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THE COUNCIL OF THE CITY OF SYDNEY PLEDSE KETVAN TO W. PETERSE 9299

MASTERPLAN AND PLAN OF MANAGEMENT

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MACQUARIE PLACE

1990

prepared by

Lester Tropman & Associates

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SECTION I

INTRODUCTION

Council has for many years realised the value of it's parks and the need to identify methods of management to assure that they are conserved and enjoyed to their maximum potential.

Macquarie Place is greatly valued as an open space in the intensely urbanised northern commercial precinct of the city. The historic monuments in Macquarie Place, such as Macquarie's obelisk and the anchor and cannon from HMS Sirius, pay tribute to it's important role as a public space in Sydney over the last 200 years. The historic character of the precinct and it's surroundings make it a fascinating place where 19th Century Sydney may still be glimpsed. In 1989 Council, with the assistance of The Council of the City of South Sydney, appointed Lester Tropman and Associates as consultants to prepare a Plan of Management and Masterplan for the conservation of Macquarie Place and the important historic monuments within it.

There is an urgent need to address the many conservation and management issues affecting Macquarie Place today, such as the deterioration of the historic monuments, the effects of changed micro-climatic conditions due to overshadowing, and the need to sympathetically incorporate new development in the area surrounding the Park. The Plan of Management and Masterplan offer solutions to the various problems facing Macquarie Place. Drawing together the information contained in numerous conservation reports relating to the Park that have been prepared over the last ten years, it will allow Council to conserve and upgrade Macquarie Place according to it's heritage significance so that it may continue to function well as an important public place and green space within the city.

This study serves as a plan for the preservation, conservation, reconstruction and adaption of Macquarie Place and the important historic monuments within it.

1.1 LOCATION OF STUDY

Macquarie Place is located in the northern commercial precinct of the city, close to Circular Quay. It is a triangular portion of land bounded to the south by Bridge Street and to the east by Loftus Street with the Macquarie Place streetscape completing the triangle. The land has a westerly aspect and forms part of the eastern bank of the former Tank Stream valley. The map below shows the location of the study area.



MAP 1

Location of the study area.

1.2 DEFINITIONS

The following terms used throughout the report, are defined in <u>The Burra Charter</u> which is the Australian adaption of the International Charter for the Conservation and Restoration of Monuments and Sites. (Venice 1966).

CONSERVATION

 'Conservation means all the processes of looking after a place so as to retain its cultural significance. It includes maintenance and may according to circumstances include preservation, restoration, reconstruction and adaption and will be commonly a combination of more than one of these'.

MAINTENANCE

 'Maintenance means the continuous protective care of the fabric, contents and setting of a place, and is to be distinguished from repair. Repair involves restoration of reconstruction and it should be treated accordingly'.

PRESERVATION

• 'Preservation means maintaining the fabric of a place in its existing state and retarding deterioration'.

RESTORATION

• 'Restoration means returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material'.

RECONSTRUCTION

 'Reconstruction means returning a place as nearly as possible to a known earlier state and is distinguished by the introduction of materials (new and old) into the fabric'.

ADAPTION

'Adaption means modifying a place to suit proposed compatible uses.'

COMPATIBLE USE

• In addition 'Compatible use means a use which involves no change to the culturally significant fabric, changes which are substantially reversible, or changes which require a minimal impact'.

SECTION II

CONSERVATION AND MANAGEMENT ASSESSMENT

2.1 HISTORICAL SUMMARY

Macquarie Place occupies the land that was once the eastern bank of the Tank Stream near where it flowed into Sydney Cove. Artists' sketches from as early as 1793 show the land that was to become Macquarie Place as a triangular area adjoining the garden of the First Government House (see plate 2.1). The triangle of Macquarie Place and the alignment of Bridge Street are also visible on plans of Sydney dated from as early as 1800. Bridge Street, so named because it was the location of the bridge across the Tank Stream, formed the western approach to the First Government House.



PLATE 2.1

A Sketch of Sydney by Ferdinand Brambila in 1793, only five years after the formation of the colony, showing the large triangular space which Macquarie Place orignally occupied, with a view up Bridge Street.

The alignment of Macquarie Place began as a contour path that followed the original topography of the Tank Stream valley. The early 19th Century street frontages of Macquarie Place marked the boundary between the Government House grounds and the surrounding private residential allotments.

The properties surrounding the reserve were owned by the elite of the early colony. To the west of Macquarie Place were allotments leased to Simeon Lord, Thos Randall, William Chapman, and Thos and Mary Reiby. To the south were the allotments set aside for the houses and offices of the Colonial Secretary and the Judge Advocate, the chief civic officials of the colony after the governor (see map 4).

The reserve was the dividing space between Government House and the "common land" of the Rocks area, therefore it represented, in effect, the centre of the colony. The locational importance of the reserve was increased by Governor Macquarie in 1818 when he located the famous obelisk in the centre of the triangular space. This obelisk designed by Francis Greenway was to mark the geographic centre of the colony, from which all distances were to be measured, and was inscribed with the mileages to other colonial centres (see plate 2.2).

In the following year, Macquarie commissioned Francis Greenway to design the doric fountain which was located at the western corner of the Park. Both these monuments were considered landmarks of the colony and are marked on most maps of the period, as well as being favourite subjects for artists (see plates 2.3 and 2.4).

Governor Macquarie planned the Park formally to create an appropriate approach to Government House. A path system was developed to encircle the Park and lead to the central obelisk, as seen in Harper's <u>Plan of Sydney</u>, 1823. An engraving from 1829 shows the Park surrounded by a low sandstone wall and palisade fence (see plate 2.5).

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PLATE 2.2

The obelisk inscribed with the mileages to other colonial centres (c1890's)





PLATE 2.4 MACQUARIE PLACE, c1870, looking N-E

The Park was surrounded by a palisade fence, and Francis Greenway's drinking fountain was located where the T. S. Mort statue stands today.

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PLATE 2.5 SYDNEY FROM THE DOMAIN NEAR GOVERNMENT HOUSE From <u>Select Views of Sydney</u>, 1829.

This is the first sketch to show the palisade fence surrounding the Park. This fence was probably replaced when Loftus Street was extended through the Park.

It was during the 1830's that the alignment of the Sydney streets began to change to a grid system with a north/south orientation, leading to Circular Quay. The relocation of Government House to the Domain, and the levelling of the topography (including the covering of the Tank Stream), made it possible to extend Castlereagh Street to the harbour, resulting in the reduction of Macquarie Place to the size that it is today. The proposed extension of Castlereagh Street (today known as Loftus Street) was recorded as early as 1832 (see map 2), and later in 1840 (see map 3). During the late 19th Century, the Park began attracting various memorials. In 1869 the stone gate posts marking the Bridge Street entrance were installed and engraved by Walter Renny, the mayor at that time. Then in 1883 the ornate doric drinking fountain at the south-west corner of the site was replaced by a statue of Thomas Sutcliffe Mort, recognising Mort's important role in establishing Australia's export trade. The anchor and cannon recovered from the ship-wrecked Sirius were placed in the Park in 1907 (see plate 2.6) and in 1908 the domed lavatory was placed on the north-east corner of the Park. Gas lamps were also present in the Park at this time (see plate 2.7).

Between 1905 and 1910, Sydney was undergoing a "beautifying scheme" where dramatic changes were made to all the major parks of Sydney, not least of which was Macquarie Reserve. The following quotes are from the Sydney Times in 1910, and describe some of the changes made to the Park.



PLATE 2.6

The anchor and cannon salvaged from the ship-wrecked Sirius were placed in the Park in 1907



PLATE 2.7

Gas lamps, similar to the replicas shown above, were installed in the Park in 1908





MAP 3 Detail of 1840 PLAN SHOWING THE SITE FOR THE NEW GOVERNMENT HOUSE PUBLIC OFFICES, THE LIBRARY, CIRCULAR QUAY, AND THE IMPROVEMENT OF STREETS CONNECTED THEREWITH.

This plan clearly shows the intention to re-align the streets of Sydney to the north-south grid pattern which exists today.

"At Macquarie reserve near the Quay a big change is noticeable. Here it was just grass and Moreton Bay fig trees. Now we find two sides of the three bordered with gardens plots, and on the third (the western side)seats beneath the three remaining trees. Thus shelter is given alike to man and plant from the glare of the afternoon sun. The garden plots are higher than the bed of the Park; they are built up level with the footpaths. And over the walls that keep them up are to be trained plants to cover, as in Boomerang Street and Hyde Park, the bare appearance of the stonework. Already a great deal has been done in trimming the trees left, and remaking the lawns and footways, but a lot more has yet to be done before its improvement is complete."

It was during this time that the wrought iron palisade fence surrounding the Park was removed, and the fig trees (which were planted in the 1860's under the encouragement of Charles Moore, Director of the Botanic Gardens) were reduced in number from fifteen to four. The Sydney Times article of 1910 explains,

"Areas that were caged in high iron railings and congested into a dark mass of varying green have been freed of their bondage and, unrestrained, throw out myriads of beautiful tints to catch and please the eye of passers-by. It took a long time to convince a lot of people that the removal of the railings would benefit these areas - and themselves. In fact, it was not until the irons came down that many guessed what might be possible. There is not a critic today; even the most hypercritical opponent of that first step of progress has become converted into an admirer of what is. It is well; for the commendation of the people means a city made more and more beautiful. Following the railings went lots of useless trees, and the lopping of others that had gat all awry. They would have spoilt the perspective had they been allowed to retain their ungainly growth." Not only were the iron railings removed, but the entire stone wall along Macquarie Place was replaced with two broad steps which extended the length of the Park, and the grass along that side was replaced with gravel (see plates 2.8 and 2.9). The bollards and chains which had surrounded the statue of T. S. Mort (see plate 2.10) were also removed, (see plate 2.11) allowing the public to finally enter all areas of the reserve.



PLATE 2.8



This photo, taken in 1919, shows the extent of the paved area to the north of the anchor.

PLATE 2.9

This view of the Park from Macquarie Place streetscape shows the two steps which extended along this side of the Park.



This 1908 photograph was taken soon after the removal of the palisade fence which surrounded the Park, and the bollards which surrounded the T. S. Mort statue prior to the

Sydney beautification scheme, 1905-1910.

