and his party. At it twenty-four men, women and children danced to the accompaniment of beating sticks and hands (Bradley, 231).



2. Detail of Charles Grimes' 'Plan of Sydney' showing the semicircular redoubt, the Salt House and Boston's Mill in 1800. HRNSW.V.f.p.837.

Much to the distress of relatives and friends, Bennelong and a young compatriot 'Yem-mer-ra-wan-nie' agreed to return to England with Phillip. They left in December 1792. Of the two Aboriginals, only Bennelong survived the trip and it was not until 1795 that, homesick and unwell, he was able to return with the new governor, John Hunter (Collins, I, 211, 296, 331, 572). Bennelong left no record of what he thought of his meetings with England's erratic and unprepossessing monarch, George III. The trip and his European connections helped unsettle a volatile character and he found himself alienated from both Aboriginal and European cultures. This was exacerbated by bouts of intoxication whenever he could gain access to liquor. According to the *Sydney Gazette,* Bennelong died at Kissing Point in 1813 (ADB, I, 85).

During Bennelong's English trip the house was hardly used (McBryde, 17), and in March 1793 it was lent to the visiting Spanish expedition of Don Alexandro Malaspina. The expedition made astronomical observations from the point and used the structure for the safe-keeping of the instruments (Collins, I, 231). The house was demolished in 1795 and the bricks used elsewhere (McBryde, 17).

In 1795 there was a shortage of salt in the colony and Governor Hunter agreed to John Boston's proposal to make salt at Bennelong Point. He was allocated seven convicts and constructed a small works on the west side of the Point (ADB, I, 126; Collins, I, 355). Its location is confirmed by Grimes' plan of 1800 (fig.2) and by Charles-Alexandre Lesueur's engraved *Plan of Sydney* of 1802 in which the building is still known as the 'Saline' or salt works.

Boston was a free settler and staunch republican whose entrepreneurial spirit outran his competence. He only managed to produce 'three or four bushels of salt… in more than as many weeks' and the work was abandoned (ibid). The following year he turned his attention to brewing beer from corn, making soap and erecting a windmill on the ridge running south from Bennelong Point, approximately at the present location of the conservatorium of music. By June 1797 Hunter had come to the conclusion that Boston 'was one of those whom the colony will not derive any advantage from' (ibid, 127). In 1804 on a trading expedition Boston landed with seven others at Nukualofa. All were killed by the waiting Tongans as they stepped ashore (ADB, I, 127).

Early defence works and visitors, 1788–1802

Bennelong Point became the site of the first defensive work commenced in the colony. In April 1788 Phillip appointed marine officer and part-time astronomer, William Dawes, to act as artillery and engineer officer (Collins, I, 20) and he was requested to construct a small redoubt on the east point. David Collins notes that, in July, Dawes' labour force was made up of recently active thieves of whose guilt there was 'little doubt, though no positive proof' (ibid, 28). The work was finished by the end of the year and on new year's day 1789 two guns were placed in position (Harvey, 2.0). The redoubt would have been just sufficiently back from the northern tip of the point to attain a modest elevation and some command of the surrounding water.

Before the work was completed Phillip was obliged to send HMS *Supply* on an urgent quest for flour and, in order to increase its capacity, he removed eight of its guns. These were landed on the west (Dawes') point and a small breast work thrown up round them (Collins, I, 33). Both batteries fell into decay and the Bennelong Point battery was abandoned by 1791 (Harvey, 2.0). In December 1798, the ship's company of the *Supply* under Lieutenant Kent completed a half-moon battery 'on the east point (fig.2), where stood the house built by Governor Phillip for Bennillong' (Collins, II, 97-98, 100). It was armed with some of the guns from the *Supply*.

In October 1800, Governor Philip Gidley King's newly-appointed engineer officer, Edward Abbott, reported that the 'Bennelong Point or East Battery… consists of 4 [6-pounder] guns and 6 embrasures formed of wattle, casks, and earth, in a total state of decay' (HRNSW, IV, 198). No attempt was made to repair or reconstruct the work and instead the point was to become a de facto hospitality area for visiting survey and expedition vessels.

Nicholas Baudin's French expedition spent five months in Sydney from June to November 1802 and it was on the tip of Bennelong Point, south of the battery site, that King permitted Baudin to establish his shore tents 'to facilitate the work of the astronomers'. Matthew Flinders' tents erected from the *Investigator* were already nearby (Bonnemains, 57; HRNSW, IV, 948). One of Baudin's artists, Charles-Alexandre Lesueur, left a fine collection of reasonably accurate pencil sketches of Sydney and Bennelong Point (Bonnemains, 101–106). The Baudin visit was marked by the nice balance of courtesy, hospitality and suspicion which subsisted between the English officials and the French visitors.

If, as Collins suggests, Bennelong chose the site of his house, why was it in such an exposed location on the tip of the point, overlooked by headlands and ridges and visible from the waters of the harbour in three directions? In the absence of records of the local people's attitude to the point, it seems likely that Bennelong chose to give maximum visibility to the very solid evidence of the esteem in which he was held by the European visitors. The value of such a highly visible symbol of white benevolent intentions would not have escaped Phillip. Perhaps he guided Bennelong in his choice. Whatever the reason, the topographical characteristics which made it attractive to Bennelong also

made the vicinity useful for temporary defensive works and, when they were derelict, as a shore camp for visiting foreign expeditions. On the point, the foreigners could be held at a not inconvenient arm's length and at the same time be kept under easy surveillance.

For the first quarter century of European settlement, then, practical considerations arising from the topography determined the use of the northern part of the point. In the second decade of the nineteenth century, however, a new dimension was added to the way in which the place was perceived and Bennelong Point and its spinal ridge became the focus of a new official aesthetic.

Bennelong Point and the Picturesque, 1810–1843

The area now occupied by Bennelong Point, the gardens and Mrs Macquarie's Point was reserved for the crown by Phillip and was to continue as a government demesne free of leases or encroachments (Gilbert, 14–15). Under Hunter and King, however, a variety of leases and buildings were permitted. When Governor William Bligh took over in 1806 he would have none of such foolish or venal nonsense. He cancelled the leases and required the removal of the buildings (HRNSW, VI, 305). It was yet another act that failed to endear him to his 'mutinous' free subjects. Fortunately the next official governor, Lachlan Macquarie, reinforced and completed the clearance.

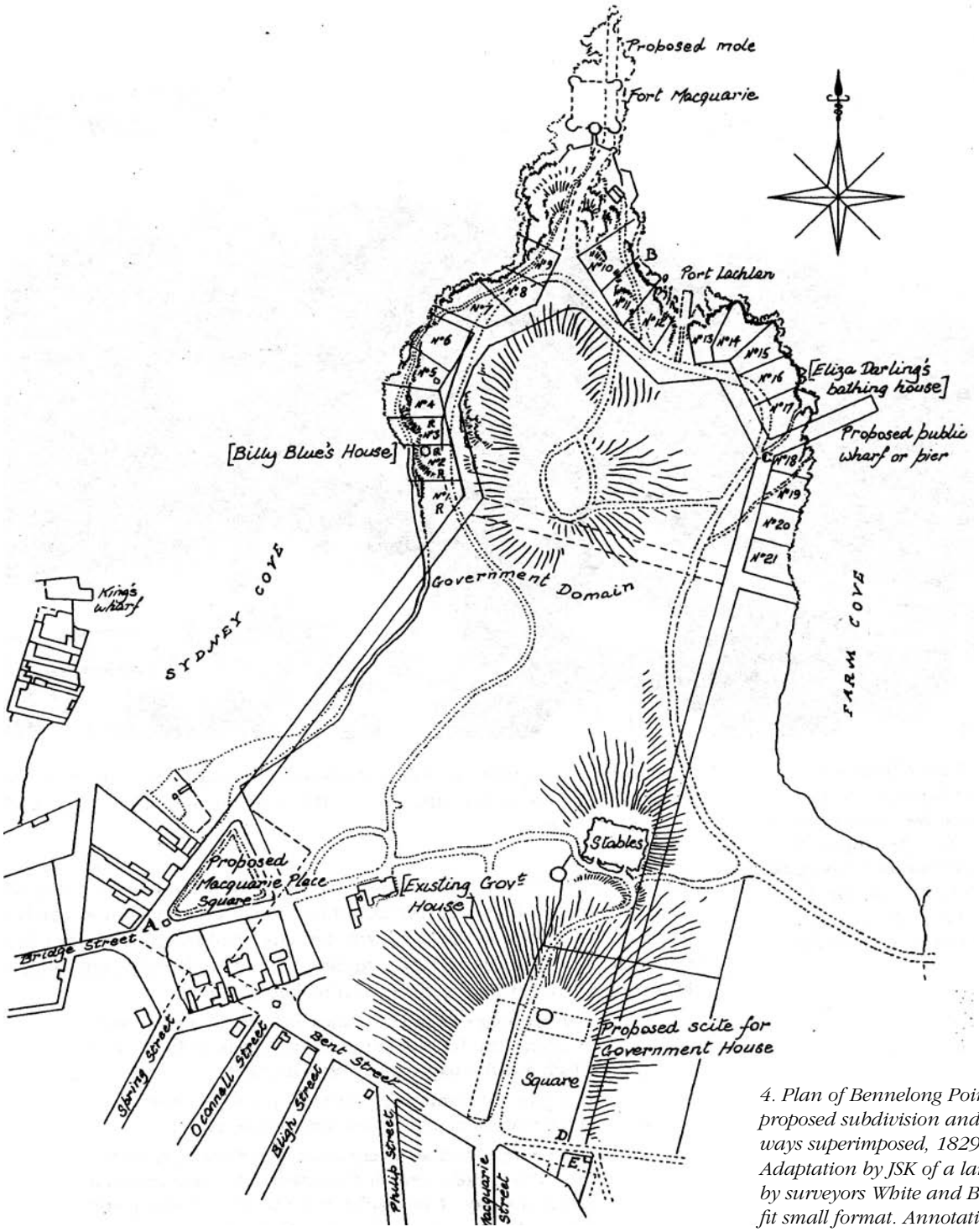
3. Billy Blue's house, detail of an engraving by S. Hall published in W.C. Wentworth's … Description of … NSW, 1820.

Macquarie and his wife Elizabeth did a lot more than return the government domain to its former shape: they also set out to embellish it. Elizabeth's taste for the Picturesque is now well documented (Kerr & Broadbent, chapter 3) and in Sydney she had one of the grandest water landscapes in the world to work on. Moreover she had a husband who shared her taste and was prepared to take responsibility for getting the work done.

The first fruit of the partnership on Bennelong Point was modest: a two-storey, vaguely castellated, octagonal cottage completed in 1812 on the west side of Bennelong Point (figs 3 & 4). It was built on Macquarie's orders as a dwelling for an eccentric black Jamaican known as Billy Blue. William Blue had been transported for stealing sugar and acted as a waterman, watchman and oyster seller. With his top hat and 'naval' uniform he was a highly visible member of Macquarie's marine menagerie (Ritchie, 165; Maclehose, 176–177).

