

ARCHIVES OFFICE
OF
NEW SOUTH WALES

PUBLIC WORKS

SYDNEY OPERA HOUSE

GOLD BOOK

2/8645A

NRS 12706/1 2/8645A



SYDNEY OPERA HOUSE, BENNELONG POINT, MARCH, 2ND 1959



Greatest confidence trick in the
history of N.S.W.

SYDNEY OPERA HOUSE

1954 Start B'tu
1959 Foundation Stone Laid Gift £100,000 Appeal £300,000
1960. £4.8

Mar 1963 £12.5

June 1964 £17.5 Utzon

What really

Car Parking

embellishment of area

Cost of operating
per year.

(C)

21st MARCH 1959
POLLING DAY

CEREMONY TO COMMEMORATE THE COMMENCEMENT OF THE BUILDING OF THE SYDNEY OPERA HOUSE

On 2nd March, 1959, at 2.30 p.m. on the site at Bennelong Point the following ceremony is to take place.

The Hon. J. J. Cahill, M.L.A., Premier of the State of New South Wales, will fix in position an inscribed Commemorative Plaque indicating the point from which all measurements of the Sydney Opera House will be taken.

PROGRAMME

Arrival of Official Party.

Opening of proceedings by the Chairman of the Sydney Opera House Executive Committee, Mr. S. Haviland, C.B.E.

The Right Honourable the Lord Mayor of Sydney, Alderman H. F. Jensen, will welcome the guests.

Messages of goodwill conveyed by—

A representative of the Prime Minister of Australia, the Right Honourable R. G. Menzies, C.H., Q.C., M.H.R.

Mr. R. W. Askin, M.L.A., representing the Leader of the New South Wales Opposition, Mr. P. H. Morton, M.L.A.

Mr. Davis Hughes, M.L.A., Leader of the New South Wales Country Party.

A commemorative address will be given by the Honourable J. J. Cahill, M.L.A., Premier of New South Wales.

Mr. Joern Utzon, Architect, will hand to the Premier the trowel to be used in the ceremony of fixing the Commemorative Plaque.

Immediately upon the fixing of the Plaque, a signal will be given for work on the site to commence.

(By courtesy of the Commissioner of Police, Mr. C. J. Delaney, C.V.O., the New South Wales Police Band will entertain guests prior to the ceremony and during refreshments).

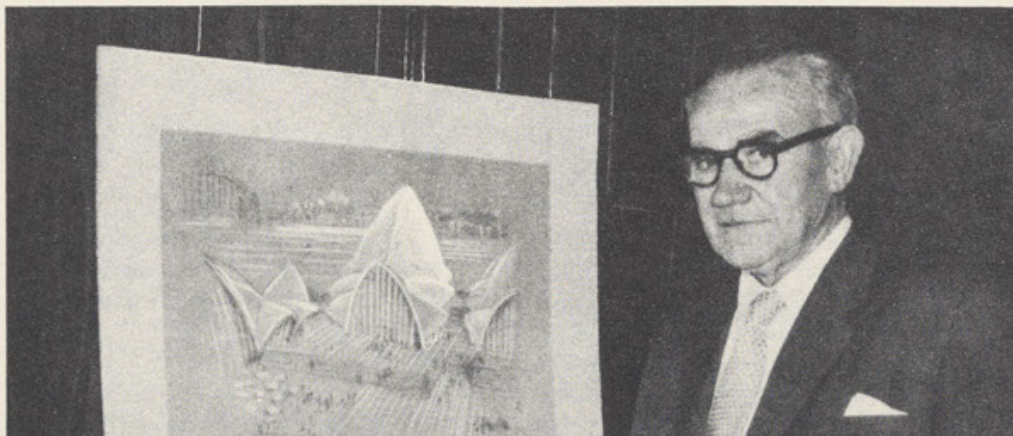


Photo by courtesy Government Printer, Sydney

THE proposal to build the Sydney Opera House and the proof we have given of our determination to see the project through to finality, have focussed the eyes of the world upon us.

We Australians have already made our mark in many fields of human endeavour and we are rapidly growing into a great nation.

The nations of the past have each contributed something to the accumulation of those arts which spring from the soul and mind, and form such an essential part of any great civilisation.

We have something to contribute also, and my Government is convinced that Australia is worthy of a building in which our contribution to the music of the world can be fittingly demonstrated.

Such a building will be the Sydney Opera House and it will stand not merely as an outstanding example of modern architecture or even as a world famous opera house, but as a shrine in which the great artists of the world may be seen and heard and our own artists may display the flowering of Australian culture.

Over the four years during which this project has so far developed there has been much praise and comparatively little criticism.

Any criticism has been along two main lines, one, that we should erect homes rather than this building and two, that only the wealthy will be able to afford patronage of the Opera House.

My answer to the first criticism is that not one home less will be built.

In answering the second criticism, I repeat what I said in August, 1957, namely, that the building when erected will be available for the use of every citizen, that the average working family will be able to afford to go there just as well as people in more favourable economic circumstances, that there will be nothing savouring even remotely of a class conscious barrier and that the Opera House will, in fact, be a monument to democratic nationhood in its fullest sense.

In conclusion, I express my grateful appreciation of the honorary services rendered by the members of the Executive Committee, the Appeal Fund and the Advisory Panels as well as the many other individuals who have voluntarily assisted in developing this project. As true Australians the reward they seek is that in a day which is not far off the dream shall become reality and this beautiful building stand for all the world to see and admire.

J. J. CAHILL

Premier of New South Wales

THE NEED FOR THE OPERA HOUSE

NEW South Wales needs an opera house such as that visualised for Bennelong Point because the State's artistic development has outgrown the facilities available for presenting to the people music in all its forms, ballet and theatre.

There is, for instance, an enthusiastic audience in Sydney for chamber music but no suitable auditorium for this finest of music; nor, for that matter, for musical recitals.

The Sydney Symphony Orchestra, we are repeatedly told by overseas authorities, is rapidly approaching world class but has no appropriate home.

Professional and amateur drama has progressed remarkably since the war but is hampered by the lack of adequately equipped, comfortable, well-situated theatres.

In addition, we need an opera house for opera; a great theatre for the production of a complete operatic repertoire under conditions which will facilitate superb performances by artists and full enjoyment by audiences.

The Sydney Opera House with its four separate auditoria will give us all these things.

The large auditorium, with its maximum seating capacity of 2,800, will be used for the annual opera season of from six to eight weeks but its principal use will be for concerts by the Sydney Symphony Orchestra which gave over 120 concerts of various kinds in Sydney over the last year.

Here the orchestra will give its subscription concerts. The greater seating accommodation of the new auditorium will enable a reduction in the number of subscription concerts from 50 to 40. This in itself is of the utmost importance.

All patrons will enjoy perfect sound and sight of the concerts, and the foyers, cafes

and bars of the Opera House will give them facilities not now available anywhere in Australia.

Additionally, the new auditorium not only will reduce the present burden of the subscription concerts on the orchestra but its seating capacity will enable the enrolment of another 1,200 subscribers.

It will also allow at least 2,000 more young people to enrol for the orchestra's Youth Series without adding to the work of this orchestra.

Naturally, it would be the place for recitals by artists like David Oistrakh or Claudio Arrau but its construction will enable it to be "adjusted" to seat 1,700 for opera, and this is an ideal size for recitals by artists not quite in the Oistrakh-Arrau bracket.

The second hall or theatre will seat 1,100 and be used primarily for drama. The theatre will have a revolving stage and every piece of equipment a producer might conceivably need as well as adequate foyers and refreshment facilities.

Of the two small halls one will seat 430 and the other 310. The larger will be completely equipped for modern theatre production or concerts and both will give Sydney superb accommodation for conventions and other public gatherings.

Both of these halls could be used for chamber music and recitals, whilst the larger will be perfect for the kind of theatrical performances now being staged under comparatively make-shift conditions; this little theatre also will have an excellent foyer and refreshment facilities.

Sydney is one of the world's big cities. If its citizens wish it to be great as well as big they must give it those things which endow a city with greatness. These, very definitely, include a focal point for the arts of music, drama and ballet.

What else
would they
say
Moreton
Hughes.

COMMENTS

THE commencement of building operations on the Sydney Opera House site marks another milestone in the development of Sydney.

I am sure that all citizens will be proud, as I am, that in prospect a magnificent structure will soon appear to add dignity and attractiveness to the skyline, and provide another dominant feature to the Harbour Gateway of Sydney.

The premiated design of the Opera House, so universally acclaimed as a bold and ultra-modern concept, has already aroused world-wide interest, which reflects itself in added prestige and publicity for the City and the State.

The functional character of the structure, with its cultural and utilitarian purpose, adds to the stature of the Mother City of the Commonwealth, and will provide the citizens with an incomparable venue for the appreciation of music and the arts.

H. F. JENSEN
Lord Mayor of Sydney

The Sydney Opera House marks the beginning of a new phase in Australian history. This imaginative structure in a beautiful setting will attract and inspire the great artists of the world and stimulate the rapid growth of our native culture. It will be not merely a striking landmark on the shores of Sydney Harbour, but also a symbol that our cultural thought is keeping pace with national expansion. Country as well as City people will enjoy its benefits and the people of other States will watch its progress with interest and pride.

DAVIS HUGHES
Leader, N.S.W. Country Party

The conception behind this Opera House has given a marked fillip to music, opera and the theatre.

Many people have been captivated by its striking boldness of design. It has attracted wide interest overseas and greatly enhanced our cultural standing.

