Honouring the past
by securing the future

Heritage Landscape Management Plan

Including a Heritage Landscape Masterplan and Inscriptions Conservation Management Plan

for the conservation and adaptive re-use of
the North Head Quarantine Station

Final Draft - May 2006

Prepared by

Thompson Berrill Landscape Design Pty Ltd

In conjunction with

Paul Davies Pty Ltd & Arborcraft

For

QUARANTINE STATION

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DECLARATION AND APPROVAL

This Heritage Landscape Management Plan has been prepared to meet the requirements of Conditions 91 and 92 of the Conditions of Planning Approval for the North Head Quarantine Station.

In preparing and granting approval for this Heritage Landscape Management Plan all efforts have been made to comply with the Conditions of Planning Approval and relevant legislation. However, in the event on an inconsistency with this plan and any requirements of the Conditions of Planning Approval or relevant statues; the Conditions of Planning Approval or the relevant statutes will prevail. Furthermore, the granting approval for this plan does not relieve the co-proponents of the obligation to obtain all other approvals from relevant authorities required under any other legislation.

The plan was prepared by:

Glenn Berrill *(Ba. L. Arch Hons)*
Director

Joanna Thompson *(Ba. L. Arch Hons)*
Director

Thompson Berrill Landscape Design Pty Ltd

This plan was presented to the Quarantine Station Community Committee at its meeting on 17th August 2005.

This plan was approved by:

Simon McArthur, General Manager Mawland Hotel Management and Q-Station Pty Ltd in May 2006; and

Tony Fleming, Deputy Director-General, Parks and Wildlife Division on behalf of the Department of Environment and Conservation on 15/9/06.

Reece McDougall, Executive Director, Heritage Office, Department of Planning (as delegate of the Heritage Council of NSW) on 15/9/06.

A copy of the Approvals can be found in Appendix E.

RELEVANT APPROVAL CONDITIONS

The following table contains the relevant Approval Conditions for the Heritage Landscape Management Plan and the location in the document where these conditions are met.

Relevant approval condition	Location in document where addressed
90) Aviation Phase	See Section 1.4.1, 2.2.3 and 2.3 See also Interpretation Plan Table 4.3
91) Qualifications and experience of authors and review of plan	The qualifications and experience of Thompson Berrill Landscape Design Pty Ltd were delivered to the Heritage Office and DEC in 2003 to meet Approval Condition 63. Arborcraft, who are qualified Arborists, was included in the project team approved above. Team members are listed in Appendix B. The plan has been reviewed by the NSW Heritage Office and DEC, as identified on the Declaration sheet inside the cover
92a) Objectives for the management of the cultural landscape	Section 1.4 lists overall landscape objectives as well as specific objectives on particular aspects of the landscape. These objectives are driven by a vision as defined in Section 1.3
92b) Assessment of existing conditions	Section 3.0 provides an assessment of the existing condition of the landscape Section 3.5.1 and Appendix A identifies the condition of cultural plantings Section 2.2.4 and 2.2.5 identifies the condition of grassed areas Section 3.5.2 identifies the condition of walls, fences, stormwater drains, paths and edgings Section 3.1.3 identifies areas of erosion and contamination
92c) Prioritised schedule of conservation works	Section 6 provides a prioritised schedule of conservation and / or remediation works These works have been incorporated into an Appendix within the Conservation Works Program
92d) Proposed changes to the existing landscape	Sections 4 and 5 describe the overall changes to the landscape Section 6.0 presents a full list of all the proposed changes to the landscape. Section 2.0 provides the policy justification for overall changes needed to return the landscape to a similar form as it was in the Aviation Phase, which is backed up by DACMP policies and approval condition 90 The Interpretation Plan provides a justification for many of the landscape initiatives to indirectly interpret cultural significance The Visitor Management Plan provides a justification for the car parks, barriers, fences and pathways to manage visitor access and minimise impacts
92e) Proposed management protocols, practices and maintenance works	Section 4.3.1, 4.3.2, 4.3.3, 5.1.3.5, 5.2, 5.2.3.3, 5.2.3.4, 5.3.3.3, 5.3.3.5, 5.5, 5.5.3.2, 5.5.3.6 provide actions and guidelines for stabilisation of eroded areas, and the same actions are included in the priority implementation table in Section 6.0. Section 4.3.1 provides actions on drainage Section 4.3.2 addresses irrigation Section 4.2.1 addresses the use of fertilisers in the site Treatment of lawn edges and bushland/lawn interfaces Section 4.2.1, 5.2.3.1 and 5.2.3.2 for the First/Second Class Precinct, Section 7.0 lists the monitoring of cultural plantings across the site and coral trees within the Wharf Precinct as worthy indicators for an Integrated Monitoring and Adaptive Management System / Environmental Audit Section 4.2 addresses treatment of trees Section 4.2.1 provides guidelines for cultural plantings and the species that are and are not acceptable, as well as a replanting strategy Section 4.2.1 provides actions for the introduction of new plants or organic materials

Relevant approval condition	Location in document where addressed
	Materials for landscaping works are introduced in Section 4.2 and 4.3, and further detailed in Section 5. Construction techniques to be used for major landscaping works will be provided as part of detailed plans for the carparks, funicular stairway, outdoor eating area and A2 conference breakout space
92f) Bush regeneration program	Section 4.2.3 provides a framework for bushland management that includes mapped revegetation zones, supported by management guidelines and specific actions for these zones (within Section 4.2.2, 4.2.3, 5.5.1, 5.5.3.5 and the actions are repeated in the implementation table in 6.3, 6.4 and 6.5) Specific supporting regeneration programs will be prepared consistent with DEC information from the Information Management System.
92g) Identification of areas to create additional bandicoot habitat	Section 4.2.4 and Drawing No. QS-10b 5.5.2 identifies areas to enhance bandicoot habitat, supplemented by recommendations in 5.5.3.2, 5.5.3.5 and 5.5.3.10
92h) Monitoring requirements	Section 7.0 provides a set of recommended indicators for the Integrated Monitoring and Adaptive Management System
92i) Specific issues	Section 5.3.2.3 proposes that at this point in time, there are no options for reinstatement of the covered walkway between buildings P5 and P6, due to the need for access by maintenance and emergency vehicles. There are therefore no impacts to consider Section 5.3.3.5 proposes re-instatement of former paths in Third Class Asiatics Precinct. Section 5.5.39 proposes reinstatement of a former track between A1 and cottages along the power easement. Sections 5.5.3.2 and 5.5.3.7 propose to reinstate the funicular track from the Administration Precinct to Third Class Precinct. Section 5.5.3.6 presents an option for an outdoor breakout space outside building A2 Section 5.5.3.12 presents options for accessing and interpreting the Second Cemetery
93) All landscape works, excluding minor maintenance works are to be undertaken in accordance with the adopted HLMP with the following exceptions: a) car park construction b) the establishment of stabilised path or walkway in the Second Cemetery.	Section 6 contains the implementation table. Sections 4 and 5 contain all the description and rationale for implementation priorities. Car park construction - the design is described Section 5. No other specific reference required. Second Cemetery is described in Section 5.5.3.12.
94) The co-proponents shall undertake a review of the HLMP every five years after the commencement date for the duration of the activity.	Section 6 contains the implementation schedule of works over 5 years. Section 7 monitoring describes review of the plan.

Note: Approval conditions for the Inscriptions Plan are located in Appendix C.

EXECUTIVE SUMMARY

ROLE OF THE HERITAGE LANDSCAPE MANAGEMENT PLAN

This plan guides the future design and management of the North Head Quarantine Station landscape consistent with the Preferred Activity Statement (PAS) and in accordance with Conditions 90 to 94 of Clause 243 determination report - North Head Quarantine Station proposal.

The Heritage Landscape Management Plan (HLMP) incorporates the Heritage Landscape Masterplan which is referred to in the Approval Conditions 90 to 94 and contains the Inscriptions Management Plan in Appendix C, prepared by Simon McArthur of Mawland Hotel Management Pty Ltd in accordance with Approval Conditions 95 to 98.

The adaptive management approach to the site will ensure there is regular monitoring of the recommendations in the HLMP with a formal comprehensive review proposed after five years of operation. The background information and research to describe the Aviation Phase landscape will continue to guide the future management of the site.

RELATIONSHIP OF THIS PLAN TO OTHER KEY AGENCY PLANS

The unique location of the Quarantine Station in the broader Sydney Harbour National Park landscape influences its future design and management. Department of Environment and Conservation (DEC) are responsible for the management of Sydney Harbour National Park. DEC have a range of existing plans that have informed the HLMP and guide its recommendations and are currently preparing additional management plans that will inform the future management of the broader bushland areas of the Quarantine Station. These include the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) and the Bushland Management Programs for the larger parcels of bush that extend beyond the lease boundary into the National Park.

SCOPE

As identified in Approval Condition 90, the HLMP is to achieve the following:

The cultural landscape will be conserved, managed and interpreted primarily to reflect its 1950-1983 form (the Aviation Phase). The interpretation of earlier landscape conditions is appropriate providing there is demonstrated compliance with the policies in the QSCMP (Quarantine Station Conservation Management Plan, 2000), DACMP (Detailed Area Conservation Management Plan, 2001) and Interpretation Plan (Condition 100) or a clear justification for any proposed variances.

There are a range of other approval conditions which this HLMP addresses including: soil erosion; cultural plantings; management of bushland areas; existing site infrastructure; stomwater run-off; identification and treatment of trees through the site; new small-scale shelter areas for Long-nosed Bandicoots; and specific recommendations for areas within the site including Second Cemetery, Third Class/Asiatics, Entry area at Building A2 and First Class Precinct. Refer to the Approval Conditions for detailed description of the Conditions.

Whilst the plan has substantiated the rationale for re-instating and interpreting the Aviation Phase landscape, there are a range of potential guidelines and actions that will follow in a future review of the HLMP. The fully integrated rationale and description of the Aviation Phase landscape has been documented in this plan, and when the 5 year review is undertaken, additional actions will be considered to further conserve and interpret the Aviation Phase where required.

KEY ISSUES INFLUENCING THE OUTCOMES

The major issue that arose during the development of this plan, which has been articulated clearly in this HLMP, is:

- The inherent competing values between re-establishing the cultural landscape present during the Aviation Phase and retaining the environmental values associated with the bushland re-growth now present on the site.

Other key issues addressed in the HLMP include:

- Define what constitutes the Aviation Phase landscape, particularly the broader landscape context in terms of mown areas and historic view corridors. This was not described in detail in either the DACMP or the QSCMP.
- Design new landscape infrastructure to interpret the Aviation Phase landscape, clearly differentiating it from original infrastructure and taking account of contemporary environmental values and visual sensitivities of the site.
- Integrate interpretation of earlier phases of quarantine, where they are required by the Interpretation Plan or other documents including the PAS.
- Design the landscape to assist visitor management as described in the approved PAS and Visitor Management Plan in a manner that minimises impact on the cultural landscape of the Aviation Phase, and minimises the need for new landscape infrastructure in the site.
- Design new infrastructure to assist with interpretation of the Quarantine Station to meet current building standards, durability, all-ability access and safety, whilst minimising the impact of new infrastructure on the cultural landscape and environmental values of the site.
- Provide compensatory habitat for the endangered vegetation community Eastern Suburbs Banksia Scrub (ESBS) and Long-nosed Bandicoots without significantly reducing the Aviation Phase cultural landscape.
- Provide habitat protection for the Little Penguins.
- Design the site to accommodate the projected number of visitors including vehicle and pedestrian circulation.

KEY OUTCOMES

There are two types of key outcomes recommended in the Heritage Landscape Management Plan and Masterplan. These are:

a) Outcomes which have already been approved in other plans for the Quarantine Station Adaptive Re-use Proposal, including the PAS and EIS, and have been assessed and included in the Joint Determination Report. These outcomes are further articulated in this HLMP and integrated into the overall Landscape Masterplan for the site.

b) Outcomes which have not previously been proposed in other plans as part of the Quarantine Station Adaptive Re-use Proposal, but are considered to be consistent with the approved PAS, the DACMP and the Joint Determination Report. These outcomes may require further environmental and heritage assessment prior to confirmation of their implementation.

a) Summary of outcomes already approved in other plans

General

- Description and refinement of what constitutes the Aviation Phase cultural landscape.

Infrastructure

- Funicular stairs between the Wharf and First Class Precincts, designed to interpret the former funicular route with design reference to the natural and cultural landscape, clearly differentiated as new infrastructure, and designed to minimise visual impact on view corridors into the Quarantine Station.
- Design of an outdoor eating area for the restaurant building A6 which incorporates habitat protection for the Little Penguins.

- Design of a conference break-out space and entry area to A2, which interprets the former extent of the Aviation Phase landscape in a contemporary manner and addresses an area of serious soil erosion.
- Assess and reinstate paths along former alignments in Third Class Asiatics Precinct as an interpretive tool.
- Design of a replacement section of new beach fence including alignment and fence opening location.
- Design of an inscriptions barrier that complements the cultural and natural landscape character of the site.
- Assessment of the condition and recommendations for the existing landscape infrastructure in the site.
- Design of the symbolic precinct fencing to represent the former precinct boundaries with a contemporary design that assists with interpretation of the cultural landscape.

Vegetation

- Defined areas of on-site ESBS regeneration as compensatory habitat for the proposed clearing to establish car park 5 and to allow reconstruction of buildings P21, P22 and P23 as approved in the PAS.
- Defined on-site habitat enhancement for the Long-nosed Bandicoots including creation of refuge areas adjacent to foraging sites, and redirection of stormwater runoff into foraging areas, whilst minimising impacts on the cultural landscape of the Aviation Phase.
- Defined areas to be retained as mown grass in accordance with the unadorned landscape character of the Aviation Phase landscape.
- Assessment of all major trees in the site including species identification and recommendations for their future management, retention or replacement.
- Proposed palms along Main Axial Street to reinstate and interpret the cultural landscape.
- Reinstate views for the Night Experience Tour by trimming trees on First Class escarpment in front of Buildings A28 and A29.
- Continue discussions with DEC and NSW Heritage Office to determine an acceptable method of interpreting the Second Cemetery.

b) Summary of outcomes that have not previously been proposed in other plans

Infrastructure

- Further interpret the Funicular route with a proposed path established along its length, clearly marked to differentiate this from other pedestrian paths in the site.
- Reinstate former paths that were present during the Aviation Phase and can be adaptively reused to assist with the visitor management and interpretation of the Aviation Phase landscape. A list of these works is included Appendix B.

Vegetation

- To interpret the former extent of the Aviation Phase landscape and reinstate the historic view corridor between the Cottages and Administration, selectively remove bushland re-growth between the Cottages and Administration Precinct around footprints of former buildings A3 and A4. An integral part of this proposal is to retain areas of low indigenous groundlayer vegetation for Long-nosed Bandicoot habitat enhancement, and return the area around the former building footprints to mown grass.
- To interpret the former extent of the Aviation Phase landscape, clear bushland re-growth from the area represented by the former Boatmens cottages below Second Class Accommodation.
- To assist with visitor safety and management plant indigenous vegetation around the perimeter of some buildings to restrict access to contaminated soils, with species that complement the cultural landscape character of the Aviation Phase landscape.

ACKNOWLEDGEMENTS

The project team would like to thank the following officers from the two Approval Agencies, NSW Department of Environment and Conservation and NSW Heritage Office who have attended workshops, meetings and have contributed to the development of the HLMP including:

Department of Environment and Conservation (DEC)

- Gary Dunnett, Acting Regional Manager, Sydney Region
- Joanne D'Urso, Environment Officer, Quarantine Station
- Sherrie-Lee Evans, Acting Environmental Management Officer
- Jenny Faddy, Assets Manager, Sydney District
- Robert Humphries, Threatened Species Unit, DEC
- Melanie Tyas, Ranger
- Sian Waythe, Environment Manager, Quarantine Station
- Janine Williams, Planner

NSW Heritage Office

- Ed Beebe, Heritage Officer Architecture
- Alice Brandjes, Senior Heritage Officer
- Siobhan Lavelle, Heritage Officer Archaeology
- Stuart Read, Heritage Officer

The plan would not have been possible without extensive research into what constituted the cultural landscape during the final phase of the Quarantine Station, known as the Aviation Phase (1950-1983). A number of people were particularly helpful in providing insights into vegetation cover and species, maintenance and re-painting of inscriptions, and location and use of walking tracks. We would therefore like to acknowledge the following persons for participating the in the oral history research and in some cases, visiting the site to clarify the extent of vegetation cover at the Quarantine Station during the Aviation Phase:

- Peter Fletcher, a former conservation works coordinator for the NSW National Parks and Wildlife Service immediately following the Aviation Phase
- Kevan Keegan, a former conservation works coordinator for the NSW National Parks and Wildlife Service immediately following the Aviation Phase
- Julie Rigoni, a former resident of the Quarantine Station during Aviation Phase
- Ellen Roberts, a former staff person and resident of the Quarantine Station during the Aviation Phase
- John Roberts, a former resident of the Quarantine Station during the Aviation Phase
- Roy Walker, a former Quarantine staff person and resident of the Quarantine Station in the Aviation Phase
- Tony Woodford, whose father worked and fished at the Quarantine Station during the Aviation Phase
- Mary Gwen Worthington, a former resident and Quarantine Staff person

We would like to recognise several people who interpreted the many stories and historic photographs into clear positions of cultural landscape during the Aviation Phase, including:

- Jennifer Cornwall, a historian and oral history researcher
- Jean Foley, a historian and author of several publications on Quarantine
- Mark Jackson, a researcher employed by Mawland Hotel Management
- Kate Rankin, a tourism research student volunteering for Mawland Hotel Management

GLOSSARY

Word	Definition for use in this Heritage Landscape Management Plan
Adaptation	Modifying a place to suit the existing or a proposed use.
Adaptive reuse	The process of converting a building into a new use that does not reduce the significance of the place or damage significant evidence of previous use.
Associations	The mental connection of ideas and the special connections that exist between people and ideas.
Audience	The people who experience some form of interpretation.
Clearing	Removal of all existing vegetation for purposes defined in the plan which may include construction of buildings or hard surface areas or protection of archaeological features.
Conservation	All the processes of looking after a place so as to retain its cultural significance.
Cultural landscape	The landscape shaped and formed by the former phases of Quarantine and ongoing adaption.
Cultural significance	The aesthetic, historic, scientific, social or spiritual value for past, present or future generations.
Day visitors	Visitors to the Quarantine Station that are not staying overnight.
EIS	Environmental Impact Statement (for North Head Quarantine Station)
Emergency	Any event that arises internally or from external sources, which may adversely affect persons or the community generally, and which requires an immediate response
EMP	Environmental Management Plan (for North Head Quarantine Station)
Endemic	Native to a particular area and found no where else in the world.
Foraging areas for long-nosed Bandicoot	Areas in which Long-nosed Bandicoots search for food.
Formal and informal monitoring	Monitoring is a process of repetitive observation of one or more elements or indicators of the environment according to pre-arranged schedules in time or space. Formal monitoring is the basis of the TOMM, and features details on desired performance, recording method, reporting and decision making. Informal monitoring is less structured and based more on casual observation and response to manage situations that cannot be anticipated and prepared for – such as undesirable visitor behaviour.
Funicular railway	A cable railway up a steep grade with a cable passing round a driving wheel at the highest point, pulling railway cars/trolleys up the grade.
Groundlayer vegetation	Vegetation that is less than 0.59m high, and typically consists of ground covers (i.e. prostrate spreading vegetation), grasses and small shrubs.
Guests	Visitors to the Quarantine Station that are staying overnight.
Heritage Landscape Management Plan	Plan containing policies, actions and procedures for restoring the cultural landscape, installing additional visitor facilities and maintaining the landscape. Also contains an Inscriptions management plan and Landscape Masterplan.
Historic fabric	All the physical material of the place including components, fixtures, contents and objects.
Historic view corridor	Unobscured or partially obscured view that was important to the social, cultural, character and function of the Quarantine Station during phases of Quarantine. An example includes the historic view corridor between the Staff Cottages and Administration, and between Isolation Precinct and Administration.
Indigenous species	Species that occur naturally in a region.
Inscriptions	Written or carved words or designs on a surface. In contrast, engravings have a narrower context of being carved or deeply impressed words or designs on a surface.
Integrated monitoring and adaptive management system	A system for checking on the condition and health of environmental, cultural, social and economic indicators relating to the site and the Quarantine Station operation, based on the Tourism Optimisation Management Model.
Interpretation	A means of communicating ideas and feelings which helps people enrich their understanding and appreciation of the World, and their role within it. Interpretation is the revelation of a larger truth that lies behind any statement of fact. The interpreter goes beyond the apparent to the real, beyond a part to the whole, beyond the truth to a more important truth.

Word	Definition for use in this Heritage Landscape Management Plan
Interpretation plan	Plan containing themes, messages and techniques to interpret the cultural significance of the site
Lessee	The organisation that holds a lease for the Quarantine Station (Mawland Hotel Management)
Local community	The residents who live in the Manly Local Government Area.
Local provenance plants	Plants that originate from the site (e.g. at North Head) and are grown from seed originating from the site.
Maintenance	The continuous protective care of the fabric and setting of a place.
May	Indicates the existence of an option
Meanings	What a place signifies, indicates, evokes or expresses for people, including intangible aspects such as symbolic qualities and memories.
Midstorey vegetation	Ranging in height from 1.2m to 6 metres and typically consists of shrubs and small trees.
Minimal impact code	Set of guidelines designed to influence behaviour, equipment and services so that they cause little to no impact on their immediate physical and social environment.
Mobility Impaired Persons	Persons having physical, intellectual, visual or auditory disabilities or impairments, either temporary or permanent
Moveable heritage	Industrial equipment, furniture, artefacts and other objects associated with the operations of the Quarantine Station.
Natural landscape	The landscape primarily shaped and formed by natural processes.
NHQSCMP2000	North Head Quarantine Station Conservation Management Plan, 2000
NSW NPWS	The New South Wales National Parks and Wildlife Service
Overstorey Vegtetation	Trees with a mature height greater than 8 metres.
Persons with disabilities	Persons having physical, intellectual, visual or auditory disabilities or impairments, either temporary or permanent
Preservation	The process of maintaining the fabric of a place in its existing state and retarding deterioration.
Proposed lease area	Some 31 hectares of Sydney Harbour National Park generally referred to as the Quarantine Station (and generally referred to by Mawland as the Quarantine Station. The proposed lease area contains the Wharf, Hospital/Isolation, Third Class/Asiatic, First/Second Class and Administration Precincts. The proposed lease area also includes the second cemetery, but not related areas such as Quarantine Beach (below the high tide mark) the third cemetery, Store Beach or Old Mans Hat.
Publicly accessible spaces	Areas which are not being solely used by a guest or areas which do not contain valuable or dangerous items.
QSDACMP2001	Quarantine Station Detailed Area Conservation Management Plans, 2001
Q-Station	The proposed operation and overall experience. The site will always be called the Quarantine Station (part of Sydney Harbour National Park) but will be branded the Q-Station. The Q-Station brand will include accommodation and venues for conferences, education and functions. Other experiences will be branded individually.
Quarantine Station	The area and its buildings leased to Mawland by the NSW National Parks and Wildlife Service.
Reconstruction	Returning a place to a known earlier state distinguished from restoration by the introduction of new material into the fabric.
Refuge areas for Long-nosed Bandicoots	Areas where Long-nosed Bandicoots can shelter whilst foraging (searching for food). These may also provide nesting sites where they are located away from high levels of disturbance.
Restoration	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.
Selective vegetation removal	Removal of some and not all vegetation.
Shall	Indicates that a statement is mandatory

Word	Definition for use in this Heritage Landscape Management Plan
Should	Indicates a recommendation
Significance	The importance of heritage that provides its principal meaning and value.
Symbolic landscape elements	Elements designed to interpret rather than replace former elements of the landscape. Examples include: symbolic fences and the outline of the footprint of building A5.
Trimming	Cutting back plants to generally improve visibility and access along paths and roads.
Understorey vegetation	Ranging in height from 0.6 to 1.19 metres consisting of shrub species.

1.0 INTRODUCTION

1.1 BACKGROUND

1.1.1 Site Location and Regional Context

The North Head Quarantine Station is located on North Head, Manly approximately 16km from Sydney CBD. The study area includes all land within the proposed lease boundary with a total area of approximately 30 hectares. Refer to **Drawing Nos. QS-01** and **QS-02** for existing area. The site is located within the boundaries of the Sydney Harbour National Park and is currently owned by the State Government and managed by NSW Department of Environment and Conservation (formerly National Parks and Wildlife Service).

The site is located on North Head and is highly visible and prominent with spectacular views out to Port Jackson and other headlands in North and Middle Harbour including Dobroyd Head and Middle Head. Views into the site from the surrounding headlands and the water are important and a key consideration in the future management of the landscape. Being located in the Sydney Harbour National Park situates the site in a unique natural setting that contributes to its sense of isolation from the urban areas of Sydney. The broader environmental values of the National Park have been considered in the development of the adaptive re-use proposal for the site and in this Heritage Landscape Management Plan (HLMP).

1.1.2 Site Management

In January 2000 the then NSW NPWS and Mawland Hotel Management (Mawland) signed a Conditional Agreement to Lease for a proposal for the conservation and adaptive re-use of the North Head Quarantine Station. The NSW Minister for the Environment proposes to offer Mawland a 21 year lease for the adaptive re-use of the

North Head Quarantine Station. The 30 hectare lease area contains approximately 65 buildings, a wharf, services, sealed roads, bushland and grassed areas.

1.1.3 The need for the plan

This plan has been prepared to meet the following Approval Conditions:

- Preparation of a Heritage Landscape Masterplan
- Preparation of an Inscriptions Management Plan

These plans must be approved by the NSW Heritage Office and DEC. The Heritage Landscape Management Plan will be reviewed by the Quarantine Station Community Advisory Committee and Heritage Advisor for the NSW Heritage Office, before being approved by the NSW Heritage Office and DEC.

The day to day responsibility for implementing the Final Heritage Landscape Management Plan will be the Q-Station's Construction Manager and Site Management team, with support from a range of staff from Q-Station's Visitor Services and Guest Services operations and Department of Environment and Conservation (DEC) Quarantine Station Environmental Manager for the site.

The approved Plan will be reviewed and updated every five years, consistent with the Approval Conditions.

1.1.4 Project team

Thompson Berrill Landscape Design Pty Ltd (TBLD) is a firm of Landscape Architects with specialist skills in the preparation of Landscape Masterplans and Management Plans in environmentally sensitive and heritage sites. Paul Davies Pty Ltd is part of the project team to provide input to the heritage conservation values and interpretation of the heritage conservation policies for the site. Arborcraft is a firm of qualified Arborists who provided arboricultural assessment and advice for key feature trees at the Quarantine Station.

A profile of TBLD was submitted and approved by the NSW Heritage Office and DEC, to meet Approval Condition 63, before commencing this Plan.

The project team has worked closely with the Approval Agencies and Mawland in the development of this HLMP.

1.2 RELATIONSHIP TO OTHER PLANS

1.2.1 Consistency with the NHQS DACMP

The North Head Quarantine Station Detailed Area Conservation Management Plan (Davies et. al. 2001) acknowledges that the cultural landscape of the Quarantine Station is layered and complex and that returning the landscape to a set period in time is inappropriate. The DACMP placed some emphasis on the Aviation Phase as the way to present the Quarantine Station, but the cultural landscape reveals and contains material from every phase of occupation.

There are also a number of fundamental issues related to landscape that are discussed in the DACMP that require actions that will change the current landscape status of the Quarantine Station. There is also an acknowledgement that there will be new design elements and changes as well as new opportunities for interpretation.

The guiding principles that arise from the DACMP relate to:

- conservation of the significant aspects of the landscape;
- ensuring that future landscape actions or works, for whatever reason they are undertaken derive from conservation, interpretation and good management practices;
- the need for new works to form a layer across the site that is readable;
- preventing further damage to the landscape from inappropriate management practices;
- balancing cultural values of the buildings and setting with natural values;
- seeing the site as a complete cultural landscape that will guide decisions by seeing them in relation to the whole station rather than small parts of it;
- protecting the place from bushfire and other risks; and
- managing the various areas of the site to ensure they are not overused.

There is a strong emphasis in the DACMP on experiencing the landscape. There is not just one experience but many that relate to historical forms, natural values, views, recreation, etc. There is also a high recognition of the change that took place historically in the landscape from clearing the place to periods of regrowth. This perhaps has been the area of greatest potential conflict where arguments exist for extensive site clearing and for retention of regrowth areas.

This management plan works from the policies in the DACMP and seeks to integrate them with the proposed use of the site. There is a clear intent to use landscape works to interpret the site in a creative and positive way and to address problem areas that presently exist in the landscape.

1.2.2 Other agency plans

1.2.2.1 **Eastern Suburbs Banksia Scrub Endangered Ecological Community Recovery Plan** (DEC, 2004)

Eastern Suburbs Banksia Scrub (ESBS) is listed as endangered in Schedule 1 Part 3 of the NSW Threatened Species Conservation Act 1995 and as endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

The Recovery Plan describes the current understanding of ESBS and documents management actions undertaken to date along with a proposed recovery program to implement the next 5 years.

The Recovery Plan will guide future management and protection of ESBS on the Quarantine Station.

1.2.2.2 **Endangered Population of Little Penguins at Manly Recovery Plan** (NPWS, 2000)

The little Penguin population at Manly Point was listed as endangered in Part 2 of Schedule 1 of the NSW Threatened Species Conservation Act in 1997. The plan includes a range of management activities to protect and recover this colony. The Recovery Plan, and its successor, will guide future management and protection of the little Penguin colony at the Quarantine Station.

1.2.2.3 **Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks** (DEC, 2004)

This plan provides direction for fire management activities including bushfire prevention, suppression and mitigation in the Sydney Harbour and Botany Bay National Parks, which includes the Quarantine Station. Of particular relevance to this plan is the Bushfire Behaviour Potential mapping and the bushfire history of the site. Department of Environment and Conservation (DEC) will be undertaking hazard reduction works as part of this Fire Management Plan. Works such as vegetation clearing, selective removal and trimming for hazard reduction burns will take place.

1.2.2.4 **Flora of North Head** (GIS Environmental Consultants, 2003)

The survey was prepared for the Sydney Harbour Federation Trust in November 2003 and conducted field surveys, reviewed previous studies, described plant communities, their distribution with a focus on threatened species. The vegetation community mapping in this HLMP has used the Flora of North Head as its source, along with the vegetation community descriptions.

1.2.3 Site-wide Plans

1.2.3.1 The Interpretation Plan

The Interpretation Plan (Mawland 2005a) contains the themes, messages, and techniques to interpret the significance of the site.

In relation to the Heritage Landscape Management Plan, the Interpretation Plan:

- identifies landscape initiatives to indirectly interpret the site; and
- outlines the content and location of interpretive signage.

Within the Interpretation Plan, Mawland have stated that the site will always be acknowledged as 'the former Quarantine Station', but re-branded as the Q-Station. The change signifies the site's transition from a quarantine station to a heritage tourism experience that is contemporary (Q) and respectful of the past (Station).

1.2.3.2 Visitor Management Plan

The Visitor Management Plan (Mawland 2005b) provides policies and strategies for managing visitor access and behaviour. More specifically, the plan addresses transport to and within the site, equity and special access, whilst incorporating a Security Plan and an Emergency and Evacuation Plan.