During WWI major restructuring of the area around the obelisk was in progress, with the addition of steps either side of the obelisk leading up to street level, and a restructuring of the length of stone wall behind the obelisk (see plates 2.12 and 2.13). The area around the obelisk was paved in gravel and five years later, a metal fence was added to close the area off from the rest of the Park, so that the major access to the obelisk was from Loftus Street (see plate 2.14).



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PLATE 2.12

This photo shows the obelisk surrounds, in 1898. The fence along Loftus Street was continuous prior to WWI, and there was no path leading to the obelisk.



PLATE 2.13

The obelisk in 1917 was accessible from Loftus street via the stairs either side of the obelisk, as seen in this photo. The pavement around the base of the obelisk has also been extended, using sandstone pavers.



PLATE 2.14

This photo of the obelisk, taken in 1922, shows the addition of a metal fence surrounding the obelisk area. From here, three steps led into the grassed Park.

In 1960, a small bronze fountain by sculptor, Gerald Lewers, was added to the Park in remembrance of an Australian sculptor who was killed during service in France, 1917. This fountain was orignally located in the southern corner of the Park near the corner of Loftus and Bridge Streets but was moved soon after to its present position behind the Mort Statue. During this time the Edwardian steps and wall surrounding the obelisk were destroyed by a car and replaced with the current wall and steps.

An aerial photo taken in 1923 reveals a circular garden bed (possibly a rose garden) located in the grass lawn in the centre of the Park (see plate 2.15). As this is not seen in other photos or maps, it is not certain how long the garden bed was in existence.



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A birds eye view of Macquarie Place Park from the west. This photo, taken in 1923, reveals a large circular garden bed in the centre of the Park and also shows the extent of the steps along the Macquarie Place edge of the Park.

PLATE 2.15

In 1954 Her Majesty Queen Elizabeth II planted the two London plane trees to mark the beginning of the Remembrance Driveway to Canberra. These trees are now reaching maturity.

Little change occurred in the Park from 1960 until 1976 when several major alterations were made (compare map 8 with map 9):

- The western corner of the Park was extended to meet the T. S. Mort statue.
- The pathways were altered.
- Macquarie Place Street was closed to vehicular traffic and the kerbs re-aligned.
- A planting bed along the outside of the wall and a podium were added along the Macquarie Place edge of the Park.
- The ornamental drinking fountain was located next to the podium.
- The asphalt footpaths around the Park were replaced with grey monier interlocking pavers.
- Garden beds were created around the base of the Moreton Bay fig trees along the Macquarie Place edge of the Park.
- Gas lamp replicas were installed.

These recent changes have weakened the previous strongly defined triangular shape of the Park, by trying to "key in" the Park with the Macquarie Place streetscape.

The following maps represent the changes to and evolution of Macquarie Place over the last 200 years.



MAP 4 MACQUARIE PLACE, 1807

This map shows the guard house (A) the allotment to Shad Shaw (No. 84) and the Park's division into three sections.

Source: PLAN OF THE TOWN OF SYDNEY IN NSW, by James Meehan, 1807.

MAP 5 MACQUARIE PLACE, 1823.

The location of the obelisk (A), doric fountain (B) and path systems. Source: PLAN OF SYDNEY, by Harper, 1823. (AO Map S2434, four of four)



MAP 6 MACQUARIE PLACE, 1900

The Park is totally surrounded by a palisade fence, and the perimeter is planted with Moreton Bay fig trees. There are bollards around the Mort statue (A) and three temporary sheds along Loftus Street (B).

Source: LAND, METROPOLITAN DETAIL SURVEY, CITY OF SYDNEY. Area H4, 1901. Photos 4 5 6 7 9 10 11 and

Photos 4, 5, 6, 7, 9, 10, 11 and 12.

MAP 7 MACQUARIE PLACE, 1930

Steps have replaced the wall along Macquarie Place, the bollards surrounding the Mort Statue have been removed and garden beds edge the eastern and southern boundaries of the Park. There are three additional structures in the Park: the Sirius anchor and cannon (A) the Edwardian lavatory (B) and a temporary shed along Bridge Street (C). Steps flank either side of the obelisk (D) which is set on large paved area and a surrounded by a metal fence (E) Most of the fig trees have been removed.

Source: Photos 14, 16, 17, 20, 21, 22 and 25.

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MAP 8 Macquarie Place, 1970

A wide path to the obelisk (A) has opened the Park as a pedestrian thoroughfare. The Lewers' Fountain (B) has been relocated from the south east corner of the Park to the western corner and set in a circular pond against a sandstone wall. The sandstone walls near the obelisk have been replaced and redesigned (C).

Source: EXISTING LAYOUT OF MACQUARIE PLACE, 1970. By the Park and Recreation Department.

MAP 9 MACQUARIE PLACE, 1989

Most changes have occurred along the Macquarie Place streetscape which is now closed to traffic. A garden bed has been placed at the southern end (A), a podium added (B) and the Park extended to meet the T. S. Mort Statue (C).

source: Site survey, 1989.

E XISTING LAYOUT OF MACQUARIE PARK, 1976.

By the Park and Recreation Department.

2.2 STATEMENT OF SIGNIFICANCE

Macquarie Place is an item of environmental heritage with historical, cultural and aesthetic significance. The following statement isolates the component qualities that make the Park significant, based on the historical and physical evidence analysed.

HISTORICAL SIGNIFICANCE

- Macquarie Place was the second open space in Sydney to be dedicated as a public reserve (1866).
- 2. Governor Macquarie had the convict architect Francis Greenway design a sandstone obelisk that was placed in the centre of the Park in order to mark that point as the geographic centre of the colony.
- 3. As one of the earliest ornamented spaces in Sydney, the Park and its various monuments were popular subjects for the many artists in the early days of the colony.
- 4. The triangular shape of the Park is a remnant of the early street layout of Sydney, that responded to the topography of the Tank Stream valley.
- The two Moreton Bay fig trees are remnants of the street planting scheme of the 1860's, influenced by Charles Moore, the Director of the Royal Botanic Gardens, 1848-1896.
- 6. Many of the buildings which face the Park along Bridge Street and Macquarie Place are of historic significance, providing an appropriate scale and setting for the Park.

CULTURAL SIGNIFICANCE

7. Macquarie Place is an important green space in the city's central business district, providing an attractive haven for city users.

AESTHETIC SIGNIFICANCE

8. Macquarie Place contains several mature trees which soften the surrounding urban environment and help to enclose the Park.

2.3 URBAN CONTEXT

Macquarie Place is located within the financial core of the Central Business District of Sydney, forming part of the Northern Commercial precinct as defined in the Central Sydney Strategy 1988.

Most of the buildings in the immediate area of Macquarie Place are low in scale although high buildings are generally dominant in this precinct. The low scale 19th Century and early 20th Century buildings surrounding Macquarie Place are mostly built of Hawkesbury sandstone, which gives the area a distinctive character. Many of these buildings are now protected by Conservation Instruments.

The historic buildings of particular relevance to the urban context of Macquarie Place include:

KYLE HOUSE: 27-31 Macquarie Place

This building was designed by Bruce Dellit and was constructed in 1931 overlooking Macquarie Place Park. Important features include the main external stairs and barrel vaulted portico which is clad in granite.

Kyle House is built in the inter-war Art Deco style and was one of the earliest buildings to discard classical motifs on the exterior.

SIRIUS HOUSE AND THE CUSTOMS HOUSE HOTEL:

15-25 Macquarie Place

This group of four buildings and historic facades front onto Macquarie Place. These buildings date mostly from the inter-war period and were built in a stripped classical style with sandstone being the dominant exterior construction material.

The facades of these buildings have been retained as part of the redevelopment of the site for a high rise hotel development by the Ramada Renaissance company.

LANDS DEPARTMENT BUILDING

This important historic building occupying a whole city block, was designed by James Barnet, NSW Colonial Architect from 1862 until 1890. The Bridge Street facade presents a symmetrical composition with a formal entrance. The building is made of intricately detailed sandstone blocks, and is a major landmark in this precinct.

EDUCATION DEPARTMENT BUILDING

This sandstone building built in 1914 compliments the scale and detailing of the Barnets Lands Department building, forming an important component of the Government building group along Bridge Street. It is a landmark building highly visible from Macquarie Place.

2.4 USAGE OF THE PARK

Macquarie Place is a highly valued green space by office workers and indeed any visitors to this part of the city. From noon to 3pm on weekdays, the Park is especially popular. The favourite places to sit depend upon the weather and season. In general however, the spaces which are in the sun are the most popular, particularly if there is some hard surface on which to sit, such as the benches, podium steps or low sandstone walls. The grass is often damp due to poor drainage and is therefore not as well used as it could be.

Other popular sitting areas are those which have a view to some form of activity, such as pedestrian traffic, or the fountain. Further hard seating is required in the Park, whether it be benches, sandstone ledges or low walls of appropriate dimensions. The location of seating must take into consideration views, pedestrian traffic, and the amount of sun/shade available.

The Park is also used as a short cut for people walking between Bridge Street and Loftas Street, and this activity tends to detract from the restful character of the Park. Pedestrian routes through the Park should be reconsidered so as not to conflict with the needs of recreational users of the Park.

It is expected that usage of the Park will increase with the opening of the Northbourne building on Macquarie Place and the Gateway at Circular Quay. As a result of this, new food outlets will encourage people to use the Park as an eating place, there will be more shoppers passing through the area and more office workers who may use the Park during lunchtime. This higher level of usage, coupled with increased shade from overshadowing buildings, means that the Park will be subject to increased pressure. Thus adequate seating, durable grassed areas and paved surfaces need to be provided.

SECTION III

MACQUARIE PLACE MASTERPLAN

3.1 CONSERVATION POLICY

The following conservation policy is the basis for the Masterplan recommended for the reconstruction and adaption of Macquarie Place. The Masterplan and Conservation Policy give consideration to both the historical and cultural importance of Macquarie Place. The Conservation Policy is as follows:

- Actively conserve the many features of historical significance within the Park.
- Emphasise the distinctive triangular shape of the Park and sense of enclosure when considering the boundary treatment.
- Attempt to dissuade by design, the consumption of alcoholic beverages in the Park.
- Maximise the area available for grass, since there is a shortage of grassed areas in the city.
- Reconstruct the historic alignment of the Macquarie Place streetscape.
- Remove major obstructions from the streetscape and those materials which are not appropriate to the historic character of the area.
- Adapt the Macquarie Place streetscape as a pedestrian area providing appropriate paving, seating, shelter and lighting.