The Opera House will further establish the capital of New South Wales as one of the world's truly beautiful cities.

It does pose a very big challenge, however—that of producing cultural works of a continuing standard worthy of the structure in which they are presented. This challenge will, I know, be met.

P. H. MORTON
Leader of the State Opposition

It is ten years since I first discussed the building of an opera house for Sydney with Sir Eugene Goossens.

A Sydney Opera House such as we are going to build at Bennelong Point was Sir Eugene's "vision splendid". Above all else he saw it as a home for his beloved Sydney Symphony Orchestra.

As we go along towards the realisation of his dream we should not forget Sir Eugene's early campaigning and his success in persuading people that an opera house was not only desirable but essential to the State's cultural growth.

I am proud that I was a member of the original Opera House Committee appointed by the Premier (Mr. Cahill) and am one of the three originals remaining on the present Committee.

CHARLES MOSES
General Manager, Australian Broadcasting Commission

COMMENTS

Architecture is the mistress art. We now have the opportunity to produce a building which could rank among the great buildings of the world. We have a fine site, an imaginative design and a practical solution to the problem.

Behind the design towers an imaginative architect in Joern Utzon, supported by Ove Arup, an engineer of world renown.

It should be appreciated that this original and magnificent scheme has received acclaim all over the world and comprises a significant contribution to the development of the architecture of our own time.

H. INGHAM ASHWORTH

Professor of Architecture, University of Sydney

The past twenty-five years have seen a remarkable transformation in Australia's musical life; but during that time no single event has had the influence that we can expect the building of the Sydney Opera House to exercise in the future.

It is common knowledge that the expansion of concert audiences has far outstripped the facilities available for the performance of opera, symphonic and chamber music. Indeed, not the least remarkable feature of music making in Australia is the fortitude of performers and public alike in the face of inadequate accommodation. Opera in Australia has yet to be enjoyed in surroundings where a full orchestra is properly situated in relation to the singers and the audience; and it is no exaggeration to say that the Sydney Symphony Orchestra has never been heard in conditions which do justice to its quality.

The Sydney Opera House has attracted world-wide interest as an architectural adventure; but for Australians it must surely represent the beginning of a new and exciting period of cultural and artistic development.

BERNARD HEINZE

Director, State Conservatorium of Music

Even one building may make a difference to a city. In 1920 the City of Stockholm commissioned an architect to design a new City Hall. From the day that building was finished the face of the city began to change.

For the architect had seen the soul of Stockholm and turned the people's minds to the beauty of the waterfront and the possibility for improvement.

When architects work they try to express the climate and the personalities of the people who will live and use a house. The architect must be inspired.

I am sure the people of Sydney will understand when I say how deeply I feel my responsibility and how much I am inspired by it.

JOERN UTZON

Architect

The Sydney Opera House is one of the outstanding civic enterprises of our times. Its conception has already inspired a design of singular beauty. As a cultural and social meeting place for the people of Sydney and as a gesture of confidence in the vitality of the arts in Australia the Opera House will take its place among the foremost buildings of the world.

I am proud that the Elizabethan Theatre Trust has been associated with its planning.

HUGH HUNT

Executive Director Australian Elizabethan Theatre Trust

The Opera House will be unique not only in its beauty, but because it will provide for every taste and enrich the whole life of the community.

It will bring together under one roof (and what a superb one!) all who enjoy the performing arts, all who like to be entertained. The musician, the theatre-goer, the opera enthusiast, the common man and the connoisseur will be drawn together in bonds of pleasure and achievement and will share their pride in this great building.

ROBERT QUENTIN

Director, School of Dramatic Art

COMMENTS

The importance of the Opera House to the cultural life of this city cannot be underestimated.

We have created through our activities musically and otherwise, a pattern which is to be envied in most parts of the world, including America, and we should be happy to complete a venture that has been long overdue. With the influx and absorption into our cultural life of many peoples whose habits have been handed down traditionally, we must, and soon, reacquaint them with their normal activities and provide for our musicians a suitable centre of performance requirements.

ERNEST LLEWELLYN
Leader of Sydney Symphony Orchestra

The theatrical profession is greatly exhilarated by the knowledge that our mighty new State Opera House has at last been commenced. It is our great hope that the smaller auditorium, particularly, will prove the home of many play productions now without proper stage accommodation. It is a challenge to us to provide theatrical fare worthy of this great centre. If theatregoers will also make this House their Mecca, then our Opera House will indeed be the envy of many other nations. All honour to Sir Eugene Goossens, to our Premier, to Mr. Utzon and to all citizens of vision who have translated a great ideal into an exciting reality.

JOHN ALDEN
Actor

I think the building of the Opera House a wonderful idea, for we are such a musical race and have so many lovely voices here.

The Opera House will provide our artists with both incentive and opportunity.

This is a great step forward in the cultural development of Australia and one which we can and will support.

I hope to be there on the first night.

GLADYS MONCRIEFF
Soprano

OVERSEAS PRESS

"Time" New York—February 25th, 1957

"Sydney, Australia, which staged one of the world's biggest international competitions, has emerged with the most pleasing and original design of all for its harbour-front site.

... So many opera houses look like boots. There is the high proscenium arch, then the low part which is the audience. Utzon has solved the problem."

"Architects Journal" London—February 14th, 1957

"Joern Utzon, the Danish winner of the Sydney Opera House Competition, promises to contribute as impressive a development in concrete shell construction, as Candela is producing in Mexico. Here is the epitome of romantic sculpture on the grand scale.

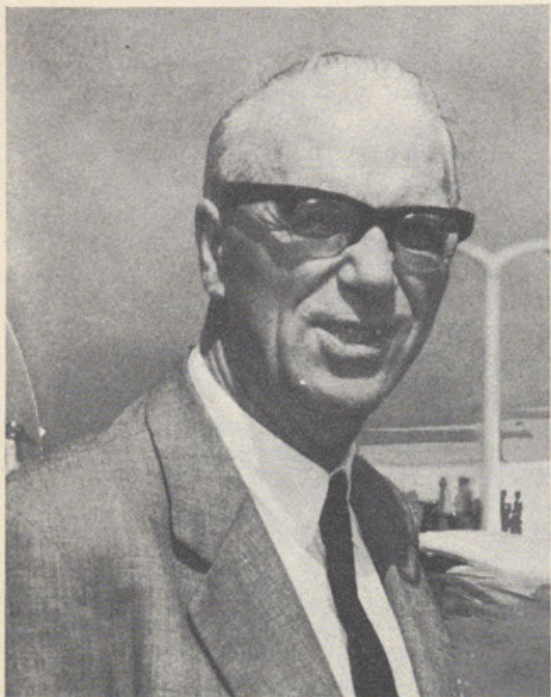
... No doubt there will be controversy over this design — controversy over competition results is inevitable nowadays anyway. But the citizens of Sydney should congratulate themselves. The design will always be of interest, however the theorists may argue, and will be worth travelling many a mile to see, admire and wonder at, Sydney need have no doubts that its policy in holding an International Competition was absolutely right."

"The Observer" London—February 17th, 1957

"The whole conception is one which cynics may ridicule for no better reason than that it is unorthodox, it will lend itself to parody, it may change in the course of building, but will remain in its essentials as an example of grace; exciting and as functional as need be. It has an ever rarer quality; it is poetic."

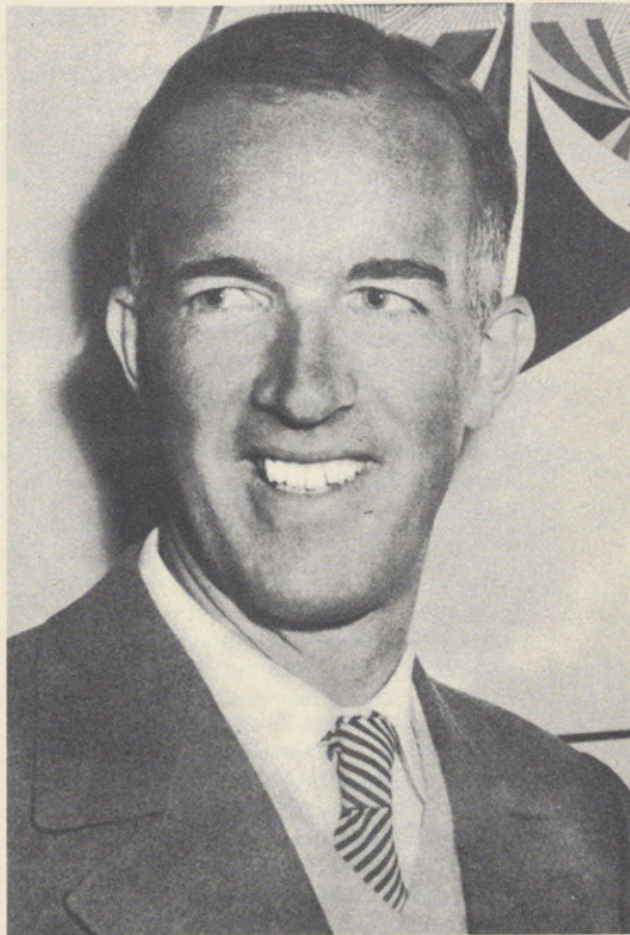
Basil Spence, Architect, London

"The plan is broad and simple, sensitive and at the same time imaginative and I am certain it will be one of the great buildings."