In relation to the Heritage Landscape Management Plan, the Visitor Management Plan:

- provides policies and actions for car parks and traffic barriers;
- provides policies and actions on fencing;
- provides policies for, and access arrangements to, the inscriptions; and
- proposes emergency lighting and signage.

1.2.2.3 Environmental Management Plan

The Environmental Management Plan (Department of Environment and Conservation 2005a) details how potential impacts will be minimised and monitored, incorporating the integrated monitoring and adaptive management system.

In relation to the Heritage Landscape Management Plan, revised versions of the Environmental Management Plan may further document bushland regeneration programs and bushfire management policies.

1.2.3.4 Integrated Monitoring and Adaptive Management System

The Integrated Monitoring and Adaptive Management System (Mawland 2005c) provides a model for checking the condition and health of environmental, cultural, social and economic indicators relating to the site and the operation.

Of specific relevance to the Heritage Landscape Management Plan are indicators for monitoring the cultural landscape, erosion and drainage.

1.2.3.5 Infrastructure Control Plan

The Infrastructure Control Plan (Mawland in progress) details the assessment and management of the water, sewerage, stormwater, road, power and telecommunications systems across the site.

In relation to the Heritage Landscape Management Plan, the Infrastructure Control Plan provides an analysis of the standard of existing infrastructure and specific direction on the upgrading and maintenance of roads, power, water, sewer, stormwater and telephone systems.

1.2.3.6 Moveable Heritage Plan

The Moveable Heritage Plan (DEC, 2005b) provides collection management and sampling guidelines.

In relation to the Heritage Landscape Management Plan, the Moveable Heritage Plan provides policy direction on headstones, artefacts, industrial equipment and archival material, some of which is located in the outdoor environment.

1.3 VISION FOR THE QUARANTINE STATION

1.3.1 Overall Project Vision

Mawland's vision for the conservation and adaptive reuse of the Quarantine Station is to:

1. Create powerful interpretive experiences that connect the past to the present and engage visitors in discussion about the future.
2. Provide a haven for people to rejuvenate.
3. Achieve conservation through use.
4. Nurture a creative and innovative culture.
5. Share the Quarantine Station adaptive re-use experience with others.

1.3.2 Landscape Vision

To achieve the Overall Project vision, the Landscape Vision for the Quarantine Station is to:

Manage and interpret the competing values between the landscape authentically depicting the historic operational simplicity of the former Aviation Phase, contemporary environmental values and a renewed landscape that combined, rewards visitors with panoramic harbour views stimulating experiences and a calmness that relaxes and reinvigorates.

1.4 HERITAGE LANDSCAPE MANAGEMENT PLAN OBJECTIVES

The Heritage Landscape Management Plan Objectives aim to meet the Landscape Vision and Overall Project Vision.

1.4.1 Overall Objectives

- To establish a design and management framework for the heritage landscape of the Quarantine Station to primarily reflect the landscape character of the Aviation Phase 1950 - 1983 and provide for its adaptive re-use.
- To recognise and reflect the changing phases and evolution of the site during its use as the former Quarantine Station.
- To protect and enhance the environmental values of the site where consistent with the interpretation of the Aviation Phase and adaptive re-use.
- To protect the natural and cultural heritage values of the site through reducing risk of bushfires.

- To create an inspirational visitor experience engendering an appreciation of the contemporary natural landscape and marine environment within the heritage landscape context.
- To guide planting and vegetation management that reflects:
  - the Aviation Phase;
  - the adaptive re-use;
  - interpretation of changing uses;
  - and to achieve other outcomes including:
    - Habitat Protection
    - Control access reducing need for infrastructure;
    - Retain cultural landscape values.
- To guide creative integration of new landscape infrastructure where required for adaptive re-use.
- To assist visitors gain an experiential understanding and interpretation of the cultural and natural significance of the site.
- To retain and reinforce a sense of isolation from the city of Sydney.
- To meet the Conditions of Approval, the relevant policies in the Detailed Area Conservation Management Plan, relevant sections of the Environmental Impact Statement (EIS) and the Preferred Activity Statement (PAS).

1.4.2 Specific Objectives

1.4.2.1 Vehicles

- Minimise vehicle access into the site to protect the natural, heritage and interpretation values.
- Contain vehicles to designated routes and parking areas to minimise physical and visual impacts.
- Establish appropriate vehicle speeds through the use of speed control and road design.

1.4.2.2 Pedestrians

- Improve the path system to promote interpretation and understanding of the site.
- Design pedestrian routes to reflect former path alignments that support adaptive re-use.
- Promote pedestrian use to minimise the need for vehicle and people mover access and circulation.
- Create a safe and accessible site for pedestrians and, where possible, provide all-ability access.

1.4.2.3 Vegetation

- Retain and reinstate cultural plantings that assist interpretation of the Aviation and previous Phases*.
- Introduce new planting to manage erosion, drainage, control access and in some locations provide potential habitat for the Long-nosed Bandicoot*.
- Utilise indigenous and local provenance species in new planting where not reinstating cultural planting.
- Protect significant flora species on the site, particularly the Eastern Suburbs Banksia Scrub (ESBS) as an Endangered Ecological Community and adhere to the Recovery Plan as well as the policies contained in the DACMP.
- Protect the natural and cultural heritage values from bushfires consistent with Sydney Harbour National Park Fire Management Plan.

1.4.2.4 Historic view corridors

- Reinstate historic view corridors to reflect the Aviation Phase.

- Minimise the impact of new landscape infrastructure on existing view corridors into the site from prominent public viewing points and the water.

1.4.2.5 Hydrology

- Minimise additional input to existing stormwater drainage system.
- Retain the existing open stone drainage system as part of the cultural heritage landscape.
- Stabilise natural spring and drainage lines with indigenous vegetation where they are causing erosion.

1.4.2.6 Inscriptions

- Control access to inscriptions with least visual intrusion and damage to the landscape character.
- Provide focus areas for visitor viewing and interpretation of inscriptions.
- Minimise damage to inscriptions whilst protecting the remnant indigenous species present on the site prior to settlement.

1.4.2.7 New landscape infrastructure

- Forms, materials and technology to differentiate new infrastructure from historical landscape infrastructure.
- Design and material use to be empathetic with the natural values of the site.
- To meet current Australian Standards.
- Designs to be creative and functional to meet the adaptive re-use of the site.

1.4.2.8 Existing landscape infrastructure

- Retain and protect existing landscape infrastructure (prior to 1984) with regular maintenance and repairs to minimise further deterioration.

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* Avoiding the selection of weed species

2.0 HISTORICAL CONTEXT

2.1 SUMMARY OF THE STATEMENT OF THE SIGNIFICANCE

The following is a summary from the Statement of Significance contained in the North Head Quarantine Station Conservation Management Plan (NHQS CMP). Included are items relevant to the natural and cultural landscape significance:

'...Nations oldest and most intact facility of its type and can be ascribed National Significance.... Evidence of the hardships experienced by European and Asian internees during their detention in Quarantine, and the tragic deaths of some of them, is powerfully conveyed by the inscriptions on the gravestones, monuments and amongst the random inscriptions scattered throughout the site..... The rugged topography of the southern rock cliffs in the area and The Old Man's Hat, where the power of the sea is manifest, and where the healthy and sick internees sought relief from the confinement of the Quarantine Station, contrasts strongly with the sanctuary of Quarantine and Store Beaches.... The views to the Station from the City of Sydney and from the Station down the length of Port Jackson are significant for their iconic value..... The class system which permeated colonial society...in the cultural landscape which contrasts with the subtle evidence of fences and paths which were constructed to maintain absolute separation between classes and races, and between healthy and sick, the dying and the dead.... displays evidence of natural systems, historic built forms and historical association with the experience of quarantine, have been retained largely intact due to its relative isolation on North Head'. (Freeman et al, 2000).

2.2 BRIEF SUMMARY OF THE LANDSCAPE HISTORY

The NHQS CMP and the NHQS Detailed Area Conservation Management Plan (DACMP) have described the site's history and development in detail. These two source documents have been referred to in the preparation of this Heritage Landscape Management Plan and should be referred to for further detail.

2.2.1 Pre-Quarantine Station – Aboriginal Heritage

Before the site was used as a quarantine station it had a long use and interpretation by Aboriginal people, and this interpretation is current and equally relevant to any other landscape interpretation. The Aboriginal perspective of the cultural landscape is a personal one and has been described in the NHQS CMP. A summary of key points from Section 3.5 of the NHQS CMP follow.

Aboriginal perspective	Substantiation
The Quarantine Station area as part of North Head – there are no boundaries, it is an island site	*'While detailed knowledge about pre-Quarantine Station Aboriginal use of the actual site is scant, North Head must be seen as part of the rich history of Aboriginal occupation of Sydney Harbour and the wider Sydney district.* (Freeman et al. 2000: 35 - 37)

Aboriginal perspective	Substantiation
The landscape is unique and is the basis for unique stories	*' No other landscape with the same natural geography, flora and fauna and other resources exists elsewhere – North Head is unique. The oral histories relating to North Head exist only for that landscape'.* (Lee 2000:48)
The eastern cliff tops were valuable lookouts	*'A place with such views can be seen as an Aboriginal heritage place because it provides a vantage point for seeing daily activity in all parts of the Harbour and land, standing guard against attacks, or tracking food resources such as fish.'* (Lee 2002: 35)
The western side was a more attractive camp place	*'The physical evidence of past Aboriginal presence at North head is interpreted as showing its use mainly for the seafood found on the rocky shores in adjacent waters…over twenty locations have been located within the Quarantine Station Study area; but more are likely to be hidden by the often very dense vegetation...' 'The recorded sites include rock shelters with middens [food debris comprising largely shell] and middens on the open beach…'* (Freeman et al. 2000: 35 - 37)
Many of the 'first events' between cultures happened at North Head	*'North Head was recorded as a place where large numbers of people and canoes could be found most of the time. North Head was the location of meeting of women, the kidnapping of three saltwater men and the spearing of Governor Phillip.'* (Lee 2002: 23) *'Our story is about a whale who, in 1790, was the centrepiece around which an assassination attempt on the Governor's life at North Head was made. The people are Aboriginal and European. The event changed the course of Australian history'.* (Lee 2000:53)
The area is a reminder of the impact of disease upon the Aboriginal population. North Head is known as a burial island	*'The Small Pox raged among them with great fury and carried off great numbers of them every boat that went down the Harbour (Sydney Cove to the Heads) found them laying dead on the beaches and in caverns of rock forsaken by the rest as soon as the disease is discovered in them. They were generally found with the remains of a small fire on each side of them and some water left within their reach…Boats were often sent down the Harbour for no other purpose that to bury the dead'.* (Irvine 1988:113)
There are a number of sites in particularly good condition	*'A number of rock shelters have been identified as probable archaeological sites although no such material is visible on the surface. Burials occur in such shelters and have in the past been removed from a least two shelters at North Head. Other Aboriginal sites recorded at North head comprise mainly art sites, inscriptions [in shelters or on rock shelves in the open], and painted art or hand stencils in rock shelters.*' (Freeman et al. 2000: 35 - 37).

2.2.2 Quarantine Station landscape history

2.2.2.1 Introduction to the key phases

The North Head Quarantine Station is the first quarantine station in Australia. It was established to quarantine newly arrived vessels suspected of carrying infectious diseases at the port-of-entry to protect the Colony. At the time of establishment types of diseases prevalent in the world could include the plague, cholera, typhoid fever, yellow fever, smallpox and leprosy. A total of at least 580 vessels and more than 13,000 people were quarantined there. An estimated 572 people are buried in three burial grounds, some 50 of whom were brought from Sydney during outbreaks of smallpox and the plague.

2.2.2.2 Summary of the key phases

A summary of the key phases and changes that influences the site's landscape including the pattern of establishment, precinct definitions and access routes through the site is contained in the following table and three maps.

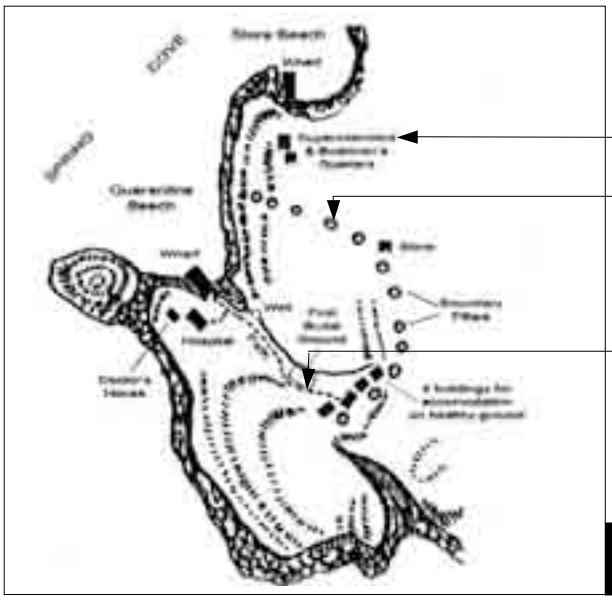
Date	Phase and related landscape activity
1837 - 1838	**Establishment of the Station – a landscape of essential services** ❑ Arrival by water and access established to Third Class and Hospital Precincts ❑ Construction starts with tents and a shed, then two wharves (Quarantine Beach and Store beach) ❑ First significant buildings are a hospital and doctors house on the top of the escarpment, and a modest amount of accommodation on 'healthy ground' behind existing Third Class accommodation ❑ Stone cairn shaped boundary pillars (lime washed for visibility) are constructed to delineate quarantine station boundary, backed up by patrols camped near Store Beach ❑ The First Cemetery established ❑ Weatherboard huts erected above the Store Beach wharf for the Station superintendent and Boatmen. ❑ Construction of a path up the gully past the First Cemetery to 'healthy ground' behind existing Third Class accommodation ❑ Separate access track to the Hospital
1839 - 1872	**Immigration Phase – consolidation of buildings and boundaries** ❑ More accommodation buildings erected as use increases ❑ Double line of fencing erected around the grounds ❑ Quarantine Beach shoreline used to store and fumigate luggage
1873 - 1880	**Immigration Phase – class definition** ❑ Four first class accommodation buildings erected ❑ Precinct boundary fencing around First Class
1881 - 1909	**Board of Health Phase – infrastructure and recreation facilities arrive** During this time epidemics included smallpox and the plague which began in 1900. ❑ Land access from Manly created but has limited use ❑ Jetty replaced with 50 foot boat ramp and shed ❑ First cemetery closed and second cemetery established ❑ Extensive fence construction, including inner boundary rubble stone wall, paling fencing around the hospital to separate infected patients, paling fence around the second cemetery and an additional paling fence to separate Second Class from First Class ❑ Widespread clearing of vegetation, grass planted around buildings ❑ Reservoir installed and mains water connected ❑ Tennis court and badminton court for First Class ❑ Expansion of Second class and Third class accommodation
1910 - 1950	**Federal Phase – expansion of infrastructure** During this time epidemics included 1913 smallpox outbreaks and 1918 global influenza. ❑ Land access from Manly expanded but use is limited ❑ Hospital upgraded and expanded, isolation wards built ❑ Wharf upgraded and *Jenner* Steam Launch acquired ❑ Funicular railway installed and made operational ❑ Drainage system introduced ❑ Second cemetery closed and third cemetery established ❑ Wire fence to separate visitors from staff and internees at road entrance ❑ Paling fencing around Isolation Precinct, rear of S5, S6, S9, S10, A24, A27

Date	Phase and related landscape activity
	❑ Vegetation clearing maintained, gardens introduced ❑ Palm plantings in Administration, First Class and Third Class
1950 - 1983	**Aviation Phase – removal of infrastructure and buildings** During this time aircraft passengers with influenza and dysentery occupied the station and modernisation program. ❑ Access shifts from water to land - roads sealed ❑ Use consolidated in Administration and First Class ❑ Modernisation program of buildings and landscape features begins, for example kerb construction on Main Axial Street ❑ Funicular ceases operation and much of rail network is removed ❑ Third cemetery closed ❑ Vegetation clearing and selective removal reduced, minimalist gardens maintained
1984 - 2005	**NSW National Parks & Wildlife DEC Phase – conservation and adaptive reuse** ❑ Buildings receive urgent conservation work ❑ Adaptive reuse of First, Second and Third Class as a conference and functions centre ❑ Adaptive reuse of Administration and Wharf Precinct as a works depot ❑ Some fences and parts of boundary rock wall collapse, inscriptions fade ❑ Vegetation removal to retain historic view corridors ceases ❑ Bushland clearing to protect buildings ❑ Some cultural plantings die and some cottage gardens become overgrown ❑ Reservoirs deactivated ❑ Two buildings destroyed by fire ❑ Prescribed burn to bushland to the east of the station including the Eastern Suburbs Banksia Scrub vegetation community

Refer to the following page for the three maps of the Quarantine Station growth.

2.2.2.2 Summary of the key phases continued

Maps illustrating the settlement patterns of the North Head Quarantine Station landscape



Note the early existence of these buildings in the site

Boundary pillars constructed prior to the wall for securing the site, one of which remains near Second Class Accommodation

Original path alignment similar to Wharf access road leading up to what was the original accommodation on the site

FIGURE 2.2~1 ILLUSTRATION OF THE QUARANTINE STATION 1838 SOURCE: JD FOLEY

Boatmens quarters remain the site along with the access route through what is now Second Class Accommodation

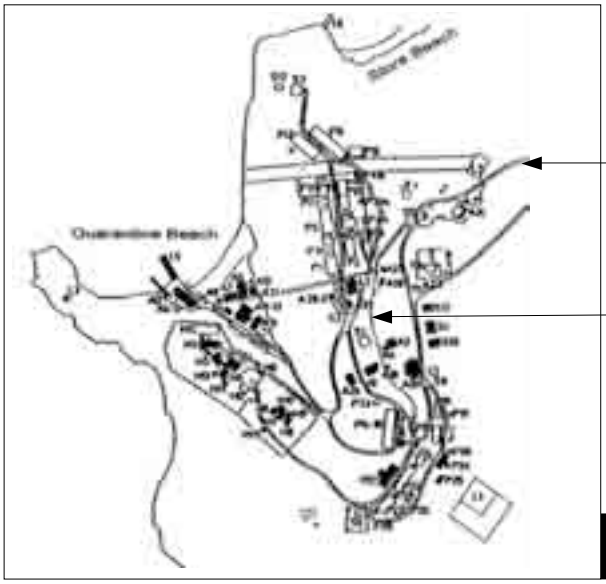
First Class established in this location with Main Axial Street alignment

Access paths are designed with the Wharf as the only point of access into the site

Substantial amount of accommodation provided near what is now Third Class Accommodation

Second Cemetery established

FIGURE 2.2~2 ILLUSTRATION OF THE QUARANTINE STATION 1884 SOURCE: JD FOLEY



Access to the site by vehicles with road alignment similar to that present today

Funicular installed

FIGURE 2.2~3 ILLUSTRATION OF THE QUARANTINE STATION 1918 SOURCE: JD FOLEY

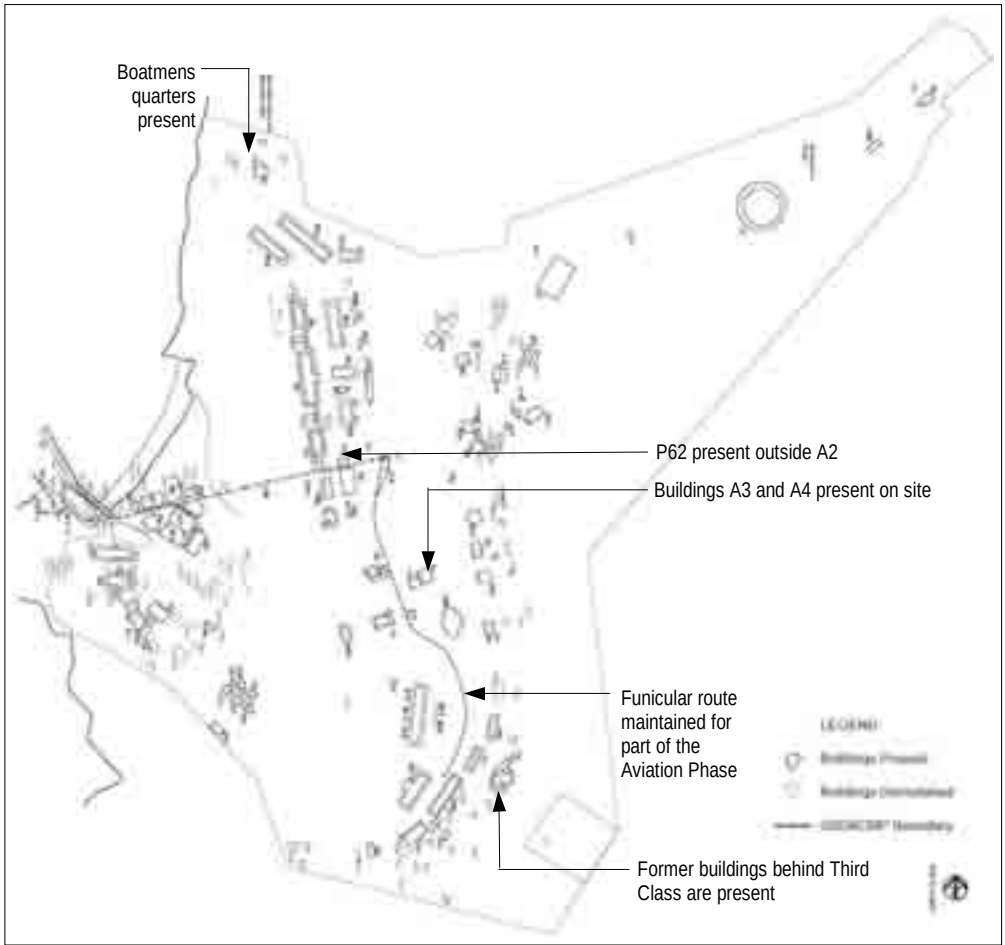


FIGURE 2.2~4 ILLUSTRATION OF THE QUARANTINE STATION AVIATION PHASE SOURCE: DCAMP P. DAVIES 2000

2.2.3 Aviation Phase landscape

As noted in Section 1.4, the intent of the HLMP is to primarily interpret the Aviation Phase (1950-1983) and earlier phases where this assists with interpretation and appreciation of the Quarantine Station's history. The DACMP is clear that the Aviation Phase was not the most important historical phase and that all periods of use were equally important. The DACMP, however, recognised that the Aviation Phase was the last phase of the sites use as a quarantine station and therefore is the most intact in terms of fabric presentation and appearance.

The declining need for quarantine

The Aviation Phase is a loose term to describe the Quarantine Station from the 1950's through to its closure in late 1983. The phase represented several fundamental international changes:

- a major decline in the spread of infectious disease, resulting from improvements in general health and lifestyle, the widespread use of inoculations and improved treatment of disease; and
- a shift from sea to air transportation, reducing travel to periods well inside disease incubation and moving the Sydney arrival point from Sydney Heads to Sydney Airport.

A fundamental change in use and site management

The initial response to the changing international trends was a period of consolidation of site use and refit of accommodation to cater to the needs of air travellers in contrast to sea travellers. There was a fundamental change in the way the Station was used, resulting in pragmatic removal of early fabric, and modernisation of facilities. Some of the these changes of particular relevance to the cultural landscape include:

- downscaling the role of the wharf area as a place of arrival and storage;

- change of access from water to land, consolidating road entry and sealing all roads including kerb and channel in Main Axial Street;
- decommissioning the funicular, removing the rail network from everywhere but the Wharf Precinct;
- upgrading power and lighting throughout the site, resulting in power poles and street lighting;
- removal of class based accommodation, resulting in removal of First Class class-based fencing;
- moving accommodation out of Third Class and Asiatics and consolidating within the First Class and Administration Precincts, resulting in removal of at least 13 buildings (11 auctioned and two demolished);
- clearing the bushland landscape cyclically but irregularly and a maintaining a cleared mown landscape around the buildings;
- maintaining staff gardens and repainting the inscriptions within the Wharf Precinct and Old Mans Hat area; and
- closing the Third Cemetery.

The upgrade and maintenance focussed on the areas that continued to be used (primarily the Administration, First and Second Class Precincts). Ironically, while other precincts deteriorated through neglect, the same neglect allowed them to escape retrofitting and therefore maintain much more of their remnant fabric of earlier phases. Though much of the change to the buildings took place from the late 1950's to the early 1960's, changes to the landscape were undertaken over many years and were not one consistent layer of work or neglect.

Decline of the cultural landscape

The 1970s and early 1980s represented the least frequent and lowest level of use. The cultural landscape can be typified during this time as:

- generally falling into neglect;
- obscuring cultural significance as key infrastructure (such as the funicular route, signal masts, fences, headstones and walking tracks) are removed, rust, collapse and / or are overtaken by vegetation;
- obscuring cultural significance as new features are constructed that changed its former character; and
- obscuring cultural significance as bushland overtakes former cleared areas, and views are lost into and out of the site and between buildings.

Compounding this deterioration at the time of closure was the loss of extensive written and photographic records pertaining to the creation, makeup and maintenance of the cultural landscape, making it more difficult to conserve, present and interpret.

2.2.4 NPWS/DEC Phase

While not assessed in the DACMP as a significant phase of occupation, the first 20 years of management of the Quarantine Station as a historic site has directly influenced the emphasis for landscape conservation works that need to be undertaken.

During the NPWS/DEC Phase the awareness and understanding of natural environmental values rose significantly, and vegetation communities, individual plant species and wildlife were listed as threatened and endangered. Funding was limited and the approach during this phase was to retain natural bushland areas and allow additional areas to regenerate where they were not perceived to compromise the buildings. The following major changes have been made to the landscape during this phase:

- weed eradication and selective removal of vegetation above Wharf Precinct inscriptions;
- new handrails, fences and signs were installed;
- the condition of inscriptions was re-assessed and conservation strategies proposed;
- the Stonemasons Yard was cleared to its Aviation Phase perimeter;

- the majority of the cleared areas of former building footprints in the Second and Third Class Precincts (where buildings once existed) became overgrown with vegetation;
- vegetation regenerated over more than half of the footprint of the second cemetery and, though parts of the regrowth were recently burnt, the footprint remained unclear;
- mown grass areas were gradually reduced in size as bushland areas regenerated;
- vegetation encroached over the formerly cleared road edges, over the remainder of the funicular route and walking tracks to the extent that they became largely obscured;
- wooden and wire fences collapsed;
- cottage gardens became overgrown or died;
- various mown grassed areas and embankments have become worn or eroded particularly due to the rabbit population (which has more recently been controlled);
- painted inscriptions were not repainted and thus faded; and
- prescribed burn of the eastern and southern perimeter bushland including the Eastern Suburbs Banksia Scrub, which burned a larger area than originally planned.

The cultural landscape during the NPWS/DEC Phase has not reflected the cultural landscape of the Aviation Phase. Today the large areas of bushland re-growth through the Station have made its former scale and size of operation difficult to interpret due to the loss of views and access between the different areas of the Station. During the Aviation Phase the landscape was more extensively cleared with open view corridors between precincts and along pedestrian and vehicle access tracks.

2.2.5 Changing vegetation cover

One of the key issues this Heritage Landscape Management Plan has addressed is achieving an equilibrium between contemporary environmental values of the bushland areas and the cultural landscape of the Station during its operation and particularly during the Aviation Phase. This section has been prepared to provide further background to the changing vegetation cover synonymous with the history of the Quarantine Station, particularly its Aviation Phase.

2.2.5.1 Cultural landscape

The cultural landscape was constantly changing and being modified to suit the needs and requirements of the operation. The landscape was modified by a range of fires which burned the natural landscape around the site reducing the sense of enclosure and protection. The natural bushland areas of the Quarantine Station were also cleared at various times as part of the functional design of the Station. During periods of heavy use vegetation was cleared to create space for building construction and temporary shelters including tents. During periods of low use maintenance of the area declined allowing the bush to naturally regenerate. Whilst there are not clear records as to why the bushland was cleared, an examination of use would suggest that reasons included:

PHOTO 2.2-1 BETWEEN ADMINISTRATION AND FIRST CLASS CIRCA 1940 SOURCE: STATE ARCHIVES

- for construction of additional buildings and infrastructure such as the First and Second Cemeteries;
- to accommodate roads, paths and the funicular railway system through the site;
- to protect buildings and the site from bush fires;
- as a result of bush fires;
- to create view corridors between Administration and the various precincts on the site;
- to retain views to Sydney Harbour;
- to provide space for recreation; and / or
- to provide space for mustering large groups of internees.

A selection of historic aerial photographs from 1929 through to 2000 have been interpreted to create three maps illustrating this changing cultural landscape:

- Map QS-04a presents vegetation present in 1929 (Federal Phase);
- Map QS-04b presents vegetation present in 1978 (Aviation Phase); and
- Map QS-04c presents vegetation present in 2000 (NPWS Phase).

The table below summarises the key characteristics of vegetation cover for these three periods, and is to be read in conjunction with diagrams of vegetation on page 18. More detailed maps of the vegetation cover change during each of these periods are illustrated on **Drawing Nos. QS04, QS05** and **QS06** included in **Appendix A**.

Area	Federal Phase (1929)	Aviation Phase (1978)	NPWS/DEC Phase (2000)
In general	❑ Vegetation generally sparse. In areas with cover, extensive visible sandstone indicates vegetation may have experienced recent fires or been actively cleared.	❑ Vegetation regrowth over some cleared areas with clear buffer around buildings. ❑ Bushland between roads regenerating and screening views.	❑ Significant regrowth over former mown grass areas. ❑ Bushland more extensive between roads with many views closed off.
Wharf Precinct	❑ Largely cleared in the low lying areas and along the Funicular route up the escarpment and round to Third Class/Asiatics.	❑ Largely cleared but with the additional planting on the beach and increased vegetation cover on the escarpment.	❑ Largely cleared but with the additional vegetation present at the northern end of the beach and increased vegetation cover on the escarpment.
Hospital & Isolation	❑ Cleared to the southern boundary fence line. ❑ To the north vegetation present but sparse on escarpments in front of Isolation and the Hospital.	❑ Cleared around the buildings to the southern boundary fence line. ❑ Vegetation is present on the escarpment in front of Isolation and the Hospital, however, the extent of the vegetation cover appears to be sparse.	❑ Vegetation encroached around buildings on the southern and northern boundaries.
First & Second Class	❑ The escarpment is vegetated with a larger cleared area adjacent to the Funicular route. ❑ The northern boundary to Second Class is cleared back to the original fence line. ❑ Eastern extent is totally cleared. ❑ Northern boundary of Second Class has scattered Broad-leaved Paperbarks towards the Entry Road with what appears to be uncut low vegetation.	❑ The eastern extent of First Class is totally cleared. ❑ Palms on western side are clearly visible. ❑ Former building footprints to the north of Second Class are clear of vegetation. ❑ Northern boundary of Second Class cleared back to original fence line, with additional scattered Broad-leaved Paperbarks and Pines towards the Entry Road.	❑ First Class Escarpment has vegetation cover similar to 1978. ❑ Palms on the western side of First Class clearly visible. ❑ Vegetation covered the former buildings north of Second Class. ❑ Vegetation encroached over the northern boundary fence line, and some scattered Broad-leaved Paperbarks and Pines remain.
Administration	❑ Scattered vegetation on the northern part of the escarpment between Cottages and Admin, however this was cleared in the southern section behind A1 ❑ Behind the Cottages was a cleared road ❑ Remainder of Administration is not included in the 1929 aerial photograph.	❑ Vegetation on the northern part of escarpment between Cottages and Administration, with additional cleared area for powerlines and southern part of escarpment largely cleared. ❑ Area behind the cottages is cleared more extensively than shown in the 1929 aerial with defined tracks that lead	❑ Vegetation regrowth in the southern part of escarpment between the Cottages and Administration ❑ Area behind cottages partially cleared but former tracks overgrown with vegetation ❑ Road entry had vegetation to the north and western boundaries ❑ Vegetation regrowth around the two reservoirs

Area	Federal Phase (1929)	Aviation Phase (1978)	NPWS/DEC Phase (2000)
		from this cleared area to North Head Scenic Drive ❑ Road entry almost totally cleared to the boundary wall ❑ Cleared areas around two reservoirs	
Third Class Asiatics	❑ Extensively cleared in the south-eastern section behind Third Class and the Second Cemetery. ❑ The First Cemetery is cleared of overstorey vegetation, but appears as uncut ground layer vegetation. ❑ Specimen plantings in 1928 are clearly evident, particularly as avenue plantings along Asiatics Road and in front of Third Class dining.	❑ Extensively cleared in the south-eastern section of behind Third Class and the second cemetery, including former road. Some scattered regrowth over former building footprints. ❑ The First Cemetery is mown grass. ❑ Palms clearly visible on Third Class Access and few remaining specimen plantings.	❑ Vegetation regrowth over the former road alignment, former buildings in Third Class and a large proportion of the Second Cemetery. ❑ The First Cemetery is mown grass. ❑ Palms clearly visible on Third Class Access and few remaining specimen plantings. ❑ Vegetation appears to have become thicker on the escarpments and towards Isolation Precinct.
Second Cemetery	❑ Generally cleared with low vegetation scattered through it. ❑ A defined track extends immediately north east of the cemetery towards what is now North Head Scenic Drive.	❑ A defined square cleared area generally aligned to the west and northern boundaries. ❑ The total cleared area was smaller than the area cleared in 1929.	❑ Only a small cleared area with the majority of the site covered in regrowth.