In 1814 Macquarie received a never-to-be-repeated gift on the convict transport *General Hewitt*. It was the convicted forger, Francis Greenway, an architect capable of the stylish realisation of the Macquaries' dreams. Those dreams required castellated Gothic structures as embellishments of harbour views and these Greenway provided—although not without complaint at the occasional interference of his autocratic clients and the subversive activities of his military masters and convict craftsmen. The latter recognised his talent but couldn't stand his conceit.

Greenway clothed the Dawes Point Battery with a masonry screen and added a towered and castellated guard house, but his major defensive



4. Plan of Bennelong Point with proposed subdivision and roadways superimposed, 1829. Adaptation by JSK of a large plan by surveyors White and Benn to fit small format. Annotations in brackets have been added. (A/NSW Map SZ 454.)

work was to be commenced in 1818 across Sydney Cove on the tip of Bennelong Point. Macquarie had prepared a characteristic brief:

> **Memorandum for Mr Greenway, Gov^r^ Actg Civil Architect** 1st To draw out a Ground Plan and Elevation of a Neat Handsome Fort—intended to be erected, as soon as possible, on the lower part of Bennelong's Point, with Ten Embrasures, viz 4 in the North face, 4 in the East face and two in the West face; the South face of the Fort being the entrance and not requiring Embrasures. The Fort is to be entirely built of the best stone that can be procured near the spot. (ML, A1451, p1, Greenway Papers).

5. Detail from a Charles Bayliss photographic panorama of Sydney from the Garden Palace tower in 1879. Reading north along the Bennelong Point spine are the stables, government house and Fort Macquarie. National Library of Australia.

The fort was intended to prevent clandestine departures from Sydney Cove as well as repel 'surprise… attacks from an enemy' (ML, A3251, dispatch 25.3.1819).

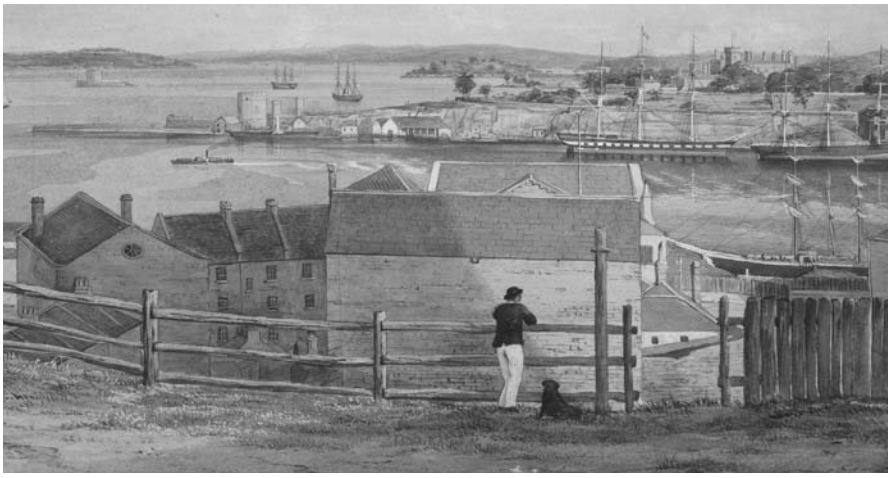
The sixteenth of December 1817 was arguably the most satisfying day of Macquarie's official life. Mr Commissioner Bigge had not yet arrived to blight his public works program, he had breakfasted with friends to celebrate the completion of Greenway's South Head Light (named Macquarie Tower) and on his return he had stopped

> at Bennelong's Point where the ceremony was performed of laying the foundation stone of the new fort… and which was this day named Fort Macquarie.
>
> At 3 p.m. this same day I also laid the foundation stone of the new stable for Government House, etc, etc,…
>
> This being altogether a very interesting day and an auspicious one, I presented Mr Greenway… his emancipation dated this day, it being delivered to him at Macquarie Tower this morning before breakfast. (Ellis, 77, quoting Macquarie's Journal, 16.12.1817).

The third and largest element to be placed on the Bennelong Point ridge was to be Macquarie's government house. Fort, stables and house were to provide a grand Picturesque composition both from the harbour and from viewpoints on the walk earlier designed by Mrs Macquarie around Farm Cove to her 'chair' on Anson Point. The house was never built but Greenway cited the source of his design as Thornbury Castle, Gloucestershire (*Australian*, 4.4.1825). In 1803 Greenway had exhibited a work titled 'Thornbury Castle restored…' at the Royal Academy, so it is clear that he was familiar with the place (Kerr, Joan,

Designing a colonial church, Vol.1, 54–55). As the stables were to be stylistically consistent with the house it is not surprising that it too showed similarities to Thornbury. Even the tower of Fort Macquarie bore a family resemblance.

Governor Ralph Darling made a second attempt at achieving a new government house in 1827. He held a competition for a plan which his wife Eliza reputedly won. The project, like its predecessor, was stillborn but the Darlings did manage to erect a castellated bathing house with octagonal towers on the Farm Cove waterfront not far from Fort Macquarie (fig.4). Eliza Darling probably had a substantial hand in its design (Kerr & Broadbent, 47). Charles Rodius made an accurate pencil sketch of the bathing house and fort from Mrs Macquarie's Point in 1833.



6. George Halsted's watercolour of Bennelong Point from the Rocks showing Government House, the Tarpeian Rock face, Fort Macquarie and Fort Denison in 1863. Mitchell Library.

Bennelong Point's romantic marine landscape was finally completed in 1843 when the present government house was finished. It was designed in England by Edward Blore for the site selected by Macquarie but was actually built on the ridge halfway between the stables and Fort Macquarie (fig.5). The style was Late Gothic or Tudor. The 'genius' of the Point was still considered to be most peculiarly Gothic and a generation of artists, amateur and professional, never tired of depicting its elements (fig.6).

The prosaic James Maclehose, in his 1839 guide to Sydney, ends his description of Fort Macquarie with the following:

> the chief pride of this town is the excellent walks round the Domain, passing Fort Macquarie (Maclehose, 122).

A third of a century later Anthony Trollope added:

> I despair of being able to convey to any reader my own idea of the beauty of Sydney Harbour. I have seen nothing to equal it… (Trollope, 30).

He particularly commended

> a walk from the bottom of Macquarie Street… leading round by the fort, under the Governor's house, to the public gardens (Trollope, 33).

What the Macquaries had done (with prior help from Phillip and Bligh and some subsequent support from the Darlings and Bourke) was to create an environment which appealed to the Picturesque sensibilities of generations to come. It was enough to ward off the grosser demands for commercial and maritime developments which were sought throughout the nineteenth century.

Lionel Gilbert illustrates the point in his quote from William Charles Wentworth's 1819 lament that 'Government House and the adjoining

domain' denies 'facilities for the erection of warehouses and the various important purposes of commerce'. It was a plaint which was echoed by the 'political economist' (economic rationalist?) William Stanley Jevons in 1858:

> … in the original laying out of Sydney a great mistake was made; a large extent of land surrounding Farm Cove extending thence to the high ridge of Hyde Park and including both the promontories of Fort Macquarie and Lady Macquarie's Chair were reserved for parks or other purposes. The whole of this would be extremely valuable as affording both wharves for marine trade and a good central position for the other trades… (Gilbert, 177; ADB, IV, 481).

Such developments (and subdivisions (fig.4)) continued to be substantially resisted, making the government domain a fine and relatively intact legacy for twentieth century Sydney.

7. Adaptation of George Barney's sketch of Port Jackson, August 1836. Public Record Office, London, WO55.852.

Fort Macquarie and the use of the point, 1817–1901

While the landscape quality of Fort Macquarie with its Gothic towers was admired, its defensive capacity was not. The fort was a 130-feet square structure with circular bastions on the four corners. The bastions were each armed with a 24-pounder, smooth bore, muzzle-loading gun mounted *en barbette* on a traversing platform. This

enabled them to be discharged over the parapet with a wide field of fire. Other guns were mounted to fire through embrasures in the east, north and west parapets, three to each side. The fort was entered by a bridge over a dry moat and then through an octagonal Gothic guard tower. Similarly embellished towerlets sprouted from the east and west extremities of the counterscarp. A magazine capable of holding 350 barrels of gunpowder was built into the base of the tower and accommodation for an officer and twelve men was located in the upper part (Ellis, 104).

8. Fort Macquarie after the construction of the upper battery, sea wall and esplanade in the early 1860s. Unknown photographer about 1870. Private collection.

Most military observers regarded the fort as an ornamental and archaic toy. They were alarmed by the fact that its terreplein was only 22 feet above high water, thus unnecessarily exposing the gunners to enemy fire. They also objected to the tower which would become a source of flying splinters under bombardment. In 1836 the newly-arrived commanding royal engineer, George Barney, reported that both Dawes Point battery and Fort Macquarie were 'totally inadequate to the defence of Sydney Cove' (WO 55.852, f.75–77).

The subsequent life of the fort attests to the comparative soundness of its construction, but the process had been a painful one. At the time Greenway had a massive task of designing and supervising a range of public works in trying circumstances and each delay made his client more exigent. The artisan in charge of Fort Macquarie complained that Greenway had never given him a proper plan to follow and tended to change details while construction was underway (Kerr & Broadbent, 43). Greenway for his part became increasingly paranoid about the theft of his ideas and misuse of his plans by others and increasingly proceeded on a day-to-day 'need to know' basis (Havard, 168, quoting Bigge). It infuriated his builders. Despite the problems the fort was sufficiently completed to fire its first salute on the departure of Mr Commissioner Bigge in February 1821.

The arguments which occupied the next third of a century over the defence of Sydney and its harbour had little impact on Fort Macquarie and it continued to be used for drills and saluting, although without regular professional gunners. It was not until the Crimean war that Fort Macquarie was seriously reconsidered as a part of a defensive program. The imperial authorities had passed the title of the Sydney fortifications over to the colonial administration in 1851 (Kerr, *Fort Denison,* 18) largely to avoid the cost of long-overdue development. In 1856, however, the colony had a new (more or less) responsible government with a treasury swollen by the gold rushes, an active and pushful Barney in charge of harbour defence and a decisive royal engineer governor general, William Denison (ibid, 19–20). Works at Fort Denison, Mrs Macquarie's Point, Kirribilli Point, Dawes Point and Fort Macquarie were undertaken (LA, V&P, 1856–57, Vol.III, EC minute 56–60).

For an account of harbour defences in the period see J.S. Kerr, *Fort Denison,* 16–21.

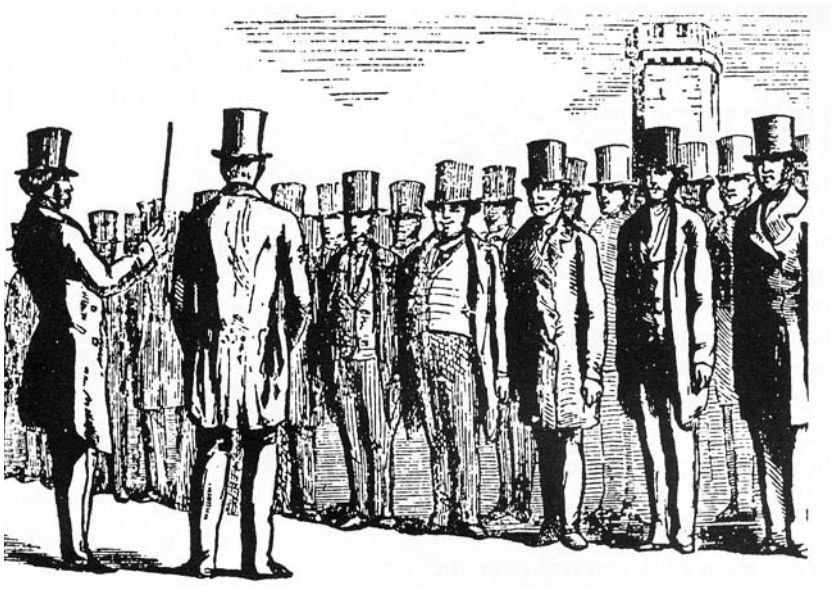
In 1861 a five-gun (42-pounder?) battery was completed on the eastern escarpment of Bennelong Point above and immediately adjacent to Fort Macquarie (fig.8). The date is confirmed by the returns of mounted and serviceable guns at the fort.