Mr. OVE ARUP, C.B.E., M.Eng.F., M.I.C.E., M.I.Struct.E., Senior Partner of Messrs. Ove Arup & Partners, London, who have been appointed Consulting Engineers for the Opera House. Mr. Arup is an Engineer of world renown.

Photo by courtesy "Sydney Morning Herald"



Mr. JOERN UTZON, M.A.A., A.R.A.I.A., winner of the recent international competition for the Sydney Opera House and subsequently appointed as Architect. Mr. Utzon comes from Hellebaek, Denmark, and is recognised as one of that country's most brilliant young architects.

Photo by courtesy QANTAS



Mr. STANLEY JONES, D.F.C., A.R.I.C.S., A.I.Q.S. (Aust.), Resident Partner in N.S.W. of Messrs. Rider Hunt & Partners, of London, Sydney, Melbourne and Adelaide, who are Consultant Quantity Surveyors for the Opera House.



The Rt. Hon. Lord Mayor of Sydney, Ald. H. F. JENSEN,
Chairman of the Sydney Opera House Appeal Fund.

Professor H. INGHAM ASHWORTH, M.A., F.R.I.B.A.,
F.R.A.I.A., M.A.P.I., Professor of Architecture and Dean
of the Faculty, University of Sydney, Chairman of Assessors,
Member of Sydney Opera House Executive Committee,
Chairman of Technical Advisory Panel, Member of Traffic
Sub-committee.

Photo by courtesy Government Printer, Sydney



Mr. S. HAVILAND, C.B.E., Under Secretary for Local
Government, Chairman, Sydney Opera House Executive
Committee.

Photo by courtesy Government Printer, Sydney



THE COMPETITION

ALL Architectural Competitions are a gamble. The Promoters hope the Competition will produce a new and original solution to the problem while each Competitor hopes he will be the fortunate winner. Between the Promoters and the Competitors are the Assessors upon whose judgment they must rely. It is the duty of the Assessors to ensure that all things having been considered the selected winning scheme is the best solution to the problem—and the Assessors in turn hope that amongst the schemes submitted there will be one which in the widest sense will make a significant contribution to the development of Architecture.

A world-wide Competition open to all architects was decided upon in an effort to find an imaginative concept and an architect of the highest calibre to carry it out. This broad objective was made quite clear in the conditions controlling the Competition. Mandatory requirements were reduced to a minimum in order to give architects as much freedom as possible in the submission of their ideas.

Prizes of £5,000, £2,000 and £1,000 were offered to the authors of the designs placed first, second and third.

The Assessors appointed to judge the Competition were:

Professor Henry Ingham Ashworth, M.A.(Arch.),
F.R.I.B.A., F.R.A.I.A., M.A.P.I. (Sydney), Chairman.
Dr. Cobden Parkes, F.R.I.B.A., F.R.A.I.A. (Sydney).
Sir Leslie Martin, Ph.D., M.A., F.R.I.B.A., (London).
Eero Saarinen, Esq., A.I.A. (Michigan, U.S.A.).

This great International Competition fired the imagination of architects the world over—more than 700 sought the conditions, and 223 schemes were finally received from thirty countries. Among the entries were 61 from Australia. Indeed it was a major task reviewing the thousands of drawings submitted. When the Assessors had made their decision the schemes were shown at a public exhibition in the Sydney Art Gallery—an exhibition which commenced one of the greatest controversies in the history of Sydney.

It is not unimportant to mention that approximate estimates were prepared for all

the schemes which the Assessors considered worthy of final consideration and the winning scheme proved, in fact, the most economical scheme of any submitted, on the basis of such estimates.

THE SITE

PERHAPS it was the magnificence of the site which more than anything else inspired the architect to his great design and this will always remain one of the most exciting features of the Sydney Opera House. Many possible sites were rejected and there were many discussions with theatre experts, traffic authorities and planning officials before the choice was made of historic Bennelong Point on the extremity of the eastern arm of Sydney Cove, where the First Fleet anchored after Governor Phillip had had the satisfaction, as he put it, of discovering the finest harbour in the world.

The Opera House will overlook this harbour from one of its best vantage points; from the foyers and restaurant the whole expanse of Port Jackson will be seen and, when the great ocean liners come through the Heads and round Bradley's Point, a new landmark will welcome visitors and home-coming Australians will look eagerly for the white sails of the Opera House roofs against the green background of the Botanic Gardens and the Domain.

Circular Quay, Sydney's main traffic focus for buses, ferries and suburban trains, is but a short walk from the site and the latter allows an ample forecourt for the manoeuvre of private cars and taxis. Because Bennelong Point is a peninsula there is no through traffic to congest the approaches and users of the different halls and theatres, who will be coming mainly in the evening, will be able to park their cars near-by in the extensive areas used by day-time city workers. Through the co-operation of the Maritime Services Board the Opera House will have its own deep water quay for direct ferry services from points around the Harbour and there is also the delightful prospect of theatre parties travelling by launch.



BENNELONG POINT LOOKING TOWARDS THE SOUTH-WEST



Sir Leslie Martin, Dr. Cobden Parkes, Eero Saarinen, Esq., Professor Henry Ingham, Ashworth.

THE SELECTED DESIGN

THE conditions of the Competition emphasise that it was unlikely that the winning scheme would be built without alteration or variation and that the main purpose of the Competition was to select a sound basic scheme and a competent architect. Thus, the conditions were deliberately set out in the simplest form, leaving the competitor the widest possible scope.

This decision obviously presented the Assessors with the problem of judging the relative merits of schemes in which many different assumptions had been made. New ideas are always on the brink of disqualification and in this Competition, considerable thought was given to stating clearly the intention or aim to be achieved and leaving the manner of their achievement to the competitors.

The drawings submitted by the winner were simple to the point of being diagrammatic. Nevertheless, the Assessors stated that they returned again and again to the study of these drawings, as representing the most original and creative submission. Because of its very originality, it was clearly a controversial design. It has the merit of great simplicity of arrangement.

A massive stone base emphasises the character of Bennelong Point. The auditoria are arranged like Greek Theatres under this rising base and are approached either underground from cars, or externally along a magnificent ceremonial approach. This approach and the auditoria steps, form a rising plateau in which the highest point of

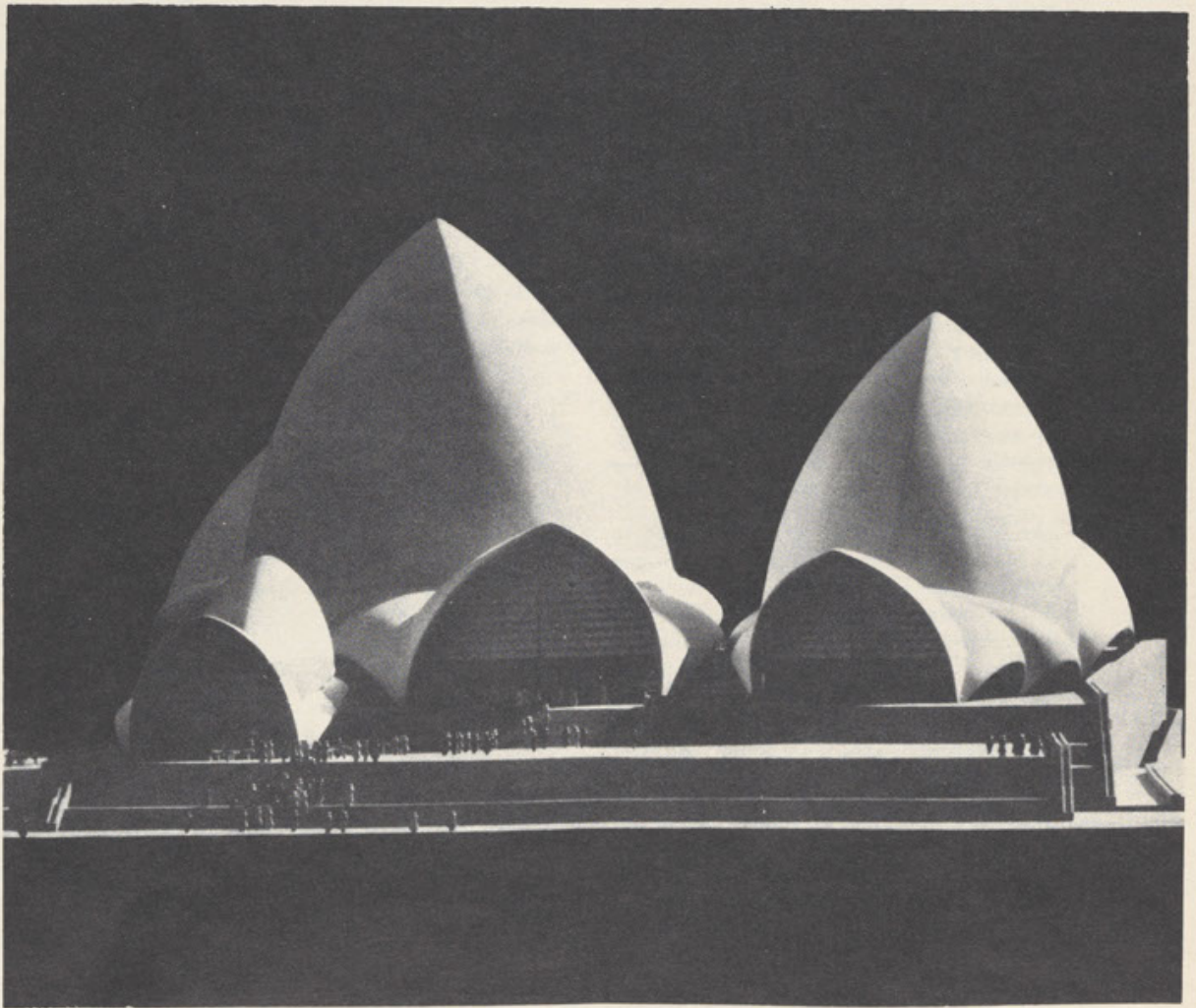
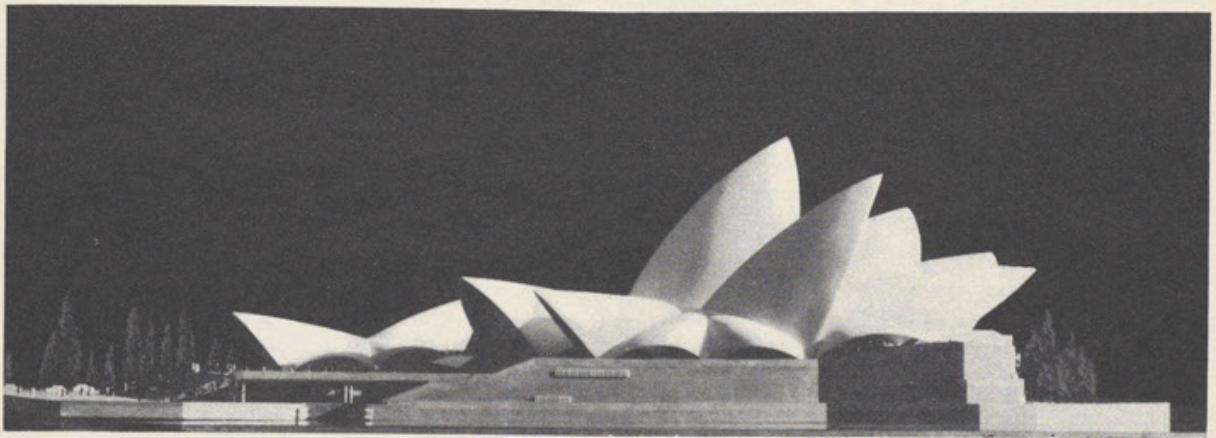
seating is about forty feet above the ground. This conception solves by elimination, all the complex needs of escape which form so much dead space in a multi-storey building.