Extracts from the plans illustrating the changed vegetation cover during the different phases of the Quarantine Station's history are shown on the following page in ***Figures 2.2~5*, *2.2~6* and *2.2~7***. For full sized plans, refer to Drawing Numbers **QS-04a, QS-04b** and **QS-04c** contained in **Appendix A**.

Plan extracts illustrating the changing vegetation cover
For complete drawings refer to Drawing Numbers QS-04a, QS-04b and QS-04c.

FIGURE 2.2~5 VEGETATION COVER 1929

FIGURE 2.2~6 VEGETATION COVER 1978

FIGURE 2.2~7 VEGETATION COVER 2000

2.2.5.2 Natural landscape (environmental values)

Since the time of the Aviation Phase the understanding of the environmental values has increased substantially. Within the Sydney region vegetation clearing on a much larger scale has continued to provide for urban development making the areas remaining in reserves and National Parks more significant. Whilst during the Aviation Phase, and indeed earlier phases of quarantine, it was necessary to clear vegetation periodically for the reasons described in **2.2.5.1**, today more information is available on this vegetation and it is recognised and valued for its natural and environmental qualities. Some of the vegetation at the Quarantine Station is endangered and protected under Commonwealth and State legislation. Endangered fauna species, notably the Long-nosed Bandicoot are present at the Quarantine Station and vegetation removal influences the quality of their habitat. Therefore the decisions to remove vegetation for cultural reasons have become more complex since the time of the Aviation Phase, and the decision to reinstate the cultural landscape now needs to be weighed up against the need to protect the environmental values. For a description of the natural landscape values, refer to **Section 3.2**.

2.2.6 Cultural planting

The exotic plantings are a tangible landscape element that reflect the site's history and set the buildings in their context. The presence of even one exotic tree in the native landscape denotes the taming and meaning of that landscape by non-indigenous settlers. The Norfolk Island Pine on the edge of the bushland behind Third Class accommodation and the Pine tree on the southern side of the Hospital Precinct are examples of this.

Many of the existing exotic plantings are assumed to be remnant from the planting that occurred by the Department of Health in 1928. A memorandum from the Chief Quarantine Officer noted the following:
'During the month of August trees were obtained from the Botanical Gardens and planted around the paths and buildings at the Quarantine Station. Nearly three hundred trees were planted. They consisted of Wattles, tree ferns, coral trees, pine, silky oak, palms, red bottle bush and others.'

The following photographs are comparative examples of cultural plantings from historical photographic archives and current photographs of these remnant plantings currently on site.

PHOTO 2.2-2 COTTAGE NO. S14, DATE UNKNOWN, SOURCE: STATE ARCHIVES

PHOTO 2.2-3 COTTAGE NO. S14, 2003, SOURCE TBLD P/L

PHOTO 2.2-4 ADMINISTRATION BUILDING A1 CIRCA 1940, SOURCE: STATE ARCHIVES

PHOTO 2.2-5 ADMINISTRATION BUILDING A1, 2003 SOURCE TBLD P/L

2.3 FOCUS ON THE AVIATION PHASE LANDSCAPE

2.3.1 Rationale for the landscape of the Aviation Phase

2.3.1.1 Approval Condition requirement

Approval Condition 90 requires the cultural landscape of the Quarantine Station to primarily reflect the Aviation Phase (1950 - 1983) in the way it is to be conserved, managed and interpreted. Provision is made in the condition to interpret earlier phases where it complies with the DACMP or the Interpretation Plan, and where adequate justification is provided. The Approval Condition is consistent with the DACMP policy that recognised the Aviation Phase as the last phase of use as a quarantine station. The rationale for the DACMP policy is that:

- the Aviation Phase is the most intact in terms of fabric presentation and appearance;
- the Aviation Phase shows the landscape and buildings modernised in First and Second Class, and other buildings and landscapes remaining abandoned without little or any change (e.g. Third Class, Isolation and Hospital). Consequently this phase contains a layering that shows much of the historical development; and
- returning the station to an earlier phase would involve massive and often conjectural reconstruction of the place and the potential for loss of evidence from the final phase of operation.

2.3.1.2 Essence of the DACMP Aviation Phase policy

The DACMP was clear that the Aviation Phase was not the most important historical phase and that all periods of use were equally important. Therefore, the essence of the policy is to:

- retain a layer of the Aviation Phase with other historic layers using as much as possible the form of the Station from the 1950-1983 period; and
- focus necessary change or adaptation in the modified areas from the Aviation Phase and not the more historically intact areas that survived the change during that period (allowing the remaining fabric from each historical period to be seen and interpreted).

2.3.1.3 Specific application of the policy in relation to the landscape of the Station

Outlined below are a number of specific applications of the policy that will be used to further guide this plan.

- *All buildings and landscape features present in 1984* are to be retained as the only intact representation of a period of development of the place. For the landscape this includes the paths, roads, drains, walls, drainage pit covers, fences, steps, power poles and gates etc.
- *The external form of the buildings and landscape features during Aviation Phase* (with several noted exceptions for roofs and rainwater elements in particular) is to be retained with only minimal alteration, where possible, to achieve the policies.
- *Reconstruction of buildings and landscape elements could only be anticipated where they were removed at the end of the stations life* and they would allow the last major phase of use to be understood. Earlier demolitions were generally undertaken to allow development of the place as a quarantine station and it is therefore inappropriate to reconstruct them. There are some exceptions to this which are contained in specific Approval Conditions and are noted in the Plan.
- *Change or adaptive reuse that allows the place to function* should be considered however broad-scale change that would change the way in which the place is understood should be avoided. It was broadly considered that change would be appropriate in areas modified during the Aviation Phase and not in the more intact areas that survived the change during that period.
- *Particular elements of the place that retain earlier forms and features* can be interpreted to those earlier periods and forms.
- *The form of the landscape that existed during the Aviation Phase is to remain* and earlier landscape forms are generally not to be reinstated across the site.
- *The cleared vegetation present in the Aviation Phase is to be selectively reinstated* where required to assist with understanding the landscape present during the Aviation Phase and protection of building form and archaeological values. This will be balanced with the contemporary environmental values associated with the bushland re-growth that has occurred on the site since the Stations closure in 1984.

2.3.2 Further interpretation of the DACMP Aviation Phase Policy

2.3.2.1 The fundamental challenge underlying the policy

Section 2.2.5 identifies the competing values between re-establishing the cultural landscape present during the Aviation Phase and retention of the environmental values associated with the bushland re-growth now present on the site. The Policies contained in the DACMP (Davies et al. 2001) specifically make reference to the need to remove some vegetation in order to reinstate the cultural significance and refer to the need the retain existing vegetation. Below are some of these policies which illustrates the competing objectives:

GCP13.2.1 Views back to the City and to the Heads should be accessible to enhance understanding of the relationship of the site to the city and the Harbour entry.

GCP13.2.2 Views to the Harbour and the bush headlands should be accessible.

GCP13.2.3 Views from the site to surrounding areas such as Store Beach, no longer visible due to the contraction of the Station, should be interpreted.

GCP13.2.5 Any changes required to the landscape setting to provide the view corridors noted in the above policies are to be based on historic precedent as well as the desire to visually link the site to its surroundings.

GCP13.3.1 Existing areas of natural vegetation should be retained, restored and interpreted for their natural heritage value, except where removal is specifically required by other policies. The fluctuating nature of the vegetation during the site's history should be interpreted.

GCP13.3.5 The current landscape fabric should not be altered to establish or enhance views to, from or within the site.

Davies *pers. comm.* (2005) confirms that the landscape fabric retention policy was written to minimise vegetation clearing beyond what was typically present during the Aviation Phase, and should not be strictly interpreted as a restraint on vegetation management required to maintain or reinstate Aviation-based historic view corridors.

It is the role of this Landscape Masterplan and Management Plan to determine the most appropriate method of achieving an equilibrium between the competing values and deliver the Policies outlined in the DACMP whilst achieving the following:

- Protect the endangered flora and fauna communities present on site
- Reinstate the Aviation Phase landscape and associated Historic view corridors
- Interpret, where appropriate, earlier phases of Quarantine
- Provide services, facilities and a level of service for the adaptive re-use that has been approved.
- Consider views into the site from surrounding areas.

2.3.2.2 Vegetation cover during the Aviation Phase

The following description is intended to assist with defining the level of vegetation cover present during the Aviation Phase. A more complete description of the Aviation Phase landscape is described in **Section 2.2.3**.

Analysis of the vegetation cover from three aerial photographs
Three aerial photographs were made available to the project during the period of the Aviation Phase and are from 1951, 1970 and 1978. The following diagrams highlight the cleared areas which have bushland re-growth in the 2000 aerial.

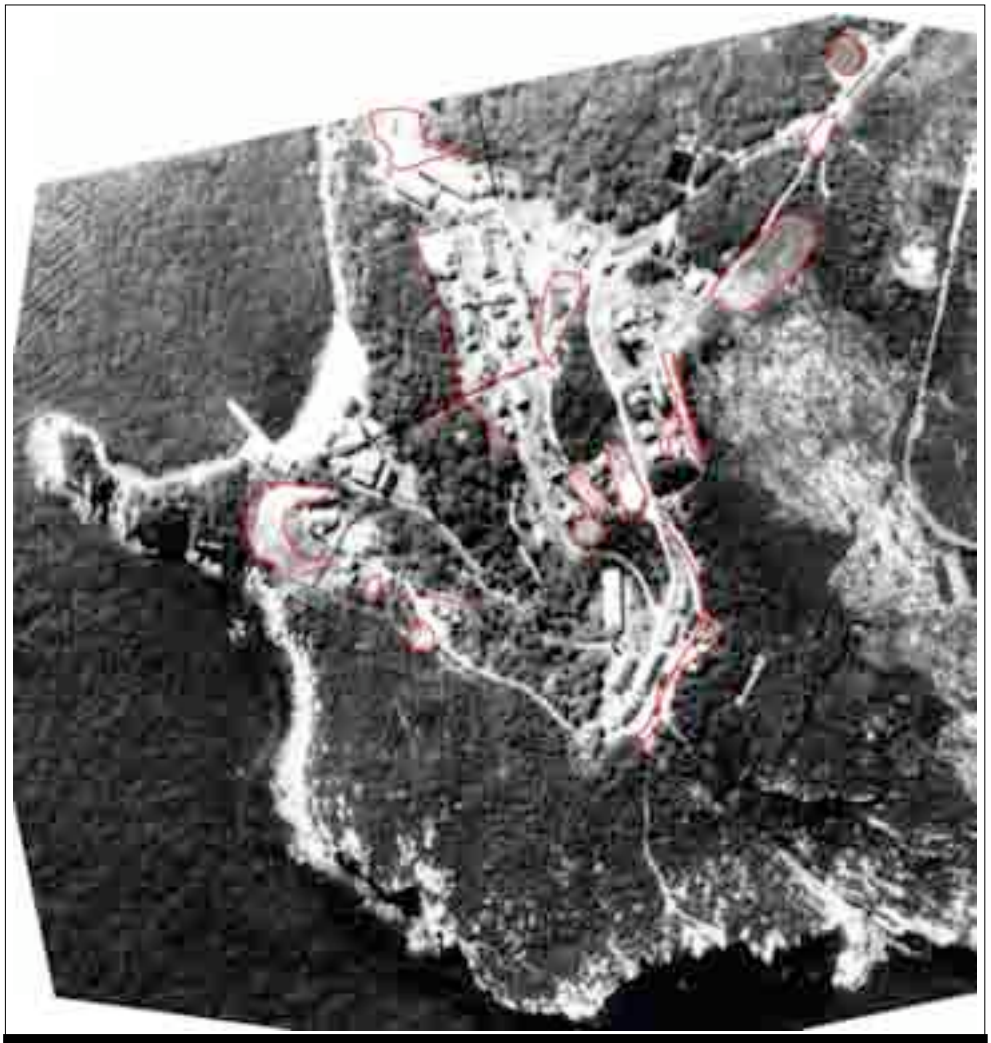


FIGURE 2.3~1 QUARANTINE STATION EARLY AVIATION PHASE (1951) ILLUSTRATING 2000 RE-GROWTH IN CLEARED AREAS

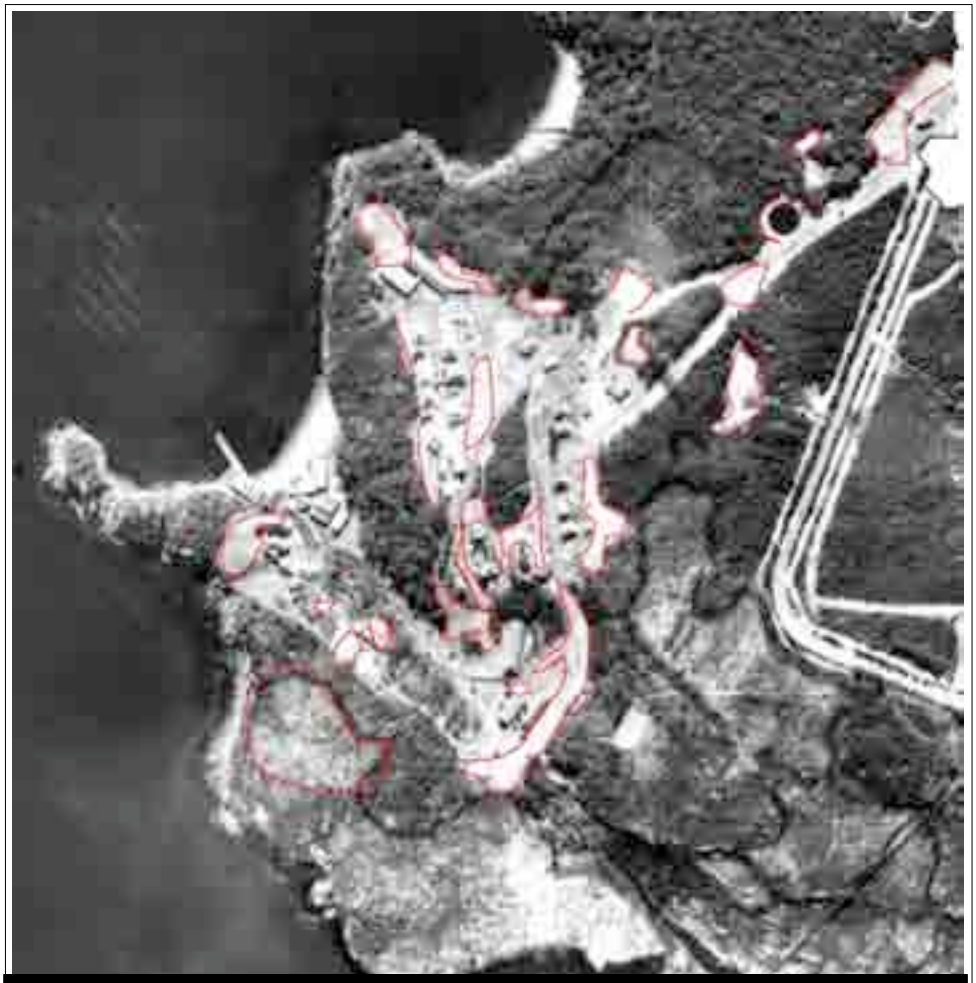


FIGURE 2.3~2 QUARANTINE STATION IN THE AVIATION PHASE (1970) ILLUSTRATING 2000 RE-GROWTH IN CLEARED AREAS

FIGURE 2.3~3 QUARANTINE STATION LATE IN THE AVIATION PHASE (1978) ILLUSTRATING 2000 RE-GROWTH IN CLEARED AREAS

An interpretation of the collection of aerial photographs from 1951 to 1978 suggests that the earlier part of the Aviation Phase represents a higher level vegetation trimming and clearing than the latter period. This is likely to reflect the progressive reduction in the role of Quarantine and the likely progressive reduction in maintenance, as evidenced by the removal of buildings and infrastructure such as fences and the funicular.

The HLMP has used the latest aerial photograph taken in 1978 to produce a map of vegetation cover (QS-04b). This map represents the greatest overall amount of native vegetation thought to be present during the Aviation Phase and can be contrasted with the vegetation mapped in 1929 (QS-04a) which shows vastly less vegetation cover, and 2000 (QS-04c) which shows significant re-growth.

In addition to the aerial photographs other sources have been used to confirm the extent of vegetation cover present during the Aviation Phase. This includes:

- a collection of other aerial and ground photographs taken throughout the Aviation Phase; and
- oral history research with historians, quarantine station staff and residents and initial staff involved in early conservation works (see acknowledgements).

This was done to create an accurate and objective portrayal of the Aviation Phase vegetation cover.

The purpose of Drawing QS-04b is to provide the basis for determining the level of vegetation cover present during the Aviation Phase, so as to re-establish an interpretation of the Aviation Phase that delivers the DACMP Policies and achieves the objectives outlined in **2.3.2.1**.

2.3.2.3 Subsequent proposed approach

The important aspects of the cultural landscape to be retained, managed and interpreted from the Aviation Phase include:

- maintaining open grassed areas separating the various groups of buildings;
- redefining the extent of grassed areas within the context of contemporary understanding of environmental values of the site;
- re-establish historic view corridors within and outside the site;
- maintaining a cleared funicular route throughout the site;
- reinstating minimalist gardens around staff cottages and offices where evidence can inform the initiative;
- retaining the remaining class based and operational fencing and symbolically rather than literally interpreting earlier systems;
- reintroducing outdoor recreation facilities and social settings where they are known to have occurred;
- interpreting some cultural plantings;
- interpreting the former extent of the Quarantine Station;
- protecting former building foundations; and
- repainting inscriptions that were repainted during the Aviation Phase.

Three categories of recommendations regarding vegetation management exist:

1) those that already have received approval to proceed;
2) those that have sufficient merit to warrant further environmental assessment prior to gaining approval; and
3) those that have some merit, but at this stage are not approved, or put forward in this plan with specific recommendations or actions. In the first review of the HLMP these will be reviewed as to whether they warrant specific actions to implement them.

A table assessing the values associated with each of the areas that require some vegetation change is included in **Section 4.2.3.1.**

The proposed site changes are illustrated in Landscape Masterplan **Drawing No. QS-10C**. The detailed rationale for the proposed areas of change are described in the Precinct Recommendations contained in **Section 5** of the Plan. **Drawing No. QS-08** illustrates areas of change to vegetation cover to achieve an adequate representation of the cultural landscape present during the Aviation Phase.

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NORTH HEAD QUARANTINE STATION
HERITAGE LANDSCAPE MANAGEMENT PLAN
QS-02
APR 2006
SCALE 1:1000
Existing Conditions
DRAWING KEY
Proposed Lease Boundary
Precinct Boundaries
Acacia terminalis spp. terminalis
Sunshine Wattle (Endangered species)
Eucalyptus camfieldii
Heart-leaved Stringybark (Endangered species)
Eastern Suburbs Banksia Scrub
Established overstorey trees
Established exotic trees
Established Pines or Araucarias
Established Canary Island Palms
Former funicular track alignment
Unsealed tracks
Unsealed surfaces
Sealed pedestrian paths
Sealed Roads/Tracks
Existing fence
Former fence
Drainage swales
Overhead powerlines
Major lines on entry road only
Existing contours at 2 m intervals
Boom gate
Existing buildings
Fire damaged buildings
Former buildings

3.0 EXISTING CONDITIONS

3.1 SITE INFLUENCES

3.1.1 Climate

The microclimate that affects the site may have informed the decision to locate the Quarantine Station at North Head as the micro-climate conditions are well suited to the establishment of this use. The site is north facing, with a sunny aspect for the open and gently contoured Wharf Precinct. The site is generally sheltered from coastal winds from the south west, but elevated ridges have access to ocean breezes.

3.1.2 Topography

The steep and undulating topography that characterises the site has influenced the type and extent of historical development. The topography and elevation informed the location of specific facilities (for shelter, views, ocean breezes), protected natural areas from clearing due to steepness (the steep escarpment woodland), and informed the location and orientation of buildings, roads, pathways and lookouts.

The site is characterised on entry by a gently sloping west facing slope, (where the main entry road enters the site), descending into deeply incised gullies, steep treed and rocky escarpments facing the sea, and a steep and rocky coastline. The southern face towards Old Mans Hat is undulating and rocky, with a deep and incised gully which was once used as a rubbish dump. The Wharf Precinct is a gently sloping, south facing, sheltered open valley, perfectly suited to establishment of the wharf buildings.

3.1.3 Geology, soils and contaminated sites

The geology of the Quarantine Station is characterised by aeolian sand dunes overlaying sandstone (Manidis Roberts Consultants 2001). The soils are low in nutrients, low in water holding capacity and the structure is highly erodible.

Pleistocene dune sands of the North Head landscape unit are sandy podsols with a distinct leached A2 horizon. These sands present a significant wind and water erosion hazard, particularly in high use areas below the Third Class Precinct. The western side of North Head grading down towards Spring Cove and Quarantine Beach contains shallow, infertile soils with a high erosion hazard. Bare rock outcrops are common.

Across the lease area there is widespread soil erosion in the form of partial vegetation cover. Soil erosion within the lease area is largely found on road edges and cleared areas where buildings once stood, or where parking has been introduced associated with the operation of conferences and tours. Additionally rabbits have contributed to erosion to the Station especially in front of Third Class. **Drawing QS-02a** identifies sites within the lease area subject to soil erosion. Soil erosion has been addressed throughout the management and design recommendations in this plan, and therefore does not have a specific section set aside for soil erosion.

Contaminated sites

Mandis Roberts Consultants (2001) and subsequent site investigations suggest that there are several sites containing mildly contaminated soil:

- soil within two metres surrounding building A18 and its storage tank, resulting from diesel fuel spillage;

- soil underneath of accommodation rooms in First and Second Class Precincts, which was sprayed with pesticides to minimise termite attack to the timber structure; and
- soil between building A46 and the funicular inclinator ramp, adjacent to building A6, considered to be from slag waste associated with the functioning of building A6 as a Boiler House.

An investigation into the A6 site by EarthTech (2003) suggested that while affected soils around building A6 could be excavated and removed from this site, they could also be effectively capped with a flexible / rigid pavement, or a 500mm clay cap over the grass.

The proposed use of the accommodation buildings warrants a subtle barrier underneath the verandahs to reduce visitor access and the chance of persons deliberately or accidentally ingesting the soil. The description of recommendations for this is included in **Section 5.2.**

The limited visitor access to building A18 surrounds and its ongoing maintenance function limits the needs for further works.

The First and Second Cemeteries were used to bury people with infectious diseases. The Director General of the Department of Health suggested minimal public health risk from these sites. (Mandis Roberts Consultants, 2001)

3.1.4 Fire

The Fire Management Plan for Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) records the earliest known fire on the Station in the mid 1940's which reportedly burnt all bush areas around the Station.

The fire history of the Station is atypical for natural areas within the Sydney region because fire had been relatively absent for the last thirty years until the recent prescribed burn in January 2004. Fires have been recorded in 1974, 1977, 1979, 1980, 1982, 1994, 1995, 1996, 1997 and 2004. Smaller fires have occurred including arson, campfires and prescribed burns.

In order to protect the Quarantine Station, wildfire has been prevented. As a result the Sydney Harbour National Park Management Plan nominated the area of Eastern Suburbs Banksia Scrub (ESBS) and closed Scrub Heath to be of scientific interest due to its long history of remaining unburnt.

The January 2004 hazard reduction burn highlighted the visual impact that fire has on the natural and cultural landscape of the Quarantine Station. This fire changed the arrival experience by opening up parts of the view corridors to the east. It also changed the interpretation of the formerly confined Second Cemetery by making it into the much larger open space.

The DEC anticipates that the bushland will recover over time, and the visual impact is considered in the development and implementation of works consistent with the Fire Management Plan for Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004).

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SCALE 1:1000

DRAWING KEY

Soil Erosion
Source: ELS, Mandie Roberts Consultants (2001)

Proposed Lease Boundary

Precinct Boundaries

Existing Conditions
Soil Erosion

3.2 NATURAL LANDSCAPE

3.2.1 Regional context in North Head

The Quarantine Station lease area is located on North Head and is part of the Sydney Harbour National Park which is listed on the Register of the National Estate for its combination of foreshores, cliffs, headlands, heath and gully forests, recreation opportunities, Aboriginal engravings, defence history and its associations with the development of Sydney (Manidis Roberts Consultants 2001). The site is individually listed on the Register of the National Estate (Manidis Roberts Consultants 2001).

The Quarantine Station's location on North Head as part of the broader Sydney Harbour National Park improves the site's ecological and natural landscape values. These values include:

- The unique sense of isolation from the urban environment, only 16km from the Sydney city centre, by the inherent protection the broader National Park of North Head and adjoining Military installations.
- The extensive system of Coastal Heathland including the Eastern Suburbs Banksia Scrub (ESBS), an endangered ecological community which extends beyond the lease boundary of the site. The ecological health of these vegetation communities in the Quarantine Station are due to being part of a larger natural system that extends over North Head.
- The diversity of the Woodland Forest vegetation systems which extend beyond the boundaries of the Quarantine Station and include:
  - The Broad-leaved Paperbark *Melaleuca quinquenervia* Forest
  - Smooth-barked Apple *Angophora costat*a Woodland
  - Mahogany Gum *Eucalyptus botryoides* Forest
- The Long-nosed Bandicoot colony on North Head which is classified as an endangered population.
- The potential habitat for the Red-crowned Toadlet.
- The Little Penguin colony which extends along the coastline past Collins Flat Beach to Manly Wharf.
- The high visibility of the site including the broader landscape of North Head from Sydney Harbour and the surrounding headlands.
- The cliff formations including The Old Mans Hat which contains many inscriptions from those quarantined which is part of the broader North Head landscape and Sydney Harbour National Park.

The historic use as a quarantine station contributes to the character and values of the broader North Head and Sydney Harbour National Park through:

- The mature coastal heath within the Quarantine Station boundaries has been so long without fire that it is of scientific interest and provides an opportunity for research into the ecological impacts of fire exclusion on coastal heath (NPWS 1998).
- The overall cultural heritage values of the National Park system with its remnant built and landscape cultural features.

3.2.2 Native vegetation

Previous studies including the EIS (Manidis Roberts Consultants, 2001) and the SIS (Gunninah Environmental Consultants, 2001), have described the existing remnant and native vegetation. The Flora of North Head (GIS Environmental Consultants, 2003) has been prepared since the EIS and SIS, and includes more detailed vegetation community mapping and descriptions. The vegetation communities descriptions below are based on the information contained in the Flora of North Head (GIS Environmental Consultants, 2003) and as the source for vegetation community mapping included on **Drawing No. QS-02b**.

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NORTH HEAD QUARANTINE STATION

HERITAGE LANDSCAPE MANAGEMENT PLAN

QS-02b
APR 2006
SCALE 1:1000

Vegetation Communities
source: Flora of North Head, GIS Environmental Consultants (2003)

Existing Conditions
Vegetation Communities

3.2.2.1 Vegetation communities

Forest

Refer to **Drawing No. QS-02b** for the extent vegetation community distribution on the site.

The forest community is an open forest without interlocking canopies and has a number of characteristic overstorey species. Within the site there are variations in the dominant overstorey species including:

- Broad-leaved Paperbark *Melaleuca quinquenervia*, dominant forest occurs west of the Lower Reservoir and on the northern extent of the graded land in front of Cottage S16; and
- Mahogany Gum *Eucalyptus botryoides* dominated forest occurs on the graded land in front of Cottages S6, S4, S10 and S14, around A1, S1 and A25.

Typical midstorey species include Blueberry Ash *Eleocarpus reticulatus* and the understorey is dominated by ferns, bracken and Gahnia. (GIS Environmental Consultants, 2003)

Ridgetop Woodland

Refer to **Drawing No. QS-02b** for extent of vegetation community distribution on the site.

This community is a dry open woodland with sparse canopy and is generally associated with exposed sandstone ridges. This community is described as typically having an overstorey of Bloodwood *Corymbia gummifera*, Scribbly Gum *Eucalyptus umbra*, Broad-leaved White Mahogany *Eucalyptus haemastoma* and Old Man Banksia *Banksia serrata*. This community typically has high species diversity. Thompson Berrill Landscape Design Pty Ltd (TBLD) noted from site observations that Rough-barked and Smooth-barked Angophora are present as dominant overstorey in the vegetation community between Isolation and Third Class Asiatics. At the Quarantine Station this vegetation community has not been recently burned and therefore includes Cheese Tree *Glochidion ferdinandii,* Pittosporum *Pittosporum undulatum* in the midstorey and occasional Port Jackson Fig *Ficus rubiginosa* as overstorey trees. (GIS Environmental Consultants, 2003)

Coastal Banksia Low Woodland

This occurs on the west facing escarpment in front of Second Class.

The community varies from open to closed scrub, low woodland and open forest. In this location on the Quarantine Station it occurs as an open to closed scrub. The main species include Coast Banksia *Banksia integrifolia*, Old Man Banksia and Swamp Sheoak *Casuarina glauca*. In areas without recent fires, Cheese Trees and Pittosporum can dominate. Lower species include Dilwynia, Snake Vine *Hibbertia scandens,* and Spiny Matt-rush *Lomandra longifolia.* (GIS Environmental Consultants, 2003)

Shrubland

The extent is limited to the northern edge of the lease boundary, refer to **Drawing No. QS-02b** for distribution.

The shrubland is dominated by Scrub Sheoak *Allocasuarina distyla*, with other species including Heath-leaved Banksia *Banksia ericifolia* and Paperbark Tea-tree *Leptospermum trinervium.* (GIS Environmental Consultants, 2003)

Rocky Heath

This occurs around the south eastern boundary of the site, extending out to Cannae Point, refer to **Drawing No. QS-02b**.