31 Dec'r	42pr	24pr carronade	12pr	6pr	Notes
1860	-	11	1	6	5 dismounted 42pr brought in
1861	4	-	-	-	-
1862	5	4	1	-	-

(Statistical returns, NSW.)

It was also at this time that an esplanade was created round the fort by erecting an encircling sea wall and filling the area formerly covered by high tides (fig.8). Later in the 1860s the fort was upgraded by the addition of 32-pounder shot and 10-inch and 8-inch shell guns, probably for training purposes.

In 1854 Fort Macquarie had become the drill ground of the colonial volunteer artillery, formed hastily to repel the Russian bear (fig.9). It was also used by elements of 7 battalion, royal artillery, who had arrived in October 1856 and had their headquarters at the Dawes Point battery, although much of their strength was despatched in 1858 and 1861 to fight in the Maori wars (Kerr, *Fort Denison,* 37). Late in the century the fort was occupied as a volunteer naval brigade depôt and lecture rooms and a drill shed were erected south of the guard tower (fig.10). The brigade and its more portable buildings were removed to Rushcutters Bay in 1900–1901 to make way for a tram depôt (PWD, AR, 1901).



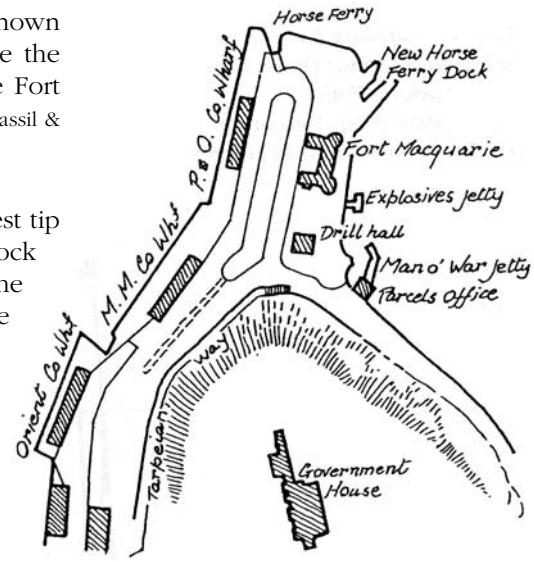
9. Drill of the Artillery Volunteers at Fort Macquarie, From the Illustrated Sydney News, *30.9.1854, p.264.*

Two other nineteenth century uses of the point are of interest. On 3 June 1858 the fort commenced firing a noon-day gun on the drop of the time ball at the new observatory. On 1 September it was altered to one o'clock and thereafter the government astronomer guaranteed that the timing was sufficiently accurate for the rating of ships' chronometers (Gov^{t} Gazette, 1.6.1858 & 24.8.1858).

Two years later a Milsons Point vehicular steam ferry was established from the west side of Bennelong Point near the dry moat (Stephenson & Kennedy, 137). The double-fronted vessel with a central smoke stack can be seen in Halsted's 1863 watercolour (fig.6). The ferry landing was demolished in 1889, presumably to make way for the completion of major longshore wool, mail and passenger wharves which, during the

1880s, extended along the east side of Sydney Cove. The best known and longest established were the Orient Company's wharf beside the former site of Billy Blue's house and, at the northern end beside Fort Macquarie, the wharf of the Peninsular and Oriental Company (Brassil & Le Maistre, 13).

The west side ferry was replaced by a horse ferry on the north-west tip of the point and this was in turn superseded by an elaborate dock for a large ferry north-east of the fort in 1898 (PWD, AR, 30.6.1899). The opening of the Sydney Harbour Bridge in 1932 put an end to the vehicle ferries. An odd piece of barbarism of the late 1890s was the demolition of the western rampart of the fort—presumably to provide carriage access and space for the burgeoning P&O passenger trade on the mail run to the United Kingdom.



10. Bennelong Point wharves, based on an unidentified plan of about 1899 from the Dennis Wolanski Library.

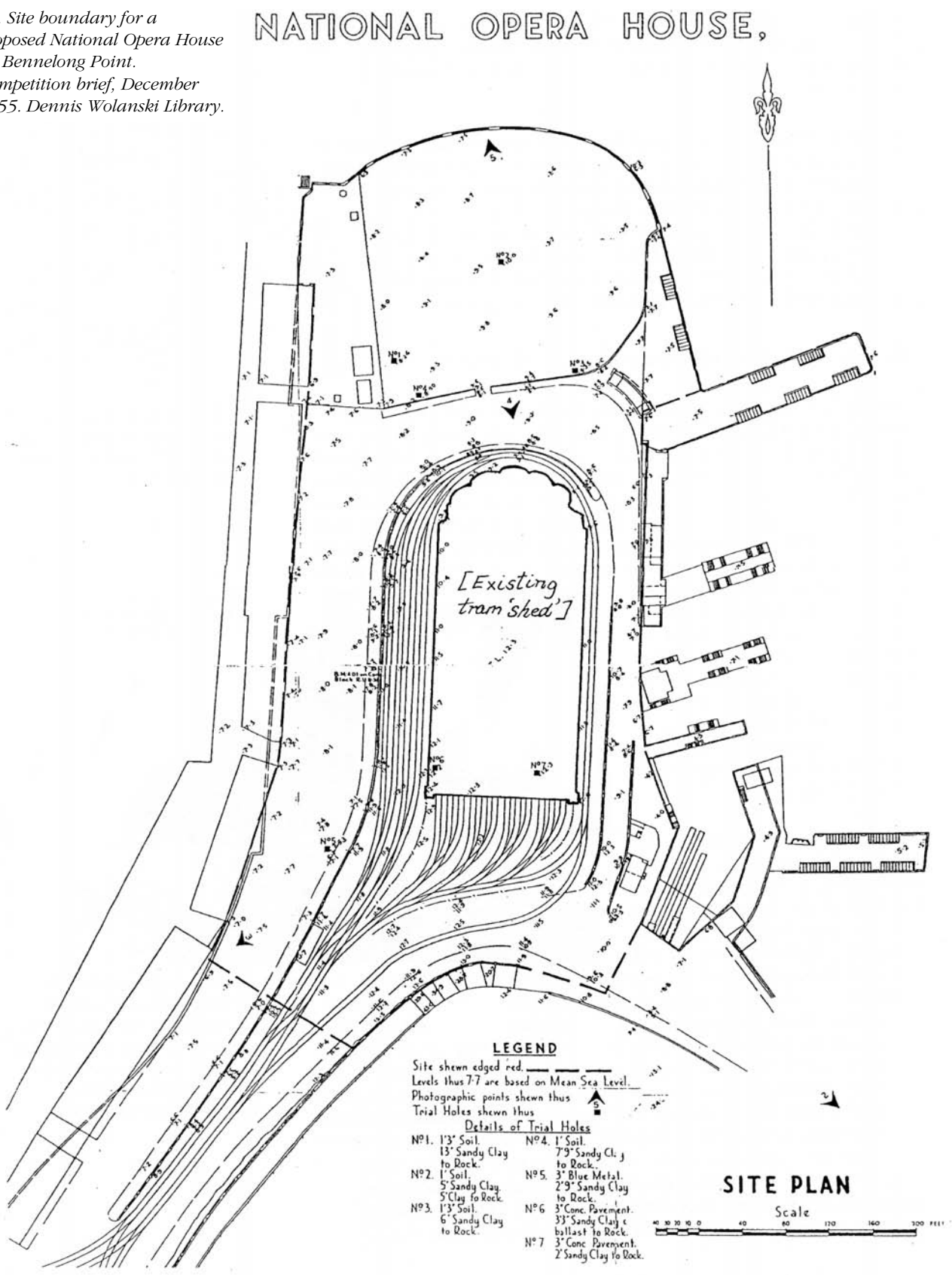
The 'Fort Macquarie' tram shed, 1901–1958

From 1879 Sydney was progressively covered by a tramway network. Horse-drawn at first, it was later powered by steam and, finally, electricity. In 1901 a new single track electric tramway was constructed linking Belmore Park to the Quay via Pitt, Hay, Castlereagh, Bligh, Bent and Loftus Streets. It then ran as a double track at the back of the East Circular Quay wharves to a new tram-car house simultaneously built on the site of Fort Macquarie. A loop line ran round the 'house' to facilitate heavy holiday traffic and serviced the new wharf and jetties constructed on the east side of the point by the Sydney Harbour Trust. The jetties had berths for excursion ferries and charter boats and were known as the picnic jetties. It was a very lively place at the weekend (ibid, 14). The entire works were completed and opened in September 1902 (PWD, AR, 1902, 1903).

11. Photograph of the northern apsidal elevation of the tram shed on Bennelong Point, about 1955, included in the competition brief. The 'shed' was designed by the NSW government architect. Dennis Wolanski Library.

The car-house, or 'shed' as the public preferred to call it, was substantial. It was designed to hold 72 of the largest trams on twelve parallel tracks and provided 200x120 feet of pit accommodation for overhaul work. While the function of the site had changed dramatically, the appreciation of its Picturesque quality had not, so the outer shell was built of brick and sandstone in a fortified Gothic mode. The Department of Public Works reported that it was designed to harmonise with the surroundings and was 'similar in style to the residence of the governor general, which is not far off' (PWD, AR, 1902). Hence the industrial saw-tooth roof was concealed behind crenellated parapet walls and the office and staff facilities were located in a north end with five apses in echelon—in the manner of the thirteenth century High Gothic cathedrals of Amiens, Rheims and Beauvais. This surprising arrangement was surmounted by an asymmetrically placed tower in the government architect's best Neo-Gothic mode (fig.11).

12. Site boundary for a proposed National Opera House on Bennelong Point. Competition brief, December 1955. Dennis Wolanski Library.



Genesis of the Opera House

The Fort Macquarie tram shed continued in use for over fifty years and finally became redundant during the 1950s when Sydney's trams were progressively phased out in favour of buses. Bennelong Point had already caught the attention of Eugene Goossens, the conductor of the Sydney Symphony Orchestra, as a splendid location for a performing arts centre. He was unhappy with the acoustics and facilities of the Sydney Town Hall and in October 1948 publicised a plan for an opera house on the site with an auditorium to accommodate 3,500 to 4,000 people (SOHIT quoting *SMH,* 7.10.1948).