Within this plateau are the workshops, the rehearsal rooms and the dressing rooms. The workshop areas are adequate and well placed in relation to the stages. They are placed in positions which would allow problems of sound insulation to be effectively solved in the developed scheme.

The great merit of this building is the unity of its structural expression. One of the most difficult problems of opera house design, is to relate the stage tower to the separate and surrounding buildings, and this becomes of particular importance on this exceptional site which can be viewed from all directions around the Harbour.

The solution suggested in this scheme is that the two auditoria should be roofed by a series of interlocking concrete shell vaults, in which the high stage tower is within one of a series of separate shells.

This creates a striking architectural composition admirably suited to Bennelong Point. The sail-like forms of the shell vaults relate as naturally to the Harbour, as the sails of its yachts. It is difficult to think of a better silhouette for this peninsular. The dynamic form of its vaulted shape contrasts with the buildings which form its background and gives a special significance to the project in the total landscape of the Harbour.



Photos by courtesy Carl E. Rosenberg

THE OPERA HOUSE AS FINALLY CONTEMPLATED

AS a result of the Competition and to further the development of the scheme, the following Professional Consultants were formally appointed, namely:

Joern Utzon, Architect — Hellebaek, Denmark.

Messrs. Ove Arup & Partners, Consulting Engineers—London.

Messrs. Rider Hunt & Partners, Quantity Surveyors—London and Sydney.

Consultants for mechanical services and acoustics:

J. Varming—Mechanical services.

M. Balslev—Electrical installations.

V. J. Jordan—Acoustics.

Consideration of the acoustics of both halls has been undertaken for some time to ensure that the acoustics will be right for the various uses of the building.

The combined efforts of the Consultants ultimately led to the approval of the final sketch plans for the Opera House by the Executive Committee. It should be stated that the approved sketch plans still retain the essential characteristics of the concept illustrated in the competition drawings. Such modifications as have occurred are in the main technical in character, or, alternatively, comprise additional facilities considered desirable by the Committee.

The original priorities of use intimated in the competition conditions were reaffirmed and have not been varied. Thus, there are still two main halls—one large, one small. The large hall is contemplated as being the new home for the Sydney Symphony Orchestra and therefore, the symphony concert has been accepted as priority No. 1, while large-scale opera, and ballet, will also be provided for.

The capacity of the large hall will comprise an audience of 2,800 for concerts, and 1,700, a reduced number, in the case of opera. This conversion of the hall for opera is effected mechanically and results in a reduction of the audience area and a vast increase in the

stage area. This is an ingenious solution of the ever-prevalent difficult problem of using one hall effectively for a dual purpose.

Associated with the scheme will be a fine restaurant seating 250 and sited independently of the two halls, but in close juxtaposition, thus the restaurant will cater for patrons of the Opera House and at the same time will afford a much needed facility for the citizens of Sydney during the day. It will comprise a main restaurant and a grill room, and in suitable weather it is felt that some out-of-door seating will be possible. The restaurant overlooks the Harbour and Circular Quay, affording interesting vistas both by day and by night.

It is contemplated that facilities will be provided for a port of call for a ferry from the other side of the Harbour on appropriate occasions and that ultimately when all the old wharves are moved, there will be a fine boulevard walk from Circular Quay to the Opera House site.

The landscaping and planting associated with the building must of necessity be somewhat formal and restrained to be compatible with its dignity.

It has been decided to erect the building in two, or possibly three, stages, each comprising a separate contract. Contract No. 1, which has now been let to Civil & Civic Contractors Pty. Ltd., Sydney, comprises the foundation work, marine engineering to the wharves and perimeter of the site, and all incidental engineering site works, and will terminate at the level of the podium.

The Architect feels strongly, and the Committee agree, that in clement weather the processional pedestrian approach to this great building via a magnificent flight of steps leading to the plateau upon which the buildings are sited, is a very essential factor in creating the atmosphere associated with attending what should be an inspiring occasion.

The target date for the formal opening of the Opera House, is the 175th Anniversary of Australia Day, namely, 26th January, 1963.

1959 Commencement

It should be reiterated that although the building has been termed the Sydney Opera House, which is indeed a dignified title, in essence the buildings comprise a great centre of music and drama in which opera will play a small though, of course, not insignificant part. It is felt essential that this should be stated in view of the misconception which obviously still exists in the minds of many.

Similarly many people have the impression that the Opera House is a relatively small low building, but this is not so. The major shell soars to a height of 216 feet above the ground. Relating this height to that of Unilever House at 175 feet, the I.C.I. Building at 139 feet and the deck of the Harbour Bridge at 178 feet affords a more accurate concept of the scale of the Opera House.

The first structural aspect to strike the eye of the traveller arriving by sea or air will be the two series of delicately shaped large reinforced concrete shells forming the outer covering of the major and minor halls. On a closer approach a similar formation of smaller shells over the restaurant will become apparent. These shells are quite unique and present to the Engineers a succession of difficult and interesting problems with little precedent. To decide on their thickness and to carry out the necessary structural calculations relating to their stability and stresses and also later to build them it was first of all necessary to define them geometrically in a way that satisfied the Architect that his intentions were to be realised. What are called the main shells consist of two symmetrical halves meeting in a ridge in the vertical plane of the longitudinal axes of the halls. The shape of these and shells bulging out at the sides of the halls are technically described as elliptic paraboloids.

By thus defining the surfaces of the shells each point of the surface can be given spatial co-ordinates.

A considerable amount of research work is now under way in connection with testing models in wind tunnels to find the distribution of wind pressure for all directions of winds up to the maximum recorded velocities.

Aerodynamic phenomena arising from periodic eddy shedding will also be investigated by these tests. Much of the numerical work for structural design is being programmed for electronic digital computation. The Engineers have also found it necessary to undertake a theoretical study to extend calculation of shells to these not previously used shapes.

The key to their general stability has been to make use of the louvred vertical surfaces in the open sides of the main shells as major structural members. It is intended to confirm the theoretical and numerical calculation by structural model loading tests on representative sections.

The small hall, with a seating capacity of 1,100, is primarily associated with dramatic presentations, intimate opera, recitals, and in consequence, every effort has been made to capture the intimacy so essential to such uses.

A very significant addition to the original scheme is the provision of a small experimental theatre in the basement, with separate external access. This small theatre will seat 430 and has its own foyer, and complete stage facilities suitable for its purpose. It is intended to satisfy the needs of many amateur theatrical societies who at present have no suitable theatre for their performances. This experimental theatre will satisfy an existing need and indeed will stimulate development in this field. It is quite likely that there will be suitable accommodation associated with the experimental theatre to house a School of Dramatic Art, should this facility prove necessary.

Similarly, it was decided to abandon the two separate meeting rooms originally contemplated and in their place provide one large well-designed room which could be used independently for chamber music or social functions as required.

Bars, lounges, foyers, rehearsal rooms, dressing rooms, workshops, stage facilities and all the necessary facilities associated with the scheme, have all received detailed attention and are considered adequate and appropriately sited. It is perhaps worthy of mention that foyers and lounges to each of the halls will face over the Harbour. The mechanical

requirements have also received similar attention; air conditioning has been considered an essential, lifts for physically handicapped or aged people have been provided and the most modern stage machinery compatible with requirements in Sydney, is being included.