SECTION IV

MANAGEMENT RECOMMENDATIONS

4.1 STRUCTURES OF HISTORICAL IMPORTANCE

4.1.1 MACOUARIE'S OBELISK

DESCRIPTION:

The sandstone obelisk was designed by Francis Greenway, and commissioned by Governor Macquarie in 1818, marking the geographic centre of the colony from which all distances were to be measured. It was inscribed with the mileages to other colonial centres.

PHYSICAL CONDITION:

The obelisk suffers from rising damp, bringing with it rising salts which accumulate under the cornice and at the base of the obelisk. This aggravates the problem of stonework and mortar deterioration. Dirt has also accumulated, staining the sandstone, particularly on ledges and weatherings.

MANAGEMENT STRATEGY:

The obelisk should undergo preservative treatments as recommended in the obelisk restoration report (see Appendix A). The report's recommendations are summarised below:

- The decorative acroteria details need to be brushed down, coated with retardant, and applied with coats of silicone rubber of a colour similar to sandstone.
- Some stonework to be replaced, joints chalked prior to cleaning, and mortar restored.
- The foundations of the obelisk are to be inspected to verify stability.
- Accumulated salts are to be removed by cyclic periods of saturation and then washing down of the salt affected areas.
- Return the ground around the base of the obelisk to its original level.



PLATE 4.1

Further deterioration of this historic landmark will diminish its aesthetic, and historic significance. It must be preservatively treated as soon as possible.

4.1.2 'SIRIUS' ANCHOR AND CANNON

DESCRIPTION:

The anchor was salvaged from HMS Sirius, one of the vessels in the First Fleet which was wrecked off Norfolk Island in 1790. The anchor was later installed in Macquarie Place in 1907 as was the cannon which was landed in Sydney in 1788.

PHYSICAL CONDITION:

The cannon is itself in good condition, but the replica wooden carriage on which it rests (built in 1907 and rebuilt in the 1970's) has badly deteriorated. The paint is not only lifting off the rotten wood and iron fittings, but is harbouring chloride ions and moisture which will accelerate corrosion of the iron, and perhaps the cannon itself. The anchor has corroded much more heavily than the cannon, especially at points of contact with the concrete base and the replica wooden stock at the end of the shank (which is in a similar condition to the wooden gun carriage). The corrosion process has been aggravated by Sydney's humidity, air pollution and air-borne salt from the harbour.

MANAGEMENT STRATEGY:

The Sirius anchor and cannon are currently undergoing preservative treatment and reconstruction as recommended in Pearson's Conservation Report (see Appendix B). The report's recommendations are summarised below.

- The cannon and anchor should be provided with protective coatings.
- A new replica gun carriage for the cannon and new stock for the anchor should be made.
- The anchor and cannon should be redisplayed on special mounts to prevent fresh corrosion.
- A strict maintenance schedule should be drawn up involving regular inspection and maintenance by a qualified person so as to ensure the long term preservation of the relics.



PLATE 4.2

This notice currently located in the Park, explains the absence of the cannon and anchor, salvaged from HMS Sirius, for conservation purposes.

4.1.3 T.S. MORT STATUE

DESCRIPTION:

Erected by popular response in 1883 after the death of Thomas Sutcliffe Mort (1878), recognising Mort's role in establishing Australia's export trade. It is the first public sculpture of a personage other than a governor or official.

PHYSICAL CONDITION:

Good condition.

MANAGEMENT STRATEGY:

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- The Statue should be reburnished and provided with a wax coating that is to be renewed yearly. (The Martin Place cenotaph has recently undergone this treatment, see plate 4.3)
- Replace the bollards and chain which originally surrounded the statue (see plate 2.10) which will not only prevent the practice of parking bikes around the statue, but the bollards and chain will also help to reinforce the triangular shape of the Park.



PLATE 4.3

Detail of the Martin Place cenotaph that has recently undergone preservative treatment which has been proposed for the T.S. Mort statue


PLATE 4.4 T. S. Mort Statue

4.1.4 COVERED DRINKING FOUNTAIN

DESCRIPTION:

One of a series of decorative surrounds to drinking fountains, which were made in Britain and distributed throughout the colonies. This fountain was relocated from elsewhere in Sydney to Macquarie Place in the 1970's.

PHYSICAL CONDITION:

Good.

MANAGEMENT STRATEGY:

- Reconstruct the brass swan that used to be at the centre of this drinking fountain.
- Repaint the ironwork in a colour scheme appropriate to the Victorian period.
- Consider a more suitable location for the fountain.



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The ornate drinking fountain, which is presently located along Macquarie Place.

4.1.5 DWARF SANDSTONE WALL

DESCRIPTION:

Before 1917, the low sandstone wall surrounded the Park on all three sides with only two entry points. Originally it formed the foundation for an iron palisade fence.

PHYSICAL CONDITION:

The original wall can be distinguished by the grouted holes which used to support the palisade fence that was removed earlier this Century. The following segments of the wall have since been added:

- the wall edging the path to behind the obelisk was built in 1966 to replace the wall destroyed by a car.
- the wall behind the T. S. Mort Statue was added in 1976, and the northern end of the wall along Macquarie Place was moved 2.5m inside the Park.

MANAGEMENT STRATEGY:

 The wall should be extended along the entire length of the Loftus Street edge of the Park, and the steps on either side of the obelisk should be removed. This strategy will stop the Park being used as a pedestrian thoroughfare therefore encouraging its preferred use as a haven for city users and repository of historic monuments.

4.1.6 STONE GATE POSTS

DESCRIPTION:

The sandstone gate posts were installed in 1869 to mark the Bridge Street entrance to the Park, and were engraved with the words "Walter Renny, Esq., Mayor 1869".

PHYSICAL CONDITION:

The gate posts are generally in good condition. The cavities for the original iron gates have been grouted over. Markings on the gate posts themselves suggest that the position of the gate posts may have been changed during this Century.

MANAGEMENT STRATEGY:

Maintain.



PLATE 4.6

Engraved gate posts show evidence of relocation on base portions. Sockets for iron gates are also evident.

4.1.7 EDWARDIAN LAVATORY

DESCRIPTION:

This structure installed in 1908, is listed by the National Trust due to its unusual architecture, in particular, the iron detailing and glazed roof. It was one of a small series of underground public toilets erected in Sydney in the early years of this Century.

MANAGEMENT STRATEGY:

This structure should be activly conserved and be subject to the managment recommendations of a separate conservation plan.



PLATE 4.7

The glazed dome of the Edwardian Lavatory.

4.1.8 LEWERS' FOUNTAIN

DESCRIPTION:

This small copper fountain, built by the sculptor, Gerald Lewers, was installed in 1960 in the southern corner of the Park in remembrance of a sculptor killed in battle (France, 1917). The fountain is an abstract curvilinear shape and careful attention has been paid to balance sculptural and water form.

PHYSICAL CONDITION:

The sculpture was originally placed at the highest part of the Park, near the corner of Loftus and Bridge Street, in an informal setting surrounded by river pebbles. In the 1970's, the fountain was moved to the western corner of the Park and placed in a large circular water pond to deter vandalism. Despite this, the fountain has been vandalised, is badly dented on one side, and the fountain jets do not function to full effect. The pond is frequently chocked with fallen leaves and litter, and its large formal shape is not appropriate for the informal character of the sculpture itself.

MANAGEMENT STRATEGY:

- Thoroughly clean and repair fountain to remove dents and clear water jets.
- Relocate fountain to a more suitable position, not necessarily in Macquarie Place (any new location of the Lewers' fountain is to be advised by Council).
- Remove surrounding pond.



PLATE 4.8

Gerald Lewers' fountain.



PLATE 4.9

The circular pond in which the Lewers' fountain has been placed is an inappropriate setting for such a small informal fountain.

4.2 FUNCTIONAL CONSIDERATIONS

4.2.1 PAVING TREATMENT

DESCRIPTION:

Macquarie Place Park is currently paved with sandstone and slate flagstones installed sometime after 1930. Prior to this, gravel was used as paving as is seen in photographs from the early 20th Century.

PHYSICAL CONDITION:

The slate flagstones are generally in good condition but they are slippery when wet making them a hazard to pedestrians. A prominent sign has been erected by Council in the Park warning of the slipperiness of these pavers (see plate 4.10). The sandstone flagging, laid in a random ashlar pattern, is not a pedestrian hazard but has become very dirty over the years and some of the flags are broken.



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PLATE 4.10

This prominent sign in the centre of the Park clearly indicates the slip problems of slate paving.

MANAGEMENT STRATEGY:

Due to the slipperiness of the slate paving and the poor condition of the sandstone, it is recommended that this unit paving be replaced by decomposed granite gravel. Gravel paving in Macquarie Place would not only respect the history of the Park, but would also have numerous practical advantages:

- Gravel is a continuous surface and would therefore provide a contrast to the sandstone monuments and buildings, thus highlighting these features.
- Gravel being a highly porous surface, would allow more moisture and nutrients to be received by the roots of the significant trees in Macquarie Place.
- Gravel has good grip and is therefore a safe surface to walk on. The Masterplan recommends that the Park be no longer used as a thoroughfare, and therefore there is little chance that gravel will be scattered.
- Gravel is historically appropriate to the 19th Century character of Macquarie Place and is the original paving treatment.

4.2.2 GRASSED AREAS

PHYSICAL CONDITION:

There are large areas of bare earth in Macquarie Place Park due to a combination of soil compaction and overshadowing from tree canopies and buildings (see Map 10). The grass is also being worn by people who take a short cut through the Park from Macquarie Place to Loftus Street. The areas of good grass cover are well used by office workers during lunch time.

MANAGEMENT STRATEGY:

Grass is a very pleasing surface in city environments and ideal for passive recreational activities. In Macquarie Place Park the grassed areas help to visually reinforce the significant triangular shape of the Park.