It was not until 1952, however, that the idea gained political support in the person of the newly-elected Labor premier of NSW, John Joseph Cahill, who announced the need for an opera house. The following year Goossens and Cahill discussed the concept with the professor of architecture at Sydney University, Henry Ingham Ashworth. With only a slender parliamentary majority, Cahill had other preoccupations; nevertheless in November 1954 he convened a public meeting to appoint an opera house committee to advise government on ways to implement the government's intention to build an opera house.

The committee consisted of Goossens, Ashworth, Charles Moses (general manager of the ABC), Roy Hendy (Sydney City Council town clerk) and Stan Haviland (the head of the Department of Local Government) who served as chairman (SOHT, AR, 1961, Appendix). The committee recommended the Bennelong Point tram shed and park area as the site and an international competition to select the design (ibid).

The competition, 1955–1957

In January 1956 the government announced an international competition for the design of a 'National Opera House' to be erected on Bennelong Point. Site boundaries were shown on an attached plan (fig.12) and competitors warned that designs which exceeded the boundaries would be disqualified (Competition brief, 7). The brief noted that 'ample parking space' could be found 'within easy walking distance of the site' (ibid, appendix 3) and that space for approximately 100 cars was required on site for musicians, some staff and invalids attending performances (ibid, appendix 4).

Appendix 5 set out two mandatory requirements for the building:

1. There shall be two halls—one large and one small hall. The large hall should seat between 3,000–3,500 persons. The small hall should seat approximately 1,200 persons.

   The large hall to be designed for use for the following purposes:—

   (a) Symphony Concerts (including organ music and soloists).
   (b) Large-scale Opera.
   (c) Ballet and Dance.
   (d) Choral.
   (e) Pageants and Mass Meetings.

2. The small hall to be designed for use for the following purposes:
   (a) Dramatic Presentations.
   (b) Intimate Opera.
   (c) Chamber Music.
   (d) Concerts and Recitals.
   (e) Lectures.

> The requirements under 1 and 2 above, have been listed in order of priority with respect to the attention which should be given to their specialised building needs.
>
> It is expected that ideal conditions will be provided as far as possible acoustically, visually and in connection with stage and orchestral facilities. Compromises which will prejudice the entirely satisfactory performance of a function with a higher priority in the above list should not be made (ibid, 24).

There was no limit placed on the estimated cost of the project, instead competitors were

> allowed to use their discretion in submitting a design of the character and dignity associated with this type of building. At the same time they should bear in mind the necessity for sound judgment as to the financial implications (ibid, 6).

The assessors were Ashworth, John Leslie Martin (professor of architecture at Cambridge and a member of the design team for the Royal Festival Hall, London, and an Ashworth acquaintance from their Manchester days), Cobden Parkes (the NSW government architect) and Eero Saarinen (the renowned Finnish architect from Michigan, USA) (ibid, 4).

The combination of site and open brief proved irresistible: 933 competitors registered. They came from all over the world:

UK	220	Far East	28
Europe	219	Canada	25
Australia	193	New Zealand	20
USA	113	Eire	10
Middle East & Balkans	63	South America	6
South Africa	32	Other	4

(NLA, MS 4500, Ashworth papers, box 9).

Of these over 220 finally submitted entries. It was a competition which generated real international interest.

Judging took place in January 1957 and the entry of a Danish architect, Jørn Utzon, was the unanimous winner. Both the architectural fraternity and the public were amazed by the design. The *Architect's Journal* called it 'The epitome of romantic sculpture on the grand scale' (*AJ,* London, 14.2.1957). Most people found it a spectacular and appropriate development of the site.

There were a few dissenting voices: Cahill reacted with 'it looks like a bloody crocodile' but he was quickly pacified (Parsons, 342); the world-famous Italian engineer Pier Luigi Nervi, who had designed the interlace beams for Harry Seidler's Australia Square tower, objected to the evident lack of structural basis; Frank Lloyd Wright, grown somewhat crusty with age, demanded 'Australians are not going to let this

abomination happen, are they?' A more kindly and enigmatic Buckminster Fuller noted, 'it will give simple people pleasure' (Boyd, Now it can never be architecture). Second prize went to seven architects from Philadelphia, USA and third to Boissevan and Osmond of London, UK.

There are conflicting views of what took place during the jury's deliberations but all agree that Saarinen was a strong advocate of the winning design. His much quoted philosophy speaks for him: 'The only architecture which interests me is architecture as a fine art. That is what I want to pursue' (Jencks, 197). The Sydney Opera House design provided a splendid opportunity for that pursuit.

During public debate on a name for the building the following month, Paul Butz wrote to the *Sydney Morning Herald* (SOHIT, *SMH,* 19.2.1957) suggesting it be called Bennelong Hall and then abbreviated to Ben Hall, thus it 'would be in keeping with the bushranger prices that will no doubt be charged for admission'. It was exactly what Cahill feared and in August the same year, he promised:

> the building when erected will be available for the use of every citizen, the average working family will be able to afford to go there just as well as people in more favourable economic circumstances, there will be nothing savouring even remotely of a class conscious barrier and the Opera House will, in fact, be a monument to democratic nationhood in the fullest sense (Report of Trustees of SOH, 30.6.1963).

Utzon had arrived the previous month to see, for the first time, the site for which he had prepared the design. He charmed the natives and a sense of euphoria prevailed. The laconic entry in the chronology prepared for the Opera House library says it all:

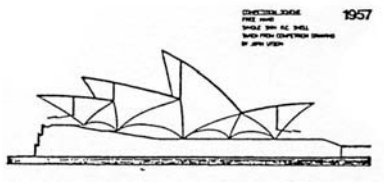
> 7 August 1957: Fundraising meeting at the Sydney Town Hall. Utzon cheered, model unveiled for the first time. Premier overcome with emotion. Public waved banknotes and cheques (SOHIT).

Utzon then returned to Denmark to work up his plans with the help of the engineering firm of Ove Arup and Partners of London. Arup was Utzon's choice but was responsible directly to the client. It was an arrangement suggested by Ashworth for the major consultants but it was later to contribute to the discord between architect and engineer (Baume, 12–13). A further recommendation by Ashworth to government which had unfortunate repercussions was that it was unnecessary for Utzon to work with an Australian architectural firm with local knowledge, as had been foreshadowed in the competition brief (Ashworth to Hall in conversation).

Utzon's evolving concept, 1957–1966

Greenway had designed a functional if somewhat old-fashioned fort for his client and embellished it with Picturesque borrowings from a Gothic past. Eighty-five years later the NSW government architect did the same for the tram shed. It was an approach which spanned the nineteenth and early twentieth centuries but, in the 1920s and '30s, was reviled and abandoned by followers of the Modern Movement. They

held, as an article of faith, that form must follow function. The tram shed almost outlasted the most puritanical phase of the Modern Movement in Australia and thus preserved the site for the work of a new generation of which Utzon, in his development of the Sydney Opera House, was the most expressive and dramatic exponent.

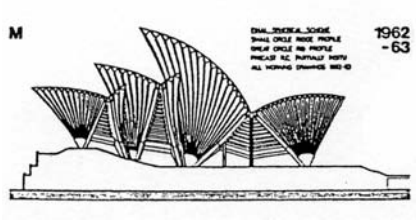


13. Utzon competition entry drawing, 1957. Arup & Zunz, SOH, 9.

The roof shells

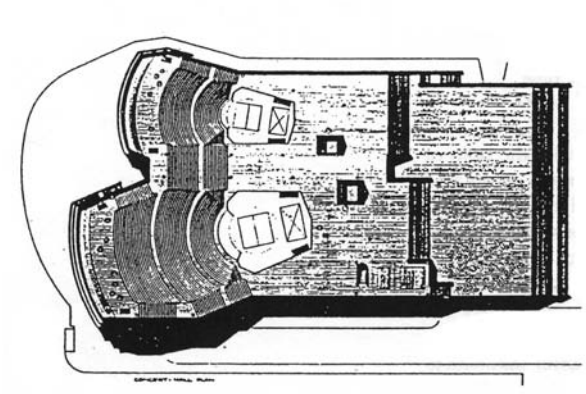
Utzon, like the designers that preceded him on Bennelong Point, was inspired by the site. It was clear that the building would be viewed from all angles—from water, land and even air. It would be a focal point in a grand waterscape: hence the roof was of 'major importance'. Utzon explained:

> … instead of making a square form, I have made a sculpture—a sculpture covering the necessary functions… If you think of a Gothic church, you are closer to what I have been aiming at.
>
> Looking at a Gothic church, you never get tired, you will never be finished with it—when you pass around it or see it against the sky… something new goes on all the time… together with the sun, the light and the clouds, it makes a living thing (Utzon, SOH, 49).



14. Final roof scheme, 1962–63. Arup & Zunz, SOH, 9.

The austere line sketches Utzon prepared for the 1957 competition show a roof of relatively squat, free form, concrete shells (fig.13). These were concept diagrams and did not prove to be structurally practical. Over the next five years Utzon, in conjunction with the Arup firm, developed a ribbed shell system based on the geometry of a sphere (fig.14). This system permitted each rib to be built up of a number of standard segments cast at the site. The segments were then lifted into place between the previous rib and a supporting telescopic steel arch devised by the contractor, M.R. Hornibrook. The complete rib was then stressed and the process repeated.



15. The platform or podium with steps and auditorium seating. Arup & Zunz, SOH, 6.

The development of the roof shell design was a difficult and lengthy process. The final solution was not evolved until 1962–63. As with so much of the Sydney Opera House work, it extended skills and pushed technology to the limit. Utzon was proud of having combined an expressive freedom of form with the precise technology of the machine age in a job of such complexity (Utzon, SOH, 49).

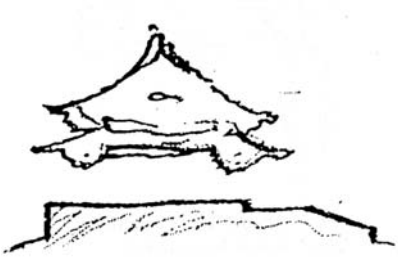
The platform

The past was not a foreign country to Utzon. He drew on it for inspiration—not in the nineteenth century way of recapturing styles by borrowing details but in the re-interpretation of long used ideas. One of these was the importance of the platform. In 1959 he wrote:

> The platform as an architectural element is a fascinating feature. I first fell in love with it in Mexico on a study trip in 1949, where I found many variations both in size and idea of the platform… a great strength radiates from them (Giedion, Utzon, 41, quoting Utzon).

Subsequent travel reinforced Utzon's conviction that 'the horizontal plane—the platform—[is] 'the backbone of architectural compositions" (ibid).

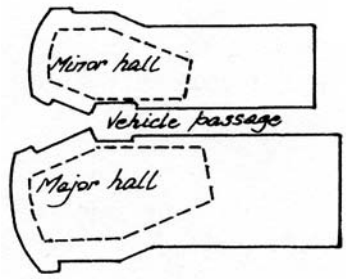
It is not surprising then that the shell structures of the Sydney Opera House are supported on a substantial, visually solid, platform or podium and that almost the entire south front is spanned by terraces of steps approximately 282 feet wide in the manner of Mayan temples. Giedion cites Yucatan as an example (Giedion, Utzon, 38–39). The major halls and public perambulation areas in the Opera House are placed upon the platform and the working parts of the complex are located underneath.