This is an open-heath containing extensive areas of bare sandstone shelves. The main shrub species is Heath-leaved Banksia and Darwinia *Darwinia fasicularis* sp. *fasicularis.* (GIS Environmental Consultants, 2003)

Eastern Suburbs Banksia Scrub (ESBS) Open Heath

The eastern boundary of the Station is predominantly ESBS, refer to **Drawing No. QS-02b**.
This community is listed as an endangered ecological community in the NSW *Threatened Species Conservation* (*TSC) Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation* (*EPBC) Act 1999*. The community is Open Heath to 2 metres high on very low nutrient Pleistocene sand. The community is species rich and some characteristic species include Wallum Banksia *Banksia aemula*, Scrub Sheoak*,* Mountain Devil *Lambertia formosa,* Carrot Tops *Platyace linearifolia,* and Grass Trees *Xanthorrhoea resinfera* and *Xanthorrhoea australis.* (GIS Environmental Consultants, 2003)

ESBS - Senescent

For distribution of this community refer to **Drawing No. QS-02b**.
The scrub reaches a height of approximately 3.5 metres and occurs on Pleistocene sand. The community is dominated by Coast Tea-tree *Leptospermum laevigatum* and Bracelet Honey-myrtle *Melaleuca armillaris*. The understorey is species poor with some Wallum Banksia and Grass Trees. (GIS Environmental Consultants, 2003)

3.2.2.2 Dominant characteristic overstorey species

Southern Mahogany *Eucalyptus botryoides* which is the dominant overstorey tree present in the bushland areas near Administration and Asiatics Precinct and to the north of the Entry Road.

Broad-leaved Paperbark *Melaleuca quinquenervia* with mature specimen trees in the lawn area near the Lower Reservoir on the upper slopes. A mature specimen is also present in front of S5 on the escarpment. These trees are remnant and a considerable age and size, contributing to the natural landscape character and values of the site. These trees have been located on the existing conditions plan.

Smooth-barked and Rough-barked Apple *Angophora costata and A. floribunda* present in the site between Third Class and Isolation, creating a distinct landscape character in this section of the site.

Port Jackson Figs *Ficus rubiginosa* are present in the wet gully south of Wharf precinct, on the sandstone escarpments around Wharf Precinct, and in the wet gully near A20. Some of the individual specimens appear to be remnant trees and a significant size and spread, and contribute to the protected 'littoral rainforest' character of the wet gullies and assumed to provide important habitat values for fauna. These are visible on the 1929 aerial photos as mature trees.

3.2.2.3 Significant Flora

The SIS (Gunninah Environmental Consultants, 2001) identified the significant flora species that require protection. A brief summary of the significant flora identified for the site includes:

Sunshine Wattle *Acacia terminalis spp terminalis*
The Sunshine Wattle is a threatened species listed for protection under the NSW *TSC Act 1995*. The Sunshine Wattle is a shrub approximately 1.5 metres high and was once known as the Port Jackson Wattle. This species is present in a number of locations in the site, generally in areas that have been disturbed. The **Existing Conditions Plan Dwg No. QS-02** has highlighted locations on the site where Sunshine Wattles were found during the site assessment. These correlate with the sites identified in the broad mapping as part of the EIS, Vol 1, Section 10.

Camfield's Stringybark *Eucalyptus camfieldii*
The Camfield's Stringybark is a threatened species listed for protection under the NSW *TSC Act 1995*. It is a small tree to approximately 8 metres in height with thick broad,

almost circular leaves. One specimen was identified on the site during the Environmental Impact Statement (EIS) (Mandis Roberts, 2001) process near the fork in the Entry Road. This has been located on the Existing Conditions Plan **Drawing No. QS-02**.

Eastern Suburbs Banksia Scrub (ESBS)

The ESBS is an endangered ecological community and is listed on NSW *TSC Act 1995* and the *Commonwealth EPBC Act 1999*. This vegetation community is a sclerophyllous heath/scrub community that occurs as a number of small, isolated remnants along the Sydney coast from La Perouse to Manly. Common species in this community include *Banksia aemula*, *B. serrata, Eriostemon australasius*, *Lepidosperma laterale*, *Leptospermum laevigatum*, *Montoca elliptica* and *Xanthorrhoea resinfera*. (DEC, 2004)

This vegetation community is present along the southern boundary of the Entry Road, at the fork in the road, and to the southern boundary extending to the Second Cemetery The ESBS Recovery Plan has mapped the extent of this vegetation community and the more detailed mapping is included in Flora North Head (GIS Environmental Consultants, 2003). The more detailed mapping has been included in this report on **Drawing No. QS-02b**.

3.2.3 Native fauna

Previous studies and reports describe native fauna present on the site and identify threatened and endangered species.

The native vegetation areas provide habitat for up to 90 species of native birds, numerous mammal species, a range of reptile and amphibian species.

3.2.3.1 Significant fauna

The following species have been identified and described in the SIS (Gunninah Environmental Consultants, 2001).

Long-nosed Bandicoot *Perameles nasuta*
This species is listed as an Endangered Population on the NSW *TSC Act 1995*. They forage at North head in natural vegetation, mown lawns and garden beds. Known and potential habitat areas previously identified in the EIS (Mandis Roberts, 2001) are included on the Existing Conditions Plan **Drawing No. QS-02c**. A Draft Recovery Plan is currently being prepared for the Long-nosed Bandicoot by DEC.

Little Penguin *Eudyptula minor*
This species is listed as an Endangered Population on the NSW *TSC Act 1995*. The Little Penguin roosts and breeds on North Head including the rocky perimeter north and south of Quarantine Beach. Three breeding pairs of penguins were more recently discovered at the base of the sandstone escarpment adjacent to A6. The Little Penguin is primarily an oceanic and pelagic species coming ashore to roost, nest and moult in rock and earth shelters along the shorelines, along with seaside houses, woodpiles and overhanging vegetation. Critical habitat has been declared for the Little Penguin and this is illustrated on the Fauna Habitat Values Plan **Drawing No. QS-02c**.

Red-crowned Toadlet *Pseudophryne australis*
This amphibian species is listed as vulnerable on the NSW *TSC Act 1995*. It is known to occur in a variety of damp gully and drainage lines on Hawkesbury Sandstone, and usually favours seepage areas on hillsides and associated wet rock crevices. There are no confirmed sightings of this species, however, potential habitat areas have previously been mapped as part of the EIS (Mandis Roberts, 2001) and are included on the Existing Conditions Fauna Habitat Values Plan, **Drawing No. QS-02c**.

Powerful Owl *Ninox strenua*
The Powerful Owl is listed as vulnerable on the NSW TSC Act 1995. They have a large home range in mountain forests, gullies and forest margins, sparser hilly woodlands,

coastal forests including large trees in private and public gardens. The species nests on decayed debris in hollow trunks or limbs 8 to 20 metres high and the roosts and breeding hollows are occupied intermittently for years. A sighting of the Powerful Owl in the escarpment in front of First Class has been recorded and mapped as part of the EIS process and included on the Existing Conditions Fauna Habitat Values Plan, **Drawing QS-02c**.

3.2.4 Bushfires

Fire is a natural part of the landscape and is required to manage species diversity. Controlled burning can achieve this objective and reduce the likelihood of bushfire escaping and burning buildings, infrastructure and cultural plantings. The last bushfire in the area was April 1995, when 30 hectares above Store Beach between Collins Flat and North Head Road was burnt as a result of a campfire.

The Fire Management Plan for Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) has mapped the Bushfire Potential Behaviour for the site. Following is a summary of the zones included in the Quarantine Station:

- The major areas of **High Bushfire Behaviour Potential** include: Coastal Heathland to the south western portion of the site (i.e. behind Isolation); the Heathland immediately east of Third Class Precinct and north of Second Cemetery; the Coastal Woodland escarpment between Wharf Precinct and First and Second Class, and a small path of overstorey vegetation on the escarpment in front of Isolation.
- The areas of **Moderate Bushfire Behaviour Potential** include: Coastal Heathland immediately to the south and east of Third Class Precinct (with an area of low potential in the vicinity of The Old Mans Hat walking track); the ESBS vegetation to the east of the entire site; the woodland to the northern side of Quarantine Station Entry Road; the Broad-leaved Paperbark gully land associated woodland on the northern boundary of Second Class and Administration; and the escarpment vegetation in front of Isolation extending around to Third Class.

The mown grass areas within the Quarantine Station are identified as having negligible fire risk potential. It is noted in this plan that Quarantine Beach is one of the evacuation points in the area. (Mawland 2004a).

DEC are responsible for implementing the Fire Management Plan for Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) and vegetation management in the site will be consistent with this.

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies Pty. Ltd. and Arborcraft

NORTH HEAD QUARANTINE STATION

HERITAGE LANDSCAPE MANAGEMENT PLAN

QS-02c

APR 2006

SCALE 1:1000

Existing Conditions
Fauna Habitat Values

3.3 CULTURAL LANDSCAPE

3.3.1 Existing Cultural Plantings

No.	Species	Existing condition and contribution to landscape character
3.3.1.1	Canary Island Palms *Phoenix canariensis*	The Palm plantings consist of two formal row plantings in First Class and Wharf Precincts, an informal scattered planting around buildings A1 and S1, and a row of three outside Third Class. All Palms are in good condition and show no signs of infection with the fungus *Fursarium oxysporum*. Their presence in the site significantly contributes to the structure of cultural plantings, and the layering of the sites history.
3.3.1.2	Norfolk Island Pine *Araucaria heterophylla* and Hoop Pine *Araucaria cunninghamii*	There are four Norfolk Island Pines in the site. What appears to be the oldest of the cultural plantings in the site is the Norfolk Island Pine at Cottage No. S10, which is consistently present in older photographs of the Station. Their visual prominence on the horizon line particularly from the water reinforces the cultural history of the station. One Hoop Pine is present in the Wharf Precinct, has an unusual form and contributes to the cultural landscape character of the Wharf Precinct.
3.3.1.3	Radiata Pines *Pinus radiata*	The most substantial planting of Radiata Pine is the group planted on the Entry Road in Administration Precinct. This is a group of approximately 15 trees with grass established under them. Some of the trees are in poor condition, likely to be caused by overshadowing. A superb specimen is located in front of Asiatics accommodation. There are scattered plantings of Radiata Pines throughout the site including in the cottage gardens and in Isolation and Hospital Precincts. The Radiata Pines behind S12 are in poor health, which is thought to be due to the fungus *Sphaeropsi sapinea* that can occur following damage to foliage from hailstorms. The other specimens near Hospital and Isolation are relatively small due to the weather conditions and exposure.
3.3.1.4	Coral trees *Erythrina x sykesii*	The key significant planting of Coral trees is along Quarantine Beach. There are other Coral trees on the perimeter of bushland areas which may have self seeded in these locations given they are a known invasive species in bushland areas. The aerial photos indicate there were more extensive plantings originally in the vicinity of Third Class accommodation. For further detail on individual plantings, refer to Chapter 5.
3.3.1.5	Exotic trees planted in the Cottage Gardens	Exotic trees include an Irish Strawberry Tree *Arbutus unedo* and Frangipani *Plumeria sp.* All gardens were not inspected due to time constraints and occupation of some cottages.
3.3.1.6	Exotic shrub plantings	Shrub plantings in the site are minimal. There are some Chinese Rose *Hibiscus rosa-sinensis* planted in Administration Precinct between buildings S1 and A1, and in front of A2. Oleanders *Nerium oleander* are planted in front of A1 and P4. The garden south of building A1 has Maidenhair ferns *Adiantum sp.,* Bottlebrush *Callistemon spp*. and Wattle *Acacia sp.*
3.3.1.7	Cottage gardens	Oral history research, Jackson, M (2003) has revealed the following: ❑ Front gardens of S10, S4 and S12 were well maintained buffalo grass and not decorative. There may have been a Mulberry tree on the south side of S10. ❑ Back and side gardens of staff cottages contained Boronias, Waratahs *Telopea sp.,* Maidenhair ferns, Bottlebrush, Wattles and some wildflowers.

No.	Species	Existing condition and contribution to landscape character
		❑ The vegetable gardens had tomatoes, beans and lettuce. ❑ The staff cottages had simple timber fences. ❑ Clearing behind the staff cottages were used for bonfires and firecracker nights. ❑ The landscape was well cleared in front of staff cottages, and Balmoral could be seen from the S10 porch.
3.3.1.8	Mown grass areas	Mown grass areas are a fundamental part of the cultural landscape, and are found in all precincts except Isolation. The open nature of the slopes and grassed areas is of high cultural value, reflecting the predominant form of the site as used as a quarantine station. Open grassed areas were created to protect buildings and infrastructure from fire, create a sense of space around buildings, create views across and out of the site, provide recreation areas and create a village-like character. The mown grassed areas also assist to make the site clearly visible from across the Harbour. The mown grassed areas, particularly moist areas, are used for foraging by Long-nosed Bandicoots. Most of the grassed areas are couch or buffalo grass, which is known for its tough base, tolerance of dryness and low level of growth. Several mown grass areas are denuded, patchy or eroded as a result of vehicle parking, rabbit digging, stormwater runoff or a lack of maintenance during stress periods. The perimeter of many grassed areas have been invaded by bushland and/or weeds.

3.3.2 Existing landscape infrastructure

No.	Feature	Description
3.3.2.1	Sealed roads	❑ Typical sealed road construction is successive layers of black asphalt over an original crushed sandstone road base. ❑ There are no concrete roads.
3.3.2.2	Unsealed roads	❑ Typical unsealed road construction is compacted crushed sandstone, typically providing access to yards or sheds. ❑ Unsurfaced dirt roads are found in some locations where access is informal or infrequent.
3.3.2.3	Sealed paths	❑ Remnant asphalt paths with sandstone base in site, particularly near building entries. ❑ Concrete paved surfaces including former building foundations.
3.3.2.4	Unsealed paths	❑ Typical unsealed path construction is compacted crushed sandstone or dirt, varying from 1.5 to 3m in width.
3.3.2.5	Open stone drains	❑ Open stone stormwater gutters or drains line the typically upslope edges of the main sealed roads, constructed of various sizes of hewn sandstone blocks. The drains were located to capture the surface runoff from open grass areas and road surfaces, and are generally in good condition. (Refer to Photo 3.5-1). ❑ Some inappropriate localised repairs have been completed with non original stone or concrete, lowering the integrity of these heritage features. ❑ Open informal drains with significantly large flat flagstones laid on slight angles feature in the lower part of the site. ❑ One section of stone gutter opposite on the upslope edge of the entry road above A2 is significant as it is hewn out of solid in-situ rock. ❑ Open stone entry pits exist on the entry and lower roads, with two significant large open pits on the main entry road.  PHOTO 3.3-1 STONE DRAINS SOURCE: TBLD
3.3.2.6	Drainage infrastructure	❑ Concrete pipe drains and concrete side entry pits are constructed across the site, during different periods. ❑ Larger streets (eg. Main axial Street) have sub-surface concrete stormwater drains and pit systems.
3.3.2.7	Stone road edging	❑ Longitudinal stone edging lines the edge of some sealed roads, laid flush with or proud of the road surface. ❑ The large stone road edging the main entry road is a significant landscape feature, as it is in excellent condition, unmodified, and a significant feature of the entry landscape. ❑ In some locations the successive top seal of asphalt has risen above the surface of edging, making it non functional, and often hidden by asphalt.
3.3.2.8	Concrete kerbs	❑ Sections of concrete kerb are installed to the edge of some roadways in the site, in combination with concrete pit and pipe systems. ❑ Main Axial Street in First Class Precinct has concrete kerbs to both sides of roadway. The concrete kerbs were extended above the existing road surface, resulting in existing stair systems being extended to meet the top of kerb levels. This can be clearly seen near above P5. This formalisation of road edge, has removed the informal free draining grass road edge that characterised the earlier period of this street. ❑ Installation of concrete kerbs may have resulted from an attempt to

No.	Feature	Description
		improve surface drainage, in conjunction with the intention to formalise the site. Historical photographs show the road without kerb, linked to main axial street, with high levels of use of road area by pedestrians.
3.3.2.9	Stone walls	❑ Stone walls exist across the site, varying in form, purpose, style, lay pattern, tolerances, dry mortared joints, height and length, formality and condition. (Refer to Photo 3.5-2) ❑ Typically constructed of hewn sandstone, they are significant features of the landscape, and reminders of the effort expended in creating level areas in steep terrain.  PHOTO 3.3-2 STONE WALLS SOURCE: TBLD P/L ❑ The most significant stone wall is the solid stone high perimeter security wall to the north of the lease area. The majority of the wall is outside the lease area, built over steep terrain, and a significant length. It was built to isolate and secure the Quarantine Station from access to or from North Head, and is mainly intact, but hidden in the coastal scrub. The wall is in various states of repair however the section in the lease area is in reasonable repair. ❑ A curved and particularly graceful sandstone wall to the south of P27 is an interesting example, as it displays two distinctive styles, which tends to indicate different periods of construction, and or constructors. The wall creates a sheltered and intimate level area, for outdoor use adjacent to the building. ❑ The varied type of stone walls across the site are significant, as they form part of the cultural landscape, and may have been constructed or influenced by people in quarantine, reflecting cultural origins.
3.3.2.10	Concrete retaining walls	❑ Concrete retaining walls provide site and slope retention, stability or division. ❑ A high concrete wall above A20 was installed to retain the elevated roadway and establish the lower walking surface, and is in good condition. ❑ The concrete wall that retains Quarantine Beach was constructed to defend the Wharf building area from coastal wave action, and large sections have been buried by natural sand deposition. This process is continual, and sections of this wall will continue to be exposed and covered. ❑ An interlocking concrete block retaining wall, located on the pedestrian walkway from the Hospital to Wharf Precincts, is an example of an inappropriate material use, as it is clearly modern, yet does not contribute to site character, values or adaptive re-use of the site.
3.3.2.11	Stone steps	❑ Stone steps provide access to buildings typically made from hewn sandstone blocks. ❑ Some steps were built with steel posts and handrails, and have deteriorated or lost their posts, as in First Class Precinct steps to courtyards.  PHOTO 3.3--3 ORIGINAL STONE NEXT TO NEW PATH AT ISOLATION SOURCE: TBLD P/L ❑ The two large stone steps located either side of A1, with subtle shaping to top stone surfaces, illustrate the simple but powerful use of stone as a feature landscape material in the site.

No.	Feature	Description
		❑ Stone and gravel infil steps are found across the site, in various states of repair. They are characterised by the hand-hewn rocks. ❑ Stone and gravel infill steps were constructed using non-original stone and white paint markings on steps to upgrade an eroding track in 1999. It appears there is some original stone from previous track work is present in the adjacent bush. Compacted Gravel has been used for infil, but erosion is occurring in locations where localised stormwater is not controlled. Inadequate drainage has been installed at the top of steps.
3.3.2.12	Concrete steps	❑ Concrete steps provide localised access to building entries and sites throughout the site, in various states of condition.
3.3.2.13	Road and pedestrian barriers	❑ Steel barriers of a range of types and condition are constructed across the site, typically located at the edge of roads, drains and pathways. ❑ Steel pipe barriers along road edges (i.e. at the junction of the main entry road and Main Axial Street) are poorly constructed, with recent addition of "pool mesh type infil" and do not contribute to the landscape, but are functional to inhibit vehicles from entering the deep drains adjacent to the road edge. ❑ Steel post and handrails (i.e. on track from hospital to Wharf Precinct) are generally of a basic steel pipe construction, which are functional for pedestrian safety, but not significant features.
3.3.2.14	Signage	❑ A diverse range, style and condition of DEC signs exist in various states of repair.
3.3.2.15	Power poles	❑ Power and light poles are typically hardwood timber.
3.3.2.16	External lighting	❑ Light fixtures consist of a diverse range of designs and materials, from older curved steel armatures attached to poles, to modern security spot lights and fluorescent lamps attached to poles. ❑ Refer to lighting strategy for details of existing lighting infrastructure.
3.3.2.17	Gates	❑ Gates are generally constructed of galvanised steel frames and galvanised wire mesh. Gates are also constructed of timber and pickets adjacent to cottages. ❑ Many fence openings are no longer gated, as the need to control security access within site has diminished and the gates have been removed. ❑ The historic white timber truss vehicle and pedestrian gates located at main entry and between precincts such as First and Second Class, no longer exist.
3.3.2.18	Fire hydrant covers	❑ Fire hydrant covers are located throughout the site, constructed of folded steel covers, painted white and red, in various states of condition.
3.3.2.19	Fences	❑ Perimeter fences defined the external boundaries of quarantine site, and were important given their role in physically defining the range of movement, i.e. the perimeter of quarantine, and were typically constructed of galvanised steel frame and galvanised wire mesh. ❑ Internal fences were typically used to define and divide precincts, with low security fences typically constructed of hardwood timber frames and hardwood timber vertical palings, limiting movement and interaction between classes. Higher security fencing segregated infected and non infected people, ❑ The beach fence is commonly a steel post and cyclone mesh fence.
3.3.2.20	Wharf pier	❑ The wharf is constructed of timber and concrete, without handrails or barriers which would have acted as an impediment to safe loading and unloading of passenger ships. ❑ This wharf is a significant element in the marine cultural landscape. ❑ The wharf is immediately recognisable for its function and purpose as a heritage marine structure in the landscape.
3.3.2.21	Funicular rails	❑ The funicular steel rails are still extant in some areas of the Wharf Precinct, contributing to an understanding of use, function and

No.	Feature	Description
		orientation of the funicular in the site. ❑ The steel rails are small in cross section, (compared with railway line) and this may have resulted in their deterioration in external sites due to rust. ❑ Where the rails are located inside buildings, e.g. A7, they are in excellent condition. It is predicted that other rails are buried under asphalt, in an unknown condition ❑ The rails no longer exist on the sloped section of the funicular from the Wharf to First Class Precinct, or along the level section of former funicular route from A18 to P27. ❑ The altered topography (cut and fill), undertaken to create evenly graded and clear access routes to construct the funicular is still clearly evident in the landscape (eg. along the routes described above) notwithstanding the recent undergrowth and shrub vegetation that has invaded the funicular route over the past 40 years. This altered, shaped and functional landform is a significant contributor to the legibility of the heritage landscape.
3.2.2.22	Quarried sandstone	❑ Within the Stonemason Yard is a scattered collection of quarried sandstone blocks. ❑ The DEC report that this sandstone was introduced by the DEC to assist with repairs, and that most is of poor quality for further working.

3.4 HISTORIC AND CONTEMPORARY VIEW CORRIDORS

3.4.1 Views into the site

Refer to Drawing Number QS-05

3.4.1.1 Contemporary views into the site

Views into the site are from other major public land and water include Dobroyd Head, Middle Head and from the water, i.e. the Manly Ferry. An analysis of the main view corridors into the site is outlined on View Corridor Analysis Plan, **QS-05**. The site is characterised from distant views by the spectacular headland, discernible small areas of cleared grass, and the clusters of building roofs. These views change according to the viewing angle, and the further towards Middle Head, the less is seen of the site, as the site is obscured by the ridgeline to the south.

When seen from the middle distance, primarily from the water when passing by boat, the site unfolds as the headland gives way to views of the Wharf Precinct buildings and chimney, the beach and buildings on escarpments. The open grass area below S15 and above Second Class Precinct is visible, as it faces due west and suggests a formal maintained landscape. The hospital occupies a spectacular viewing position, and historical photos suggest it would have been an intimidating experience for arriving ships, and a relaxing and inviting view for hospital staff.

3.4.2.2 Historic views into the site

The existing views into the site do not reflect how the site would have looked during the Aviation Phase. During this period, there was less bushland and a higher proportion of maintained lawn areas. In particular the view would have included:

- a grassy area below the Second Class accommodation buildings, where the Boatmens cottages were located;
- a clearing between the Administration building S1 and the staff cottages (S16, S6 and S12);

- more buildings within the Third Class Precinct;
- the hospital, particularly when viewed from the water coming through the heads, or the Manly Ferry;
- Isolation Precinct;
- more cleared area around the Third Class Precinct; and
- funicular ramp and precinct boundary fencing for First and Second Class Precincts.

Figure 3.4~1 provides an indication of this view corridor in 1960, and assists to show some of the elements that are absent in the current landscape.

FIGURE 3.4~1 VIEW INTO THE SITE DURING THE EARLY AVIATION PHASE (Circa 1960)

In addition to reinstating historic view corridors into the site, this Plan seeks to minimise the impact of new landscape infrastructure on existing view sheds into the sites, from prominent public viewing points and the route of the Manly Ferry.

3.4.2 Views from the site

Refer to Drawing Number QS-06

3.4.2.1 Contemporary views from the site

Contemporary views from the site are characterised by long and expansive views to Sydney Harbour and the headlands of Dobroyd Head and Middle Head. Approach views of the Harbour are glimpsed on entry, whereas views to the ocean are only visible from the Isolation and Hospital Precincts. An analysis of the main view corridors from the site is outlined on the attached plan **QS-06**.

3.4.2.2 Historic Aviation Phase views from the sites

Views were a fundamental part of the Quarantine experience. The DACMP commented on the historic value of views to the Harbour…

> "Much of the built environment is orientated towards the water. The siting of the First Class buildings with their wide verandahs appears to respond to the generous views of the Harbour" (Davies *et. al.* 2001:94).

"...The long vistas reflect the remoteness of the Quarantine Station from the original settlement of the colony" (Davies *et. al.* 2001:93).

"Historically, the extent of the views has fluctuated as a result of changing vegetation patterns: clearing, regeneration, changed drainage patterns, weed infestation, bushfire and cultural plantings" (Davies *et. al.* 2001:94).

The importance of these expansive views was also confirmed in oral history research (Roberts, Rigoni and Worthington *pers. com.* 2004).

3.4.3 Views between precincts

3.4.3.1 Contemporary views between precincts

The majority of views between precincts within the site area largely obscured by vegetation. The remaining views between precincts that are available on the site today include:

- glimpses of the Hospital precinct from the Wharf precinct;
- glimpses of Administration precinct from Hospital precinct;
- views over Second class from Administration; and
- views between first and second class.

3.4.3.2 Historic views between precincts

Oral histories suggest that throughout the Aviation Phase there were views of the Harbour and connecting views between buildings, and that these views were fundamental to operations and to creating a sense of connection and community, as outlined in Table 3.4-1 below.

Table 3.4-1 Aviation Phase Historic Views of the Harbour and Buildings (Roberts, Rigoni and Worthington *pers. com.* 2004)

Views between precincts	Significance of view
From the western side of all First and Second Class accommodation buildings: - across the Harbour - across to the Hospital and Isolation buildings - across to parts of the Third Class buildings Note that towards the end of the Aviation Phase building P5 had more of a patchy view to due several palms.	- Attracted people from various accommodation buildings onto the western verandahs to sit and socialise and admire views. - Created a sense of community among internees.
From the northern side of the Isolation buildings: - to the First and Second Class accommodation buildings - to Asiatics accommodation - to Administration buildings A1, S1 and A25.	- A sense of connection between those giving / receiving specialist care and the healthy residing in accommodation.
From the staff accommodation buildings S10, S4 and S12: - to the First and Second Class accommodation buildings - to some of the lower Administration buildings - to the Hospital and Isolation buildings.	- A sense of connection and reinforcement between family residents and their family workers on the site.

Additional oral history research suggests that most of these views were still in existence at the time that the Quarantine Station became part of the Sydney Harbour National Park (Keegan and Fletcher *pers. com*. 2004).

3.4.3.3 Views between precincts considered important to the Aviation Phase cultural landscape

An objective of the HLMP aims to minimise the impact of new landscape infrastructure on existing view sheds within the site. Key views considered in preparation of the HLMP are:

- from Building A28-A29 in First Class Precinct across to the Hospital Precinct;
- from the Hospital Precinct across to the First and Second Class Precincts;
- from the Wharf Precinct up the valley towards Third Class Asiatics Precinct, and to the escarpments of the Hospital and First and Second Class Precincts;
- from Third Class Asiatics Precinct down the valley to the Wharf Precinct;
- from entry roadways to Second Class Precinct;
- from the staff cottages to the Administration Precinct;
- from Administration along the Main Axial Street to First Class Precincts;
- from Second Class Precinct along the Main Axial Street to Administration; and
- from the upper part of the Wharf Precinct access road to the Wharf Precinct.

EXTERNAL VIEWS INTO THE SITE DRAWING NUMBER QS-05

VIEWS FROM THE NORTH HEAD QUARANTINE STATION DRAWING NUMBER QS-06

3.5 ARRIVAL SEQUENCE

Visitors to the Quarantine Station are introduced to the landscape and ocean views by a sequence of unfolding views. Refer to sequence of photos on following pages.

Photo 3.5-1 Entry view to Quarantine Station, characterised by double fences, receiving shed and long straight entry road.

Photo 3.5-2 View along Quarantine Station Entry Road with dense native vegetation to both sides of road, grass verge with continuous stone edging to upper side of road, and power lines lining the straight roadway. (pre-January 2004 burn)

Photo 3.5-2a View along Quarantine Station Entry Road after the prescribed burn in January 2004.

Photo 3.5-3 Dense stand of Eastern Suburbs Banksia Scrub abuts the grass road verge, east of entry road. (pre-January 2004 burn)

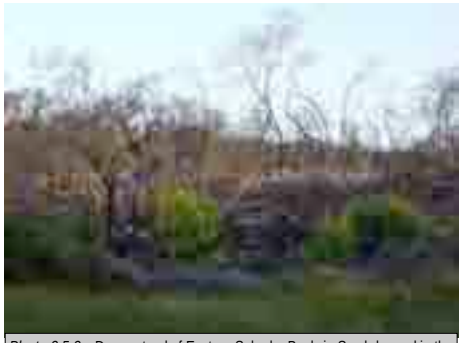


Photo 3.5-3a Dense stand of Eastern Suburbs Banksia Scrub burned in the prescribed burn in January 2004.

Photo 3.5-4 As the Quarantine Station Entry Road divides, there are no significant views. Entry to the Quarantine Station is via the right fork, with the exit road straight ahead. (pre-January 2004 burn)

Photo 3.5-5 A lack of formal road kerbing characteristics the entry road. The entry takes the right fork, with the exit to left, without destination views.

Photo 3.5-6 As the entry road descends towards the lower reservoir with the characteristic grass verge and stone road edge, a glimpse of North Harbour is seen between the dense scrub.

Photo 3.5-7 As the entry road approaches the stables, a tantalising view of North Harbour opens up between trees with the city appearing on the distant horizon.

Photo 3.5-8 As the entry road approaches the Administration Precinct, the Pines to the left, remnant Melaleucas to the right and open grass areas denote a transition into the formal landscape of the Quarantine Station.

Photo 3.5-9 The entry road descends between cottages in the grassy landscape, with a panoramic view of North Head unfolding on the horizon.

Photo 3.5-10 The entry road descends between cottages in the open grassy landscape of Administration Precinct and a panoramic view of North Harbour and Dobroyd Head unfolds over First and Second Class Precinct.

Photo 3.5-11 The entry road enters steeper topography above First Class Precinct, with the characteristic lack of kerbing to road edge, and regrowth is beginning to obscure views to buildings and to North Harbour.

Photo 3.5-12 As the entry road approaches Main Axial Street, the view is dominated by the rear of A2, with native vegetation to the left and the hand-hewn rock drain to upper edge of road.

Photo 3.5-13 The entry road approaches Main Axial junction with North Harbour glimpsed between the buildings of First Class.