To achieve a good quality grass surface in the Park, slopes need to be graded more evenly to assist drainage and new turf laid on at least 75mm of topsoil. Shady areas under trees should be turfed with Durban grass which has been grown successfully under fig trees in the Royal Botanic Gardens.

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Durban grass planted under figs in the Royal Botanic Gardens



MAP 11

Areas within the Park where the grass is not growing successfully.

4.2.3 DRAINAGE

CONDITION:

Certain low points in the turfed area are susceptible to poor drainage due to the heavy clay soils and the severe embankment slopes. The section below shows the large area of grass which is often too wet to sit on. Even when dry, however, people often prefer to sit on elevated areas.



MANAGEMENT STRATEGY:

- Grade the slope more evenly so that the slope is more comfortable to sit on, and there are fewer drainage problems.
- A series of agricultural subsoil drains connected to the stormwater system should be installed to further assist in draining the Park.



4.2.4 PODIUM ALONG MACOUARIE PLACE

DESCRIPTION:

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This sandstone paved extension of the Park into Macquarie Place was installed in the late 1970's.

PHYSICAL CONDITION:

The steps are badly damaged due to the overhang tread detailing. The podium also has several functional liabilities:

- it interrupts the alignment of Macquarie Place

- the extension interrupts the triangular shape of the Park

- the podium faces the Customs House Hotel and encourages customers to use the Park as a drinking place.



PLATE 4.12

The steps are badly damaged and slabs often require replacement.

MANAGEMENT STRATEGY:

Remove the podium and reinstate a straight edge to the Park and create smaller entries that will not encourage drinkers to enter the Park.





The removal of the podium opposite the Customs House Hotel would make the use of such signs unnecessary

4.2.5 PARK FURNITURE

DESCRIPTION:

There are currently four timber benches and several rubbish bins in the Park that would have been installed in the late 1970's.

PHYSICAL CONDITION:

The Park furniture is in satisfactory condition, but should be replaced within the next five years.

MANAGEMENT STRATEGY:

• Park benches appropriate to the 19th Century setting should be installed in the Park to replace existing benches. New benches should be made of timber and wrought iron.

4.3 ESTABLISHED TREES

4.3.1 FICUS MACROPHYLLA

DESCRIPTION:

The Moreton Bay fig trees are one of the most distinctive historic landscape elements in Macquarie Place Park. These trees were planted in many of the important parks around the city in the 1860's under the influence of Charles Moore, director of the Botanic Gardens 1848-96. These figs are mature but are relatively small (approximately 15 metres high) compared to many other figs planted in Sydney parks at the same time.

CONDITION:

The fig trees are currently under physiological stress due to insect attack, root compaction and overshadowing.

STRATEGY:

Undertake a maintenance program which would include regular injections of dimethoate (rogor) to control psyllid attack.

4.3.2 FICUS HILLII

DESCRIPTION:

A large fig tree probably planted in the early 1970's, providing much shade to the northern corner of the Park.

PHYSICAL CONDITION:

Satisfactory.

MANAGEMENT STRATEGY;

Needs sensitive pruning to the canopy in order to allow more sunlight onto the turfed areas.

4.3.3 PLATANUS ACERIFOLIA

DESCRIPTION:

Three plane trees were planted by Queen Elizabeth II and The Duke of Edinburgh in1954 to mark the beginning of the Remembrance Driveway to Canberra, and they are now approaching maturity. They are therefore of cultural heritage significance.

CONDITION:

Satisfactory.

STRATEGY:

The trees need sensitive canopy pruning to allow more sunlight onto turfed areas.

4.3.4 SCHINUS AREIRA

DESCRIPTION:

Peppercorn tree with two leading trunks growing out of a small space between the Edwardian toilet, and stone wall boundary.

CONDITION:

Satisfactory.

MANAGEMENT STRATEGY:

This tree should be retained until such time as it is found to be damaging the Edwardian toilet or other stone work.

4.3.5 STRELITZIA ALBA

DESCRIPTION:

The two specimens of *Strelitzia alba* are about five metres tall and located in the Park close to the wall of the Edwardian toilet.

MANAGEMENT STRATEGY:

These plants seem to be causing damage to the wall of the Edwardian toilet and have a tendency to appear scrappy. They should be removed and replaced by kentia palms so as to avoid further damage to the structure.





4.4 MACQUARIE PLACE STREETSCAPE

DESCRIPTION:

The streetscape of Macquarie Place functioned as a vehicular street up until the late 1970's when it was closed to traffic. Photographs from the 1930's show that the carriageway was paved in timber blocks at this time. Following the closure of Macquarie Place to traffic, the Park and street were landscaped by Sydney City Council. This landscaping included the construction of the podium, a sandstone planter filled with palms, and the re-alignment of the eastern kerb of Macquarie Place. The old roadway was paved in grey interlocking concrete pavers. The facades of the building frontages of Macquarie Place support the scale and historic character of the precinct. Some of these buildings are listed as heritage items in the Central Sydney Heritage inventory.

PHYSICAL CONDITION:

Macquarie Place streetscape is currently in poor condition due to a number of factors. These include:

- The deterioration of recent landscape elements, such as the podium steps and interlocking payers.
- Recent building works along Macquarie Place have necessitated the removal of much of the paving and three street trees. Temporary bitumen pavement is now in place along most of the building frontages.

Some historic elements remain along Macquarie Place, including some trachyte kerbing, which is still in-situ along both sides of Macquarie Place, opposite the Northbourne development. There appears to be no surviving evidence of previous road surface treatment beneath the existing road and footpaths.

MANAGEMENT STRATEGY:

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The streetscape of Macquarie Place should be adapted to function as a usable open space for pedestrians while respecting the historic character of the precinct. Works related to the conservation of the Macquarie Place streetscape should be funded by contributing developers and the Sydney City Council.



PLATE 4.14

The orignal character of Macquarie Place has diminished with the inappropriate use of materials and structures (such as the podium).

The landscape works should include:

- Reconstruction of the kerb line along the eastern side of Macquarie Place in trachyte.
- Removal of the existing planter and transplanting of the palms growing in it to the area surrounding the Edwardian toilet.
- The paving in sandstone of the Macquarie Place streetscape with the western kerb alignment indicated in the pavement. Sandstone is the dominant material in the precinct and is considered the most historically appropriate treatment for this area.
- Port Jackson fig trees should be planted along the Macquarie Place streetscape because of their historic association with early Sydney. By the time the existing figs in the Park die any new plantings of figs along Macquarie Place should be well advanced.
- Well defined outdoor eating and drinking areas associated with the building frontages of Macquarie Place should be encouraged to enliven the area and allow it to function as a usable public space. These areas need to be sensitively designed to respect the historic character of the precinct. Flower and fruit stalls would also be a colourful and compatible addition to this important public space.
- The footpaths surrounding the Park that are currently paved with interlocking bricks should be removed and replaced with sandstone flagging or another paving material appropriate to the historic character of the precinct, such as an old style bitumen mix.
- Greenway's drinking fountain, demolished in the 1880's, should be conjecturally
 reconstructed and sited in its original position near the corner of Bridge Street and
 Macquarie Place. This item would greatly enhance the space and provide a further
 interpretive dimension.

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PLATE 4.15

This c1900 photo, looking south along Macquarie Place, shows the street's early character. The sense of streetscape should be returned.

SECTION V

IMPLEMENTATION

As outlined in the statement of significance, Macquarie Place is an area of great cultural and historical importance. It is also a vital recreational resource for city users. In order to retain the significance and usability of Macquarie Place it must be carefully maintained and managed.

This Masterplan and Plan of Management, with its emphasis on conservation and maintenance, is the set of actions that need to be undertaken by Council to protect Macquarie Place. These actions have varying degrees of urgency, thus a programme of priority works is included below to assist Council in the implementation of the plan in a consistent manner as funds become available.

It should be noted that some works will require detailed documentation ie. preparation of plans, details and specifications. Timing of these works should take into consideration the need to prepare further documentation before such works can be implemented. Further documentation should be prepared by consultants with proven expertise in heritage conservation matters.

5.1 PROGRAMME OF PRIORITY WORKS

Certain works proposed in the Masterplan and Plan of Management must be urgently implemented in order to maintain the significance of the place and items within it. These priority works have been identified and are summarised under the following priority headings.

5.1.1 PRIORITY ONE WORKS

Priority one works are urgent works that should be implemented during 1990 on adoption of the Plan of Management.

- Implementation of the restoration works on Macquarie's obelisk as documented in the restoration report (see Appendix A) including the removal of the stairs around the obelisk, reconstruction of the original Park wall and lowering of the ground around the obelisk to original levels.
- Commencement of treatment for the Sirius anchor and cannon in preparation for longterm display in Macquarie Place in accordance with the conservation analysis by Dr Colin Pearson (see Appendix B).
- 3. Implementation of the proposed works to the western edge of the Park. These works should be implemented in association with the proposed paving and streetscape works to Macquarie Place which are to be funded by Northbourne Pty Ltd and Ramada Renaissance Pty Ltd.
- 4. Restoration and repainting of the cast iron drinking fountain.

5.1.2 PRIORITY TWO WORKS

Priority two works are works that should be implemented over the next five years as funds become available.

- 1. Replacement of stone flagging with decomposed granite gravel paving in the Park.
- 2. Replacement of interlocking pavers along footpaths with an old-fashioned bitumen mix.
- 3. Relocation and repair of the Lewers' fountain.
- 4. Extensive re-turfing and regrading of the Park.
- 5. Installation of cast iron bollards and chains around the T. S. Mort statue.
- 6. Provision of more seating, the details of which must respect the historic character of the Park.
- 7. Tree surgery and sensitive canopy pruning to allow more sunlight into the Park.

- The upgrading of the border shrub and ground cover plantings, to include species indicative of the historic character of the Park.
- 9. The seeking of expression of interest from the private sector to fund the reconstruction of Greenway's drinking fountain.
- 10. Removal of the sandstone planter located in the streetscape portion of the site and the transplanting of the advanced palm trees within the Park borders.