16. Utzon's sketch of a Japanese house with platform and roof elements only. Zodiac, *14, 40.*

The glass walls

By 1963 the problems of the platform (construction stage I) and the roof (construction stage II) had been resolved and the building design had arrived at the stage delightfully expressed by his earlier sketch of a Japanese house *sans* walls (fig.16). As the roof shells of the Opera House only touched the platform at certain springing points, the character of the infill between the platform and the roof had to be resolved. By 1964, Utzon wanted to glaze this in such a way that the glass appeared suspended from the shells, transparent and with no suggestion of a vertical load-bearing capacity (Utzon, SOH, 83). It was also to reflect something of the sculptural quality of the building and, most difficult, provide a link which would accommodate the very different geometry of the roof shells and the stepped platform. It was a problem finally left to the architects of stage III to solve.



17. Diagram of vehicle access passage below halls.

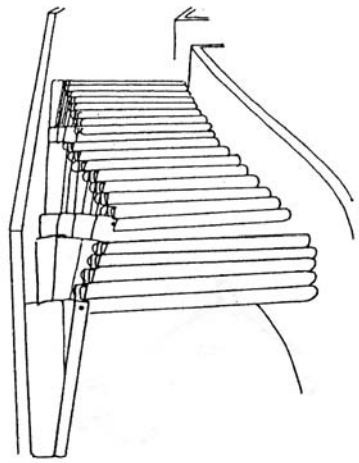
Interior relationships

Utzon's plan set the two largest halls side by side upon the platform. It made possible his dramatic sculptural elevations but it was not without some functional cost. The main item was the loss of conventional side and backstage space. Instead, access was contrived from below and vehicle deliveries were effected via a broad spinal passage under the platform at ground level (fig.17). The halls had their stages set to the south. This maximised views of the harbour from the northern foyers and from the glass-walled passages as the public passed round to the northern end.

Those people who arrived by car would enter the austere, low-lit, linear spaces of the stairway and booking hall under concrete beams of unusual span and form. The ascent of the remaining steps to the platform level rendered a continuation of Utzon's cathedral analogy entirely appropriate. It was to be like passing from a low narthex or crypt to a grand Gothic cathedral—light, airy and with a tall sculptural rib vault above.

Corridors

Utzon's vision of the building as a 'living thing' manufactured from simple mass-produced elements in a limited range of materials was to apply throughout the building. The intended design of the corridors under the platform was an off-beat example. The location and irregular



18. Sketch of Utzon's corridors based on mock-up model.

form of the corridors were determined by the structural and functional requirements of the halls and superstructure above, but their internal treatment was cunningly devised to conceal their additional function of distributing electrical, hydraulic and mechanical services.

Standard 16" ply panels were to be developed as a part of an overall manufacturing process. They were to sit on a rail at floor level on one side of the corridor and cover the otherwise exposed services on the wall. At the top they were pivoted to a plywood slat which was anchored to a rail on the opposite wall thus forming an additional visual barrier to the services on the ceiling (fig.18). The barrier was increased by using a dark colour above the slats and high intensity lighting between. It was still possible, however, to carry out a casual inspection by looking directly up between the slats (Utzon, Narrative, 1965, 20).

The sculptural effect was created by Utzon's pivot and by the irregular form and width of some corridors. This resulted in the wall and ceiling slats connected by the pivot being progressively inclined from their vertical and horizontal planes (ibid). The effect would have been rather like passing along the somewhat quadrilateral alimentary canal of a giant recumbent serpent.

Toil and trouble

In the early 1960s the architectural character of the proposed Sydney Opera House had already made it famous in professional circles. By the mid 1960s the controversy surrounding its time and cost overruns had spread that fame to almost all levels of society. In February 1966, with the roof structure more than half complete, Utzon 'resigned'. By April he had left Sydney and did not return. Like the building itself, the reasons for the Opera House troubles were complex and much discussed in a range of publications, some of which are listed in the bibliography.

A major factor was Premier Cahill's insistence on the building being commenced before the March 1959 election—long before the design for the shells and their supports had been resolved. With construction running ahead of design solutions, it set up a chain reaction which plagued all those concerned with the work during the fifteen year construction of the building. The most quoted example was the need to explode and reconstruct those foundations which were to bear the weight of the roof as finally designed. Cahill may have been right in insisting that the project would not have survived without an irrevocable early commitment, but it certainly proved a disastrous handicap to the building program.

A further problem lay in the committees appointed by Cahill in August 1957 to act for the client (SOHIT). They consisted of a large executive committee advised by two sub-committees: a music and drama panel and a technical advisory panel. The latter became the most relevant committee for the supervision of the building program. As with the other committees, the technical advisory panel was honorary and did not meet sufficiently frequently to give timely advice, so its chairman,

Ashworth, often made decisions. Indeed, he became the de facto client. In 1959 Arup wrote to Utzon, who was still working in Denmark:

> …no-one can afford to wait until the Committee formally approves your latest plans for the major hall stage area. When your scheme is fully worked out you should send it to Professor Ashworth stressing that he must give immediate authority to go ahead. From past experience the full Committee cannot be summoned in time nor induced to give an opinion positive enough to allow work to proceed… (Baume, 68)

It was a role Ashworth would have found gratifying. He was one of those persons whom the English have often been pleased to export to the colonies. As professor of architecture at the University of Sydney he took full advantage of a residual cultural cringe among the natives to become a great committee man and arbiter of taste in Sydney commercial and professional circles. Inclined to pomposity and dependent on others for informed advice, he was not in a position to provide the astute guidance necessary if Utzon's method of working was to survive in an alien cultural environment. Instead he provided enthusiastic and uncritical support for Utzon's proposals and progress payments were authorised without question (Baume, 93–94). After the new Liberal government took office in May 1965, Utzon's sheep were replaced by wolves.

Utzon was a natural problem-solver, working up solutions in consultation with technical experts and artisans by a process of trial and error. He made his method clear in a letter to the new minister for public works in July 1965.

> It was mutually agreed with the client [Ashworth's committee] that, every time a better solution was evolved on one point or another, it was necessary to incorporate the better solution. I have not compromised with either my previous client or the consultants in my search for perfection. This is what separates this building from any other—that it is being perfected at the same time as it is being built (Baume, 70, quoting Utzon to Hughes, 12.7.1965).

In his search for perfection Utzon was working to a very different agenda to that of the new government. He knew he could get there in the end, but in financial—and therefore political—terms it was not a process the government considered appropriate to jobs of the scale and complexity of the Sydney Opera House. Once the authorisation of fees was transferred from the executive committee to the minister for public works, Davis Hughes, in October 1965 (SOHIT) Utzon was in trouble. Utzon finally resigned in an oddly constructed letter in which he told Hughes that he had been 'forced… to leave the job' (Baume, 84, quoting Utzon to Hughes, 28.2.1966). The alacrity with which Hughes dispatched a formal acceptance of Utzon's 'resignation' belied the deep regret he expressed at receiving it (ibid, 84, Hughes to Utzon, 28.2.1966).

At the beginning of 1965 Ove Arup said:

> Utzon is a very charming and genial genius, but uncompromising… (Arup, Address, quoted in Baume, appendix 1).

In addition to this generally acknowledged charm and genius Utzon possessed that degree of artistic determination so necessary for the rigorous pursuit of an artistic ideal and this, combined with a distinct naivete in dealing with bureaucratic expectations, made conflict inevitable. Had he had a trusted Australian architectural firm to advise him on local culture as suggested in the competition brief, a showdown may have been averted.

There were a range of other factors, not least of which was the progressive breakdown of relations between Utzon and the Arup firm. Utzon believed that the firm's contact with the client should be only through him as architect. As Arups were directly engaged by the client this did not always happen. Utzon also came to believe that Arups arrogated to themselves too much credit for design solutions and he increasingly harboured dark thoughts about Arup's behaviour and intentions—thoughts which he finally expressed to Ove Arup in two letters written after his resignation (Baume, 41–43). In the later one he taxed Arup with not advising the client that his firm's services would be withdrawn unless Utzon was fully reinstalled. Whatever the rights of the matter, it was fortunate for the project that Arups did in fact continue their work.

Completing the Opera House, 1966–1973

In April 1966 Hughes announced the appointment of a panel of Sydney architects to complete the project. It consisted of Peter Hall from Public Works; Lionel Todd of Hanson, Todd and Partners; and David Littlemore of Rudder, Littlemore and Rudder. They became Hall Todd and Littlemore for the duration of the job. Hall was responsible for design (Yeomans, Progress, 1.7.1972). The fourth member was the government architect, Ted Farmer, who, by virtue of his office, acted as client.

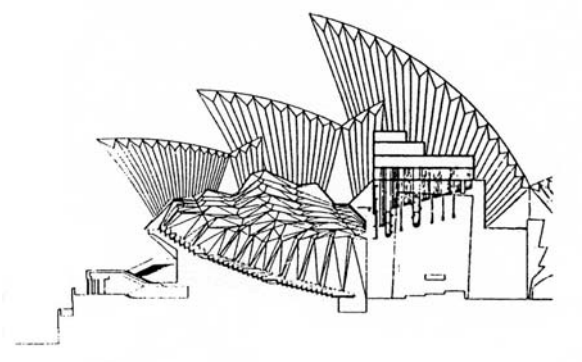
At the time, the structure of the podium was complete, the shells nearly so and the first tile lids were being placed on the shells. In May, following a partial resolution of a dispute over fees, Utzon handed over a batch of drawings relating to the proposed stage III. The drawings covered aspects of paving and cladding, glass walls, restaurant and major and minor halls. There were no schemes for the foyer spaces or louvre walls. Hall described the drawings as being without dimensions, identification of materials or indication of fixing points. They were, he said, 'not working drawings; they did not represent even a worked-out sketch scheme' (Hall, Monument, 2). While this made work difficult for Hall, Todd and Littlemore, it also emphasised the very different approaches of Utzon and his Australian successors. Utzon liked to work with consultants and contractors developing and adjusting three-dimensional prototypes, on the other hand the Australian tradition continued the primacy of the two-dimension drawing.

The recollections of the electrical consultant's man on the spot from 1963, Frank Matthews, provide an affectionate picture of Utzon at work. Matthews found him 'tremendously enthusiastic and a most inspiring person to work for'. He also noted:

> Utzon was the sort of person who carried a great deal of the design in his head and didn't always record his ideas in formal ways, so Hall, Todd and Littlemore often had to rely on people like ourselves who remained on the site to fill in detail and help them fit the pieces of the puzzle together (Anderson & Cochrane, Julius, Poole & Gibson, 83&86).

It was apparent that, in the absence of communication between Utzon and the new team, the Opera House was not going to be finished as Utzon might have intended.

Two problems beset the major hall: seating capacity and acoustics, the resolution of which was to have far-reaching effects within the building. The hall was a proscenium type theatre with a large stage and with the necessary tower above it under the main shell (fig.19). Seven elevators would provide access from below for props and equipment. The hall was intended (as set out in the brief) for both concert and opera performances (ibid, 3).