Visitors arriving on foot or by car will begin by having a good view of the shells but their immediate impressions on arrival will be of the sweeping concourse area. This area consists of a stone paving supported by long span prestressed concrete beams. When viewing the underside of the concourse the Architect-Engineer collaboration will become immediately apparent to the expert. For architectural and structural reasons these large spans have been designed as folded slabs, the folds being arranged in such a way that the distribution of material corresponds with the ideal structural requirements at any position. Thus, at mid-span, where the bending moments are positive, most of the horizontal portion of the slab is situated at the top, whereas at supports over which there is continuity it is situated at the bottom. This results in a comparatively light structure since the material is placed in a way which is most advantageous structurally.

The folded slabs are prestressed by cables of high tension wires. The folds of the slab form channels through which rainwater which seeps in between the joints of the stone paving slabs can be led away. In different parts of the building these large spans are supported in different ways because of intervening stair openings and differences in the supporting walls, etc., and these differences are directly reflected in the corrugations of the ceiling so that it is possible to visualise the whole structural action.

The remainder of the structure, little of which will be visible, is of a conventional nature. The halls are separate structures inside the shells so that a two-layer system is reached for the exclusion of external noise. Lower down as much use as possible has been made of necessary walls made structural to carry the large spans involved by such things as rehearsal rooms and the experimental theatre under the main hall.

The foundations of the building presented little problem in view of the excellent sandstone underlying Bennelong Point.

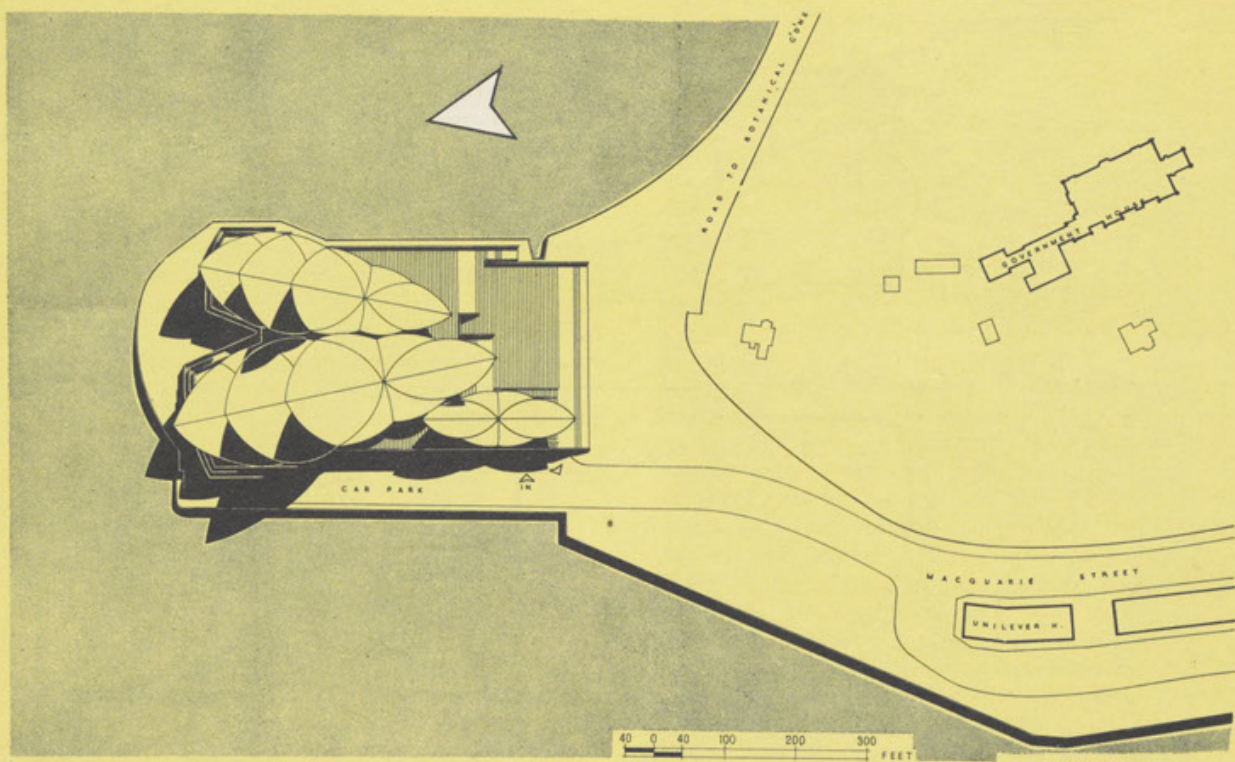
The function of the Quantity Surveyor is to maintain strict financial control over the contract through all its stages on behalf of the Architect and the Opera House Committee. This control is exercised by a series of steps which provide not only constant budgetary review of the expenditure but also ensure that the maximum value is obtained from every pound spent on the work.

The first step is the preparation of a series of detailed approximate estimates of cost. These estimates are prepared initially in Sydney and later checked and reviewed with the Architect and Engineers in Copenhagen and London. All estimates are constantly reviewed through the planning period and both the Architect and the Opera House Committee are kept informed of the effect on costs of design modification that may occur.

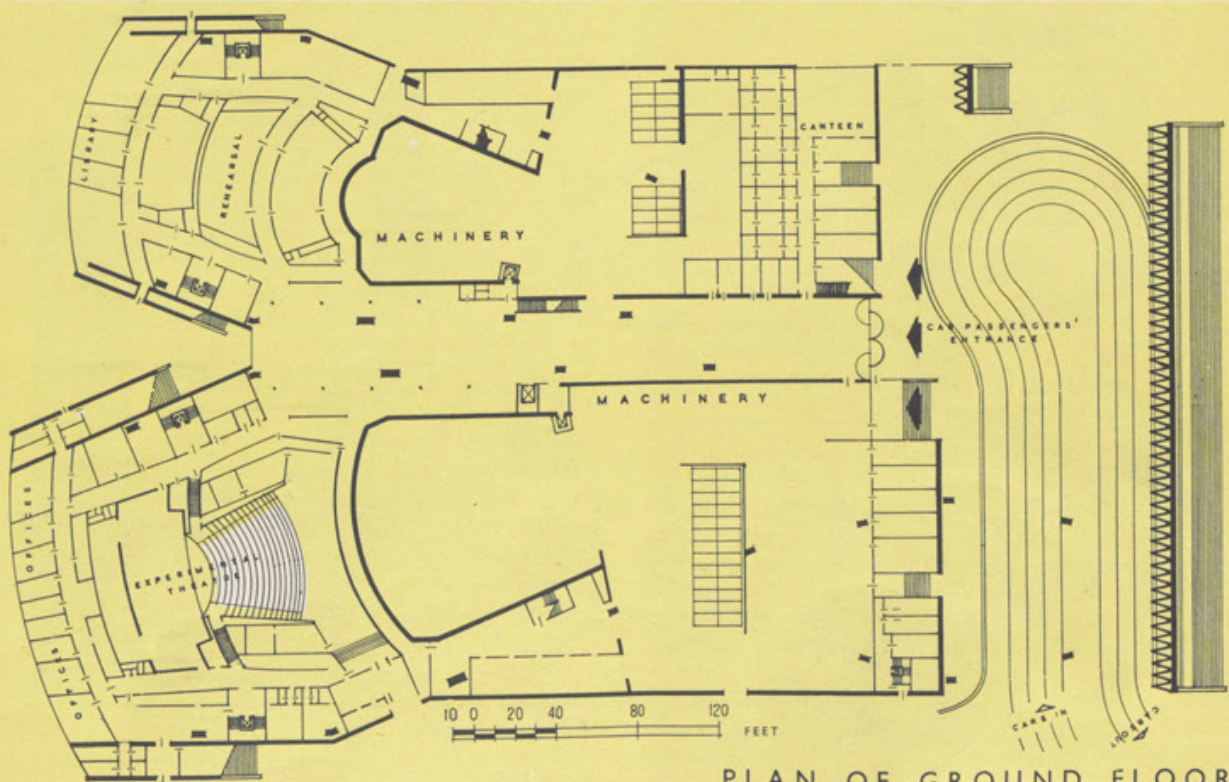
Contract documents are then drafted to ensure that maximum economic advantage is obtained from competitive tenders. To this end, the Quantity Surveyors prepare a document called a Bill of Quantities which is a detailed list of every item of labour and material necessary for the construction of the building. The Bill of Quantities is priced by each tendering contractor and the priced Bill of the successful tenderer provides the basis for all subsequent dealings on the contract. As construction proceeds, the Quantity Surveyor is responsible for the proper certification of progress payments to the builder.

Concurrently he controls the cost of variations on the contract and reports progressively through the Architect to the Opera House Committee on their value. The priced Bills of Quantities are used to determine both progress payments and the value of variations.