5.2 FUNDING

While it is envisaged that Council will fund the majority of works outlined in the Masterplan and Plan of Management there may be opportunities to obtain funds from other sources. These other sources include:

- Corporate sponsorship and promotion
- N. S. W. Heritage assistance scheme
- Revenue generated from the leasing space along the Macquarie Place streetscape for the purposes of outdoor eating and flower/fruit stalls.

ACKNOWLEDGEMENTS

The Macquarie Place Masterplan and Plan of Management was prepared through the efforts of many people. The following individuals and organisations deserve thanks.

- Jim Hutchison, of Parks Department, South Sydney Council, who gave a great deal of time and helpful advice on the formation of the Plan.
- John Sweaney, of the City Engineers Department, who also gave helpful advice.
- The Heritage Branch, Department of Planning.
- Maritime Services Board Library.
- Mitchell Library.

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- City Engineers Department.
- Parks Department, South Sydney Council.

The report was written and co-ordinated by David Beaver, assisted by Cassandra Davies.

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APPENDIX A

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A RESTORATION REPORT ON THE OBELISK MACQUARIE PLACE, SYDNEY for

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The Council of The City of Sydney

97.19.0050

September 1981

COX. TANNER PTY LTD | ARCHITECTS ARCHITECTURAL RESEARCH AND RESTORATION 2 MCMANUS STREET MCMAHONS POINT, NORTH SYDNEY, NSW, AUSTRALIA 2060, TELEPHONE 929 6752





North Elevation 1981



SPECIFICATION

Temporary Fence

A temporary protective screen 'Cyclone' or equal, to be erected around the monument. Minimum height 2.5m with 1/No. access gate.

Recording of Inscriptions and Decorative Detail

(i) Photographic Record

Two (2/No.) general views (each showing two faces) and four (4/No.) elevational views each at Scale 1:10.

Nominated subcontractor: Peter Stroethoff.

(ii) Cast Record

2/No. inscriptions and 7/No. decorative acroteria details to be lightly brushed down, and coated with an approved suitable retardant, prior to the application of 6/No. coats of silicone rubber. This process may take up to 6 working days. The mould to be carefully removed and the image cast in fibreglass colour to approximate sandstone. The original and image to be presented to the Council of the City of Sydney or their nominee, for safekeeping.

Nominated subcontractor: Brian Bertram (telephone 82.3848)

3.01 Sign

The Contractor to provide a sign as per set out provided by the Architects. Sign to be formed of 10mm waterproof plywood with ex 50 x 25 border. The lettering to be Roman face, dark stone colouring on light stone background. Border to be painted in dark stone colour. Sign to read:

Architect: Francis Greenway

Letters) MACQUARIE OBELISK 100mm high)

Constructed 1818

Letters 50mm high

Restoration 1981/1982 by the Council of the City of Sydney. Restoration Architects: Cox, Tanner Pty. Ltd.

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Caulking of Joints Prior to Cleaning

Open joints to be caulked with an approved compound (equal to sisal with silicone mastic). Extent of caulking to be determined on site by the architect.

4.02 Cleaning Stonework

Clean down all external stonework in the two following operations. Firstly, remove all superficial dirt by means of water sponging and brushing with bristle brushes. Mild organic based liquid detergent solutions may be used only to remove accumulations of bird droppings. If these are built up on ledges and weatherings. Note that detergents containing sodium sulphate shall not be used. If this method is unsuccessful approval shall be sought from the Architect to undertake the following: stains on stonework surfaces shall be removed by sponging with organic solvents such as white spirit or trichlorethelyne. Deep seated stains that do not respond to solvent sponging shall be removed by poulticing ABS.

Note that neither abrasive blast cleaning nor steam cleaning are allowed.

4.03 Poultice Cleaning of Stonework

Poultice paste shall be made from a mixture of whiting or other inert powder with suitable organic solvent, thoroughly mixed to form a stiff paste. Wet stained area thoroughly with solvent and apply paste with trowel or brush and allow to dry in position. Allow to remain in position overnight and remove poultice and any traces of whiting remaining on surface by scrubbing and water spraying ABS.

4.04 Inspection after Cleaning

After cleaning operations are completed, all external stonework shall be inspected by the Architect and any further repair work required shall be agreed with the Contractor, and carried out.

4.01

Stonework

Stonework restoration is as detailed on Drawing No. 8124/02

5.01 Mortar for Stonework

Mortar for stonework shall be :

Lime mortar 1:4 lime putty - fine aggregate by volume.

Lime putty shall be run from rock lime in large lumps slaked with water in a tank for minimum of 2 hours, the mix being 1 part rock lime to 3 parts water. Sieve mix after slaking through 22 mesh sieve into clean bin, drain and allow to cool. Cover bin and allow to stand for 14 days before using to make up mortar mix. Fine aggregate for mortar shall be Sydney bush sand.

5.02 New Stone

New stone shall be selected to match existing stones in colour, texture and grain. Stone shall be machine dressed and finished off the saw to match existing. Mouldings shall be planed or moulded by machine and finished to match saw surface finish. Stone for work shall be free of vents, shakes and sand or clay holes.

5.03 Stone Thickness

Note that the thickness of all new stonework shall not be less than 50mm thick at any point, unless specifically shown on drawings.

5.04 Workmanship for Stonework

New stonework shall be laid to the dimensions, lines, levels, thickness, profiles and finishes as shown on drawings. All stones shall be fully bedded and jointed. Stones used in replacement and restoration shall be fully back jointed in addition. Jointing pattern for new stone work shall maintain existing joint pattern where applicable. Note that where new facing stones are inserted at corners, these stones shall be cut to maintain existing jointing pattern, and shall not show 50mm thickness at corners. Special attention shall be paid to waterproofing and jointing of all copings, weatherings, sills and heads of openings. Perform all other surfacing operations as shown on drawings. Remove existing vents in walls to be reworked and refix in position.

5.05 New Stone Flagging

Supply sawn stone flags and lay over whole area indicated on drawings. Lay flags on 25mm average thickness of dry-mix type D mortar, with maximum 3mm joints. Hose over area after laying. When dry brush dry sand over flags to fill joints. Top surface of completed flagging shall be smooth and even. Flags to be 50mm thick. Cut apertures to receive drains.

New Stone For Replacements and Restoration

Supply and cut to size new stone for replacement and restoration. Stones shall be sawn on all faces and tooled on face or faces to match existing adjacent stonework and as shown.

5.07 Attachment of New Stonework

Where 3 or more new stone blocks are to be fixed vertically above each other, each block shall be adequately cramped back to original stonework backing with approved non-ferrous cramps. All new cornice blocks to be fixed in position by approved non-ferrous cramps.

5.08 Finishes to Stonework

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Finishes for new stone work, and for stone used for replacement, restorative and reworking, shall be as follows:

Sawn and Rubbed - stones shall be finished off the saw and rubbed to match adjacent existing surfaces.

Sawn - stones shall be finished off the saw.

Tooled - stones shall be vertically tooled to match adjacent existing surfaces, with flat untooled sawn margins.

Moulded - moulded surfaces, sills etc. shall be finished off the machine and rubbed as required to match existing mouldings.

Extents and locations of finishes as shown on drawings.

5.09 Putty for Repointing Existing Stonework

Putty for repointing existing stonework shall be run from fine white lime completely slaked with water, with excess water allowed to evaporate until mix is of sufficient consistency for working. Add approved oxides to obtain colours as directed.

5.10 Repointing Existing Stonework Joints

Where repointing of existing joints in stonework is required, any loose mortar shall be raked out of existing joint, the joint blown out, damped down and repointed with putty ABS. Point joints with straight edge and steel blade, cutting each side of joint to remove surplus putty.

5.11 Artificial Stone

Where artificial stone is shown for reinstating stonework cut back for lay, hook in copper wire or rod reinforcement, brush clean, damp down and apply coat of white cement and water slurry to damaged surfaces and reinforcement.

Mix artificial stone filling from crushed stone dust and coarse sand, bound with equal to Southern Brand portland cement and water or approved organic binding agent. Apply mix in layers, building up damaged part of stonework to finished profile and surface. Finish off the wood float. Cure each layer of artificial stone to prevent rapid drying out. Note that artificial stone patches shall conform with existing jointing pattern so that patches do not extend across a joint line.

Where approved by the Supervising Officer other artificial stone mixes may be used by Stonemason after trial patches have been laid up and cured. Note that artificial stone patching shall not be used in positions other than those shown on drawings, without the Supervising Officer's permission.
5.12 Inspection of Existing Stonework

Before remedial work is carried out to existing stonework ABS, a detailed inspection of the faces of the buildings shall be carried out by the Contractor, the Stonemason and the Architect. Replacement, restoration, reworking and/or reinstatement work, if required in addition to that shown on the drawings, shall be agreed to extent and degree of working and shall be marked on the stones.

5.13 Existing Stonework

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Carry out work to existing stonework as shown on drawings, as follows:

Restore - Cut back surface of existing stone to a depth of not less than 75mm, clean out, cut new stone to match original profile and surface finish of existing stone removed, bed and joint in mortar. Note also 3E.58 Attachment of New Stonework ABS

Reinstate - Cut back stonework as required for key, clean, hook in copper reinforcement, and build up to original profile and surface finish with artificial stone. Allow minor reinstatement allow 2m of reinstated surface.

5.14 Lead Capping to Projecting Cornice

Sheets of 1.8mm thick decopperfied lead to be laid over bituminous felt over cornice. Lead be lapped 25mm at junctions and dressed securely into the stonework joint and lip over the edge of the cornice.

5.15 Repointing with Silicone Mastic

All pointing to be in mason's putty. For the following areas the mason may use an alternative material, silicone mastic:

- vertical joints in base course
- vertical joints in cornice
- spire corner stones

Re-Construction of Pavement Surrounding Base of Obelisk

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Existing pavement to be carefully removed and also existing spotlights and associated conduit.

Architect to inspect the foundations of the obelisk to verify stability.

50mm diameter copper stormwater lines to serve 4/No. brass grille intake positions, and to be connected via 1:50 falls to existing stormwater system. Intake grilles to be flush with finished face of sandstone.

Install 2/No. G.E.C. Solarflood lamps or approved equal and connect to new concealed conduit. Existing switching and supply line to be maintained.