19. Proposed configuration of major hall, 1962. Zodiac, *14, 43.*

In June 1966, the Australian Broadcasting Commission, as the major commercial user of the space, produced a somewhat belated but specific set of requirements for the space. In precis they were:

- seating capacity of not less than 2,800 with comfortable seating and good sight lines;
- stage space for a large choir and orchestra in the same acoustical space as the audience;
- an organ of adequate proportions for concert work;
- acoustics suitable for symphonic concerts with 'a reverberation time at middle frequencies in the region of 2.0 seconds when fully occupied' without electronic assistance;
- character and diffusion of sound similar to that found in the Boston Symphony Hall, the Concertgebouw in Amsterdam, the old St Andrew's Hall, Glasgow and in the Grande Salle, Place des Arts in Montreal;
- quiet air conditioning;
- television, radio and announce control rooms;
- camera positions for television coverage.

In addition the ABC requested rehearsal, administrative and parking space (Duckmanton to Farmer, 7.6.1966).

The minister enjoined Hall, Todd and Littlemore to investigate the ABC's requirements and Hall set off on a tour of overseas performing arts centres and experts. This, together with a series of working groups later in the year, resulted in the presentation to the minister in January 1967 of a *First Review of Programme*. It was a nicely understated title for some dramatic recommendations. Hall later summarised those that affected the interior performing spaces:

> (a) The Major Hall should be made into a concert hall satisfying the ABC's criteria. It should no longer try

to be a multi-purpose hall. To gain the floor area needed for the increased seating and the volume needed to produce a reverberation time of about 2.0 seconds, the proscenium arch and the stage tower should be removed, allowing the ceiling to sweep uninterrupted from one end of the hall to the other.

(b) To use the Major Hall for a concert hall was reasonable only if a satisfactory alternative theatre could be offered for opera and ballet. The Minor Hall at 1,100 seats with its tiny orchestra pit, would not do. Its capacity could, however, be increased to 1,500 by the addition of galleries and an enlargement of the pit to accommodate around 80 musicians. The advantages of having a large auditorium for concerts and a reasonable-sized separate theatre for opera made this alteration seem sensible.

(c) The Drama Theatre (in the podium) should be designed as a proscenium theatre seating around 500, an excellent capacity for subsidised theatre.

(d) The area below the stage in the Major Hall (stage machinery space) should become a large rehearsal/recording studio, not otherwise available in the building and very important to its use.

(e) The set-changing area below and behind the Major Hall should become a fourth auditorium. We thought of a national film theatre, since film has developed into the major art of the century and is now often provided for in performing arts centres. (Hall, Monument, 6).

When the propositions were put to the Sydney Opera House Trust, the Elizabethan Theatre Trust and the ABC, a 'fierce and bitter' controversy erupted (ibid, 6). Bruce Petty produced a memorable image of heavily armed Wagnerian warriors, led by a redoubtable Brunhilde, furiously assailing enraged instrument-wielding members of the ABC's Sydney Symphony Orchestra (The *Australian,* 16.2.1967). The clash was brief and, despite the championship of H.C. 'Nugget' Coombes, the heavies of The Ring were defeated by the ABC's pocket stroke. General Manager Duckmanton made it clear that if the hall did not comply with concert performance requirements, the ABC would seek other venues.

To a government responsible for the viability of the Opera House, the loss of its major user would have been a financial nightmare. Cabinet decided to adopt the review recommendations and the director of public works advised the architects that:

- the major hall will be a special concert hall;
- the stage machinery designed and manufactured for that hall will not be installed;
- the minor hall will be designed to seat 1,500 and a careful examination of the orchestra pit and stage areas will be continued to ensure that the best practicable provisions are made therein for opera and ballet;
- the experimental theatre will be designed as a high standard drama theatre to seat 700–750 persons;

- provision will be made for a rehearsal hall for orchestra below the major hall stage area and, if practicable, it will also be designed as a recording studio for orchestra (Humphrey to Hall, Todd and Littlemore, 3.4.1967, included in Hall, SOH, 85).

Petty's last image was of Brunhilde, with her Elizabethan Theatre Trust banner, defiantly astride the peak of the major shell as the titanic bulk of the Opera House slid beneath the waters of the harbour (The *Australian,* 22.3.1967).

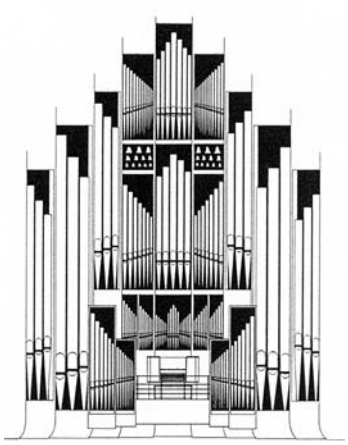
It was to be another eighteen months before Hall, Todd and Littlemore were able to present a 'detailed and estimated brief' to government for the formal approval of the stage III program (Hall, Monument, 6). When the third stage commenced early in 1969, it was ironical that Hughes, by then experienced in his portfolio, had agreed to a 'construction management' arrangement with the main contractor—the Hornibrook Group. Hornibrooks had shown themselves to be inventive and reliable in the stage II erection of the roof and had established working relationships with both the structure and its designers. In view of the problems yet to be solved, it was seen to be the most sensible arrangement although it was still to be the major cost of the project. H.R. 'Sam' Hoare, the Hornibrook director in charge of the project, provided the following approximations in 1973:

Stage I:	podium Civil & Civic P/L	approx $5.5m
Stage II:	roof shells M.R. Hornibrook (NSW) P/L	approx. $12.5m
Stage III:	completion The Hornibrook Group	$56.5m
Separate contracts: stage equipment, stage lighting and organ		$9.0m
Fees and other costs		$16.5m
		$100.0m

(Hoare, SOH, 4).

Apart from the changes to the performing spaces, stage III involved a major upgrading of mechanical and electrical services. For example, the air conditioning program designed in Utzon's time was modest and could not service the major and minor halls simultaneously, nor was it intended to supply backstage and dressing room areas at all. The government therefore authorised the doubling of capacity to cover all theatres and backstage at the same time. The massive ducting requirements would have led to a series of extensive structural changes. The problem was reduced by the provision of 'over 70 separate air handling systems located in 24 plant rooms around the building and fed with heated and chilled water from a central refrigeration system' (Todd, The end in sight, 3; Hoare, SOH, 4, 14).

In 1968, state cabinet was prepared to allocate $85 million as an all-up figure for the completion of the project. This led, in the words of Hall, to 'a healthy discipline in detail design that undoubtedly benefited the job' (Hall, SOH, 22). It also resulted in the establishment of a hierarchy of treatment which is reflected throughout the building:



20. Elevation of organ supplied by Ronald Sharp.

1. exterior and external works;
2. main auditoria;
3. other public spaces;
4. administration and artists' areas;
5. services areas (ibid).

It meant that 'quality where it counted most or was essential to performance was affordable' but that 'care was taken to economize where possible' (ibid). The schedule of interior finishes set out on pages 60–70 of David Littlemore's *Sydney Opera House* provides an account of what this meant in practice.

The major hall was always intended to be equipped with an organ although in its original proscenium configuration the placement of the organ remained a difficult acoustic problem. Once the decision was taken in 1967 to convert the major hall to a single space the problem was solved. The organ was simply placed in a traditional location, high on the axial southern wall where it presents a handsome face to the audience (fig.20). It was designed and built by Ronald Sharp of Sydney, assisted in the last months of construction by the Austrian organ-building firm of Gregor Hradetzky. Like the Opera House, the organ had a protracted and fraught construction history but it was finally completed in 1979 and, as well as being a comprehensive and flexible instrument, was probably the largest mechanical action organ in the world (Rowe & Hubble, *Organ,* 1 & 2; Sharp, *Organ,* 1).

In 1967 the target date for completion was December 1972 and in that month the first orchestral performance was given in the Concert Hall to test the acoustics. The Sydney Symphony Orchestra played to an audience of construction workers and invited guests. Work on the project was brought to a 'state of practical completion' on 31 August 1973 (Littlemore, SOH, 89). The first opera season began the following month, although the season had been preceded by a number of unofficially claimed 'first' performances at a variety of venues.

While Cahill did not live to see his project finished, it was his foresight in arranging a peculiarly Australian system of finance that ensured its success. His Opera House lotteries, announced in September 1957, contributed just over $100,000,000 to the construction of the building. The wowsers may have hated the idea of a cultural monument built on gambling, but it proved a painless way of parting the people of NSW from their money for an endeavour which could be considered elitist. Cahill was only half right in his prediction that the building would be 'a monument to democratic nationhood'—on completion the 'average working family' could afford to go there as tourists but not as patrons. To help redress the situation the Sydney Opera House Trust have introduced schemes which provide free or cheap access to a variety of activities within the building.

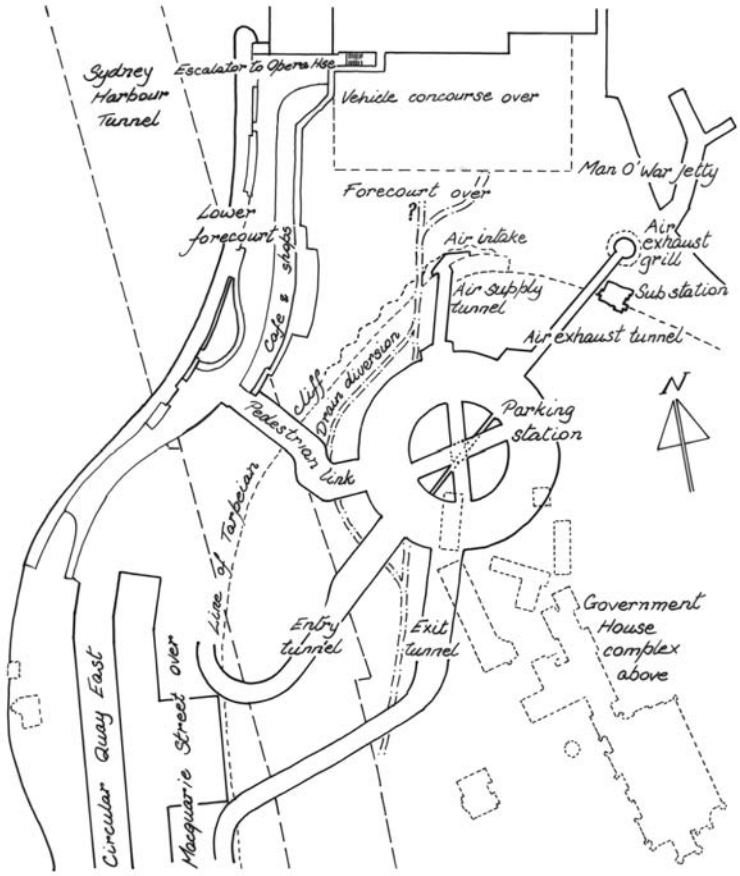
The opening: white elephant or sacred cow, 1973

The first public performance in the house was given in the Opera Theatre on 28 September 1973 by the Australian Opera Company and the following night in the Concert Hall Charles Mackerras conducted the Sydney Symphony Orchestra with Birgit Nilsson as soloist. The Opera House was formally opened by the Queen on October 20 (SOHT, AR, 1973–74). During the inaugural period 300 journalists from all over

the world arrived to see if the Sydney Opera House was to be a white elephant or a sacred cow. Martin Bernheimer, the music critic of the *Los Angeles Times,* spoke for most when he wrote:

> This, without question, must be the most innovative, the most daring, the most dramatic and in many ways, the most beautiful home constructed for the lyric and related muses in modern times (ibid).