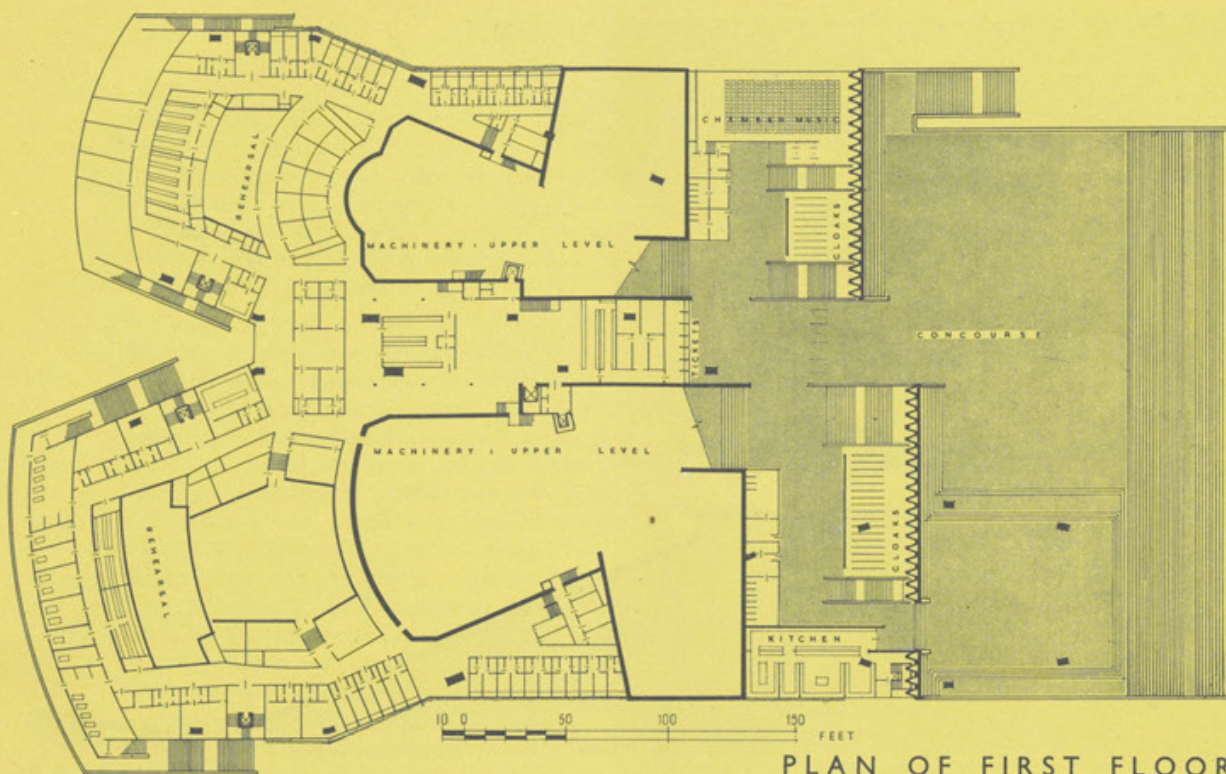
Finally the Quantity Surveyor prepares and presents a detailed statement of the final cost of the building showing exactly how every penny has been spent.