Install 50mm blocks of sandstone blocks as per drawing. Sandstone to have colour and grain to match <u>1966 retaining wall</u>. Architect to approve stone quality before installation. Sandstone blocks to be tightly bedded in 50mm of sand. Blocks may be machine sawn with hand finished junctions and drainage channels.

6.01 Washing out of salts

Accumulated salts in spalling areas and under the cornice should be removed by cyclic washing and drying-out, using successively longer soaking and drying-out periods over a total time span of 3 to 8 weeks.

The washing out process is as follows:-

(i) blast of water

large quantities of water at low pressure (i.e. a high flow rate). Time: 15 minutes

(ii) fine spray

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small quantities of water at low pressure . Time: 1-4 hours

Both stages can be achieved using garden hoses with selected nozzles.

The aim is to saturate and then wash down areas that are affected by salts - notably the underside of the cornice and the base of the obelisk.

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APPENDIX B

CONSERVATION ANALYSIS OF THE

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'SIRIUS' CANNON AND ANCHOR

by

Dr. Colin Pearson

Cultural Heritage Science Division Canberra College of Advanced Education



CONSERVATION ANALYSIS OF THE SIRIUS CANNON AND ANCHOR

1. <u>Summary</u>

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At the invitation of the Australian National Maritime Museum, I was engaged to advise on the condition and conservation requirements of the cast iron cannon and wrought iron anchor from HMS Sirius, currently an outdoor display in Macquarie Place, Sydney (see Fig. 1 and Appendix 1).

Following an assessment of the condition of the relics, the main question to be answered is whether they can remain outdoors, or must they be taken indoors into the Australian National Maritime Museum to ensure their long term preservation.

The basic conclusion of the study is that the cannon and anchor have deteriorated to some extent, the anchor more than the cannon. This is due mainly to the mounting techniques and associated materials, and also to them being displayed outdoors. The cannon in particular is in quite good condition, but the replica carriage which it is resting upon has badly deteriorated and is a probable cause of corrosion. The anchor has corroded quite heavily, but this is due primarily to it being embedded in concrete at the head, and by the presence of the replica wooden stock at the end of the shank. In addition, there does not appear to have been a maintenance schedule for these relics, without which any outdoor monument will slowly deteriorate.

It is recommended that the cannon and anchor be removed for conservation treatment and provided with protective coatings. A new replica gun carriage for the cannon and stock for the anchor will be required. The accuracy of the design of these replicas needs checking. The treated relics could be returned to Macquarie Place for exhibition, but if so, special mounting techniques will be required to prevent fresh corrosion, in particular at the points of support and at the junction of the anchor with the stock, which have, up until now, created the main corrosion problems. In addition, regular inspection and maintenance by a qualified person will be required to ensure the long term preservation of the relics.

Even if these procedures were carried out there is no guarantee that the relics will not deteriorate further on outdoor exhibition. in addition there is the ever present problem of deliberate or accidental damage caused by the public. It is therefore strongly recommended that, following conservation in order to preserve the cannon and anchor, they are exhibited in an air conditioned building and protected from access by the public. The Australian National Maritime Museum would be a suitable location.



2. Condition of Cannon and Anchor

2.1 Cannon

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The cannon is a 6 pounder cast iron cannon (Figs. 2a and 2b), see the report by Mr. V. Evans for details (1). The only point I would question is that the number 6. incised into the surface near the monogram indicates that the cannon is a 6 pounder (Fig. 3). The six cannon jettisoned from HMB Endeavour in 1770, and raised in 1969, are all four pounders and are similar in design, although smaller than the Sirius cannon. Each Endeavour cannon has a different number incised on the barrel, i.e. 2, 3, 6, 12, 13, 14, (2). It was considered that this number was used to locate the position of the cannon on the ships deck, taking into account the different weights of the cannon. For example, the Sirius markings indicate 16 cwt. 2 qrs. 14 lbs. (that is for a six pounder), whereas the markings on the six Endeavour cannon indicate weights corresponding to the above numbers of 11-3-0, 11-2-15, 11-2-21, 11-2-5. 11-2-7 and 11-2-2. The Endeavour cannon are shorter than the Sirius cannon by about seven inches, and are obviously heavier in weight. It is the diameter of the bore of the cannon which determines the size of the cannon ball and hence its weight.

On one further point there appears to be the letter 'Z' embossed on the right hand trunnion (viewed from the rear, Fig. 4). It is suggested that Major J.G.D. Elvin, Cannon Cottage, Llandrindod-Fynydd, Llandrindod Wells, Powys, Mid Wales, LD1 6YA, be contacted for information, as he is an authority on such matters.

2.1.1. Condition of Cannon and Gun Carriage

The cannon is of cast iron and has been painted at some stage with a protective coating. The coating system, discussed later, appears to have been very effective in protecting the cannon. There are only a few spots where the top paint layer has lifted. This is seen in Fig. 5. - the red spots near the vent hole are the undercoat. It was not possible to examine inside the barrel without Due to recent heavy rains removing the wooden tompion. this had swollen and would not have been possible to remove without destroying it, necessitating a new replacement (Fig. 6). A brass plaque fixed to the top of the barrel does not appear to have caused any corrosion problems, and although tarnished, is stable from a corrosion point of view (Fig. 7).

It is important to discuss the conditon of the gun carriage along with that of the cannon. <u>The carriage is wooden</u> and according to the report was built in 1907 (1). It has badly deteriorated and has split in many places. <u>The</u> elevation wedge originally under the base of the cannon has completely disintegrated. In fact, it was fortuitous

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Fig. 2b Note deterioration of the replica gun carriage



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Fig. 4 Possible letter Z embossed on the L.H. trunnion. (Viewed from the rear.) Such letters usually refer to the gun founder.



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Fig. 5 Near the vent hole spots of the black micaceous iron oxide top coat are missing revealing the red oxide under-coat.



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Fig. 7 Brass plaque fixed to the barrel of the cannon

that the carriage was too narrow for the cannon, as the weight of the cannon was taken not on the trunnions and wedge, but mainly on the side cheeks of the carriage (see Figs. 2 and 5). As it was not feasible at the time to raise the cannon off the carriage, it was not possible to determine if corrosion had occured at the points of contact, however, none was obvious.

It should be pointed out that at any crevice between a piece of metal and another material, in the presence of moisture it is possible to get crevice, or differential aeration corrosion, and the metal will corrode at the point of contact. It appears that the paint system has provided adequate protection. However, as seen in Fig. 4, the paint on the underside of the capsquare (hinge over the trunnion) has flaked off. This paint loss was from the capsquare and not the trunnion.

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Samples were taken from the cannon, carriage fittings and carriage and analysed for their composition and in particular the presence of chloride (i.e. salt). The presence of the latter indicates that there may be problems with outdoor exposure, as chloride is very aggresive to metal surfaces. Different analytical techniques were used to provide different types of information.

Table 1. Analysis of Cannon and Carriage

Sample Number	Location	Test	Composition
1a	Paint sample from underside of L.H. capsquare	XRD	hematite. chlorite, mica, quartz
1b	Paint sample from underside of R.H. capsquare	Spot	No carbonate or chloride
1c	Off cannon, under- neath barrel	XRD	Quartz
1d	Paint sample, top of muzzle	XRD	hematite, ′ quartz, mica
1e	Paint sample, top of L.H. capsquare	SEM/ EDAX	no carbonate. chloride present
1f	Paint sample, top of breech	XRD	(black) iron (red) iron, silica, alum- inium, sulphur

(grey) silicon, iron, aluminium

Sample Number	Location	<u>Test</u>	Composition
1g	Remains of wooden wedge	Spot	No chloride
1h	Remains of iron bolt through wedge	Spot	No carbonate ∙or chloride

The spot tests carried out were simply to show the presence of carbonate and chloride, the latter being the most important. No carbonate was found, and chloride was present in one sample only. Interestingly enough this was from the paint sample removed from the top of the capsquare. The survey carried out in Sydney was following a week of heavy rain, and as expected there was no chloride (usually air borne salt from the nearby harbour) in any but one of the samples. It is possible that this had lodged in a crevice under the paint layer and was therefore not washed out - a potentially dangerous situation.

(•) (•) The samples of paint removed from the carriage fittings and the cannon were analysed by XRD and SEM plus analyser. Fig. 8 is an SEM cross-section through a paint sample. It is not possible to identify the organic binding mediums in this sample on the SEM, however, analysis revealed that:

- a) the thin black paint layer on the L.H.S. is essentially iron, possibly from the corrosion of the base metal.
- b) the middle layer (red) consists of crystals or grains of iron oxide, hematite (and possibly some sulphide) in a matrix containing silicon and aluminium, with a little chloride being present.
- c) the R.H. black/grey outer layer is basically silicon and aluminium, with a little iron present.

The presence of aluminium and silicon indicates mica, aluminium silicate, which was confirmed by XRD. As the x-ray diffraction lines for silica or quartz are the same as graphite, the latter could also be present. The black surface of the paint layer does have a micaceous texture. It appears therefore that the paint layer consists of a base coat possibly of black iron oxide, although this may be part of the surface of the cannon, a red oxide primer, and a grey/black top coat containing micaceous iron oxide. Investigations have shown that this is probably the same micaceous iron oxide with red iron oxide primer that was used on the Sydney Harbour Bridge.

With the reservation that the tompion needs to be removed from the muzzle to allow inspection of the barrel, and also the cannon lifted off the carriage to determine if there

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Fig. 8 Cross section through a paint sample removed from the top of the L.H. capsquare. On the left the black base coat or iron corrosion products. In the centre the red oxide crystals in a binding medium, and on the right the black micaceous iron oxide top coat. is any corrosion at the points of contact, it can be concluded that:

- 1. the cannon is in a stable condition. The coating system, which consists of a red oxide primer and a micaceous iron oxide top coat has provided good protection. In a few places the top coat is missing revealing the red oxide primer. There is no sign of corrosion on the cannon. (the inside of the barrel and points of contact need checking), neither is there the significant presence of chloride.
- 2. the gun carriage is in a deteriorated state. The wood is rotten in many places. The paint is not only lifting off the wood and also iron fittings, but is harbouring chloride ions and moisture which will accelerate corrosion of the iron. This chloride might also transfer to the cannon and cause corrosion at any breaks in the paint film.