By his own choice, Utzon was not at the opening nor did his name appear on the plaque in the entry concourse. Nevertheless from wherever the building is seen, harbour, city or air, it is remembered as Utzon's creation—a magical embellishment of one of the grand waterscapes of the world. Hall, Todd and Littlemore will be remembered for the difficult job of turning an incomplete aesthetic masterpiece into a performing arts centre with the full range of services required.



21. Sketch plan of proposed car park and its relationship to the lower forecourt, about 1990. Loosely based on an unidentified and undated plan supplied by NSW Public Works.

Completing the setting, 1986–1993

Two jobs remained to be done: the construction of an appropriate land approach and forecourt treatment, and the provision of convenient parking (fig.21). The first was completed as a part of the NSW government's bicentennial refit of Macquarie Street and the public areas flanking Sydney Cove. It was designed under the general superintendence of Andrew Andersons (the work near the Opera House involved Peter Hall) and was completed for the royal visit on Australia Day 1988.

The second was the long-overdue parking station. A park-and-ride scheme had existed since 1973 using the city council's Domain parking station but it was neither convenient nor profitable. The new station was an ingenious solution to a complex problem. It was in the form of a double helical coil set underground behind the Tarpeian cliff face. The vehicle entry and exits were in Macquarie Street, the air intake grills were along the base of the cliff and the air exhaust was a feature in the centre of the vehicle roundabout to the east of the forecourt. During the work part of the 1858 Bennelong drain had to be relocated and the harbour tunnel avoided. The pedestrian tunnel linked directly to the 1988 lower forecourt which gave undercover access to the Opera House. While this gave wet weather protection and serviced the lower forecourt shops it bypassed Utzon's grand external approach to the Opera House.

The process of adaptation, 1973–2002

Under the Sydney Opera House Trust Act the first and second clauses of the charter charges the Trust with:

- the administration, care, control, management and maintenance of the building and its site;
- the management of the Sydney Opera House as a performing arts and conference centre.

It is a dual function in which, in the long term, the performance of either one is dependent on the successful performance of the other.

At least in the early days of stewardship of the building, the Trust was anxious that the Opera House should be seen as 'Australia's premier performing arts centre and not the world's most expensive landmark' (SOHT, AR, 1973–74). The chairman of the day even noted that 'the Opera House's exterior beauty and uniqueness [would] continue to pose challenges to the activities of the theatres' (ibid). The spectacular success of the Opera House as a performing arts centre and in particular its ability to attract great artists from all over the world helped dispel these qualms but residual tensions between the care of the structure as a monument and its function as a performing arts centre will always exist. It is therefore important to emphasise the degree to which the quality of the building and its site and the popular and financial success of the events within it reinforce each other. Neither can be neglected.

During the first twenty years as a performing arts centre the Trust's approach to the building and its site was similar to the working up of any large complex. First came the contractual removal of defects arising from construction. The issue of defect lists for the Opera House began in mid-1973 and the last list appeared in February 1974 (Littlemore, SOH, 44). Bearing in mind the complexity of the work it was a fine achievement by all concerned. Next, cyclical maintenance was commenced. By 1976 the first repaint of the interior of the complex had been completed (SOHT, AR, 1975–76).

Right from the beginning the Sydney Opera House Trust started to adapt spaces, fabric and equipment. The work arose partly to rectify, or at least modify, perceived deficiencies (the enlargement of the Opera Theatre orchestra pit) and partly because of the increasingly flexible

role the performance spaces were called on to play (grand opera and pop concerts in the Concert Hall). Technological advances and fashion in lighting and sound amplification, particularly when combined with the requirements of hirers, added a further commercial imperative for change. For example, in 1985 the general manager reported:

> In January, two winches were installed in the crown of the Concert Hall ceiling for the Australian Opera's production of Norma. In April, an American-style lighting grid was suspended on six points from the main girders above the Concert Hall ceiling for the visiting performer Phil Collins. A new centre speaker cluster in the same venue has increased the intelligibility of amplified sound… (SOHT, AR, 1985)

There will always be a demand for adaptations to a performing arts centre if it is to remain in commercial use. One of the roles of a conservation plan is to recommend the ways in which adaptations and additions may be controlled so that the cumulative effect does not degrade the building and its interiors, and to identify the thresholds at which change will have an adverse effect on the significance of the building. These matters will be addressed in the policy section.

Upgrade program

In 1988, the Premier of NSW commissioned the NSW Public Works Department to carry out an upgrade program 'to restore the building to top condition' and to establish a system of asset management which would 'ensure the survival of the house for future generations' (SOHUP, Progress Report, 1993, 4–11).

Projects during the first decade of the program have included:

- conservation of the Concert Hall ceiling surfaces;
- excavation of additional facilities below the podium;
- resealing joints between roof tile lids;
- removing, renewing, waterproofing and reseating slabs on ceremonial stairs and parts of podium;
- resealing glass wall joints;
- refurbishing auditoria seating;
- further modification of Opera Theatre orchestra pit;
- development and adoption of a 'Total Asset Management Plan' (a complete preventative maintenance program for the building);
- major structural refurbishment of supports to the Broadwalk;
- upgrading of fire protection and suppression systems;
- installation of new winch control systems in the Drama and Opera Theatres and the Concert Hall;
- commencing development of new edge tiles for the roof shells.

The program was nearing completion in 1997 when it was estimated to cost $117,000,000 over the ten years (SOHT, AR, 1997, p.50).

Redesign of catering facilities

In September 1994, after a public tender process, an agreement was signed by the Trust with Gardner Merchant (Australia) for a new twelve year contract to operate the catering venues in the Opera House and the lower forecourt. An immediate consequence was the redesign of the Bennelong and Forecourt Restaurants and the Café Mozart. Some work was also done in the Harbour Restaurant and its adjacent takeaway facility was partitioned to create further dining accommodation and an enlarged kitchen.

Conservation Council

The Trust established a Conservation Council as 'an advisory group to assist and advise the Trust with particular reference to the care, control and maintenance of the building' (SOHT, AR, 1996, p.24). Five of the seven members were ex officio appointments and the first meeting was held in March 1996. The Council's advice was to be given 'in relation to the spirit and intention of the [1993 interim] conservation plan' (ibid.). Matters considered by the Council include the conversion of the original Rehearsal and Recording Studio (under the Concert Hall stage) to a 'new music' venue and an assembly floor for orchestra members and the development of improved access, lighting and acoustics. The Council had its last meeting in November 1997. It was not convened again as, in 1998, the Trust began negotiations for the return of Jørn Utzon as an advisor and believed that a successful outcome could make Council recommendations redundant. It was to be five years (November 2002) before the reconstituted Council met again. See pages 96 to 98.

World Heritage nomination

Following an agreement between the Commonwealth and NSW governments and the provision of a budget of $200,000 by the Commonwealth, a nomination was prepared for the inscription of 'the Opera House in its harbour setting' on the World Heritage list. It was prepared under the supervision of Joan Domicelj and delivered to the Prime Minister and Premier ready for submission to UNESCO in June 1996. The Prime Minister did not forward the nomination. A revised nomination was prepared for submission in mid-1999 but it was not forwarded to UNESCO either. It is not known when, or if, the nomination will be made.

Heritage and the decision making process

Partly as a result of the decade long upgrade program and partly following the wide dissemination of the first edition of this conservation plan, management in the mid-1990s was aware of, and incorporated, heritage requirements in the decision making processes. In speaking of the plan, the then General Manager, Lloyd Martin, remarked 'James Semple Kerr is our bible' (SMH, 10.2.1996, Spectrum, 1). While perhaps an extravagant acknowledgment, it did confirm that the plan was useful and used.

Since then, heritage consideration has become inconsistent and, occasionally, disregarded. Staff turnover has been one factor. Joseph

Skrzynski in his 'Report from the chair' noted how 'senior staff changes challenged the organisation's ability to provide continuity in high level leadership and service' (SOHTAR, 1998, 9). In the six years since late 1996 there have been four chief executive officers and two acting in that capacity. Other factors include the drive to reinvigorate the place as a lively performing arts centre, community and visitor gathering place and the need to increase revenue. While these are laudable they should not result in the loss of attention to heritage. After all, the first clause of the Sydney Opera House Act charges the Trust with care of the building and its site (see page 26) and everyone is well aware that the continuing success of both the building and its uses depends on achieving an equitable balance.

A new chief executive, Tim Jacobs, appointed in January 1997 wrote in his first annual report:

> As chief executive appointed to lead the Sydney Opera House into the 21st Century, the challenge is to take the most recognisable building in the world and turn it into one of the great art centres…
>
> Visitors and patrons expect to have a memorable experience and an exemplary standard of customer service. They deserve wider choices in quality retailing, tourism services, wining and dining. In terms of amenity, service, polish and smooth assurance, the building should feel and function like a six star hotel (SOHT annual report, 1997, p.10).

As Jacobs resigned within a year of his arrival he was not to lead the Opera House into the 21st Century but he did leave a legacy of impending change to the building. It was the development of a 'master plan' which 'set out a strategy for the building and site developments which will position the Sydney Opera House as one of the great arts centres of the world by the year 2000' (SOH Master Plan Report, 1997, p.1). The entire program was to be completed by 2007 at an estimated cost of $76,790,000 (ibid., p.30&31).

The 'master plan report' was prepared by the Department of Public Works and Services and drew on a 'value management' conference and study of July 1997. Unfortunately, the plan that subsequently emerged, although described as a 'comprehensive integrated approach to the development of the building and site' (ibid., p.29), was actually a wish list of improvements to the place unaffected by consideration of heritage issues. While it was useful as a developed indication of functional desires and was used as a basis for funding requests, it was dangerous in that it was likely to achieve a degree of de facto acceptance without the significance of parts of the place, or the original architects' intentions, having been understood or accepted. In this form its proposals were released to the press in December 1997 and received wide publicity (for example SMH 8.12.1997, pages 1 and 4).

This one-sided approach had a potential to create future adversarial situations between seemingly established operational requirements and heritage needs. It has always been conventional wisdom as well as prudent practice for a master plan to embody a co-ordinated approach in which all relevant issues have been considered. If it is not done it is not a master plan. In one other respect the master plan report was useful. It revealed procedural defects in the existing system of developing

and approving proposals for work on the Sydney Opera House. This led to the restructuring of the 1993 'interim' conservation plan policies and the inclusion of a section on the management of change.

An instance of disregarding heritage issues concerns the ill-considered treatment of the setting arising from the need to maximise customer service, enliven the site and increase revenue. The 2001 annual report announced:

> A range of new operators will be appointed throughout 2001–2002. By December 2002 all food and beverages on site will have been completely rejuvenated, delivering improved customer experiences as well as improved revenue to the Sydney Opera House (SOHTAR, 2001, 24).