Photo 3.5-14 The junction of the Entry Road and Main Axial Street is dominated by closed views, with the road dividing into three directions, without external views.

Photo 3.5-15 A glimpse of North Harbour seen between S2 and vegetation from the junction of Main Axial Street and the Entry Road.

Photo 3.5-16 The northern view along Main Axial Street from the Entry Road junction is dominated by Administration buildings, formal kerbing and a lack of vegetation.

Photo 3.5-17 The final approach sequence to reception shows the arrival at Main Axial Street, with encroaching vegetation and the Canary Island Palms characterising the location of the Administration building.

Photo 3.5-18 The approach towards the Quarantine Station from the Wharf, after arriving by ferry, comprises a spectacular panorama of Cannae Point, the Quarantine Beach and the heritage buildings of the Wharf Precinct.

4.0 OVERALL DESIGN AND MANAGEMENT RECOMMENDATIONS

4.1 ACCESS AND CIRCULATION

Please refer to the Access and Circulation Plan Dwg No QS-07

This describes the future access and circulation routes through the site for vehicles and pedestrians. Whilst this plan has assisted finalisation of this circulation system, specific arrangements and policies are contained in the Visitor Management Plan (Mawland 2005b).

4.1.1 Vehicles

4.1.1.1 Visitors

Visitors to the site who are not staying overnight will be required to park in Car Park 1 and be transported into the site on a people mover vehicle. Signage will clearly indicate that access beyond Car Park 1 is for hotel guests and service vehicles only.

The existing boom gate will be relocated from the western end of A26 to the east of the building (i.e. closer to S7) to improve visibility of the gate and direct public vehicles into Car Park 1, as per the Visitor Management Plan (Mawland 2005b).

4.1.1.2 Overnight guests

Guests will be allowed entry through Boom Gate 1 on the Entry Road and signage will direct them to use the right of the fork in the road. Access to Second Class, Cottages Road, Main Axial Street and Wharf Road will be restricted with vehicle access barriers. Guests will drive to the next Boom Gate 3 south of the building A1 which is hotel reception. At this point they will leave their vehicles, and the vehicle will be valet parked in Car Park 5. Boom Gate 4 is located immediately west of Car Park 5 to control guest vehicle access into Cottages Road and Third Class Access.

If guests wish to leave and return to the site during their stay they will be advised to use the left hand fork of the Entry Road on their return and self park in Car Park 5. Boom Gate 1 will control their exit and re-entry to the site. These additional vehicle movements using the left hand fork of the road will reduce congestion on the right hand fork and reduce the need for repeated valet parking and vehicle movement.

4.1.1.3 Service and deliveries

Service and delivery entry will be in accordance with guest entry and controlled at Boom Gate 1. For small deliveries, vehicles will unload goods at the former stables building, where a vehicle turnaround will be incorporated into the existing vehicle access footprint associated with the stables. Goods will then be delivered internally within the site by Mawland service vehicles. For larger deliveries, vehicles will continue down the right hand fork to Hotel Reception or if delivering to the restaurant in the Wharf Precinct, Boom Gate 2 at the Wharf Road near Reception will be the second control point. Delivery vehicles will exit the site along the same route.

4.1.1.4 Public Bus

Public buses will load and unload passengers in the public area provided at the roundabout at the intersection with North Head Scenic Drive. Visitors arriving by public bus will wait at building A26 for the people mover to transport them into the site.

ACCESS AND CIRCULATION PLAN DRAWING NUMBER QS-07

DRAWING KEY

- Proposed Lease Boundary
- Precinct Boundaries
- Penguin critical habitat A - Source: Protecting Manly's Little Penguins, NP&WS, Manly Council et al.
- Penguin critical habitat B - Source: Protecting Manly's Little Penguins, NP&WS, Manly Council et al.
- Potential critical Peguin habitat area - Source: Protecting Manly's Little Penguins, NP&WS, Manly Council et al.
- Vessel usage Restriction Area No anchoring all year round Source: Protecting Manly's Little Penguins, NP&WS, Manly Council et al.
- Pedestrian access routes (in addition to access along made roads)
- Public Vehicles
- Hotel guests
- Service vehicles only
- Valet only
- Public Bus drop off area
- People mover
- Water access via the 'Jenner'
- Controlled Boom Gates
- Twin bollards for people mover access only
- Penguin habitat barrier to pedestrian access
- Day visitor pedestrian control point
- Guest visitor pedestrian control point
- Day Visitor Access Area
- Existing contours at 2 m intervals

HERITAGE LANDSCAPE MANAGEMENT PLAN QS-07
APR 2006
SCALE 1:1000

NORTH HEAD QUARANTINE STATION

Access and Circulation Plan

THOMPSONBERRILLLANDSC APEDESIGNP/L inassocia tionwithP aulDa viesP/Land Arbor craft

4.1.2 Water access

4.1.2.1 *The Jenner*

The Jenner is an original vessel which operated as part of the Quarantine Station during the Aviation Phase. *The Jenner* will transport visitors between Manly and the Quarantine Wharf and will become a part of the cultural landscape. A confirmed route has been defined in the Visitor Management Plan, and the EIS Vol 1 Figure 11.2.

4.1.2.2 Public boat access

Private vessels will not be permitted to use Quarantine Wharf unless approved by Mawland, the DEC and NSW Maritime Authority.

4.1.3 Pedestrians

The Quarantine Station has operated on shared pedestrian and vehicle use of the road system throughout its operational life. This shared use is supported and will continue by minimising vehicle access in the site to service and management vehicles with the exception of the Main Entry Road. This will improve the pedestrian amenity on the road system and reinstate their social and recreational role. This is consistent with DACMP Policy numbers 13.3.25 to 13.3.32. The Quarantine Station also had a defined set of walking tracks, most of which are currently overgrown.

In addition to use of existing sealed roads there are a number of off road pedestrian access routes proposed which include:

- The former funicular route is to be adapted to provide pedestrian access. As described in Section 5 the surface treatment in the funicular route will clearly differentiate it from other paths and road systems, which is in accordance with the approval conditions and DACMP Policy numbers 13.3.33 to 13.3.41, subject to further environmental assessment.
- A link from the former funicular route along the cleared overhead power easement to Car Park 5. This is reinstatement of a former pedestrian track (on a slightly different alignment) which is evident on the 1929 aerial photograph, subject to further environmental assessment.
- Along the disused road alignment to the south east of Third Class which was formerly the major access into this area and would originally have been used as a shared walking and transport route.
- Through Second Class accommodation and to the former early Boatmen's accommodation to the north of Second Class, consistent with DACMP Policy number 13.3.27. The initiative will require close co-operation with the DEC to ensure guests do not find / utilise the track to Store Beach (outside the lease area), and is subject to further environmental assessment.
- Reinstatement of a former path link between Wharf Road and Third Class Access which is one of the earliest access routes illustrated on plans dating from 1838 *(Foley, 1995*), subject to further environmental assessment.
- Re-establish a former path link between the end of the funicular and the Asiatics which is visible on the 1929 aerials and remnants of the path exist on site.
- A defined pedestrian path will be established on the Administration Road in front of A1 and S1 where it is anticipated there may be some traffic congestion at times and clear pedestrian access will be required as a central contact point in the site.

Minor pedestrian paths are proposed, subject to further environmental assessment in the following locations:

- Path between A24 and L13 the Greenhouse, to allow the functional adaptive re-use of the Greenhouse as approved in the PAS.
- Path to H14 to be reinstated in accordance with previous path alignment, to facilitate safe access.
- Graded path access to A1 to provide for all-ability access from the existing road and proposed short-term parking area.

4.2 VEGETATION MANAGEMENT

4.2.1 Cultural Plantings

Rationale
The existing cultural plantings are to be retained and managed in accordance with the table below. The Heritage Landscape Masterplan spatially locates the cultural plantings to be retained and notes new plantings where appropriate. The recommendations are consistent with the DACMP Policy numbers 13.3.13 to 13.3.21. These are divided into guidelines and actions.
It is important to note that the indigenous vegetation in the site was written about and greatly appreciated by visitors to the Quarantine Station.

Cultural Planting Management Guidelines and Actions

No.	Species	Management Guidelines / Actions	Implementation
4.2.1a	Canary Island Date Palms *Phoenix canariensis*	❑ Retain all species. If a replacement is required an alternative Palm species will need to be investigated. No new planting of Canary Island Date Palms should be undertaken due to risk of introduction of the fungus *Fursarium oxysporum,* unless a proven effective method of control is found for this fungus. ❑ Use sterilised tools when pruning dead and dying palm fronds. ❑ Do not import any sands or soils to the site as these could potentially carry the fungus.	
4.2.1b	Norfolk Island Pine *Araucaria heterophylla* and Hoop Pine *Araucaria cunninghamii*	❑ Retain all specimens, and replace with same species if required. ❑ Protect species during external works in the site. ❑ Do not increase vehicle access in the area to prevent soil compaction around their root zones.	
4.2.1c	Norfolk Island Pine *Araucaria heterophylla* and Hoop Pine *Araucaria cunninghamii*	**Actions** ❑ Remove Native Grape from eastern side of Hoop Pine in wharf Precinct.	**Implementation** Stage 1
4.2.1d	Radiata Pines *Pinus radiata*	**Management Guidelines** ❑ Monitor health of Pines behind Cottage S12 as they may recover from the fungus. If they die, remove and replace with same species. ❑ Protect specimen in front of Asiatics Accommodation in any future external works to the building and landscape. ❑ Retain other specimens and replace with same species.	
4.2.1e	Coral trees *Erythrina x sykesii*	❑ Retain and selectively prune Coral trees in accordance with recommendations contained in Appendix B. ❑ Develop a management and replacement strategy for the Coral trees which is to include staged replacement retaining more than 50% at an established age. Replacement trees to be a broad spreading canopy tree, tolerant of coastal conditions and red flowering, species to be determined.	
4.2.1f	Coral trees *Erythrina x sykesii*	**Actions** ❑ Undertake tree surgery work required on the two Coral trees nearest the Wharf to make it safe. ❑ Significantly prune and/or remove the Coral tree adjacent to the Building A6.	**Implementation** Stage 1 Stage 1

No.	Species	Management Guidelines	
4.2.1g	Exotic trees planted in the Cottage Gardens	Where trees are in good health, retain and replant with same species if they require removal.	
4.2.1h	Exotic shrub plantings	**Management Guidelines**	
		The Chinese Rose are to be retained and replaced if required.	
4.2.1i	Exotic shrub plantings	**Actions**	**Implementation**
		❑ Prune Oleanders in front of A1 to a height of approximately 1 - 1.5 metres to reinstate visual prominence of the administration building.	Stage 1 Stage 5
		❑ Prune the Oleander outside building P4 to a height of approximately 1 - 1.5 metres to reinstate view of building facade.	
4.2.1j	Cottage Gardens	**Management Guidelines**	
		Re-establish cottage gardens consistent with the adaptive re-use proposals. Gardens to adhere to following principles: • No known invasive weed species in bushland areas to be planted in gardens. • Remnant paths, walls and existing plantings are to be assessed, conserved and incorporated into re-established gardens. • Native plants identified during oral history research by Jackson, M (2003), and Rankin (2004) and noted in **3.3.1.7** to be used in gardens.	
4.2.1k	Cottage Gardens	**Actions**	**Implementation**
		❑ Undertake detailed survey of cottage gardens and prepare design plans for reinstatement prior to commencement of works on individual gardens.	Stage 1-2
4.2.1m	Mown grass areas	**Management Guidelines**	
		Existing open mown grass areas are to be retained and continue to be managed with no application of fertilisers or chemicals. Where erosion is occurring due to natural springs or stormwater runoff these are to be managed by: ❑ Minor re-shaping of surface area to create cut off drains (swales) which are planted with grass if stable and no erosion is evident, or alternatively with local provenance indigenous ground layer species that assist with soil stabilisation. The species may include Tall Sedge *Carex appressa, Carex breviculmis,* Hill Sword-sedge *Lepidosperma concavum,* Knobby Club-rush *Ficinia nodosa* and Saw-sedge *Gahnia spp.* All these species have been recorded on North Head (refer to Flora of North Head, 2003) and will assist with soil stabilisation. There is potential to interplant with Kangaroo Grass *Themeda australis* and *Poa affinis* to improve potential use as refuge areas by Long-nosed Bandicoots. The primary purpose of planting the swales, however, is to stabilise them during flows to minimise erosion.	

Use of fertilisers and herbicides

No.	Issue	Management Guidelines
4.2.1n	Fertilisers	No fertilisers are recommended for use in the site. Proposed exotic cultural plantings will be selected to survive in those soils and conditions without fertilisers. There has been no recent history of fertilisers being applied in the site, and therefore the

No.	Issue	Management Guidelines
		exiting cultural plantings have demonstrated they are able to survive without the need for fertilisers. If fertilisers were found to be required in the site the following criteria will need to be met prior to their application: ❑ Demonstrate they will not be used in areas that are recorded foraging areas for the Long-nosed Bandicoot, or that they will be transported via stormwater runoff or groundwater to these foraging sites. ❑ Demonstrate they will not be used in bushland areas, or be transported via stormwater runoff or groundwater flows to bushland areas.
4.2.1o	Herbicides	Herbicide use is to be kept to a minimum, and only used where hand weeding is not practical. Where herbicide use is required, the use and application rates are to be consistent with DEC practices in the surrounding parts of Sydney Harbour National Park. This is likely to include requirements such as: ❑ Herbicides are only to be applied during still weather conditions and not immediately prior to the forecast of rain. ❑ Herbicides are to be applied by persons trained and certified for their use. ❑ As with the use of fertilisers, their use will need to demonstrate they will not affect recorded Long-nosed Bandicoot foraging areas or that they will be transported via stormwater runoff or groundwater to these foraging areas.

4.2.2 Native trees

Rationale

Throughout the site there are existing native and indigenous trees that have been retained or planted as single specimen trees. Many of these single mature native trees significantly contribute to the landscape character of the Quarantine Station. These include the mature specimens of the Southern Mahogany, Smooth-barked Apple, Broad-leaved Paperbarks and Port Jackson Figs. The intent of the management recommendations is to ensure these trees are retained in the site, particularly the older established remnant specimens, in recognition of their contribution to the landscape character of the Station. Some of the mature native trees have been assessed by the consultant arborist as part of this management plan (table of recommendations included in Appendix B of this report). The mature specimens of Broad-leaved Paperbarks near the entry road have been identified as posing potential risk of limb drop, with the arborist recommending these be trees be fenced to prevent access under them. The HLMP recommends allowing an area of regeneration of indigenous species beneath these trees. All species greater than 1.0 metres in height will be selectively removed from the regenerated area, long with ongoing removal of weed species. The species composition will be adjusted to allow a minimum of 50% of soft grass species favoured by the Long-nosed Bandicoot to provide refuge areas for them when foraging in the adjoining open grassed areas. The use of indigenous ground layer indigenous species to discourage access under the trees and removes the need to construct a fence or other constructed barrier in the landscape.

PHOTO 4.2-1 MATURE BROAD-LEAVED PAPERBARK TBLD P/L

There are remnant Port Jackson Figs on the sandstone escarpments below Hospital and First Class precincts. The roots of the figs in front of the Hospital are causing some damage to the inscriptions. The preferred management technique included in the Inscription Management Plan (Appendix C of this report), is to trim or poison the roots of

these trees. The impact of this work on the remnant Port Jackson Figs is to be monitored and method adjusted if required to retain the mature specimen trees and the inscriptions.

These trees have been surveyed as part of this plan by the qualified Arborist to confirm the species, age and condition. Recommendations for their future management are contained in Appendix B.

Many of the recommendations for the trees within the remainder of the site are to trim overhanging limbs to roads which may pose risk to visitors. This work is anticipated to be undertaken in consultation with the Quarantine Stations Environmental Manager to assess the habitat values of these native trees prior to trimming works.

Management Guidelines for Native Trees

No.	Species	Management Guidelines
4.2.2a	Southern Mahogany *Eucalyptus botryoides*	❑ Where limbs overhang roadways and paths, remove or prune as required in consultation with the Environment Manager to reduce risk and in accordance with recommendations in Appendix B. ❑ Retain trees and if trees die, replace with same species of local provenance.
4.2.2b	Broad-leaved Paperbark *Melaleuca quinquenervia*	❑ Protect and retain all mature specimens. ❑ Allow natural regeneration of indigenous ground layer species to restrict visitor access under trees as shown on Landscape Masterplan. This management technique is to prevent regular access under trees which are identified to have potential for limb drop given their age and size. This area will also provide refuge areas for Long-nosed Bandicoots and enhance their habitat. (**Refer to 4.2.4**) ❑ Allow some occasional regeneration of additional Broad-leaved Paperbark, but selectively thin to retain open character and views to trunks and mature specimens. This regeneration is to progressively replace the older specimens as they senesce.
4.2.2c	Port Jackson Figs *Ficus rubiginosa*	❑ Protect and retain all mature trees in the site. ❑ Where tree roots are potentially causing damage to inscriptions on the sandstone escarpment, seek specialist advice on best method to control impact, whilst retaining the mature remnant trees.
4.2.2d	Camfield's Stringybark *Eucalyptus camfieldii*	❑ Retain and protect specimens, in accordance with EIS Vol 1 p10-29 and p10-34.

PHOTO 4.2-2 INDIGENOUS GROUND LAYER VEGETATION UNDER BROAD-LEAVED PAPERBARK TBLD 2003

PHOTO 4.2-3 FIG ON ESCARPMENT TBLD 2003

4.2.3 Bushland areas

Rationale

PHOTO 4.2~4 *BANKSIA ERICIFOLIA*. TBLD

The bushland areas significantly contribute to landscape values as recognised in this and previous studies, including the NHQS DACMP (Davies *et al*, 2001). Many areas of bushland through the site provide protection and containment to different precinct characters. Some areas of regrowth have encroached into formerly cleared areas and building footprints impacting on the historical understanding of the Station's size and function. This plan recommends some clearing, selective removal and trimming of native vegetation to more accurately reflect the Quarantine Station during the Aviation Phase and during previous phases of quarantine. The approach to bushland management described in this report is consistent with the DACMP Policy numbers 13.3.22 to 13.3.24, 13.3.1 to 13.3.5, and 13.2.1 to 13.2.10.

As described in **Section 2.3** the Aviation Phase landscape had less bushland areas than those now present on the site. The discussion of the need to interpret the cultural landscape necessitating some change to the extent of bushland on the site is described in **Section 2.3.** To manage the competing objectives between the cultural landscape and the environmental objectives of the site, detailed research has been undertaken to determine what is a reasonable level of change that protects the environmental values of the site, but allows some interpretation of the Aviation Phase landscape.

Table 4.2-1 summarises all the areas that require some vegetation removal and a summary of key environmental and cultural influences guiding the decision of the extent of modification to bushland areas.

As a result of the summary analysis contained in **Table 4.2-1**, there four types of status to the recommendations for future management of the bushland areas in the site:

1. Where modification to bushland areas is already approved in the PAS, and therefore Actions to undertake these works have been included in this version of the HLMP.
2. Where proposed modifications to bushland areas have received in principle approval, because they demonstrate they meet the cultural landscape needs and that the environmental impacts can potentially be managed. They are subject to further environmental assessment prior to approval because they were not previously proposed in the EIS or PAS. These are described in this report, along with recommendations which highlight they are subject to further environmental assessment.
3. Where the principles behind the proposed modifications are described but not approved in this version of the HLMP. These principles are to be considered in other plans being prepared for the site, and will be reviewed in the first Revision of the HLMP in 5 years time.
4. Where the proposed modifications have demonstrated cultural intent, however, the magnitude of the change is not warranted to pursue further at this stage.

A summary of the proposed changes to the bushland areas is illustrated on **Drawing No. QS-08.**

The extent of vegetation clearing and selective removal are described in each of the bushland management zones The zones are spatially located on the Bushland Management Zone **Drawing No. QS-09.** A summary of the main areas of proposed vegetation change is diagrammatically illustrated on **Drawing No QS-08**.

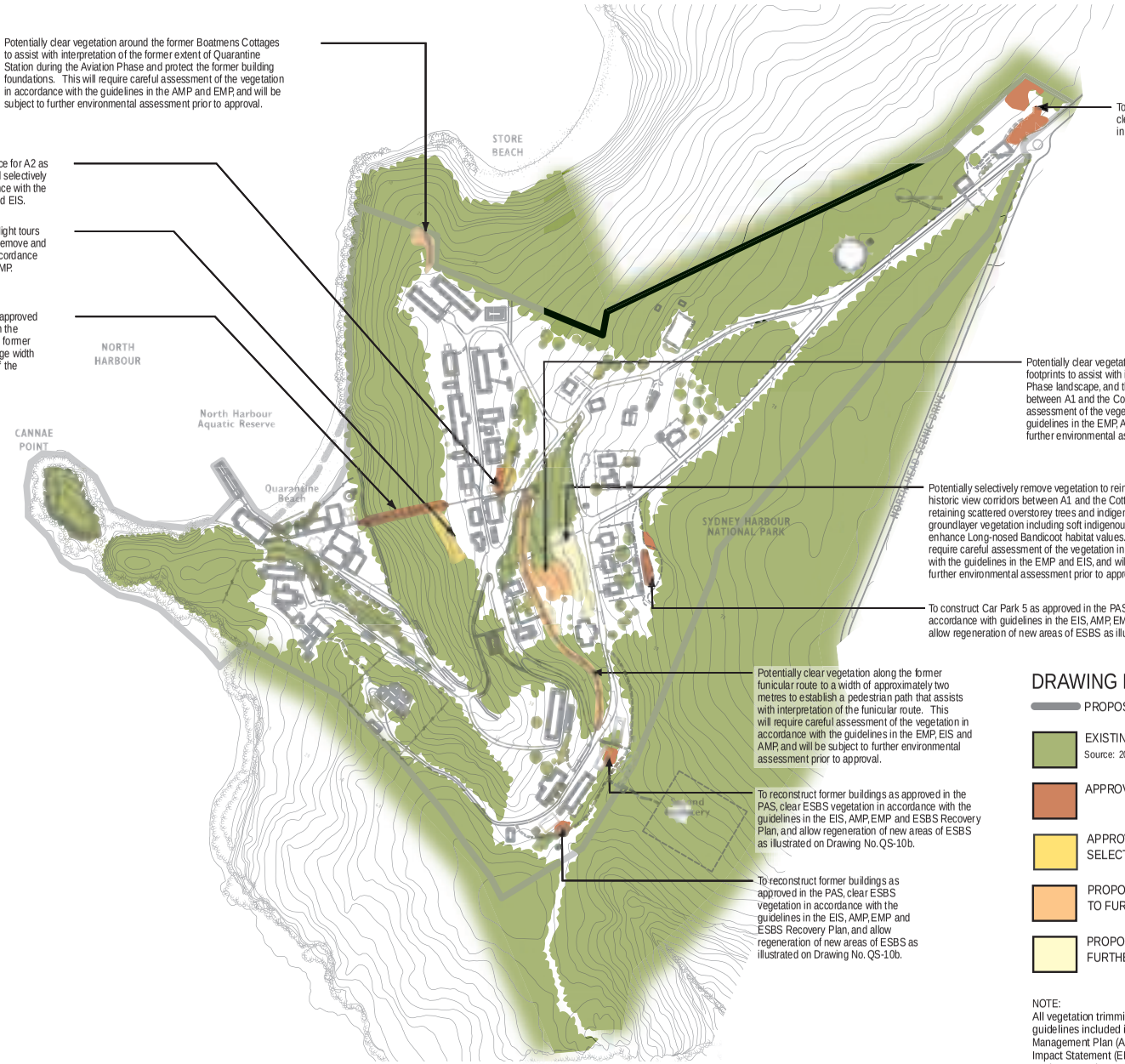
The recommendations for vegetation management are divided into Management Guidelines and Actions. The Guidelines outline the intent of management in each of these zones. The Actions are described where specific works, above regular maintenance, are required to achieve the intent of vegetation management in each of the zones. The extent of each zone is illustrated on the Bushland Management Zone **Drawing No QS-09**.

Table 4.2-1 Vegetated areas of the Quarantine Station that require some vegetation removal for the Adaptive Re-use Proposal

	Cultural							Environmental					HLMP Recommendation			
	Aviation Phase															
Location	Cleared in the 1951 Aerial	Cleared in the 1970 Aerial	Cleared in the 1978 Aerial	Cleared in the 1929 Aerial	Cleared in other historic site photos	Significant historic view corridor	View corridor confirmed with oral history	ESBS	Dense regrowth in 2000 aerial	Scattered/ partial regrowth in 2000 aerial	Long-nosed Bandicoot habitat areas (EIS)	Critical Penguin habitat	Approved and proposed in the HLMP	Proposed in the HLMP subject to further environmental assessment	Not proposed in this version of the HLMP, to be considered in other plans and the 1st Revision of the HLMP	Not proposed
Vegetated areas that require clearing																
Administration - Area behind A1 and S1 including the former building footprints of A3 and A4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes	No	No
Car Park 1	Unknown	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	No	Yes	No		
Car park 5	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No	No	No
First Class - Funicular stairs and resting platforms	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	No	No	No
Funicular path alignment, including to protect buildings A18 - Locomotive shed and the Winch and Driving Wheel	Yes	Yes, partial	Yes, partial	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No
Overhead services	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	No
Second Cemetery	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	No	No	Yes	No
Second Class - Boatmens Cottages below Second Class Accommodation	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No
Third Class Asiatics - Around the former building footprints of P21, P22 and P23.	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	No
Third Class Asiatics - Former First Class Accommodation behind Third Class Accommodation	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No
Vegetated areas that require some selective removal of overstorey and/or midstorey vegetation																
Administration - Area in front of Staff Cottages S4, S10 and S12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes	No	No
Administration - Escarpment in front of A25	Yes, partial	Yes, partial	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No
Administration - Escarpment in front of S1 and A1	Yes, partial	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No
Administration - Establish A2 breakout space	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	No
Administration - First Class escarpment adjacent to A28 and A29.	No	No	No	Yes, partial	Yes, partial	Yes	Yes	No	Yes	No	No	No	Yes	No	No	No
Administration - Upper portion of escarpment in front of S6 and S16	No	Yes, partial	Yes, partial	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes
First Class - Behind First Class Accommodation extending to 2nd Class Access Road	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
First Class - First Class escarpment adjacent to P1, P3, P5, P7 and P9	No	No	No	Yes, partial	Yes, partial	Yes	Yes	No	Yes	No	No	No	No	No	Yes	No
Hospital - Escarpment in front of the Hospital	No	Yes, partial	No	Yes, partial	Yes	Yes	Yes	No	Yes	No	No	No	No	No	Yes	No
Hospital - The landscape around the Hospital	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	Yes	No
Isolation - Escarpment in front of Isolation	No	Yes, partial	Yes, partial	Yes, partial	Yes	Yes	Yes	No	Yes	No	No	No	No	No	Yes	No
Isolation - The landscape around Isolation	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes	No

PROPOSED CHANGES TO VEGETATION COVER DRAWING NUMBER QS-08

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies P/L and Arborcraft



Potentially clear vegetation around the former Boatmens Cottages to assist with interpretation of the former extent of Quarantine Station during the Aviation Phase and protect the former building foundations. This will require careful assessment of the vegetation in accordance with the guidelines in the AMP and EMP, and will be subject to further environmental assessment prior to approval.

To establish the break-out space for A2 as approved in the PAS, clear and selectively remove vegetation in accordance with the guidelines in the EMP, AMP and EIS.

To assist with interpretation on the Night tours as approved in the PAS, selectively remove and trim vegetation front of A28-29 in accordance with the guidelines in the EIS and EMP.

To allow construction of the funicular stairs as approved in the PAS, clear vegetation in accordance with the guidelines in the EIS, AMP and EMP, along the former funicular route. Clearing will occur to an average width of four metres along the escarpment section of the route, as described in the HLMP.

To construct Car Park 1 as approved in the PAS, clear vegetation in accordance with the guidelines in the EIS, AMP and EMP.

Potentially clear vegetation around the former building footprints to assist with interpretation of the Aviation Phase landscape, and the historic view corridors between A1 and the Cottages. This will require careful assessment of the vegetation in accordance with the guidelines in the EMP, AMP and EIS, and will be subject to further environmental assessment prior to approval.

Potentially selectively remove vegetation to reinstate the historic view corridors between A1 and the Cottages, whilst retaining scattered overstorey trees and indigenous groundlayer vegetation including soft indigenous grasses to enhance Long-nosed Bandicoot habitat values. This will require careful assessment of the vegetation in accordance with the guidelines in the EMP and EIS, and will be subject to further environmental assessment prior to approval.

To construct Car Park 5 as approved in the PAS, clear ESBS vegetation in accordance with guidelines in the EIS, AMP, EMP and ESBS Recovery Plan, and allow regeneration of new areas of ESBS as illustrated on Drawing No. QS-10b.

Potentially clear vegetation along the former funicular route to a width of approximately two metres to establish a pedestrian path that assists with interpretation of the funicular route. This will require careful assessment of the vegetation in accordance with the guidelines in the EMP, EIS and AMP, and will be subject to further environmental assessment prior to approval.

To reconstruct former buildings as approved in the PAS, clear ESBS vegetation in accordance with the guidelines in the EIS, AMP, EMP and ESBS Recovery Plan, and allow regeneration of new areas of ESBS as illustrated on Drawing No. QS-10b.

To reconstruct former buildings as approved in the PAS, clear ESBS vegetation in accordance with the guidelines in the EIS, AMP, EMP and ESBS Recovery Plan, and allow regeneration of new areas of ESBS as illustrated on Drawing No. QS-10b.

DRAWING KEY

- PROPOSED LEASE BOUNDARY
- EXISTING VEGETATION COVER
  Source: 2000 aerial photograph
- APPROVED VEGETATION CLEARING
- APPROVED VEGETATION TRIMMING & SELECTIVE REMOVAL
- PROPOSED VEGETATION CLEARING SUBJECT TO FURTHER ENVIRONMENTAL ASSESSMENT
- PROPOSED SELECTIVE REMOVAL SUBJECT TO FURTHER ENVIRONMENTAL ASSESSMENT

NOTE:
All vegetation trimming and clearing is to be undertaken in accordance with guidelines included in the North Head Quarantine Station Archaeological Management Plan (AMP), the North Head Quarantine Station Environmental Impact Statement (EIS) Vols. 1 and 5 and the Quarantine Station Environmental Management Plan (EMP).

HERITAGE LANDSCAPE MANAGEMENT PLAN

NORTH HEAD QUARANTINE STATION

QS-08
APR 2006
SCALE 1:4000
0 40 80 120 200m

Proposed Changes to Vegetation Cover

THOMPSONBERRILLLANDSCAPEDESIGNP/L inassocia tionwithP aulDa viesP/Land Arbor craft

NORTH HEAD QUARANTINE STATION

HERITAGE LANDSCAPE MANAGEMENT PLAN

QS-09

APR 2006

SCALE 1:1000

0 10 20 30 50 METRES

Bushland Management Zones

For vegetation communities Refer to Drawing No. QS-02b

DRAWING KEY

- RW 1 — VEGETATION MANAGEMENT ZONES Refer to 4.2.3.1 of the Report for description of Zones
- RH — ROCKY HEATH
- RW — RIDGETOP WOODLAND
- ESBS — EASTERN SUBURBS BANKSIA SCRUB (SENESCENT)
- ESBS — EASTERN SUBURBS BANKSIA SCRUB
- F — FOREST
- SH — SHRUBLAND
- CH — COASTAL BANKSIA LOW WOODLAND
- FE — FERNLAND
- APPROVED VEGETATION CLEARING
- APPROVED VEGETATION TRIMMING & SELECTIVE REMOVAL
- PROPOSED VEGETATION CLEARING SUBJECT TO FURTHER ENVIRONMENTAL ASSESSMENT
- PROPOSED SELECTIVE REMOVAL SUBJECT TO FURTHER ENVIRONMENTAL ASSESSMENT

The Management Guidelines are to be used to guide the preparation of the bushland management programs, that will inform the appropriate methods and priorities of weed control, revegetation and regeneration, within the broader framework of priorities listed in this HLMP.