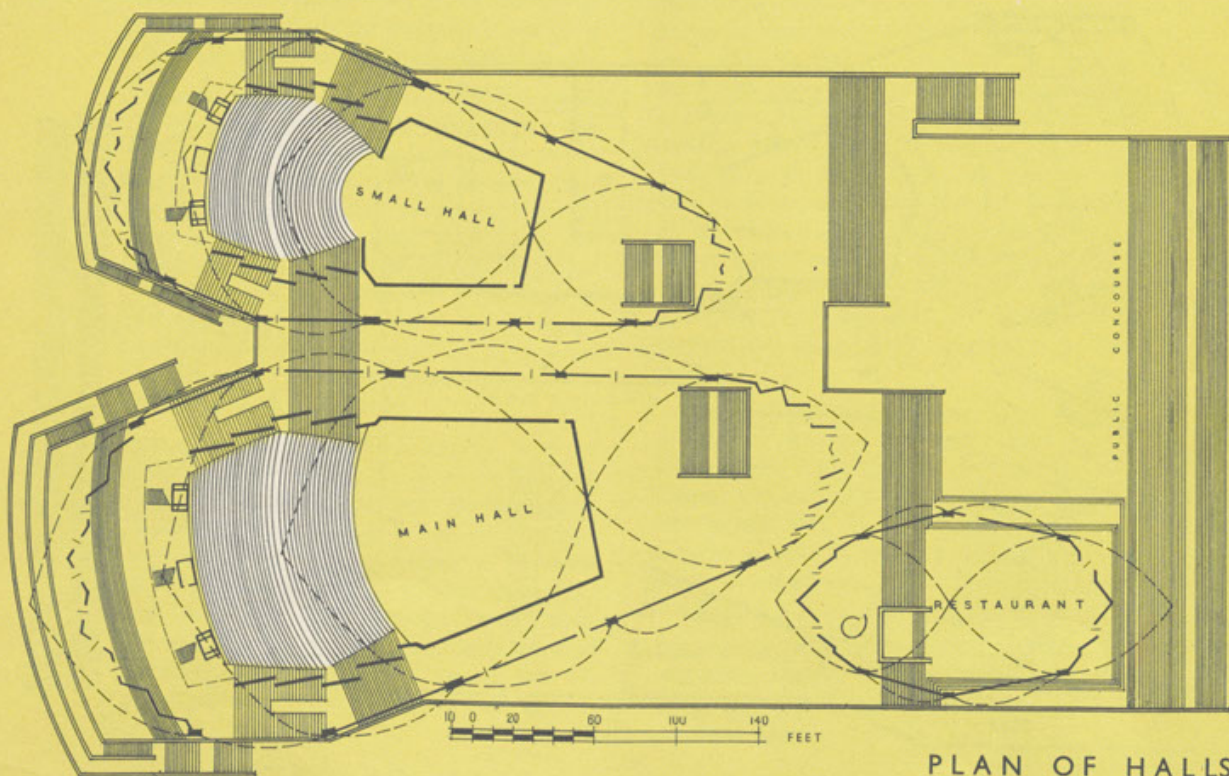
SITE PLAN



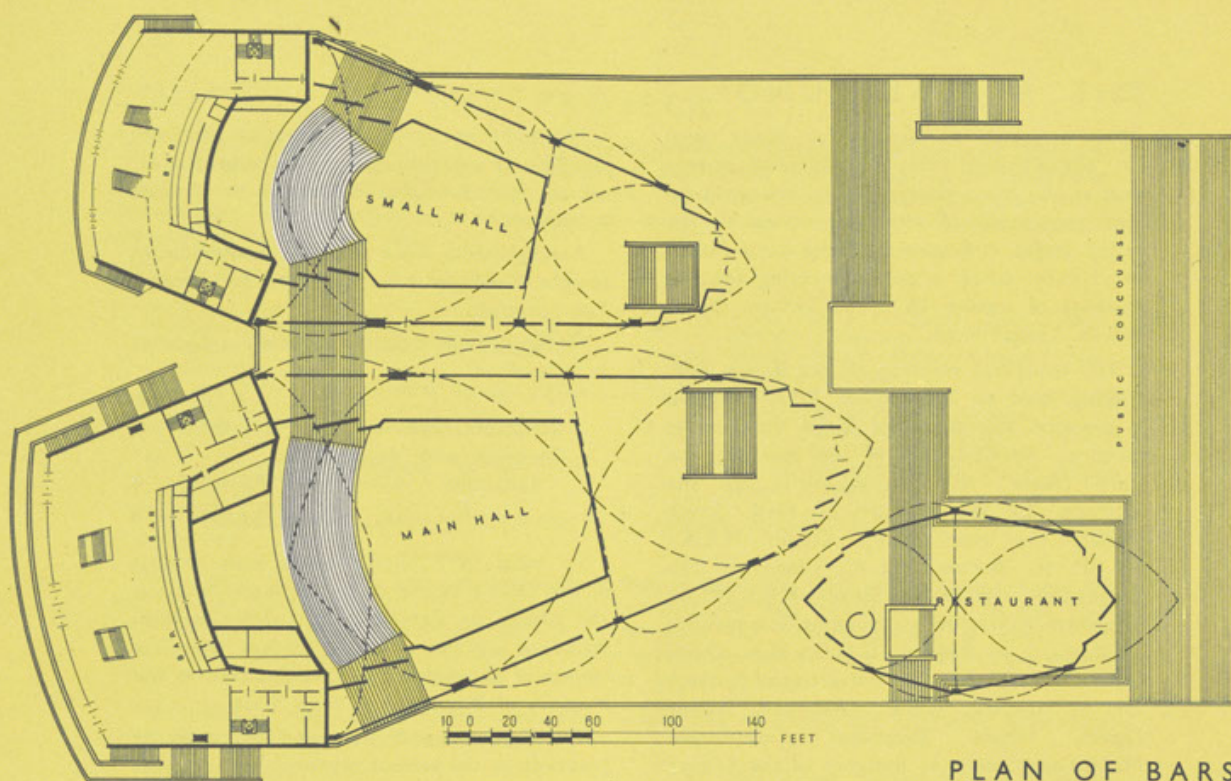
PLAN OF GROUND FLOOR



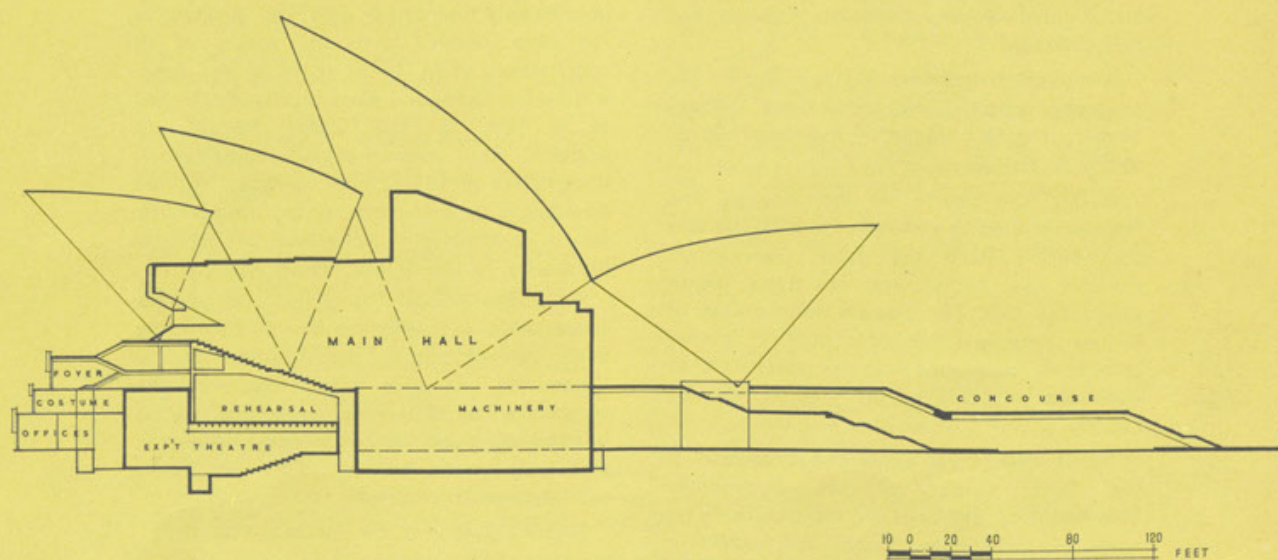
PLAN OF FIRST FLOOR



PLAN OF HALLS



PLAN OF BARS



SECTION THROUGH MAIN HALL

THE APPEAL FUND

TO organise an appeal for funds from organisations, firms and individual citizens and at the same time publicise the proposal was considered of vital importance in the initial stages. Accordingly, the Lord Mayor of Sydney called a public meeting for the purpose of setting up "The Sydney Opera House Appeal Fund".

The inaugural meeting in the Town Hall, Sydney, held on 7th August, 1957, attracted a capacity attendance of 2,400 enthusiastic citizens. As Chairman of the meeting, the Lord Mayor was accompanied on the platform by the Premier of New South Wales, the Hon. J. J. Cahill, M.L.A.; Mr. P. H. Morton, M.L.A., Leader of the Opposition; Sir Richard Boyer, K.B.E., M.A., Chairman, Australian Broadcasting Commission; Professor S. H. Roberts, C.M.G., M.A., D.Sc., Litt.D., Vice-Chancellor, University of Sydney; Mr. S. Haviland, C.B.E., Chairman, Sydney Opera House Executive Committee; Mr. J. Utzon, winning designer of the Sydney Opera House; Mr. E. Andersson, Mr. Utzon's partner.

After the formal business of the meeting the Premier launched the Appeal and urged full support of all sections of the community throughout New South Wales. He was supported by addresses from the Lord Mayor, Sir Richard Boyer, Professor Roberts and Mr. J. Utzon.

A musical programme was provided by the following artists: Joan Hammond, Elaine Sheffer, John Alden, Ruggiero Ricci, Warwick McCaffey.

During the course of the meeting the Premier handed in a cheque for £100,000 as a contribution from the State Government towards the Appeal, and the Lord Mayor announced that The Council of the City of Sydney proposed to contribute a similar amount in instalments over five years. Other donations promised at the meeting totalled £35,500.

The Premier was appointed President of the Fund; Leader of the Opposition, Vice-President; and the Lord Mayor, Chairman, while 100 prominent citizens and leaders in all sections of the community were elected to form a General Committee.

From this auspicious inauguration and with the help of a Ladies' Committee subsequently set up, the fund has continued to advance its objects.

Arrangements were made for contributions to the Fund to be deductions for Income Tax purposes.

At the present time the Appeal Fund stands as follows:—

	£	s.	d.
Donations received ...	257,593	11	5
Promises and deferred donations ...	95,429	12	4
	<u>£353,023</u>	<u>3</u>	<u>9</u>

To assist in publicity, three scale models of the Opera House structure were obtained and placed on exhibition in various venues, including London. At the present time the largest of the models is on exhibition in the Museum of Modern Art, New York.

The Committee of the Fund expresses its gratitude to the various organisations, business firms and citizens, who have so generously supported the Appeal, in many cases by subscriptions of substantial amounts, and to voluntary workers who have by their personal activities, enabled organising expenses to be kept at a minimum level.

As an incentive to subscribers to be permanently identified with the project, it has been decided that the names of all contributors of £1,000 or more to the Fund, will be inscribed on a name-plate and attached to a seat in the Opera House. In addition, the names of all contributors, irrespective of the amount donated, will be inscribed on parchment to be subsequently bound in a volume and placed permanently on display in the Opera House foyer.

An organisational survey as to future potentialities regarding the Appeal is currently being carried out at the direction of the Committee and it is hoped that with the commencement of building operations, interest in the project will be heightened to a degree that will accelerate the flow of public subscriptions to the Fund.

Subscriptions may be forwarded to the:

Joint Hon. Treasurers,
Town Hall, Sydney.

CONTROL OF THE PROJECT

THE principal body associated with the Sydney Opera House project is the Executive Committee under the Chairmanship of Mr. S. Haviland, C.B.E., Under Secretary for Local Government. The Committee was first established in November, 1954, and has progressively reported to the Government upon the action to be taken upon the various matters requiring decision, commencing with the selection of the site.

The other members of the Committee are as follows:—

Mr. E. W. Adams, Town Clerk, Sydney.	X The Honourable J. D. Kenny, M.L.C., General X
Professor H. Ingham Ashworth, M.A., F.R.I.B.A., Dean of the Faculty of Architecture, University of Sydney.	Secretary, Trades and Labour Council.
Mr. John Glass, C.B.E., General Manager, Hoyts Theatres Limited.	Dr. Nicolai Malko, Musical Director, Sydney Symphony Orchestra.
Sir Bernard Heinze, Director, State Conservatorium of Music.	Colonel Charles Moses, C.B.E., General Manager, Australian Broadcasting Commission.
Mr. Hugh Hunt, Executive Director, The Elizabethan Theatre Trust.	Dr. Cobden Parkes, C.B.E., F.R.A.I.A., F.R.I.B.A., former State Government Architect.
	Dr. H. S. Wyndham, M.A., Ed.D., Dip.Ed., Director General of Education.

The Secretary and Executive Officer is Mr. R. J. Thomson, Special Officer, Department of Local Government.

The original Committee had a membership of five, namely, Mr. Haviland, Professor Ashworth, and Colonel Moses, who are still serving, together with Mr. Roy Hendy, C.M.G., former Town Clerk, and Sir Eugene Goossens, former Director of the Conservatorium of Music. The membership was subsequently increased to enable the Committee to cope with the new problems which arose as the project developed through its various phases.

The following subordinate bodies have been established to advise the Executive Committee on matters requiring specialist attention:—

Technical Advisory Panel:

Professor Ashworth (Chairman) and Dr. Parkes, members of the Executive Committee.
Mr. W. R. Laurie, B.Arch., F.R.I.B.A.
Mr. G. L. Moline, F.R.I.B.A.
Mr. Kelvin Robertson, F.R.A.I.A.
Professor J. W. Roderick, M.A., Ph.D., M.Sc.,
A.M. Inst. C.E., A.F.R.Ae.S., M.I.E. Aust.,
F.A.A., Professor of Civil Engineering,
University of Sydney.
Professor Denis Winston, B.Arch., M.A., F.R.I.B.A.,
M.T.P.I., Professor of Town and Country
Planning, University of Sydney.

Music and Drama Advisory Panel:

Sir Bernard Heinze (Convener), Dr. Malko, Colonel
Moses and Messrs. Glass and Hunt, members
of the Executive Committee.
Mr. Harald Bowden, General Manager, J. C.
Williamson Theatres.
Mr. Alec Brown, Shand Electricity Company,
Melbourne.
Mr. Herbert Cannon, F.R.C.O., Director of Music,
Australian Broadcasting Commission.
Miss Doris Fitton, Director, Independent Theatres
Limited.
Mr. Bruce Macfarlan, O.B.E., Q.C., President,
Musica Viva Society.
Mr. William Orr, Director, Phillip Street Theatre.
Professor D. R. Peart, M.A., B.Mus. (Oxford),
Hon. F.R.C.M., Professor of Music, University
of Sydney.
Mr. Joseph Post, Associate Conductor, Sydney
Symphony Orchestra.
Mr. Robert Quentin, General Manager, Australian
National Opera Company.

Mr. John Sumner, General Manager in Victoria,
The Australian Elizabethan Theatre Trust.
Sir John Tivey, President, Sydney Symphony
Orchestra Subscription Committee.

Traffic Sub-committee:

Mr. Haviland (Chairman), Professor Ashworth and
Mr. Glass, members of the Executive Committee,
and Professor Winston, a member of the
Technical Advisory Panel.
Professor W. R. Blunden, B.Sc., B.E., A.M.I.E. Aust.,
A. Inst. P., Professor of Traffic Engineering,
University of New South Wales.
Mr. M. W. D. M. Chaseling, Superintendent of
Traffic.
Mr. R. D. L. Fraser, Chief County Planner,
Cumberland County Council.
Mr. S. Robinson, Superintendent of Planning,
Department of Government Transport.
Mr. Commissioner J. Simpson, Maritime Services
Board of New South Wales.
Mr. R. D. Stevenson, A.M.I.E., M.I.S., City Engineer,
Sydney.
Mr. G. Webster, Assistant General Secretary,
National Roads and Motorists' Association
(N.S.W.).