The consequences included the letting of contracts for five ice-cream, coffee and food bars in the forecourt and the erection of a large venue for hire on the northern Broadwalk. See pages 47 to 48. Another example, at present under consideration and mentioned in the *Venue improvement plan* of May 2002, is the use of the forecourt as a performance venue. The duration, frequency and nature of the required infrastructure will be important heritage issues. If, for example, high opaque fences are to exclude public vision across the forecourt, the project would become unacceptable. See pages 48 to 49.

Alterations, improvements and investigations

In 1998–1999 the conversion of the original Rehearsal and Recording Room (fig.57) took place. The top of the 'room' became an assembly area for the orchestra (fig.59) and below it 'The Studio' was created (fig.58) 'to present innovative and exciting new music and contemporary performing arts (SOHTAR, 2001, 13). The work involved the removal of the plant between The Studio and the Broadwalk to the basement, and the opening up of a continuous foyer serving Playhouse, Studio and Drama Theatre. See pages 79 to 82.

As well as major construction works, substantial fabric replacement has been carried out over the last four years including:

- completion of the project to replace some 8,500 edge tiles;
- areas of pre-cast paving on the northern and western broadwalk, podium deck and steps.

Also, the external pre-cast wall panels were cleaned. Within the building there has been technical or control system work relating to lighting, airconditioning, hydraulics, fire and stage facilities, some of which became necessary to gain 'Place of Public Entertainment' certification. In addition, a series of acoustic studies of the Concert Hall has been carried out.

Richard Johnson of Denton Corker Marshall commissioned

In September 1998 the Chairman of the Sydney Opera House Trust, Joseph Skrzynski, announced the appointment of Richard Johnson of Denton Corker Marshall to 'advise on any future development works

affecting the Opera House and its site' and to 'establish planning principles… which were consistent with the design principles of Jørn Utzon'. The work included a review of the 1997 Master Plan Report (Sydney Opera House media release, 1.9.1998). Skrzynski also referred to the engagement of James Semple Kerr to 'update the conservation plan'. Kerr's revised plan was completed in May 1999 but it was overtaken by negotiations for the return of Utzon to advise on the Opera House and a further revision of the conservation plan was commissioned in 2002.

Jørn Utzon re-engaged

In August 1999 Utzon accepted the Premier's invitation to provide advice to the Sydney Opera House Trust. His commission included the preparation of a statement of design principles which, in his own words, was to 'be used as a permanent reference for the long-term conservation and management of the House and for any redevelopment of interiors as and when that becomes necessary.' He continued 'it is right that we should be looking forward to the future of the Sydney Opera House and not back to the past. For this reason, I believe Richard Johnson and future architects should have the freedom to use up-to-date technology to find solutions to the problems of today and tomorrow' (Utzon in the Sydney Opera House Trust Annual Report for 2000, pages 36–37).

A program developed

For the Trust, the appointment was a 'key element in the process of developing a Strategic Building Plan for the House and its site'. The first public fruits of this process were the simultaneous release in May 2002 of the *Design Principles* and a six-part *Venue Improvement Plan* (developed for the Trust by Richard Johnson, now of Johnson Pilton Walker, in collaboration with Utzon) together with the Premier's announcement of an allocation of $45,000,000 for major venue improvements (SOHT Press Release and Premier of NSW News Release, both of 29.5.2002; Skrzynski to Kerr, 3.6.2002). This was added to an earlier allocation of $24,300,000 to make a total of $69,300,000.

The proposed work covered the refurbishment of the Opera Theatre and alterations to make the orchestra pit habitable, the improvement of Concert Hall acoustics, the refurbishment of the Reception Hall, the partial opening of the western foyer at Broadwalk level to its harbour setting together with a covering loggia, and the development of the forecourt as a performance venue. The last is the only one that can create serious heritage problems and these are discussed on pages 48 and 49.

Appendix C

World Heritage List Citation—Sydney Opera House

http://whc.unesco.org/pg_friendly_print.cfm?cid=31&id_site=166&

Sydney Opera House

Australia
Date of Inscription: 2007
Criteria: (i)
Property : 5.8 ha
Buffer zone: 438.1 ha
New South Wales
S33 51 24 E151 12 55
Ref: 166rev

Brief Description

Inaugurated in 1973, the Sydney Opera House is a great architectural work of the 20th century that brings together multiple strands of creativity and innovation in both architectural form and structural design. A great urban sculpture set in a remarkable waterscape, at the tip of a peninsula projecting into Sydney Harbour, the building has had an enduring influence on architecture. The Sydney Opera House comprises three groups of interlocking vaulted 'shells' which roof two main performance halls and a restaurant. These shell-structures are set upon a vast platform and are surrounded by terrace areas that function as pedestrian concourses. In 1957, when the project of the Sydney Opera House was awarded by an international jury to Danish architect Jørn Utzon, it marked a radically new approach to construction.

Outstanding Universal Value

The Sydney Opera House constitutes a masterpiece of 20th century architecture. Its significance is based on its unparalleled design and construction; its exceptional engineering achievements and technological innovation and its position as a world-famous icon of architecture. It is a daring and visionary experiment that has had an enduring influence on the emergent architecture of the late 20th century. Utzon's original design concept and his unique approach to building gave impetus to a collective creativity of architects, engineers and builders. Ove Arup's engineering achievements helped make Utzon's vision a reality. The design represents an extraordinary interpretation and response to the setting in Sydney Harbour. The Sydney Opera House is also of outstanding universal value for its achievements in structural engineering and building technology. The building is a great artistic monument and an icon, accessible to society at large.

Criterion (i): The Sydney Opera House is a great architectural work of the 20th century. It represents multiple strands of creativity, both in architectural form and structural design, a great urban sculpture carefully set in a remarkable waterscape and a world famous iconic building.

All elements necessary to express the values of the Sydney Opera House are included within the boundaries of the nominated area and buffer zone. This ensures the complete representation of its significance as an architectural object of great beauty in its waterscape setting. The Sydney Opera House continues to perform its function as a world-class performing arts centre. The Conservation Plan specifies the need to balance the roles of the building as an architectural monument and as a state of the art performing centre, thus retaining its authenticity of use and function. Attention given to retaining the building's authenticity culminated with the Conservation Plan and the Utzon Design Principles.

The Sydney Opera House was included in the National Heritage List in 2005 under the Environment Protection and Biodiversity Conservation Act 1999 and on the State Heritage Register of New South Wales in 2003 under the Heritage Act 1977. Listing in the National Heritage List implies that any proposed action to be taken inside or outside the boundaries of a National Heritage place or a World Heritage property that may have a significant impact on the heritage values is prohibited without the approval of the Minister for the Environment and Heritage. A buffer zone has been established.

The present state of conservation is very good. The property is maintained and preserved through regular and rigorous repair and conservation programmes. The management system of the Sydney Opera House takes into account a wide range of measures provided under planning and heritage legislation and policies of both the Australian Government and the New South Wales Government. The Management Plan for the Sydney Opera House, the Conservation Plan and the Utzon Design Principles together provide the policy framework for the conservation and management of the Sydney Opera House.

News

Jun 29, 2007 Twenty-two new sites inscribed on UNESCO's World Heritage List, and one deleted during Committee meeting in Christchurch

Jun 28, 2007 World Heritage Committee inscribes four new cultural sites on UNESCO's World Heritage List

Links

The Official Site for Australian Travel and Tourism Australia
South Wales Heritage Office
Sydney Opera House
Sydney Opera House (Department of the Environment, Water, Heritage and the Arts)

Appendix D

National Heritage List Citation—Sydney Opera House

http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_id%3D105738%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=105738

Australian Heritage Database

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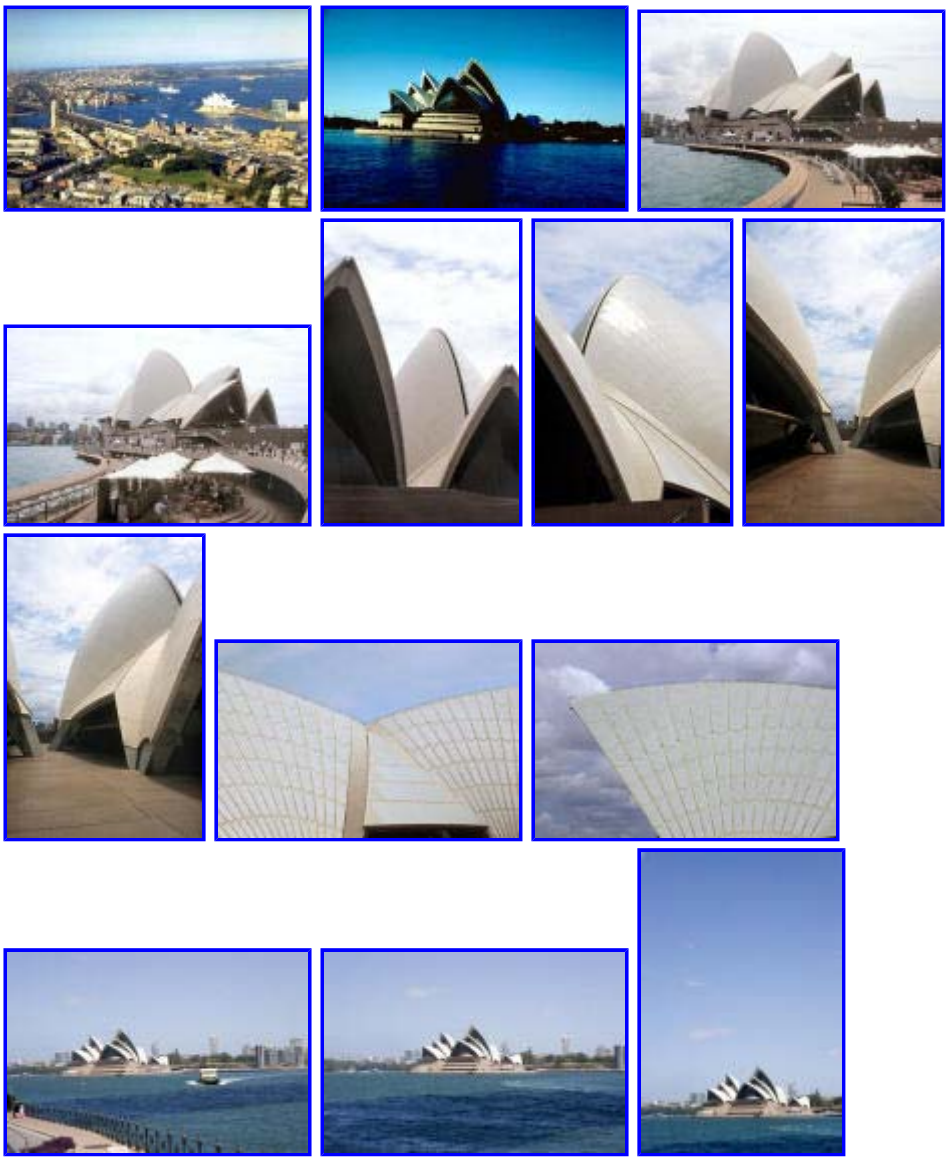

List:	National Heritage List
Class:	Historic
Legal Status:	Listed place (12/07/2005)
Place ID:	105738
Place File No:	1/12/036/0449

Summary Statement of Significance:

The Sydney Opera House, constructed between 1957 and 1973, is a masterpiece of modern architectural design, engineering and construction technology in Australia. It exhibits the creative