4.2.3.1 Bushland Management Zones

Refer to Drawing No QS-09

The bushland management zones are described by precinct.

HOSPITAL PRECINCT

4.2.3.1a Rocky Heath in Hospital Precinct

Cultural Objectives

- Retain historic view corridors over North Harbour and the ocean from Hospital Precinct
- Retain historic view corridors between Hospital, Wharf and First Class Precincts
- Protect inscriptions on the escarpment
- Retain existing open mown areas around the hospital grounds to reflect the Aviation Phase when mown areas extended to the lease boundary.

Environmental Objectives

- Retain and enhance species diversity

No.	Zone	Management Guidelines	
4.2.3.1a	**RH 1, RH2 & RH3**	This vegetation community extends beyond the lease boundary, and therefore future management will be consistent with the management directions for this broader vegetation community in the remainder of the Sydney Harbour National Park on North Head and DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) Ensure the vegetation management program developed to protect the inscriptions on the escarpment from damage, particularly the tree roots from the Port Jackson Figs, protects the health of the Figs as remnant trees.	
	RH1	**Actions**	**Implementation**
		Retain existing mown grass areas within Hospital Precinct.	All stages
	RH2	No specific actions, refer to Management Guidelines.	
	RH3	No specific actions for Rocky Heath on Cannae Point. Refer to management guidelines.	

4.2.3.1b Ridgetop Woodland in Hospital Precinct

Cultural Objectives

- Protect the historical infrastructure in the zone including perimeter fence and former building foundations
- Retain historic view corridors between Hospital, Wharf and First Class Precincts
- Protect inscriptions on the escarpment

Environmental Objectives

- Retain and enhance species diversity

No.	Zone	Management Guidelines	
4.2.3.1b	**RW1 & RW2**	This Woodland community is to be managed in accordance with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004). This will require regular maintenance and monitoring to protect indigenous vegetation and manage weeds.	
		Actions	**Implementation**
	RW1	Refer to RH2.	Stage 2
	RW2	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages

ISOLATION PRECINCT

4.2.3.1c Ridgetop Woodland in Isolation Precinct

Cultural Objectives

- Re-establish the historic view corridors between Isolation and Administration Precincts
- Retain historic view corridors over Port Jackson and the ocean

Environmental Objectives

- Retain and enhance species diversity

No.	Zone	Management Guidelines	
4.2.3.1c	**RW3 & RW4**	This Woodland community is to be managed in accordance with the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) This will require regular maintenance and monitoring to protect indigenous vegetation and manage weeds.	
		Actions	**Implementation**
	RW3	No specific actions in this HLMP.	n/a
	RW4	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004)	Stage 3

THIRD CLASS ASIATICS PRECINCTS

4.2.3.1d Ridgetop Woodland in Third Class Asiatics Precinct

Cultural Objectives

- No specific cultural objectives.

Environmental Objectives

- Retain and enhance species diversity

No.	Zone	Actions	Implementation
4.2.3.1d	**RW4**	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004). Recognise presence of both Rough-barked and Smooth-barked Apple in this vegetation community.	Stage 3

4.2.3.1e ESBS in Third Class Asiatics Precinct

Cultural Objectives

- Reconstruct former buildings P21, P22 and P23.
- Interpretation of the Second Cemetery
- Interpretation of the original extent of the Quarantine Station, particularly the former first class precinct buildings behind Third Class

Environmental Objectives

- Protect this endangered ecological community in accordance with the ESBS Recovery Plan (DEC, 2004)

No.	Zone	Management Guidelines	
4.2.3.1e	**ESBS1**	ESBS vegetation community is to be managed in accordance with the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004), and the ESBS Recovery Plan.	
		Actions	**Implementation**
		When reconstruction of P23, P22 and P21 commences, carefully assess and clear ESBS from the building footprints to allow reconstruction. Methods of clearing to be in accordance with the AMP, the EMP and the EIS.	Stages 1 and 5

ADMINISTRATION PRECINCT

4.2.3.1f ESBS Administration Precinct

Cultural Objectives

- Construct CP5 to implement the approved PAS.
- Maintain sense of enclosure this vegetation community provides along the Quarantine Station entry road.

Environmental Objectives

- Protect this endangered ecological community in accordance with the ESBS Recovery Plan (DEC, 2004).

No.	Zone	Management Guidelines	
4.2.3.1f	**ESBS2**	ESBS vegetation community is to be managed in accordance with the DEC DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) and the ESBS Recovery Plan.	
	ESBS3	ESBS vegetation community is located between the entry and exit roads on the site, and to be managed in accordance with the DEC Recovery Plan and Fire Management Plan for the Quarantine Station. Included in this zone is the one remaining remnant Camfield's Stringybark *Eucalyptus camfieldii* on the site, and Sunshine Wattles *Acacia terminalis spp terminalis* both of which are threatened species protected by the *TSC Act*.	
		Actions	**Implementation**
	ESBS2	Prior to construction of CP5, some vegetation clearing will be required as approved in the PAS. Carefully clear ESBS in accordance with the AMP, EMP and the EIS.	Stage 1
	ESBS3	Prepare bushland management program for the fork in the road, consistent with the ESBS Recovery Plan (DEC, 2004), to allow natural regeneration of ESBS. A minimum of 10 metres back from the fork in the road is to have all weed species and species greater than 0.6 metres in height selectively removed to retain clear vehicle sightlines.	Stage 1 and ongoing.

4.2.3.1g Forest in Administration precinct

Cultural Objectives

- Interpret historic view corridors between the Cottages and Administration.
- Interpret the former funicular route.
- Protect former building foundations.
- Interpret the historic view corridors between Administration and the remainder the site including First Class, Isolation and Hospital Precincts.
- Strengthen elements of the remnant cultural plantings through reinstatement of the garden bed around A1.

Environmental Objectives

- Enhance Long-nosed Bandicoot habitat.
- Retain and enhance species diversity.

No.	Zone	Management Guidelines	
4.2.3.1g	**F1**	This vegetation community will be managed to achieve the cultural objective of reinstatement of historic view corridors, subject to further environmental assessment. The future management will also be in accordance with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004)	
		Actions	**Implementation**
		To interpret historic view corridors between the Cottages and Administration, carefully assess, and selectively remove overstorey and midstorey vegetation in accordance with the AMP and EMP. Retain and improve groundlayer vegetation to improve use as refuge by Long-nosed Bandicoots. This action cannot proceed until an environmental assessment has been undertaken.	Stage 5 (subject to an environmental assessment))

No.	Zone	Management Guidelines	
		To interpret the former funicular alignment, a pedestrian path is proposed to be constructed along its length. Carefully assess, and selectively clear vegetation to a total width of 2 metres along the former funicular alignment. This action cannot proceed until further environmental assessment has been undertaken.	Stage 3 (subject to an environmental assessment)
	F2	To interpret the historic view corridors and the extent of the former Quarantine Station operation during the Aviation Phase, carefully assess and clear the existing vegetation around the former building footprints of A3 and A4 and re-establish as grass. This action cannot proceed until an environmental assessment has been undertaken.	Stage 5 (subject to an environmental assessment)
	F3	Prepare and implement bushland management programs for the bushland areas in Administration Precinct to manage primarily for protection and enhancement of species diversity. Review the extent of Native Grape and the impact this may be having on overstorey canopy trees in the wet gully adjacent to Wharf Road as part of the bushland management program.	Year 4

4.2.3.1h Fernland Administration Precinct

Cultural Objectives

- No specific cultural objectives

Environmental Objectives

- Retain and enhance species diversity.

No.	Zone	Management Guidelines
4.2.3.1h	**FL1**	This vegetation community will be managed to achieve the environmental objectives of the site, consistent with the broader vegetation management objectives for the adjoining National Park.

4.2.3.1i Shrubland Administration Precinct

Cultural Objectives

- Construction of Car Park 1 which necessitates some vegetation clearing.
- Retain the sense of enclosure this vegetation community provides on the northern side of the entry road.

Environmental Objectives

- Retain and enhance species diversity
- Establish compensatory habitat for the Long-nosed Bandicoot elsewhere on site, and off-site as required (as compensation of construction of CP1).

No.	Zone	Management Guidelines	
4.2.3.1i	**SH1**	This vegetation community will be managed to achieve the environmental objectives of the site and consistent with the broader vegetation management objectives for the adjoining National Park.	
		Actions	**Implementation**
		Prior to the detailed design and construction of Car Park 1 some vegetation clearing will be required as approved in the PAS. During detailed design documentation assess the vegetation to be cleared consistent with the requirements of the AMP, EMP and EIS, followed by vegetation clearing consistent with the approved methods.	Stage 1

4.2.3.1j Forest in Administration precinct

Cultural Objectives

- Retain the Stonemasons Yard.

Environmental Objectives

- Retain and enhance species diversity

No.	Zone	Management Guidelines
4.2.3.1j	**F4**	This vegetation community will be managed to achieve the

No.	Zone	Management Guidelines	
		environmental objectives of the site and consistent with the broader vegetation management objectives for the adjoining National Park.	
		Actions	**Implementation**
		Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
	F5	**Management Guidelines**	
		This area of Forest overstorey is dominated by Broad-leaved Paperbark and is to be managed primarily for its environmental objectives.	

4.2.3.1k Ridgetop Woodland in Administration precinct

Cultural Objectives

- Reinstate the historic view corridor from A28-29 to Hospital Precinct and Port Jackson for interpretation on the night tour, as approved in the PAS.
- Interpret the former funicular inclinator route.

Environmental Objectives

- Retain and enhance species diversity.

No.	Zone	Management Guidelines	
4.2.3.1k	**RW5**	This vegetation community will managed for the protection of environmental values consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004) and to meet the cultural objectives in a manner that minimises environmental impacts.	
		Actions	**Implementation**
		To provide access to interpret the former funicular route some vegetation clearing will be required as approved in the PAS. During the detailed design, and prior to construction of the Funicular stairs, assess the vegetation to be cleared consistent with the requirements of the AMP, EMP and the EIS Vol1, p10-27, followed by clearing consistent with the approved methods and the design requirements described in this HLMP Section 5.1.3.7.	Stage 1
		To open up historic view corridors in front of A28-29, as approved in the PAS, assess vegetation on the escarpment in front of A28-29 in accordance with the process outlined in EIS Vol 1, p10-27. Undertake selective removal and trimming in accordance with agreed outcomes from the assessment work.	Stage 2

FIRST CLASS PRECINCT

4.2.3.1m Ridgetop Woodland in First Class precinct

Cultural Objectives

- Reinstate the historic view corridors from First Class to the Hospital Precinct and over North Harbour and Port Jackson.

Environmental Objectives

- Retain and enhance species diversity.

No.	Zone	Management Guidelines	
4.2.3.1m	**RW6**	This vegetation community will be managed consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004), and to improve species diversity in a vegetation community that is recognised for high species diversity.	
		Actions	**Implementation**
		Develop a bushland management program for this First Class Precinct escarpment, consistent with the broader DEC management objectives, and consistent with the cultural objectives of this zone.	Stage 4

4.2.3.1n Coastal Banksia Low Woodland in Second Class Precinct

Cultural Objectives

- Retain the historic view corridors from Second Class to the Hospital Precincts and over North Harbour.
- Retain the historic view corridors to Second Class precinct from the Manly area and the water.

Environmental Objectives

- Retain and enhance species diversity.

No.	Zone	Management Guidelines	
4.2.3.1n	**CH1**	This vegetation community will be managed consistent with the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004), and adjoining bushland managed by DEC as part of the National Park system on North Head. Consideration for the cultural objectives will be required.	
		Actions	**Implementation**
		Develop a bushland management program for Second Class Precinct escarpment consistent with the adjoining bushland management direction by DEC and the cultural objectives of this zone.	Stage 4

4.2.3.1o Ridgetop Woodland in Second Class precinct

Cultural Objectives

- Interpret the former extent of the Quarantine Station operation during the Aviation Phase and protect the archaeological value of the former Boatmens cottages building foundations.

Environmental Objectives

- Retain and enhance species diversity.

No.	Zone	Management Guidelines	
4.2.3.1o	**RW7**	This vegetation community will be managed consistent with the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004), and the broader management objectives for the adjoining bushland in the National Park on North head, whilst meeting the cultural objectives for this precinct.	
		Actions	**Implementation**
		To interpret the former extent of the Quarantine Station operation during the Aviation Phase in the vicinity of the former Boatmens cottages, assess potential clearing. This would be assessed in accordance with the process outlined in EIS Vol 1, p10-27, and in accordance with the AMP and EMP. This proposal will require environmental assessment prior to approval. If approved, undertake removals in accordance with agreed outcomes from the assessment work.	Stage 4 (subject to an environmental assessment).

4.2.3.2 Phytopthora control

Phytopthora cinnamonii is a disease of plant roots caused by a water mould that can cause widespread decline in plant health and plant death. Plant death is more common where plants are subject to other stresses such as insect attack, water stress etc. Phytopthora is spread in contaminated soil and is easily spread in soil attached to footwear, machinery and tools.

No.	Management Guidelines
4.2.3.2a	Future bushland management work at the Quarantine Station is to adhere to the Sydney Harbour National Park Field Phytopthora Protocols (DEC, 2004) which include: - clean equipment, machinery and footwear before entering the site; - spray or soak all soles of shoes and tools with approved disinfectants before entering or leaving the site; and - don't drive vehicles off designated tracks and into bushland areas.

LONG-NOSED BANDICOOT HABITAT ENHANCEMENT AREAS DRAWING NO. QS-10a

4.2.4 Long-nosed Bandicoot habitat enhancement

Refer to Drawing No. QS-10a

4.2.4.1 Rationale

The Long-nosed Bandicoots utilise the majority of the open mown grass areas in the Quarantine Station for foraging. The Approval Condition 92(g) requests that the Landscape Plan provide small-scale shelter habitat for Long-nosed Bandicoots without significant impact on the cultural landscape. A small area of existing Long-nosed Bandicoot foraging area will be lost to construction of car park 1 (CP1). To meet Approval Condition 166, an area of habitat enhancement, reconstruction or rehabilitation works is to occur elsewhere on North Head that is at least ten times the size of the area impacted. The construction of car park 1 will result in a loss of an estimated 1,185m2 of foraging habitat (i.e. the open grassed areas). This will be off-set on-site by the provision of an estimated 9,460m2 of habitat enhancement areas, leaving an additional estimated 2,400m2 to be provided elsewhere on North Head.

Approximately 600m2 of this habitat enhancement is the conversion of hard surface parking areas in the vicinity Second Class accommodation to soft surfaces with either grass or soft native grasses. The remainder is provided by areas which are allowed to naturally regenerate with low indigenous groundlayer species, with a preference for soft native grasses. These areas are located adjacent to mown grassed areas providing shelter for Long-nosed Bandicoots thereby making the mown grassed areas more useable for Bandicoots when the site is in operation.

The DEC Threatened Species Unit have advised that the Long-nosed Bandicoots prefer to shelter amongst soft grasses like Kangaroo Grass, Weeping Grass and Tussock Grass. The plan has considered how these shelter areas can best be integrated into the landscape without unduly impacting on the cultural landscape of the Aviation Phase. These areas have been illustrated on Landscape Masterplan Drawing No. QS-10C, and have been highlighted on Bandicoot Habitat Enhancement Areas **Drawing No. QS-10a**.

In addition to allowing areas to naturally regenerate and then managing these regenerated areas to sustain a groundlayer of indigenous grasses, other measures to improve the habitat values is to redirect roof and/or stormwater runoff into these refuge areas to create a wetter environment which is thought to be the preferred habitat for Long-nosed Bandicoots.

As described in the Section 3.1.3 the soils at the Quarantine Station are naturally susceptible to erosion. It is important, therefore, that future detailed designs for redirection of stormwater and/or roof runoff adequately address this issue. This may include the use of flow spreaders and/or rock and indigenous planting utilising indigenous soil binding species.

In addition to the regenerated areas highlighted on **Drawing No. QS-10a**, Bandicoots may utilise other garden beds in the site, particularly the areas planted alongside the building. The primary intent of planting around some of edges of buildings is to restrict human access under them due to soil contamination under the buildings. The species used in these plantings will be indigenous to the site, however, will be more robust as a deterrent to access. These beds, may however, also be utilised by Long-nosed Bandicoots, additional to those highlighted on the Drawing No. QS-10a.

4.2.4.2 Management Guidelines and Actions

No.	Management Guidelines
4.2.4.2a	Regeneration of indigenous groundlayer vegetation to stabilise this steep eroding area in Third Class Precinct which is difficult to maintain as a mown grass areas. This creates refuge areas for the Long-nosed Bandicoots adjacent to the open grassed areas in Third Class. The new path in this precinct will form a maintainable edge to this zone.

No.	Management Guidelines	
4.2.4.2a (continued)	**Actions**	**Implementation**
	Allow natural regeneration of indigenous species, regularly removing vegetation of a height greater than approximately 1 metre, to retain view corridors to North Harbour. Encourage a higher percentage mix of soft indigenous grasses which are preferred by the Long-nosed Bandicoot for refuge and nesting purposes.	Stage 3, 4 and 5
4.2.4.2b	**Management Guidelines**	
	Manage as a regenerated low indigenous vegetation to retain views of established Broad-leaved Paperbarks, discourage pedestrian access under them, and provide Long-nosed Bandicoot refuge areas. Selectively remove future natural regeneration of Broad-leaved Paperbarks and other vegetation greater than approximately 1 metre in height to retain clear views of mature specimens. Some scattered additional Paperbarks can be retained to supplement mature trees. The extent of revegetation areas are illustrated on Landscape Masterplan **Drawing No. QS-10C.**	
	Actions	**Implementation**
	To provide Long-nosed Bandicoot refuge areas and prevent access under the Broad-leaved Paperbarks, mark out the area for natural regeneration and confirm in Administration Precinct. Cease mowing and allow natural regeneration of indigenous groundlayer species up to approximately 1 metre high. Encourage a reasonable proportion of soft indigenous grasses to predominate as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Stage 1
4.2.4.2c	**Management Guidelines**	
	Manage as a regenerated low indigenous vegetation to provide Long-nosed Bandicoot refuge areas and provide a wetter environment by redirecting roof runoff into these areas. Selectively remove future natural regeneration of all species other than low soft indigenous grasses to maximise the refuge and habitat potential of these areas for Long-nosed Bandicoots. The extent of regeneration areas is illustrated on **Drawing No. QS-10a** and will include the areas at the top of First Class escarpment, the area north of building P10 and west of buildings P14-15 in Asiatics.	
	Actions	**Implementation**
	❑ To provide Long-nosed Bandicoot refuge areas (top of First Class Precinct escarpment, the area north of building P10 and west of buildings P14-15) mark out the area for natural regeneration and confirm. Cease mowing and allow natural regeneration of indigenous groundlayer species with a high proportion of soft indigenous grasses as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Stage 2
	❑ Investigate the potential to redirect building roof runoff, and stormwater runoff into this regeneration zone via broad, above ground grassed or planted swales. Detailed design investigation is required prior to implementation.	Stage 2
4.2.4.2d	**Management Guidelines**	
	Manage as a regenerated low indigenous vegetation to provide Long-nosed Bandicoot refuge areas. Selectively remove future natural regeneration of all species other than low soft indigenous grasses to maximise the refuge and habitat potential of these areas for Long-nosed Bandicoots and retain historic view corridor from Buildings S6 and S16. The extent of regeneration is illustrated on **Drawing No. 10a**.	
	Actions	**Implementation**
	To provide Long-nosed Bandicoot refuge areas adjacent to Buildings S6 and S16, mark out the area for natural regeneration and confirm. Cease mowing and allow natural regeneration of indigenous groundlayer species with a high proportion of soft indigenous grasses as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Stage 5

ESBS REGENERATION AREAS DRAWING NO. QS-10b

4.2.5 ESBS Regeneration areas

Refer to Drawing No. QS-10b

4.2.5.1 Rationale

Eastern Suburbs Banksia Scrub (ESBS) is an endangered ecological community that occurs at the Quarantine Station, and is described in **Section 3.2.2.3**, and the extent of the existing community is illustrated on **Drawing No. QS-02a**.

There is a need to remove some areas of ESBS as part of the works already approved in the PAS, namely the construction of Car Park 5 (CP5) and for the reconstruction of Buildings P21 and P23. As compensation for the loss of ESBS in these specific locations, there is a requirement to provide up to twenty times the amount of ESBS removed as part of the works on the site or alternatively off-site, as stated in the EMP for the Quarantine Station, 2005 and Approval Condition 154(h). This Landscape Plan has identified areas of ESBS regeneration on site, which can partially compensate for the loss of ESBS. The works result in an estimated 290m2 area of ESBS to be removed. If twenty times the compensatory habitat is required, a total estimated area of 5,800m2 would need to be provided. A total additional estimated area of 3,486m2 has been identified for regeneration on site and compensatory regeneration areas will be required off-site for a total estimated area of 2,310m2.

Drawing No. QS-10b highlights the areas of ESBS regeneration.

4.2.5.2 Management Guidelines and Actions

No.	Management Guidelines	
4.2.5.2a	The regenerated ESBS areas are to be managed in accordance with the approved ESBS Recovery Plan (DEC, 2004).	
	Actions	**Implementation**
	Cease mowing/slashing in the areas shown on Drawing No. QS-10b to allow ESBS regeneration. Develop a management program for the ongoing management of this vegetation consistent with the Recovery Plan and the future DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004).	Stage 1 and ongoing

4.2.5.3 Other non-ESBS regeneration areas

No.	Management Guidelines	
4.2.5.3a	Allow the dune vegetation to regenerate naturally, or if this does not occur, plant with appropriate species including *Spinifex*. This regeneration will assist with protection of the Little Penguin habitat by discouraging access to the area.	
	Actions	**Implementation**
	Allow natural regeneration of the dune area on Quarantine Beach with indigenous species to extent shown on Landscape Masterplan Drawing No. QS-10C. If natural regeneration does not occur, undertake supplementary planting with local provenance indigenous species.	Stage 2

4.2.6 Proposed planting

4.2.6.1 Rationale

Planting is to be minimised across the site in keeping with the predominantly industrial and unadorned cultural landscape associated with the quarantine operations during the Aviation Phase. The existing cultural landscape does not reflect the planting that existed

during the Aviation Phase and some planting is therefore recommended to better interpret this period. Some cultural planting is recommended in the following locations:

- adjacent to Building A1 to restore former garden beds evident in site photographs. Some remnant planting remains in these areas including Hibiscus and Oleanders, and there is likely to be additional exotic planting found when removing the recent regrowth, particularly immediately south of A1;
- former Staff Cottage residential gardens; and
- residential and recreational areas of First Class Precinct.

Planting is also required to achieve other objectives in the site including:

- subtle barriers to manage visitor access, where a physical constructed barrier would create a greater visual impact; and
- areas highly prone to erosion, where grass is incapable of holding the soil or sand together.

Refer to Section 5.0 of this report for the Recommendations regarding specific locations for proposed planting. Below are guidelines for these new planted areas.

4.2.6.1 New garden bed areas

No.	Management Guidelines
4.2.6.1a	No snail bait is to be used in any garden bed areas in order to protect the Long-nosed Bandicoots, who will potentially eat the bait.
4.2.6.1b	The width of new garden beds around perimeter of buildings (for locations refer to Section 5) is to be adequate to prevent access, control erosion and allow for plant establishment only.
4.2.6.1c	Where new garden beds are established to the perimeter of buildings to prevent access to contaminated areas beneath them (for locations refer to Section 5), the planting is to be indigenous, robust to deter access, and from a distance, not detract from the open mown grassed unadorned landscape character of the Quarantine Station.
4.2.6.1d	For garden beds in new locations (not previously known to be planted), the edging is to be sawn sandstone laid flush with finished surface. The sawn sandstone will clearly differentiate the garden bed as new construction, and the sandstone material will integrate the garden bed edging with the natural landscape character of the site.

4.3 LANDSCAPE INFRASTRUCTURE MANAGEMENT

4.3.1 Management guidelines and actions for existing landscape infrastructure

No.	Feature	Management Guidelines	
4.3.1.1a	Sealed roads	❑ Maintain current asphalt roads with localised repairs as required to ensure stability of top surface and original stone edges are retained in-situ and not covered over. ❑ Match surface repairs to current surface type and colour so as to not draw attention to changes in road surface.	
4.3.1.1b	Sealed roads	**Action**	**Implementation**
		Where a section of road requires major repair or replacement (due to failure or collapse), such as in front of the Mortuary and approach to Isolation, remove or replacement of whole sections of roadway, but not short sections. This would entail removal of successive top surface layers of asphalt, to the original sandstone base, then replacement of top surface with a rolled in crushed sandstone finish, over a asphalt top layer. This will re-establish the correct levels to sandstone edges, and provide a practical wearing top surface that reflects the original surface material and colour. All works are to be in accordance with procedures outlined in the AMP.	Years 4 to 5
4.3.1.2	Unsealed roads	**Management Guidelines**	
		❑ Maintain current unsealed roads with localised repairs as required to ensure stability of top surface and original stone edges are retained in-situ and not covered over. ❑ Match surface repairs to current surface type and colour so as to not draw attention to changes in road surface.	
4.3.1.3a	Sealed paths	❑ Maintain and keep remnant asphalt sealed pathways with sandstone base. Ensure surface is trafficable, with in situ repairs as required. ❑ Maintain and keep remnant concrete sealed pathways and surfaces, and former building foundations.	
4.3.1.3b	Sealed paths	**Action**	**Implementation**
		❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels	Stage 2 to 4
		❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels, including former building foundations	Stage 2 to 4
4.3.1.4a	Unsealed paths	**Management Guidelines**	
		❑ Maintain and keep existing unsealed pathways where pedestrian traffic loads are not expected to be high, e.g. pedestrian existing track around rear of P22, and track to Second Cemetery.	
4.3.1.4b	Unsealed paths	**Action**	**Implementation**
		To reduce erosion add and compact suitable granitic sandstone based path material, and carry out suitable improvements to localised stormwater flows, i.e. improved planted swales and installation of minor cross path sub surface slotted pipe drainage lines, to remove water erosion from pathways.	Stage 2 to 4

No.	Feature	Management Guidelines	
4.3.1.5a	Open stone drains	❑ No new stone work is to be completed on stone drains, e.g. extensions in length or height. Where repairs are required, replacement stone is to be sourced from on site stockpiles (or source stone externally to match existing if adequate quantity is not available on site), and carefully cut and replaced to match surrounding stonework. ❑ Informally monitor existing stone drains for collapse or cracks, repair subsurface as required, and carefully repair with matching materials. ❑ Remove any invasive vegetative material from within large and or significant stone drains, to reduce possible root damage to stone work. ❑ Un-mortared stone work is to remain as is, and not be mortared. ❑ Works in the upstream catchment of drains are to reduce stormwater flows where possible, to allow existing stone drainage infrastructure to remain at current capacity. Open vegetated swales are proposed to assist with this stormwater flow reduction. ❑ Open sandstone pits are to be retained and not modified. ❑ Open stone drains to remain open and not be covered.	
4.3.1.5b	Open stone drains	**Action**	**Implementation**
		Install protection barriers outside stone pit area, to make drivers aware of stone pit locations, using two square 1m x 125 x 125 hardwood timber posts (natural clear finish, not painted) installed either side in close proximity to the pit, with reflective markers	Stage 5
4.3.1.6a	Drainage infrastructure	**Management Guidelines**	
		❑ Existing sub surface concrete pipe and pit drainage systems are to be retained and maintained in current condition, in accordance with the Infrastructure Control Plan. ❑ Repairs to pits are to be in keeping with type and character of local materials, and not enlarged or made dominant in the landscape. ❑ If possible, no new sub surface concrete pipe and pit drainage systems are to be introduced to the site, as they are detrimental to the heritage landscape character. ❑ Slate pit covers over junction pits are not to be modified.	
4.3.1.6b	Drainage infrastructure	**Action**	**Implementation**
		To protect slate pit covers from accidental vehicle damage, install two square 1m x 125 x 125 hardwood timber posts (natural clear finish, not painted) either side in close proximity to the pit.	Year 4
4.3.1.7	Stone road edging	**Management Guidelines**	
		❑ Retain and protect stone road edging. ❑ If edging needs to be removed due to repairs, it is to be reinstated in original alignment. ❑ Short sections of stone edging are not to be raised to meet current road height, as this lessens the interpretation of the original road surface level. ❑ Long sections of stone edging can be raised to final road level, if edging works are consistent along the road length, with edging reinstated in existing location (Refer to road repairs).	
4.3.1.8	Concrete kerbs	**Management Guidelines**	
		❑ Concrete kerbs are to be retained and maintained where required to retain edges and where required for drainage system. ❑ If concrete kerbs are in need of repair or replacement, but can be removed where alternative techniques of retaining road edge and drainage can to be used (stone edging and vegetated swales) the kerb can be removed, subject to detailed review and design.	

No.	Feature	Management Guidelines	
4.3.1.9a	Stone walls	❑ Existing stone walls are to be retained and protected, without modification or extension. ❑ Repairs are to be completed with attention to style and technique, where possible using stone from on site stockpiles, or source stone externally to match existing if adequate quantity is not available on site. ❑ When damaged or deteriorated, dry stone walls (constructed without mortar) are to be repaired by expert stonemasons, without use of mortar. ❑ Under no circumstances are non-stone materials to be used to repair stone walls.	
4.3.1.10a	Concrete retaining walls	**Management Guidelines**	
		❑ Concrete retaining walls are to be informally monitored for integrity and maintained as required. ❑ Concrete retaining walls are not to be extended or lengthened unless site conditions are such that a site is threatened by collapse.	
4.3.1.10b	Concrete retaining walls	**Action**	**Implementation**
		The interlocking concrete block retaining wall, located on the pedestrian walkway from the Hospital to Wharf Precincts, is to be planted with appropriate indigenous groundcover species to reduce its visual prominence in the site.	Year 5
4.3.1.11a	Stone steps	**Management Guidelines**	
		❑ Existing stone steps are to be retained and protected, with appropriate modification or extension. ❑ Repairs are to be completed with attention to style and technique, where possible using stone from on site stockpiles. ❑ Where stone steps have lost steel handrails, hand rails are to replaced using appropriate materials and conservation architectural techniques, refer to DACMP. ❑ The two flights of stone steps located either side of A1, are to be maintained and protected from damage. ❑ The stone and gravel infill steps leading from Isolation Precinct to Hospital Precinct are to be upgraded, with installation of the concrete path with crushed sandstone surface finish (refer to 4.3.2 New material use in infrastructure design). Localised stormwater is to be adequately controlled, with redirection of surface runoff away from steps via a vegetated stormwater drain. Painted markings are to be removed if possible.	
4.3.1.11b	Stone steps	**Action**	**Implementation**
		The stone and gravel infill steps leading from Isolation Precinct to Hospital Precinct are to be upgraded, with installation of the concrete path with crushed sandstone surface finish (refer to 4.3.2 New material use in infrastructure design). Localised stormwater is to be adequately controlled, with redirection of surface runoff away from steps via a vegetated stormwater drain. Painted markings are to be removed if possible.	Year 5
4.3.1.12	Concrete steps	**Management Guidelines**	
		❑ Concrete steps are to be informally monitored for integrity and maintained as required. ❑ Concrete steps are not to be extended or lengthened unless site conditions require.	