2.2 Anchor and Stock

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The anchor is composed of wrought iron, evidenced by the slag lines which reveal the methods of forging. Upon exposure to the atmosphere, corrosion will occur preferentially along slag lines, giving the typical wood grain appearance (Fig. 9).

The anchor is in a much more deteriorated condition. At some time it was painted - there being small fragments of paint adhered to the underside of the shank (unfortunately a sample was not taken for analysis but this can be done The anchor appears to have corroded if necessary). reasonably uniformally, taking into account the tendancy However, there to corrode preferentially at slag lines. are two areas of special concern; where the flukes or arms are embedded in the concrete (Figs. 10a, b, c), and where the shank passes through the replica wooden stock (Figs. 11a and b). On the inside of the flukes (Figs. 10b and c), corrosion scales up to 40mm thick are present At the junction of the stock and shank, necking of the shank More important, there is by up to 10mm has occurred. a gap of 15-25mm between the shank and stock filled with water-sodden rotted wood.

Samples taken from the anchor were analysed (see Table 2).

It appears that the corrosion products are the typical mixed iron oxides known as rust (e.g. containing goethite, lepido crocite, magnetite, hematite, akaganeite). No chlorides were found. The only carbonate was in the sample removed from inside the base of the fluke and this may have been contaminated from the concrete surround, in which the anchor was embedded.

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Fig. 9 Sirius anchor showing the typical wood grain appearance of corroded wrought iron.



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Fig. 10a Fluke embedded in concrete. Heavy corrosion is seen at the junction of the fluke and the concrete. The drainage hole in front of the tip of the fluke is blocked.



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Fig. 10b Heavy crevice corrosion producing necking on the inside of the L.H. fluke where it has been embedded in concrete.



Fig. 10c Similar crevice corrosion on the inside of the R.H. fluke. The volume expansion of the corroded metal has in both instances cracked the concrete.



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Fig. 11a Junction of the iron shank with the replica wooden stock.



Fig. 11b Close-up of the junction showing heavy corrosion of the shank and deterioration of the wooden stock.

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Fig. 12 Replica wooden stock embedded in the concrete base. Note heavy paint loss and deterioration of timbers.

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Table 2. Analysis of Anchor

Sample Number	Location	Test	Composition
2a	L.H.S. front base of fluke	XRD	Quartz, mixed iron corrosion products
20	R.H.S. front base of fluke	Spot	No carbonate or chloride
2c	Drain hole in front of fluke	Spot	No carbonate or chloride
2d	L.H.S. inside base of fluke	Spot	Carbonate. no chloride
2e	Underside of shank	XRD	Quartz, mixed iron corrosion products
2f	Top of shank at inside of stock	Spot	No carbonate or chloride
2g	Top of shank at outside of stock	XRD	Quartx, mixed iron corrosion products
2h	Bottom of shank at outside of stock	Spot	No carbonate or chloride

The two major problems, as mentioned earlier are at the points where the anchor is embedded in concrete, and the iron shank passes through the wooden stock. The stock, similar to the gun carriage, is in a deteriorated condition (Figs. 11 and 12). A lot of the paint is missing and the wood is cracked and in many places rotten, in particular at the junction with the shank.

Where the anchor is embedded in the concrete there are corrosion products up to 40mm thick. This, however, does not mean that the anchor has corroded by this amount. When iron corrodes there is a volume expansion of the corrosion products, and the volume occupied may be many times as thick as the loss of original metal. It is very difficult to predict exactly how much of the surface of The surface, apart the anchor has been lost by corrosion. from some fine rusting, is in sound condition. However, at the junctions of the concrete base and flukes, and the shank and wooden stock, there has been more aggresive corrosion due to the differential aeration or crevice corrosion described earlier. Water cannot drain away from these junctions and therefore provides an electrolyte for the corrosion cell to be set up. The drain hole, to remove excess water from in front of the fluke, Fig. 10a, was in fact blocked. However, there was so much contact

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between the anchor and base concrete that there was plenty of space for crevice corrosion to occur. Concrete which had been built up on the inside of the flukes for support purposes, has again created corrosion cells, Figs. 10b and 10c.

It can be concluded that the anchor has coroded by being exposed outdoors. The paint system used to protect the surface has not been effective. The anchor is in a generally sound condition, with only minor surface corrosion, however, there is heavy and continuing corrosion taking place at the points of support, and attachment to the wooden stock.

2.3 Summary of Condition

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The cannon is in good condition and appears to be stable. Inspection of the interior of the barrel and at the points of contact with the carriage are required to determine whether there has been any crevice or differential aeration corrosion. The carriage is in a bad state of deterioration and needs replacing.

The anchor is in a reasonable condition, but unprotected, it will continue to slowly deteriorate. At the points of contact of the flukes with the concrete base, and the shank with the wooden stock, there is much heavier corrosion. The wooden stock has deteriorated badly and needs replacement.

In both cases the main corrosion problems are caused by the mounting techniques of the cannon on the carriage, and the anchor with its stock on the concrete base. Outdoor exposure has allowed rain water, made more aggressive by air pollutants such as sulphur dioxide and air-borne salt from the sea, to rest in the crevices and junctions mentioned above. These have set up localised corrosion cells. The possibility of these cells being created will always be present with relics exhibited outdoors.

From observations of anchors recovered from ship wrecks. left untreated and displayed outdoors, there are cases known where the metal has corroded only very slightly due to the washing effect of rain removing salt water contamination. However, this can only be relied upon in regions that have in general a low relative humidity, and where the rainfall is heavy but concentrated in a few falls in a wet season of two to three months each year (3). This is not the situation in Sydney and in addition there are the ever present problems of air pollutions and air-borne salt from the harbour.

3. Treatment Proposals

The brief concerning the treatment proposals gives three options:

- a) treatment for museum display.
- b) treatment for long-term display in Macquarie Place, and
- c) immediate treatment in situe.

It is not possible to carry out any treatment in situe that will ensure that the cannon and anchor will not deteriorate further. In addition the carriage and the wooden stock need replacement as both are badly deteriorated, and the latter in particular is a major cause of corrosion to the anchor. The proposals will therefore be directed towards treatments for (a) and (b) above.

3.1 Museum Display

The cannon is in good condition (again subject to inspection inside the barrel and at the points of support). There are a few places where the top grey/black micaceous iron oxide coat is missing revealing the red oxide primer. As discussed in Section 2.1.1. the coating system is very similar to that used on the Sydney Harbour Bridge. <u>Mr</u>. B. White, Works Engineer, Department of Main Roads, (Tel. (02) 279-7986), should be contacted for specifications and a source of the paints. It should therefore be possible to match the top coat, and the spots could be infilled. Then, if it is possible to paint over the micaceous layer. a thin top coat can be applied, however, this decision should be left until the spots have been treated as this extra top coat may not be necessary. The tompion should be removed from the muzzle, and on the assumption that there is no serious corrosion, the inside cleaned out and coated. For indoor display the tompion should not be replaced as it could cause an adverse micro-environment. This of course requires the cannon to be displayed in an air-conditioned building. The cannon, after treatment should be remounted on a new carriage.

The anchor is more of a problem. The stock will have to be removed with care, as will the lifting of the anchor from the concrete base. It is very difficult to retain the corroded surface layers of wrought iron, especially if they contain moisture and possibly salt. The treatments required to remove moisture and salt which are essential if the anchor is to be stabilised will therefore also remove the thick corrosion products around the flukes and at the end of the shank where it passes through the stock. It is therefore better to remove these mechanically before any stabilisation treatment commences. Only at this stage will it be possible to determine whether there is any salt contamination of the anchor. Even if none is found, as the anchor will have a lot of fine crevices at the slag inclusions it can be assumed that during its long unprotected exposure to the elements, close to the harbour, that salt is present If this is not removed then any future coating system will eventually fail due to corrosion from underneath. This may have been the reason why the last coating system has virtually all disappeared.

The only way to ensure the future stability of the anchor is to remove all salt contamination and water. Salt. or chloride, is best removed by an electrolysis treatment, making it the cathode in an electrolytic bath. This is the common treatment used for cannon and anchors from ship wrecks, and has proven to be successful over the years. The Endeavour anchor was treated this way, as was the much larger anchor from the Investigator (Flinders). For details see the section by Neil North in the recent publication on the conservation of marine archaeological objects (4). The only requirements to carry out electrolysis are a tank large enough to contain the anchor submerged in a 2% w/v solution of sodium hydroxide, along with a The treatment can take up to a year, d.c. power supply. however, as the salt contamination is likely to be very low the process should be complete in a few months. During the process, any remains of paint will be removed by the combined action of the sodium hydroxide plus evolution of hydrogen gas from the anchor as cathode. The electrolyte has to be regularly monitored for chloride ion content, and when a chloride content of less than 50ppm of Cl is This is followed reached, the treatment can be halted. by washing in inhibited distilled or deionised water to remove all traces of chloride, followed by drying Again see reference 4 for details (dewatering) and coating. The only difference in treatment of the anchor for indoor or outdoor display is the final coating system. That for indoor can be a clear coating system, whereas that for outdoor must be more durable and resistant to UV degradation (Reference 4, page 231).

Finally, a new full size wooden stock is required. If stored indoors there should be no corrosion problems at the junction of the stock and shank of the anchor if both surfaces have protective coatings. In addition the anchor can rest on the ground or on any display form without fear of crevice corrosion.

3.2 Outdoor Display

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As the current micaceous iron oxide paint system on the cannon seems to have survived extremely well then the same system should be used (see Section 3.1). The major difference is that the tompion in the barrel must be replaced to keep out water and rubbish. In order to protect the inside of the barrel, a vapour phase inhibitor such as 'Cortrol VCI tablets' can be inserted before fitting the tompion.