Traffic Survey Panel.

Representatives of the—
Cumberland County Council,
Department of Government Transport,
Department of Motor Transport,
Department of Traffic Engineering, University
of New South Wales,
Maritime Services Board,
Police Traffic Branch,
Sydney City Council.

The members of the Executive Committee, the two Advisory Panels, the Traffic Sub-committee, and the Survey Panel all serve in an honorary capacity.

All Government Departments, semi-government authorities, councils and private organisations and individuals who have been approached for advice and assistance have readily co-operated and the opportunity is taken to express the Committee's appreciation of much valuable work.

ULTIMATE MANAGEMENT

THE Premier (the Hon. J. J. Cahill, M.L.A.) has already announced that a trust or similar such body will be established to control and manage the Sydney Opera House. He said "Whilst it is much too early to say exactly what the composition of the controlling body will be, it can quite definitely be stated now that it will be specially constituted and as widely representative as possible of the various interests concerned not only with administrative matters but also the various branches of the Arts which will be performed in the building".

The trust will not be concerned with the actual production of entertainment but will direct and supervise the letting of accommodation such as the various auditoria, meeting rooms, rehearsal rooms, the restaurant and grill room, liquor bars and administrative offices. The trust will have its own permanent headquarters within the building.

It is not envisaged that the trust will be a profit-making body. On the other hand, there is no suggestion that it will need to be subsidised. It cannot be too strongly emphasised that there will be no capital charges associated with the Sydney Opera House and that the controlling body will merely need to meet the cost of day-to-day maintenance and administration. There is every reason to believe that the income from rentals will be sufficient to cover this and that at the same time such rentals will be low enough to compare more than favourably with the rentals for existing accommodation of comparable capacity. This will be despite the fact that the very attractiveness and quality of the accommodation to be provided in the Opera House will be a major attraction to potential users.

No doubt the public has been misled by reports that opera, both locally and overseas, cannot be produced without being subsidised. These reports are not doubted but they have no bearing on the economics of the Sydney Opera House. In fact, the House itself, by virtue of the excellence of its accommodation and equipment, may well benefit the economics of those bodies engaged in the production of opera.

Whilst, as stated by the Premier, it is too early yet to establish the trust, it is appreciated that it should be established well before completion of the building.

The Elizabethan Theatre Trust offers congratulations to the Government and Premier of New South Wales and to the Opera House Committee on the occasion of the commencement of construction of the Sydney Opera House.

The Trust is proud to have been associated with the planning of this great building and looks forward to the day of its opening.

In the post-war years Australia has shown capacity for creative work in both opera and drama. Indigenous talent in these fields is no longer in doubt and the Opera House will not only be a fitting home for artistic endeavour but will serve as an international symbol of our growing maturity.

H. C. COOMBS

Chairman, The Australian Elizabethan Theatre Trust

The Australian Broadcasting Commission, one of the world's biggest concert-giving organisations, will be the Opera House's most frequent tenant.

To begin with, the A.B.C.'s annual subscription series by the Sydney Symphony Orchestra will occupy the main auditorium for 40 nights each year.

In addition, the A.B.C. will use the main auditorium for the orchestra's eighteen Youth concerts, its twenty concerts for schools, its summer festivals and other special concerts plus, of course, annual performances of *The Messiah* and other oratorios.

Apart from orchestral use the A.B.C. hopes to use all four auditoria of the Opera House at various times throughout the year for recitals by overseas and Australian artists.

CHARLES MOSES
General Manager

Whatever its name, a building of the type which has been designed for Sydney can be made a centre for a number of cultural activities. Indeed, the size of the community's commitment in this project makes it desirable that it should have a diversity of use within the limits imposed by its primary purpose.

Thus, in addition to providing a home for the Sydney Symphony Orchestra and for opera, the "Opera House" will be designed to provide facilities for music of a more intimate type, including chamber music and soloist recitals. It will be able also to fulfil a long-felt need in Sydney for a suitable place for the exhibition of documentary and similar non-commercial films. Further, it could be equipped, as is the Royal Festival Hall in London, to provide a hall and all

necessary facilities for international conferences and so meet an increasingly urgent need in this country.

Dr. H. S. WYNDHAM
Director-General of Education

The Opera House, as the architectural symbol of the musical achievements and aspirations of the State of New South Wales, will be a fitting permanent home for the orchestra which has added such lustre to our reputation throughout the musical world.

To accommodate subscribers, each concert in the main A.B.C. Subscription series must be given five times, each Youth Concert three times. The greater capacity of the new concert hall will make it possible to reduce considerably the number of these "repeat" performances and so the orchestra will be available for additional concerts in city and country. Furthermore, it will be possible to provide urgently needed storage facilities for orchestral instruments and pianos, together with rehearsal and practice rooms and excellent amenities for the orchestral musicians.

HERBERT CANNON, F.R.C.O.
Director of Music, A.B.C.

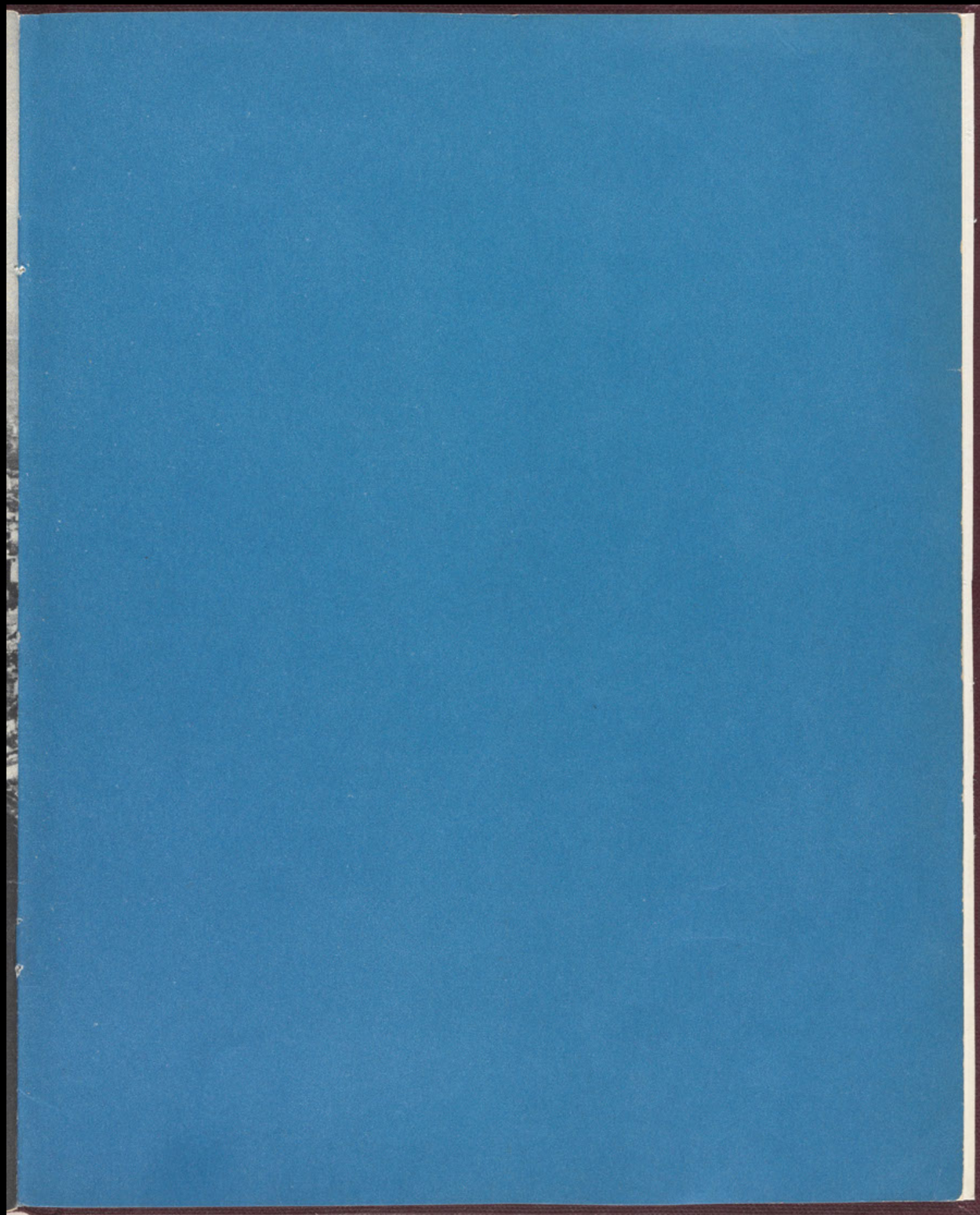
I am confident that this great building is destined to become a cultural centre, the importance of which will be acknowledged not only in this community but throughout the world. It will symbolize the tremendous developments in public appreciation of the operatic, musical and theatrical arts that have been so conspicuously apparent in this country during the last thirty years. It will enrich the city by the stimulus it is bound to give to rising talent and to established artists, both here and overseas.

Professor M. S. BROWN
Professor of Sociology, University of New South Wales

2/8645A



LOOKING OVER SYDNEY HARBOUR BRIDGE TOWARDS BENNELONG POINT



V. C. N. Blight, Government Printer