No.	Feature	Management Guidelines	
4.3.1.13a	Road and pedestrian barriers	❑ Existing Steel barriers are to be informally monitored for integrity and maintained or replaced as required. ❑ Steel post and handrail on descent track from hospital to wharf precinct is to be informally monitored for integrity and maintained or replaced as required.	
4.3.1.13b	Road and pedestrian barriers	**Action**	**Implementation**
		❑ Existing Steel barriers that have been installed during the NPWS/DEC phase are to be removed when required by condition and replaced with new barriers in accordance with new design materials refer to 4.3.2.11. New material use in infrastructure design. ❑ Steel post and handrail on descent track from hospital to wharf precinct is to be removed when required by condition and replaced with an appropriate design (refer to 4.3.2.11 New material use in infrastructure design).	Year 5 Year 5
4.3.1.14	Signage	**Management Guidelines**	
		Signage to be monitored and replaced in accordance with Signage Plan guidelines.	
4.3.1.15	Power poles	Existing power poles are to be retained, unless localised circumstances requires undergrounding of powerlines. If this occurs, reference to the AMP if required.	
4.3.1.16	External lighting	Refer to 4.3.5 HLMP Lighting Management Guidelines.	
4.3.1.17	Gates	Gates are to be repaired and reconstructed to match original designs as required.	
4.3.1.18a	Fire hydrant covers	**Management Guidelines**	
		Fire hydrant covers are to be informally monitored for integrity and maintained or replaced as required.	
4.3.1.18b	Fire hydrant covers	**Action**	**Implementation**
		Fire hydrant covers replaced with a new cover, subject to detailed design.	Stage 5
4.3.1.19a	Fences	**Management Guidelines**	
		As perimeter security fences deteriorate, they are to be replaced with similar materials, as required for security and interpretation, or not replaced if security or interpretation is not required.	
4.3.2.19b	Fences	**Action**	**Implementation**
		Steel pipe fences around staff cottages are to be replaced with timber fences, which permit Bandicoot access, as described in Appendix I of EIS, page 39-41.	Stage 4
4.3.1.20a	Funicular rails	**Management Guidelines**	
		❑ Funicular rails in the Wharf Precinct are to be exposed where possible, to assist interpretation of site, along with suitable treatment to protect deterioration in salt air. ❑ Funicular rails are not to be replaced on the angled ramp, or on the upper funicular routes, though a minimalist symbolic interpretation may be valuable. ❑ Regular trimming of regrowth along the 1.8m wide funicular route will assist with interpretation of route.	
4.3.1.20b	Funicular Rails	**Action**	**Implementation**
		❑ Remove asphalt covering funicular rails, with final surface treatment informed by detailed investigation of rail condition. ❑ Assess to potentially clear re-growth over the funicular route to re-establish the legibility, as described in Action 4.2.3.1g, 5.3.3.2b and 5.5.3.7b, and subject to an environmental assessment).	Stage 2 Stage 3 to 4 (Refer to Actions 4.2.3.1g, 5.3.3.2b and 5.5.3.7b)

4.3.2 Design guidelines for new material use in infrastructure design

Design and use of new materials in infrastructure design for the Quarantine Station are based on the objectives for Infrastructure outlined in Section 1 of this report.

The guidelines for the design approach to new material use described in this section is applied to all new infrastructure proposed in the site.

The following design guidelines apply to typical or location specific new infrastructure works in the site.

No.	New material or feature	Design guidelines
4.3.2.1	Symbolic Precinct fencing. Locations are noted on the Masterplan Drawing No. QS-10C. For illustrated sketch design, refer to *Figure 4.3.1* in this Section.	❑ The short fragments of new Symbolic Precinct Fencing, located at former junction between precincts, will denote and interpret the former location and intent of divisions between precincts. They are clearly symbolic in form, and complement the adaptive re-use of the precinct fencing alignments. ❑ The design reflects the original fence design in shape, but uses modern materials to clearly represent the adaptive re-use of fence symbol for visitors to interpret, ensuring recognition of the adaptive re-use and interpretive nature of the feature. ❑ Materials are perforated steel mesh, fabricated to the shape and dimension of paling fence. ❑ The mesh is attached to a single timber corner post with a natural finish, contrasting to the original white timber painted finish. ❑ The short fragment of fence, when seen from a distance, is similar in form to the original fence shape. However, as the viewer approaches, the actual material becomes clearly apparent, which reinforces through visitor interpretation, the representative nature of the symbolic fencing. ❑ Three grades of mesh perforation will symbolically represent the continuation of the fence in the directions of the fence alignment, suggesting the original alignment, without the need for large sections of fence.
4.3.2.2	Symbolic precinct boundary marker. For illustrated sketch design refer to *Figure 4.3.2* in this Section.	❑ This denotes the edge of precinct boundary in locations where former fences did not exist. These boundary markers are where the change in precinct is required to be denoted in the adaptive re-use of the Station. These are required between Wharf and Administration Precincts. Locations are noted on Drawing No. QS-10C. ❑ The design uses Australian hardwood posts that are shaped to match the style used in the Symbolic Precinct Fencing. They are a natural finish to contrast with painted heritage features.
4.3.2.3	Beach fence Refer to Section 5.1 of this report for design rational and description of site specific feature.	❑ The new material is steel galvanised poles with horizontal stainless steel cables at 150mm c/c, a modern material and use, which complements the adaptive re-use of the original fence alignment.
4.3.2.4	Inscriptions barrier Refer to Section 5.1 for design description of feature.	❑ The barrier uprights are laser cut in a modern curved form, reflecting the rock escarpment shape, and hot dip galvanised, a finish reflective of historical industrial landscape infrastructure. ❑ The timber leaning rail, shaped for comfort, has a natural finish to complement the natural escarpment character, and differentiate it from painted timber finishes. ❑ The outward curving posts, stainless steel cables, and natural finished timber allows this feature to be clearly recognised and differentiated by the visitor as modern, and complements the adaptive re-use of earlier barriers.
4.3.2.5	Funicular stairway Refer to Section 5.1 for design description of site specific	❑ The Funicular stairway is a major new feature in the site, designed to be contemporary in its design and use of new materials. ❑ It is responsive to the natural landscape setting, and clearly recognised and differentiated by the visitor as a modern feature,

No.	New material or feature	Design guidelines
	feature, including BCA requirements.	and complements the adaptive re-use of the funicular access route. ❑ The post uprights are laser cut in a modern curving form, derivative of natural cultural history (whale bones washed up on the beach), and powdercoat finish in dark grey to reflect historical industrial landscape infrastructure and minimise visual prominence in the landscape. ❑ The steel handrails and steel structural beams are designed to symbolically reflect the funicular rails. ❑ The natural timber treads, the whale bone shaped steel posts, interpretive views afforded over the wider station area, are features designed to engender an appreciation of the cultural and natural heritage values of the site, to be interpreted with a sign (as documented in Sign Plan, Mawland 2005a).
4.3.2.6	Little penguin protection fence	❑ Meet the DEC requirement for a 1.5 metre high solid habitat protection fence which tapers down to 1.2 metres near the beach end of the fence. ❑ Use timber and galvanised steel materials that complement the natural and industrial character of the site. ❑ Design form, pattern, height, shape and colour is irregular to complement the natural form of the sandstone escarpment. ❑ The stepped uneven panel tops reduce linearity and visual harshness of the fence in a natural setting. ❑ The angled posts reduce uniformity and provide a contemporary design clearly differentiated from heritage design patterns and forms.
4.3.2.7	New concrete path and pavers with crushed sandstone finish	❑ Where existing unsealed pathways are to be stabilised or new pathways installed due to excessive erosion, high pedestrian use or steep gradients, a concrete path with a crushed sandstone surface finish will be used. (See 4.3.1.11a and 4.3.1.11b) ❑ This crushed sandstone surface finish is reflective of the original sandstone matrix seen in early concrete work (i.e. at the wharf) and reflective of the sandstone base under original roadways and pathways surfaces, still evident today. Refer to Photo 4.3-1. ❑ This surface finish is used for new pathways (e.g. funicular pathway), or paved areas (e.g. outdoor eating area alongside building A6 and outdoor area at A2), as it provides a non slip, textured, attractive surface finish, and is clearly recognised and differentiated by the visitor as a modern material use. It complements the adaptive re-use of access routes.
4.3.2.8	Stone walls	❑ Stone walls required to provide stability in steep sites (external bank and wall south of P14) or where needed to create a new level area for visitor use (external courtyard to A2), are to be constructed from sawn sandstone. ❑ The highly finished and square stone finish will be clearly recognised and differentiated by the visitor as a modern material use, and complements the adaptive re-use of stone walls.
4.3.2.9	Rendered brick walls	❑ Rendered brick walls to be considered for potential use in place of new stone walls to external courtyard to A2. The finish is to be a rough render, in the raw brick sand colour (dark yellow/grey finish), with no addition of oxide colour to render. The surface treatment finish to be bagged.
4.3.2.10	Timber decks	❑ Timber decks are used in specific locations (outside H15 and in the external courtyard at A6), to create a contemporary walking and seating environment. ❑ The decks are designed to be modern in their layout, form, and natural surface finish, clearly recognised and differentiated by the visitor as a contemporary material use.
4.3.2.11	Posts/barriers	❑ Where posts or simple barriers are required to define or protect a heritage feature (e.g. stone pits, drains, covers) natural timber posts (with a clear finish) combined with cross rails, if required are to be used, as this is a contemporary material use.
4.3.2.12	Waste receptacles	❑ Pedestrian waste receptacle designs will reflect an industrial style, with use of modern materials, powdercoat finish in dark grey.

No.	New material or feature	Design guidelines
		❑ The receptacles will be designed to be fauna proof. The bins will have spring return lids and internal bags. Further information is detailed in the Waste Management Plan (Mawland Hotel Management in Department of Environment and Conservation 2005a). ❑ Installed to two locations only in the vicinity of A6 and near the Luggage Shed.
4.3.2.13	Irrigation	❑ There is no sub-surface piped irrigation proposed in the site. Refer to 4.4.3 for stormwater surface runoff management and 4.2.4.2d.

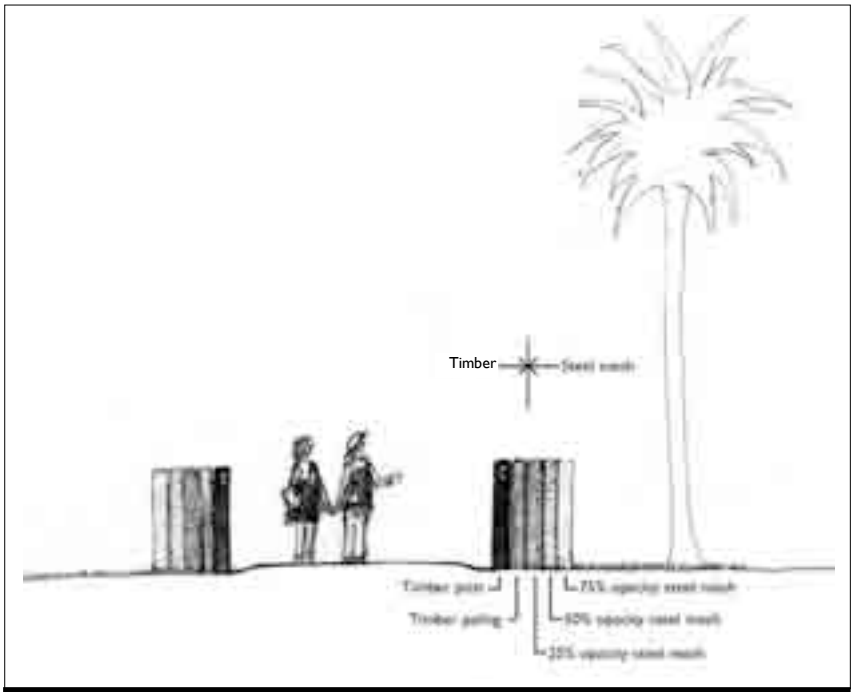


FIGURE 4.3~1 SKETCH OF PROPOSED SYMBOLIC FENCING NOT TO SCALE

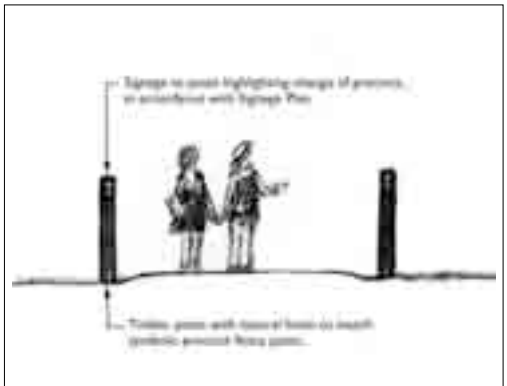


FIGURE 4.3~2 SKETCH OF PROPOSED SYMBOLIC PRECINCT MARKER

PHOTO 4.3-1 CRUSHED SANDSTONE TEXTURE FOR PROPOSED CONCRETE PAVING SOURCE: TBLD P/L

4.3.3 HLMP Stormwater management actions

Overall stormwater management actions that apply to the Heritage Landscape Management Plan are detailed below. Refer to the Infrastructure Control Plan (in progress) for further details.

No.	Issue	Actions	Implementation
4.3.3.1	Stormwater runoff from carparks CP1 and CP5	❑ Preparation of Detailed designs and specifications for carpark stormwater detention and swale systems.	Stage 1 to 2

No.	Issue	Actions	Implementation
		❑ Install grassed stormwater detention swales, to allow infiltration to trenches, in accordance with engineering recommendations (SKM 2002), subject to detailed design.	Stage 2
		❑ Install Atlantis or similar sub surface detention systems, in accordance engineering recommendations (SKM 2002), subject to detailed design.	Stages 2 to 3
		❑ Install planted swales in addition to grassed swales, to capture sediment runoff from carparks, and to assist with biological treatment of pollutant loads from carpark.	Stage 2
		❑ For CP5, adhere to the AMP for guidance in this area of moderate to high Archaeological significance.	
4.3.3.2	Bank and surface erosion, caused by natural spring surface flows, surface runoff from uncontrolled stormwater flows, road or roof runoff, uncontrolled vehicle access, and lack of effective vegetative surface cover	❑ Control upslope and bank erosion with increased vegetative cover, i.e. grass or indigenous ground covers, to increase infiltration rates, and slow surface water flow velocities. Where appropriate, if grades are not steep, grass can be used without the need for native ground covers with soil stabilising characteristics. Where erosion of swale is likely to occur, or continues to occur, plant with appropriate indigenous ground layer vegetation to stabilise soils and reduce erosion. (**Refer also to 4.2.4.2d**)	Stages 2 to 4
		❑ Establish shallow vegetated cut off swales upslope of bank erosion where required, to increase infiltration rates, and slow surface flow velocities.	Stages 2 to 4
		❑ Install adequate stormwater connections to existing stormwater systems where flows cannot be accommodated in surface swale systems. Investigate in conjunction with Long-nosed Bandicoot habitat enhancement works outlined in **4.2.4**.	Stage 2
		❑ Control vehicles, to reduce surface erosion with posts and barriers (**Refer 4.3.3**).	Stages 3 to 5
4.3.3.3	Sediment accumulation in stormwater drainage systems	1. Informally monitor and clear stormwater pits and pipes to ensure capacity is not compromised.	Annual
4.3.3.4	Unsealed path erosion	2. Install vegetated cut-off swales to control surface erosion in minor drains that enter path area.	Stage 2

4.3.4 HLMP Lighting management guidelines and actions

Overall Lighting management guidelines that apply to the Heritage Landscape Management Plan are detailed below. These management guidelines are consistent with the Visitor Management Plan, and guide the Lighting Plan (in preparation). These guidelines will be informed by the other plans, detailed design of lights, and supply of samples.

No.	New feature	Management Guidelines
4.3.4.1	Emergency lighting	Emergency lighting is to be located to facilitate movement of people to designated assembly points (refer to Visitor Management Plan, Mawland 2005). These locations correlate to the recommended use and design of these areas as outlined in the HLMP.

No.	New feature	Management Guidelines	
4.3.4.2a	Security lighting	Security lighting is to be located at key sites and is to be focused and low level.	
4.3.4.2b	Security lighting	**Action**	**Implementation**
		Detailed design and installation of security lights at entry and internal boom gates for driver visibility.	Stage 4
4.3.4.3a	Pedestrian lighting	**Management Guidelines**	
		❑ Pedestrian lighting will be low level and located along key pedestrian routes. The lights will be bollard type lights with a focused downward style light source, to limit light spill to the surrounding areas, with design and style subject to detailed design. ❑ Lighting along new pedestrian routes, for example from CP5 to Main Axial Street, will be triggered by approaching pedestrians, and turn off after a designated time period, subject to detailed design.	
4.3.4.3b	Pedestrian lighting	**Action**	**Implementation**
		Detailed design and installation of pedestrian lighting along key pedestrian routes, in accordance with Management Guidelines.	Stage 4
4.3.4.4a	Street Lighting	**Management Guidelines**	
		Street lighting is to remain on the existing timber poles, and be focused downwards with minimum light spill, subject to detailed design.	
4.3.4.4b	Street Lighting	**Action**	**Implementation**
		Detailed design to replace lighting armatures to reflect the heritage designs of gently curving steel armatures, as seen in historic photos in the Administration, First, Second, Third and Wharf Precincts.	Stage 5
4.3.4.5a	Feature infrastructure and area lighting	**Management Guidelines**	
		❑ Feature lighting will be incorporated into the detailed design of individual facilities, responding to site constraints and requirements, and design response to site infrastructure and facility design. ❑ Lighting at the inscriptions area in Wharf Precinct, is to be designed to focus on individual inscriptions, design and style subject to detailed design. ❑ Any future Wharf lighting is subject to a future Lighting Plan.	
4.3.4.5b	Feature infrastructure and area lighting	**Action**	**Implementation**
		❑ Integrated stainless steel covered down lights to be installed on the funicular stairway to minimise light spill, subject to detailed design.	Stage 2
		❑ Detailed design and installation of integrated bollard type lights for outdoor area at A2. The lights will be focused downward style light source, be clearly modern in appearance and designed to limit light spill to surrounding area.	Stage 2 to 3
		❑ Detailed design and installation of integrated bollard type lights in the outdoor area at A6 with a focused downward style light source, be clearly modern in appearance and design, and minimise light spill into the surrounding Little Penguin site.	Stage 2

LANDSCAPE MASTERPLAN DRAWING NUMBER QS-10C

5.0 PRECINCT DESIGN AND MANAGEMENT RECOMMENDATIONS

5.1 WHARF PRECINCT

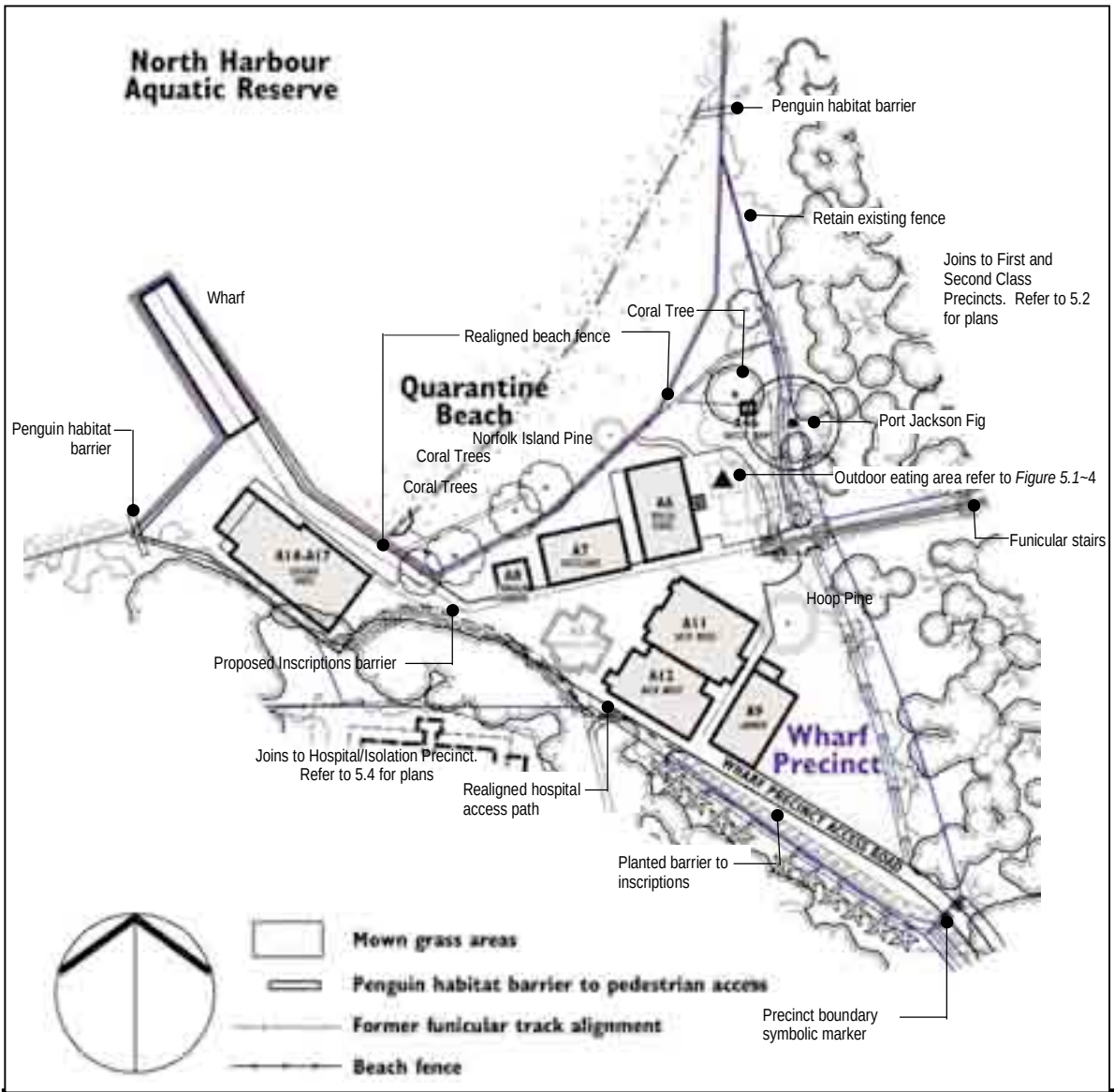


FIGURE 5.1~1 WHARF PRECINCT PLAN EXTRACT FROM QUARANTINE STATION MASTERPLAN DWG No. QS-10C NTS

5.1.1 Statement of significance

5.1.1.1 Summary of Statement of Significance (Freeman et al., 2000)

The following is a summary of relevant points for the Heritage Landscape Masterplan from the full statement of significance.

- First landfall for many immigrants and visitors to Australia.
- Reflects Australia's dependence on Maritime transport until the 1940s.
- The extensive collection of rock inscriptions adjacent to the wharf buildings which reflects desire of people quarantined to have their messages and works seen and appreciated by new arrivals.
- The line of Canary Island Date Palms are a distinctive landscape element and redolent of typical planting in the early part of the Twentieth Century.
- The significance of the road leading out to unknown areas of the site and sense of intimidation this presented to visitors after being processed at the wharf.

5.1.1.2 Summary of the Landscape Significance (Davies et al., 2001)

Cultural Landscape : High

- The contoured valley landscape form.
- The retention of its original form and grassed clearings.

Natural Landscape : High

- The wharf surrounded by rock escarpments and natural vegetation which provides a natural backdrop to this precinct.
- The maritime systems including the significance of the Seagrass.

5.1.2 Overall landscape design intent for Wharf Precinct

To retain the sense of enclosure on arrival to the site by water with the wharf buildings and cultural plantings on the beach nestled amongst the natural escarpments. The cultural plantings are to be retained as a strong visual element of the cultural landscape. New landscape infrastructure designs respond to the natural and cultural landscape values and minimise their visibility in the Precinct allowing the remnant landscape and built elements to dominate.

5.1.3 Design rationale and recommendations

5.1.3.1 Cultural plantings

FOUR CORAL TREES ON QUARANTINE BEACH

Rationale

These trees are visually prominent on arrival by water. Their significance is derived from their group planting, size and age in the setting surrounded by the natural escarpments and vegetation. As individual specimens Coral trees are not a significant species and as such the recommendations for their future management are to retain the intent of the group planting. The trees were planted in 1929 and are approximately 70 years old. They are assumed to be some of the trees that were donated to the site by the Royal Botanic Gardens. The Arboricultural assessment (refer to Appendix B) recommends the removal of at least two of the trees as they are known to be brittle and drop limbs. The group of trees, however, contribute to the cultural landscape and if two are removed this will decrease the cultural significance of their planting.

Recommendations

In the short-term it is recommended the two Coral trees closest to the wharf entry area have their overhanging branches trimmed and a temporary wire barrier fence installed to prevent access onto the grass under them.

In the longer term, develop a progressive replacement strategy that aims to retain at least 50% of the trees at a mature or semi-mature size to retain the visual prominence of the cultural plantings in this setting. Suitable replacement species are to be investigated and be broad spreading deciduous red flowering trees. New plantings to have regular formative pruning to maximise structural health and longevity.

TWO CORAL TREES ADJACENT TO EXTERNAL SEATING AREA IN A6

Rationale

There are two Coral trees at the northern end of the Quarantine Beach near the proposed outdoor eating area for building A6. The smaller of the two trees is located near the electrical shed and, whilst in relatively poor condition, does not pose a direct threat to infrastructure in its current form. The position of this tree on the beach is consistent with the other remaining Coral trees. Refer to **Photo No.5.1-1**.

PHOTO 5.1-1 VIEW OF CORAL TREES WITH PORT JACKSON FIG ON ESCARPMENT ADJACENT TO A6 SOURCE: TBLD P/L

The second tree is located inland from Quarantine Beach in front of the sandstone escarpment near Building A6 and within metres of a large remnant Port Jackson Fig *Ficus rubiginosa* on the escarpment. This tree has been assessed by the Arborists and confirmed to be structurally unsound and is recommended for removal particularly given proposed adaptive re-use of Building A6 and the establishment of the outdoor eating area in the vicinity of the tree. The Fig, located immediately behind the Coral tree, will benefit from the Coral tree removal as more light and space will be available to it (refer to **Photo 5.1-2**). It is likely the Fig will fill the space occupied by the Coral tree within a few years of its removal.

PHOTO 5.1-2 PORT JACKSON FIG ON ESCARPMENT ADJACENT TO A6 SOURCE: TBLD P/L 2005

Recommendation

The Coral tree located nearest Quarantine Beach is to be retained. If the tree continues to perform poorly, there may be a requirement to replace the planting in the longer term with the same or similar species that is used to replace Coral trees on Quarantine Beach.

The Coral tree located near the escarpment and closest to the outdoor eating area of A6, is proposed to be either significantly pruned or removed, pending more detailed arborist

assessment of the condition and pruning required to make the tree safe in the context of the proposed adaptive re-use. In the longer term, total removal of the Coral tree is recommended and no replacement is proposed due to the presence of the remnant Port Jackson Fig.

OTHER CULTURAL PLANTINGS IN WHARF PRECINCT

Rationale

The Hoop Pine outside Building A11 is the only one of its kind on the site and is to be retained and protected. The future alignment of the people mover access through this area is to remain outside the canopy dripline of the Hoop Pine to minimise compaction of the root zone.

The row of Canary Island Palms is a strong visual feature in the site when entering and leaving the Wharf Precinct via the road and proposed funicular stairs. Their significance is noted in the DACMP and as such are to be retained and protected.

Recommendations

Refer to **Section 4.2.1** for management recommendations.

Summary Actions for cultural plantings

No.	Action	Implementation
5.1.3.1a	Undertake initial pruning of Coral trees and develop a replacement strategy for the group of four Coral trees near the Wharf as described in 4.2.1e and 4.2.1f in Cultural Plantings. Construct temporary barrier with wire and star pickets to prevent access onto the grass area directly beneath the Coral trees in the wharf area.	Stage 1
5.1.3.1b	Undertake a more detailed assessment and tree surgery work or total removal of Coral tree near the outdoor eating area of A6 as described in 4.2.1f in Cultural Plantings.	Stage 1

5.1.3.2 Inscriptions in the sandstone escarpments

The Inscriptions Management Plan describes the Inscriptions in detail on the sandstone escarpment in this precinct and provides recommendations for their conservation, presentation and interpretation in Appendix C of this report. To protect the inscriptions the temporary barrier is to be replaced with a permanent barrier that restricts physical access to the inscriptions whilst retaining visual access to them. The inscriptions closest to the Wharf entry point are the most exposed, whilst those further east along the Wharf Road have a constructed stone drain and grassed area providing increased physical separation.

If the Plague Should Come — Main Road from the Landing Stage at the Quarantine Station.

PHOTO 5.1-3 VIEW OF INSCRIPTIONS CIRCA 1900 SOURCE: STATE ARCHIVES

Two types of barriers are proposed to restrict physical access to the inscriptions:

- A constructed barrier to protect the inscriptions where the paved asphalt surface extends to the escarpment. These are located closest to the Wharf.
- A planted barrier east of building A12 between the road and the existing stone drain.

CONSTRUCTED BARRIER

Rationale

The design of the barrier is derivative of the natural escarpment shape and designed to maximise visual access to the inscriptions whilst providing an effective physical barrier to prevent contact with the inscriptions and sandstone escarpment.

Recommendation

The uprights are laser cut steel, and their shape is curved to the shape of the escarpment. Tensioned stainless steel cables at approximately 200 mm spacings provide a physical barrier to access whilst retaining visual transparency to the inscriptions. A timber leaning rail is set approximately 1200mm high from ground level and is shaped for comfort and has a natural finish to complement the natural escarpment character. The outwardly curved shape and tensioned steel cables makes the barrier more difficult to climb. Interpretive signage frames are an integral component of the steel uprights and located low to the ground to minimise visual interruption to the inscriptions. Refer to ***Figures 5.1~2*** and ***5.1~3***

In addition to the constructed barrier it is recommended that the former open drain be cleared and exposed along the base of the escarpment to drain the site, to create an additional physical barrier and remove asphalt from the base of the escarpment. Refer to **Photo 5.1-3**.