The cannon can then be displayed on a new carriage, constructed to a more appropriate design (contact Major Elvin for specialist advice). As the main possible source of corrosion from outdoor exposure is at the contact points of the cannon and carriage, I would advise some minor modifications to hopefully prevent the possibility of crevice corrosion, especially at the trunnions and the base of the breech:

- a) The capsquares which hinge over the trunnions should be oversize to allow plenty of space between the capsquares and the top of the trunnions.
- b) the cut out in the cheeks of the carriage to take the trunnions should have a drain hole to avoid build up of water.
- c) the breech of the cannon which normally rests on the wedge (bolted down for security and safety) can rest on a solid rubber pad. This will prevent the paint layer of the wedge getting damaged which would allow ingress of moisture, which would in turn, slowly rot the wood and allow moisture retention and eventually crevice corrosion to set up.

The current security measures to hold the carriage in place should be repeated.

The anchor, as mentioned earlier will require a protective coating system suitable for outdoor display. It might also be advisable to apply an anti-graffiti top coat which will enable any applied graffiti to be easily removed. Details of a suitable coating can be obtained from AMDEL (Flemington Street, Frewville, S.A. 5063. (Tel. (08) 791-662). On the assumption that another replica stock will be fitted. after coating both surfaces, a silicone rubber seal should be fitted or applied to allow for differential thermal expansion and contraction rates of the stock and anchor shank, and also to prevent ingress of moisture.

The most difficult task will be to secure the anchor at The system of embedding in concrete cannot the flukes. On the other hand it must be secure as a be repeated. person swinging on an arm (in easy access to the public) could dislodge the anchor with disasterous consequences. As there are no records, it is not possible without removing the anchor to determine whether any pinning device was used to hold the anchor in place. If pins were used then it may be possible to extend them to raise the anchor clear of the base. If not, a clamping device is required. Although clamps would be visible to the public, it is a The clamps, one on either fluke, necessary compromise. can be of painted (same coating system) steel which has thin longitudinal strips of solid rubber glued to the These strips avoid the possibility of a differential surface. metal galvanic corrosion cell being formed if the paint systems wear out allowing metal to metal contact, and in addition, the space in between the strips will allow water to escape. The clamps should therefore be fixed to provide a drainage slope.

Unfortunately there is no system available at present which can guarantee that there will be no crevice corrosion cells created at the junction of the anchor and the wooden stock, and at the clamps, if the anchor is returned to outdoor exhibition.

The gun carriage and anchor stock need replacing. It would be impossible to patch up the existing items without more problems arising in the near future. Advice should be sought, on the correct designs (contact Major Alvin), and coating systems should be applied for prolonged outdoor exposure.

One of the most important aspects of any monument or relic displayed outdoors is that there is a regular inspection and maintenance schedule drawn up, and strictly followed. We do not know the rate of deterioration of the cannon and especially the anchor, nor are there details of the paint systems used as no records are available. Once treated and on display, inspection for the first year on a threemonthly basis, and then every six months is necessary. This will determine whether there are any problems with the coating systems, the support system or the carriage and stock. If so, action can be taken before it becomes serious. Good maintenance is the basis of preventive conservation and is essential if the relics are to be preserved. This work would have to be carried out by persons experienced in this field.

3.3 Facilities and Consultants

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I believe that the cannon and anchor, for either indoor or outdoor display could be treated by staff of the The treatment required Australian National Maritime Museum. for the cannon is very minimal, assuming that the current paint system is available. The anchor treatment is more complex, requiring space for a tank, lifting gear, d.c. power supply, chemicals, etc. However, anchors have been successfully treated by a number of underwater diving clubs The tank can be constructed from at very little cost. welded steel sheets. The costs are then a d.c. power supply and the chemicals. Chloride contents can be determined by volumetric analysis very cheaply, or a chloridometer can be bought for \$4,500. Analyses are only required every few days so once the anchor is installed in the treatment tank very little work is required.

I do not have information as to who can construct the carriage or anchor stock, however. I am sure there must be many organisations in Sydney capable of doing the timber and metal work. The carriages for the Endeavour cannon were made by the then Department of Transport workshop staff without any difficulty.

There would be little difference in time, costs and resources required to treat the cannon and anchor and fabricate a new carriage and stock, between indoor and outdoor display. The latter would require a little more due to having to fit the stock to the existing base, and also the provision of support clamps for the flukes.

To treat the cannon, 10 man hours, plus paint.

To treat the anchor 120 man hours plus equipment, chemicals and paint.

Total cost: (assuming no expensive equipment purchased)

\$6,800

I do not have estimates for the costs of building a replacement gun carriage, stock and display clamps.

If the cannon and anchor are repositioned in Macquarie Place. then as mentioned earlier, an inspection and maintenance schedule needs to be developed. A half-hour inspection, once every three months for the first year, and then every six months would determine if there were any problems. Then remedial treatment could be carried out. It is impossible to predict how well the newly treated and protected relics will survive; 10 years before any major work would be hoped for. If on the other hand the protective systems begin to break down, then more effective systems must be used, or the decision made to exhibit the relics In an air-conditioned environment the relics, after indoors. stabilisation and coating, should survive indefinitely. The Endeavour cannon on display at the N.L.A. in Canberra, after 200 years under the sea and following conservation, has remained unchanged for the past seventeen years. The same applies to the Investigator anchor, unchanged on display in South Australia after approximately thirteen years.

5. Comments on the Museum Proposal

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If the cannon and anchor are displayed in the museum, then the proposal is to replace the relics with bronze replicas. Personally I am not in favour of replicas as I believe that they lose a lot of their meaning. In addition, although contrary to the preservation needs of the Sirius relics, the general public get a great deal from being able to touch them. Touch is one of our most important senses and some of the major museums around the world are providing access to objects on exhibition for this purpose. Of course they recognise that there will in time be some loss/ Irrespective of this corrosion/damage or wear to the object. personal view, if replicas are required, then a copy in metal such as bronze would be appropriate. It would have to be patinated to give a black/grey surface appearance, and an appropriate surface coating for outdoor exposure applied (see The replicas would need identification as such Section 3.1). but could also provide information as to where the real cannon and anchor are on exhibition. These replicas would require regular inspection and maintenance to ensure that they do not deteriorate (see Section 3.2)

If the Sirius relics are displayed indoors, in an air-conditioned room, then few precautions are necessary. An annual inspection should be carried out to check there were no signs of deterioration.

For outdoor display a regular inspection and maintenance schedule must be initiated. It might be possible to train staff of say the Sydney City Council what to look for as regards potential deterioration problems which might be revealed by the inspection. It would be preferable, however, if an institution such as the Australian National Maritime Museum took on this responsibility.

If on the other hand no action is taken to treat the cannon and anchor, then the following can be predicted:

- a) The cannon will probably remain unchanged for some time. However, the current paint system is beginning to deteriorate exposing red oxide primer. It is now not difficult to pick off flakes of paint and children love doing this. In addition corrosion at the trunnions and inside the barrel may be occurring, which although slow, in the long term is irreversible. The gun carriage may collapse one day in the not too distant future as it is so badly deteriorated, with the obvious consequences.
- b) The anchor if untreated will continue to corrode. This will be slow and relatively uniform over most of the surface, but at the junctions of the shank and stock, and the flukes and concrete base. corrosion will be much more rapid, exaserbating the necking currently taking place. The stock is also quite rotten, and although the method of securing it to the base is unknown, there is the possibility of mechanical failure.

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- 2. Pearson, C. (1972) <u>Restoration of Cannon and other Relics from</u> <u>HMB Endeavour</u>. Department of Supply. Defence Standards Laboratories, Maribyrnong, pp.49-52.
- 3. North, N.A. (1987) Conservation of Metals, in Pearson, C. (Ed.) <u>Conservation of Marine Archaeological Objects</u>, Butterworths. London. pp.221.

4. Ibid, pp.219-231.

APPENDIX 1

BRIEF TO CONSULTANT

(*) (*) (*)

CONSERVATION ANALYSIS OF THE SIRIUS CANNON & ANCHOR

The Australian National Maritime Museum proposes to conserve and display a cannon and anchor from the First These objects are presently Fleet vessel HMS SIRIUS. located in Macquarie Place, Sydney, where they form part of a monument erected in 1907.

As relics from the flagship of the First Fleet, the objects are highly significant in the context of Australian maritime history. They have significance also in the urban context, having been in Macquarie Place since 1907.

Today the anchor, in particular, is in need of conservation treatment to arrest corrosion and provide protection against further deterioration. The Museum requires advice on options for the conservation of the objects in-situ in Macquarie Place and in the Museum environment. While the Museum proposes the latter, it is agreed that there should be a thorough investigation of the feasibility of conservation in-situ and the attendant implications of physical protection, management and recurrent cost. This information is required before any decision is taken to move the objects into the museum environment.

If there is a strong argument in support of the proposal to conserve the objects and display them in the Museum, then the Museum would propose to replace them with cast bronze replicas. However, if the argument favours conservation in-situ, then the management a nd conservation of the objects would be the responsibility of bodies other than the Museum.

INFORMATION TO BE SUPPLIED BY CONSULTANT

- ANALYSIS OF CANNON AND ANCHOR 1.
- report on condition a)
- identification of corrosion factors b)
- assessment of level of stability C)

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_	TRADE DROBOSALS			
2.	TREATMENT PROPOSALS			
a) b)	treatment for Museum display treatment for long-term display in Macquarie Place.			
c)	immediate treatment in situ.			
d)	comments on methods of mounting (a) of (b) identification of facilities and consultants for			
-1	a), b), c)			
3.	ESTIMATES OF TIME, COSTS AND RESOURCES			
a)	estimated cost in man hours of 2a), 2b), 2c)			
b)	estimate of the cost and frequency of concertation treatments in the case of 2b).			
4.	COMMENTS ON MUSEUM PROPOSAL			
a)	suitability of bronze replicas.			
b)	precautions relevant to 2a), 2b), 2c), 2a).			
C)	COUPERInces of the Rockett			
5	REPORT			
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a)	photographs where relevant.			
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INFORMATION TO BE SUPPLIED BY MUSEUM				
1.	Photographs of cannon and anchor.			
2. 3.	report by Vaughan Evans on Cannon.			
4.	comments by Mr Jon Carpenter, W.A.M.M. Conservator.			
5.	copy of proposal from bronze rounder			
TEF	mo or contract			
1.	Contract conditions are normal commonwealant consultancy agreement.			
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2.				
-	4 days (8 hours) at \$60 per nour. \$ 1920			
-	analysis of salt samples etc. \$ 200			
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