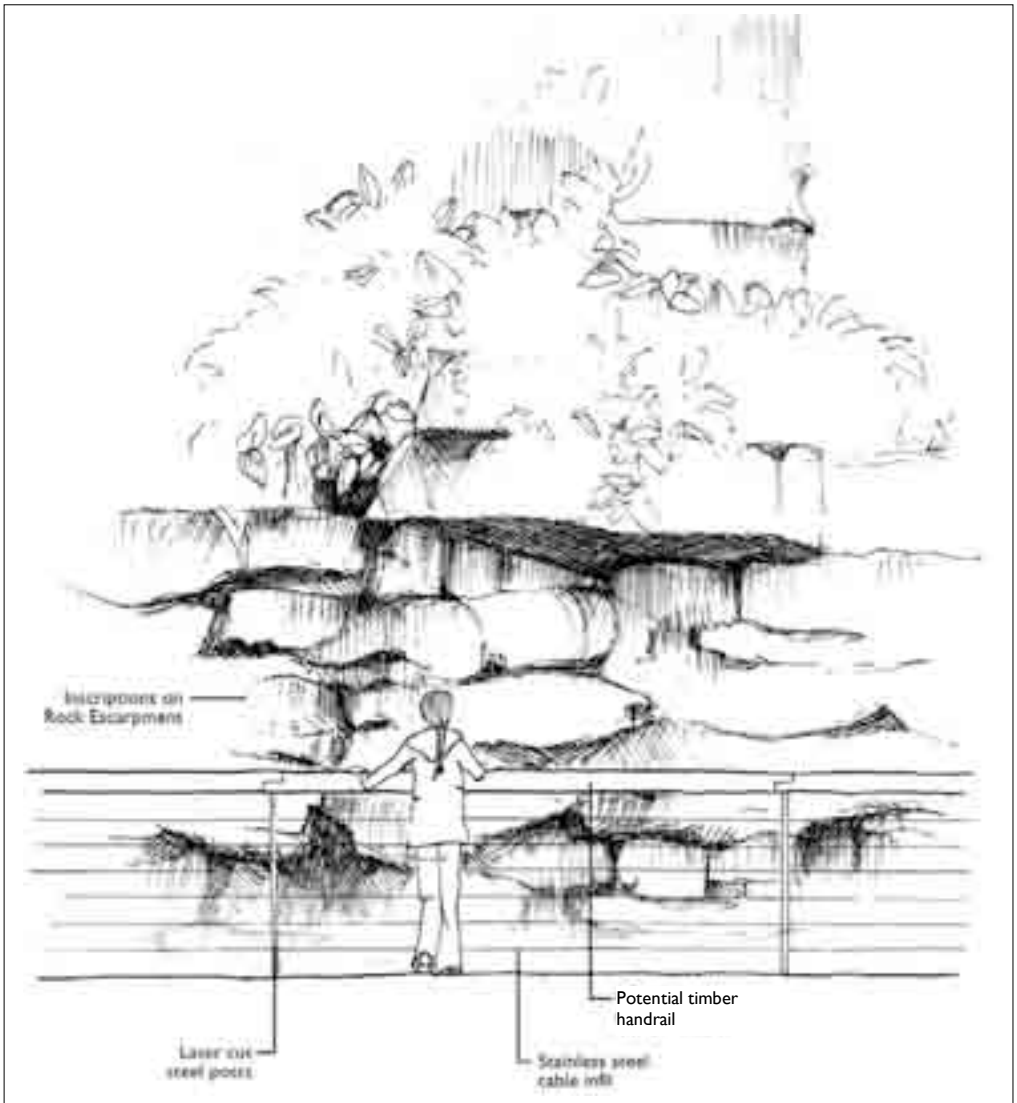


FIGURE 5.1~2 CONCEPT SKETCH ELEVATION OF PROPOSED INSCRIPTIONS BARRIER NOT TO SCALE

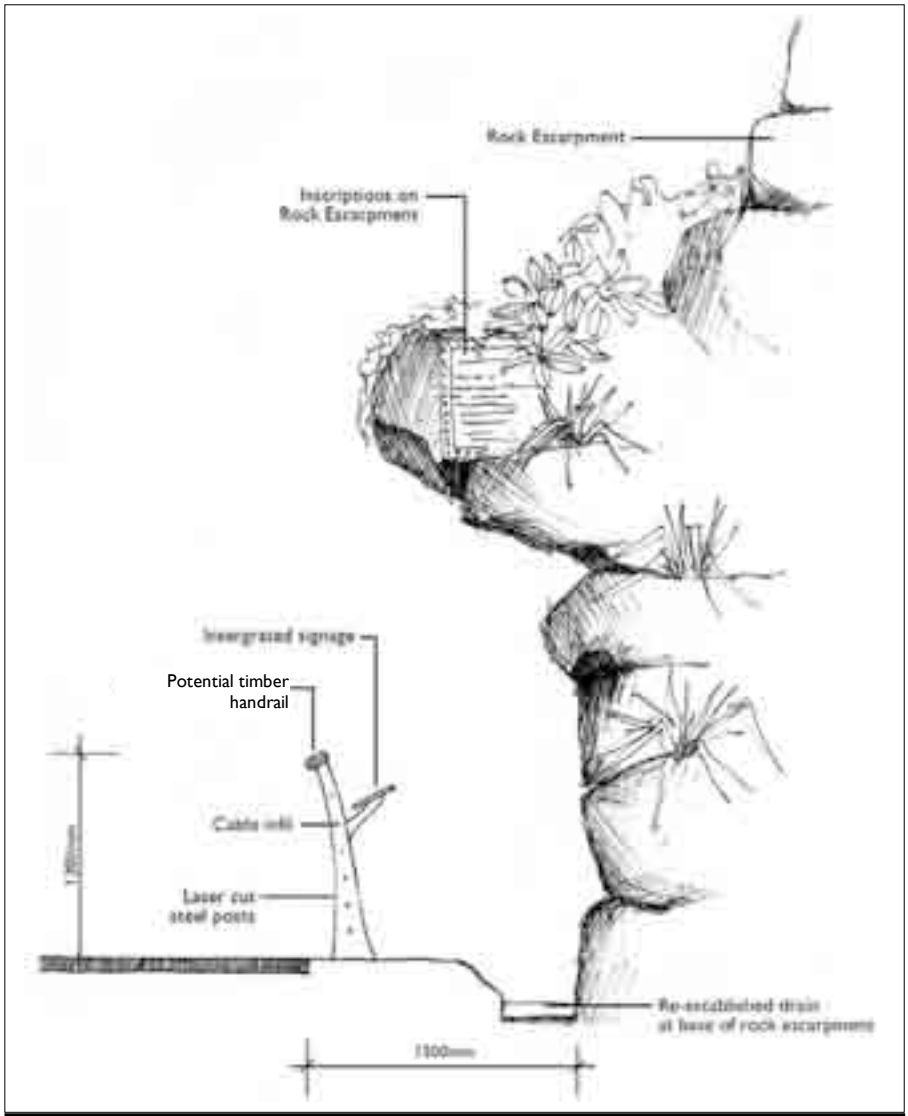


FIGURE 5.1~3 CONCEPT SKETCH CROSS SECTION OF INSCRIPTIONS BARRIER NOT TO SCALE

PLANTED BARRIER

Rationale

The inscriptions east of the hospital access path are located on the sandstone escarpment behind the existing Palm plantation and the constructed stone drain. There is an existing mown grassed area between Wharf Access Road and the constructed stone drain (east of Building A12). The drain can be crossed relatively easily given mown grass to the drains edge.

Recommendation

It is proposed that the grassed area be partially planted with low growing robust indigenous species to restrict access to the inscriptions located on the other side of the drain. The width of proposed planting immediately adjacent to the drain is a minimum of 3 metres wide. This will retain a maintainable mown grassed edge to the road which is in keeping with the historical landscape character of the road. Suitable indigenous species for this planting include Knobby Club Rush *Ficinia nodosa* and Matt Rush *Lomandra longifolia.* The use of planting in this location will minimise the need for the new structural barrier. It is noted that the species are non-decorative species in keeping with the industrial character of this precinct. Their use is purely as a functional barrier in this location, and is not to be construed as having either a decorative or habitat function in the future.

REALIGNMENT OF THE HOSPITAL ACCESS PATH

Rationale
The existing entry to the hospital access path is located directly adjacent to some existing inscriptions and increased visitor access along the path has the potential to damage the inscriptions.

Recommendation
To protect these inscriptions and retain direct access to the Hospital Precinct along this path, it is proposed the path entry is realigned to the east to provide graded access away from the inscriptions. These inscriptions will have the constructed barrier installed to protect them. Refer to ***Figure 5.1-1*** to view re-aligned route. Refer to the Hospital Precinct, **Section 5.4** for further recommendations for the upper sections of this path.

Summary Actions for inscriptions in sandstone escarpment

No.	Action	Implementation
5.1.3.2a	Detailed design and construction of Inscriptions Barrier in the Wharf Precinct and associated works including clearing of the existing drain between the escarpment and proposed barrier.	Stage 2
5.1.3.2b	Detailed design and planting of a 3 metre wide area adjacent to the existing drain on Wharf Access Road with indigenous groundlayer species. This is to prevent access to the inscriptions adjacent to Wharf Access Road behind the existing row of Canary Island Date Palms.	Stage 2
5.1.3.2c	Detailed design and construction of the realigned hospital access path entry as described, including installation of constructed inscription barrier.	Stage 2

5.1.3.3 Outdoor eating area to A6

Rationale
The area to the north of building A6 is to be an outdoor eating area for up to 80 people. This area previously had buildings constructed on it during different phases of the Station's history, and has been identified in the AMP as having high archaeological potential. The proposed design minimises impacts on the archaeological values of the area by (where possible) re-using existing concrete slabs and filling over/capping with a reversible material that ensures a safe surface, or paving over the area, or constructing an elevated timber platform over a section of the external area to minimise disturbance to the ground.

Recommendation

The concrete slab of the most recent building is to be retained and sealed to establish a relatively smooth and trafficable surface. The concrete slab with crushed sandstone matrix will be poured over the main area to create a single level floor. To interpret the former coal shed building the original ground slab may be utilised in its existing condition. Repair works to any trip hazards will be carried out using specifically engineered grout to clearly distinguish between original fabric and any required new works. Alternatively the building footprint could be covered by a timber deck or paved surface providing a reversible approach (refer to detailed plan view of this area in ***Figure 5.1~4***). The slab surface of the eating area does not extend beyond the beachside boundary of building A6. Any fixed shade structures associated with the outdoor tables will be plain and located out of view from the wharf. Umbrellas will be located towards the eastern end of the outdoor eating area.

All future works in this area will be undertaken in accordance with the relevant directions and guidelines included in the AMP to protect archaeological values.

A proposed planted area of varying width between two and three metres between the eating area, the stone drain and sandstone escarpment will soften the edge to the penguin habitat protection fence, and form a natural edge between the slab and stone

escarpment. Refer to **5.1.3.5** for a more detailed description of the penguin habitat protection measures.

Exposed sandstone aggregate concrete pavers are proposed to be placed in a random pattern to provide a trafficable surface between the outdoor eating area and the opening in the beach fence, as illustrated in ***Figure 5.1~4***. The intent of constructing this informal path is to encourage people to walk in a southerly direction away from the penguin habitat area, and the path will assist to highlight the presence of the opening. The paved surface will finish at the fenceline, and on the beach side of the fence a timber and chain walkway is proposed to stabilise the dune.

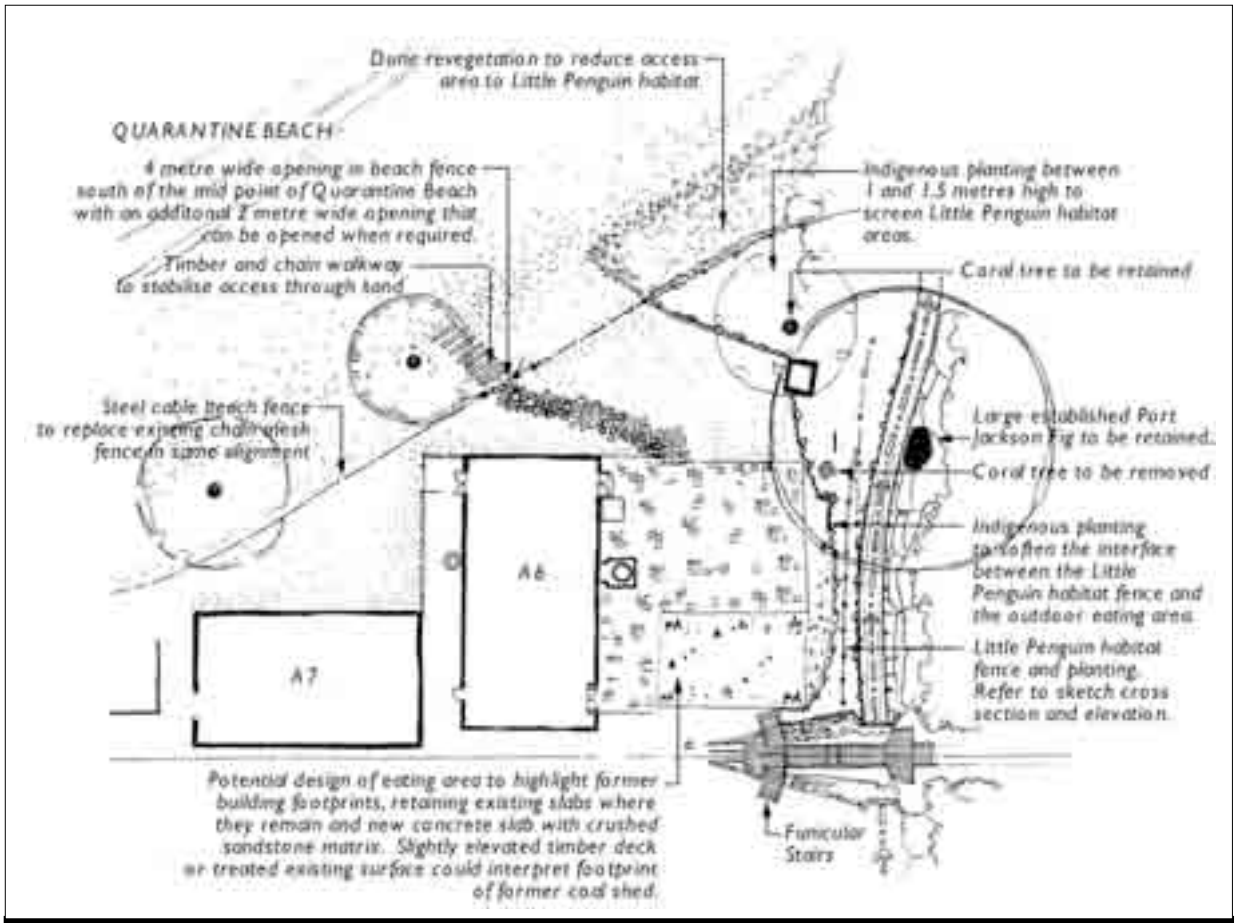


FIGURE 5.1~4 CONCEPT PLAN VIEW OF THE A6 OUTDOOR EATING AREA AND BEACH FENCE OPENING NOT TO SCALE

Summary Actions for external eating area to A6

Note: Actions for Penguin habitat are included in **5.1.3.5**.

No.	Action	Implementation
5.1.3.3a	Detailed design and construction of the external eating area to A6 which could include proposed paving, treatment of former building footprint or elevated timber deck, garden bed layout, shade structure to the rear of building near the funicular, and treatment of existing concrete surfaces.	Stage 1
5.1.3.3b	Plant low indigenous species between A6 and Penguin habitat fence in accordance with approved detailed design.	Stage 1
5.1.3.3c	Construct the outdoor slab and paved surface in accordance with detailed design (5.1.3.3a)	Stage 2
5.1.3.3d	Install concrete pavers between outdoor eating area and the new beach fence opening, in a random pattern in accordance with the detailed design (5.1.3.3a).	Stage 2

5.1.3.4 Beach Fence

Rationale

The existing beach fence is chain wire mesh, with two strands of barbed wire on the top and reflected the level of security currently required on the site. Historical photographs show the beach fence changed over time and during earlier periods in the sites history, security was not a major factor in the fence design. Former designs included a strand wire fence with a concrete base retaining wall circa 1940, refer to **Photo 5.1-4** and white horizontal barrier in the 1970's, refer to **Photo 5.1-5**. The beach has built up over the years and has effectively covered most of the concrete retaining wall.

PHOTO 5.1-4 VIEW OF BEACH FENCE CIRCA 1940 SOURCE: STATE ARCHIVES

PHOTO 5.1-5 VIEW OF BEACH FENCE CIRCA 1970 SOURCE: STATE ARCHIVES

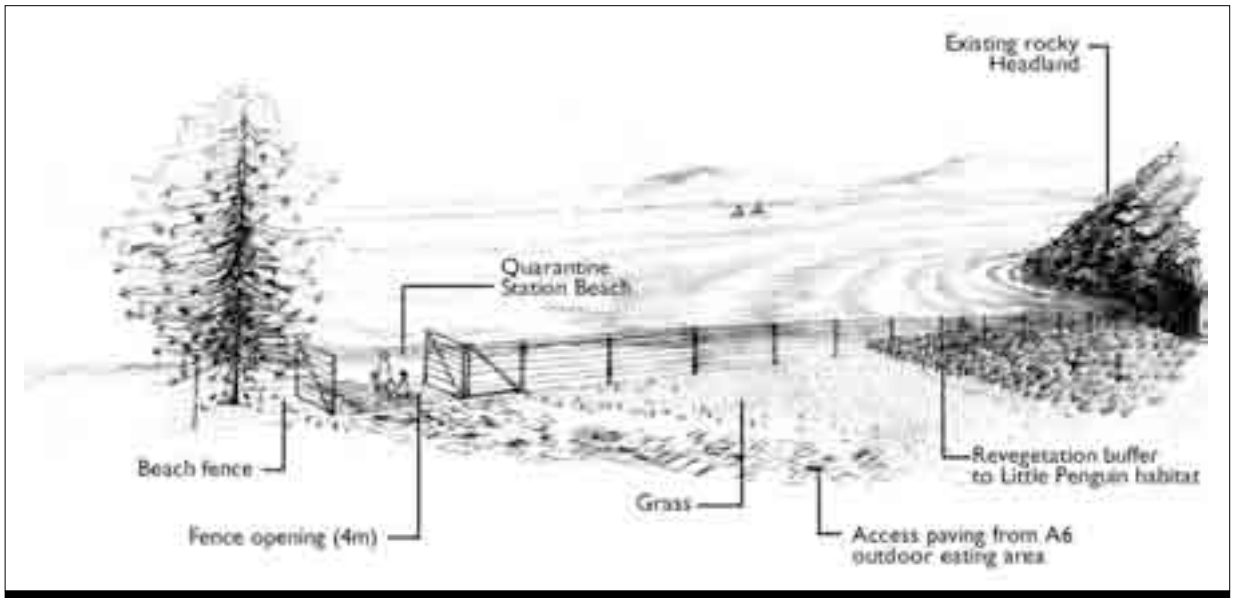


FIGURE 5.1~5 SKETCH VIEW OF PROPOSED BEACH FENCE NTS

In the adaptive re-use of the site, the existing fence is proposed to be replaced with a steel post and stainless steel wire fence that is derivative of the former fence design. The fence will be reconstructed in the same alignment as the existing fence to a height of approximately 1.8 metres. The fence will retain tangible evidence of the separation between the beach and the wharf activities and provide security for the site.

Quarantine Beach is nominated as an evacuation point in the Fire Management Plan (DEC, 2004), and in the Emergency Access Plan for the Quarantine Station and will facilitate water evacuation from the site if required during an emergency as an optional flow on from the formal evacuation assembly point at A12. The NSW Fire Brigade were consulted on-site regarding their recommended evacuation point, and reinforced the issue that the opening needs to be obvious, not constrained, and not reliant on staff unlocking gates or providing instructions for safe and efficient evacuation. The fencing adjoining building A14-17 will be re-aligned in accordance with the Aviation Phase alignment which simplifies the fencing. The Aviation Phase alignment is clearly identifiable by the remaining pole fittings on the ground.

Recommendation

A four metre wide opening in the Beach fence is proposed to the south of the mid-point of the beach, near the Norfolk Island Pine (Refer to ***Figures 5.1~4*** and ***5.1~5***). The opening will have folding gates that will be closed and secured after hours. An additional two metre wide gate, normally in a closed position, can expand this opening to a total width of six metres for use during an emergency. The opening is located in this position so it is clearly visible from the main gathering area, i.e. the outdoor eating area of A6 and the funicular stair system. Other additional landscape treatments in conjunction with the opening will direct visitors towards the southern end of the beach. This includes dune revegetation works and installation of a timber and chain walkway.

Summary Actions for beach fence

No.	Action	Implementation
5.1.3.4a	Detailed design and installation of the beach fence and gate opening in accordance with the described alignment.	Stage 2
5.1.3.4b	Remove existing beach fence and construct timber and chain walkway over the dune area between the opening in the beach fence and Quarantine Beach. One section of the existing beach fence will be retained north of A46.	Stage 2

5.1.3.5 Little Penguin habitat protection

PHOTO 5.1-6 VIEW OF QUARANTINE BEACH, 1926 SOURCE: STATE ARCHIVES

The rocky coastline to either side of Quarantine Beach has been declared as Critical Habitat for the Little Penguin colony. Little Penguins have also been nesting along the rock escarpment and drain immediately north of building A6. The approved outdoor eating area design has taken account of the existing and future use of the escarpment as a nesting area for Little Penguins and has proposed a range of measures to protect this habitat. Quarantine Beach has an important historical association with the Station with many photographs of people quarantined using the beach. Access to the beach is to be continued in the adaptive re-use proposal, in a manner that will minimise impact on the Little Penguin Critical habitat. The Landscape Masterplan for the Wharf Precinct includes a number of measures to protect the habitat values which are described below.

PROTECTION OF HABITAT ALONG THE ROCKY SHORELINES TO THE NORTH AND SOUTH OF QUARANTINE BEACH

Rationale

Little Penguins nest in the shorelines to the north and south of Quarantine Beach. The northern end of the beach is considered more sensitive due to the access from the rocky shoreline and the base of the rock escarpment in an area of the site where there will be more human activity.

Recommendations

The following recommendations will minimise the impact on Little Penguin habitat values:

- The proposed opening in the beach fence (as described in 5.1.3.4) is located south of the mid-point of Quarantine Beach to direct access away from Little Penguin habitat area.
- Revegetation of the dune area to the northern end of the beach to discourage access over the dune and beach area to the base of the rock escarpment.

- Visitor management signs installed at the gate advising visitors not to continue north of the gate opening, in accordance with the Sign Plan.
- Use of concrete pavers to the gate entry directing pedestrian traffic in a southerly direction to the beach, and define an access route discouraging access to the north.
- Installation of a timber and chain walkway on the beach side of the fence in a direction that encourages pedestrians to move to the southern section of beach, and prevents erosion of the dune from pedestrian traffic.

The following recommendations are to prevent access along the rocky shorelines in accordance with recommendations to restrict access in the EIS Vol 1 p 10 10-32.

- A secure fence is to be constructed at the north and south ends of the beach to discourage human access. The 1.8m high fence is to be constructed of black plastic coated galvanised mesh for low visibility, durability in saline environment and as a disincentive to climbing. The cut ends of the mesh will be retained along the top edge as deterrent to climbing over the fence, but not present a danger. The fence will be supported by stainless steel posts for durability in the saline environment, with stainless steel support base plates fixed to rock surfaces, and diagonal back support struts for strength. Signs designating 'no access along the rocky foreshore is permitted' to be secured to front of mesh (as per the Sign Plan within the Interpretation Plan).
- The detailed fence installation and signage design is to be determined in consultation with relevant Aboriginal community groups and DEC.

LITTLE PENGUIN HABITAT PROTECTION FENCE

Rationale

The outdoor seating area requires a minimum size and is constrained by a number of conditions including that it cannot extend forward of the beach side of Building A6, and the existing funicular track alignment to the south. The natural values of the sandstone escarpment are a key feature of this outdoor eating area and reinforce the cultural and natural values of the site. A buffer to screen and protect the Little Penguins from the light and activity in the outdoor eating area is required. To be historically and visually sensitive to this important area for the adaptive re-use of the Station, a fence design is proposed to utilise contemporary materials and design which is responsive to the natural setting, and clearly different from the historical built features in the precinct.

Recommendation

A fence with some low indigenous planting is proposed between the outdoor eating area and the escarpment.

The fence will be a minimum height of 1.5 metres tapering down to a height of 1.2 metres towards the beach end with minor variation in height along its length to reduce its linearity in this natural setting. On the outdoor eating area side of the fence, low indigenous vegetation will be planted to soften the interface between the eating area and the fence. Refer to ***Figures 5.1~6*** and ***5.1~7*** of the proposed Little penguin habitat barrier.

The design intent of the proposed barrier is to:

- Meet the DEC requirements for a 1.5 metre high solid habitat protection fence tapering down to 1.2 metre height at the beach end with minor variations in height along its length as illustrated.
- Use a combination of Australian hardwood timber and galvanised steel materials that complement the natural and industrial character of the site, and the materials in the proposed funicular stair system.
- The design form, patterns, height, shape and colour is irregular to complement the natural form of the sandstone escarpment. This includes the use of radial sawn timber as illustrated.
- The stepped uneven panel tops reduce linearity and visual harshness of the fence in a natural setting.
- The angled posts reduce uniformity and provide a contemporary design clearly differentiated from historical design patterns and forms present at the Quarantine Station.

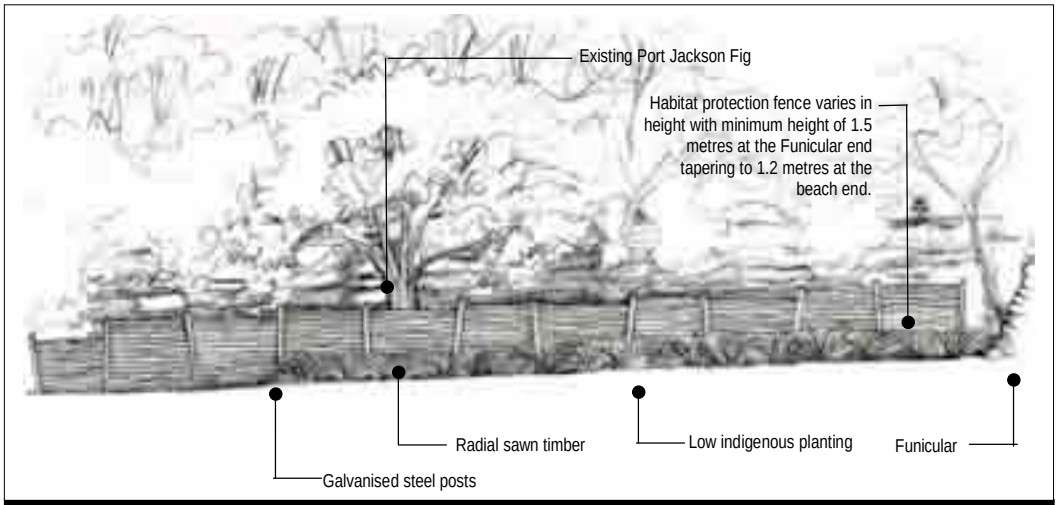


FIGURE 5.1~6 SKETCH ELEVATION OF PROPOSED PENGUIN HABITAT PROTECTION FENCE NTS

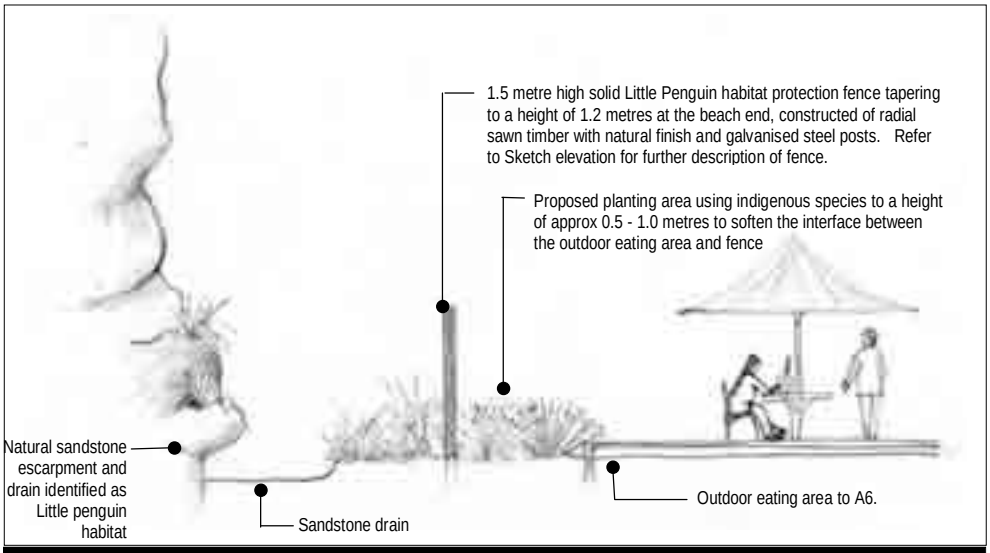


FIGURE 5.1~7 SKETCH CROSS SECTION OF THE PROPOSED PENGUIN HABITAT PROTECTION FENCE NTS

Summary Actions for Little Penguin habitat protection

No.	Action	Implementation
5.1.3.5a	Prepare detailed design and construct the approved Little Penguin habitat protection fence in accordance with the design description adjacent to outdoor eating area of A6.	Stage 1
5.1.3.5b	Develop detailed design and construct two black-coated mesh fence barriers to the north and south ends of Quarantine Beach, in consultation with DEC and Aboriginal representation, to protect the Little Penguin critical habitat.	Stage 1
5.1.3.5c	Undertake staged dune revegetation in consultation with DEC at the northern end of the Quarantine Beach to protect Little Penguin habitat.	Stage 4

5.1.3.6 Asphalt surface and archaeological remnants

Rationale

Parts of the asphalt surface within the Wharf Precinct need repair and parts need resurfacing. The asphalt surface between the western end of A14-17 and the Wharf is in poor condition, with much of its thin surface lost to the gravel underneath. The condition poses an occupational health and safety risk to groups assembling for the ferry and storytelling tours. In other parts of the Wharf Precinct, where the funicular route is

located, the asphalt has become friable, cracked and broken off. There is a significant gap between the rails and the asphalt that poses a risk for visitors to trip on.

The other issue with the existing asphalt surface relates to trapping heat on warm to hot days. The black surface readily absorbs heat and the natural escarpments and buildings prevent breezes moving through the precinct. During the DEC/NPWS Phase the area has only be intermittently used by tour groups for 5 to 10 minutes, and so heat was not an issue. In the future, the Wharf Precinct will be used by large numbers of independent visitors who may stay up to several hours. On hot days, the heat entrapment and intense use may generate an occupational health and safety issue which could be reduced if the surface was able to reflect more heat.

The former location of the Waiting Shed is central in front of the Bath Houses A11 and A12 and was a significant part of the luggage and passenger processing during Quarantine. In the adaptive re-use of the Station this site will be an important part of the storytelling tours. Currently this large triangular asphalt area is enclosed on all sides by buildings and natural rock escarpments. The buildings include the Bath Houses, the Formalin Chambers, the Autoclaves and the Boiler House.

Recommendation

- The asphalt to the west of building A14-17 up to the edge of the escarpment is to be carefully removed to provide an even base for a new thin asphalt surface to be laid over the top of the existing base.
- The gaps between the funicular rails and existing asphalt are to be filled with a substance capable of allowing the rails to be viewed and interpreted eg. marine grade epoxy. Once the epoxy is applied to fill the gap this would allow the rails to be seen and preserved in the longer term, with the removal of the occupational health and safety issue of tripping on the exposed rails and allow removal of the material if necessary without damaging the rails.
- The asphalt surface extending from the Wharf around the buildings to the end of the Wharf Precinct buildings (A9) is to be sprayed with an adherent inert material and covered with a thin layer of select grade fine crushed sandstone with fines. This will create a medium toned stone material surface that will reflect heat more efficiently, interpret the underlying asphalt surface and reflect the indigenous underlying sandstone surface often seen in worn areas of the site and wharf.
- The asphalt paved surface is to be carefully removed to reveal the sandstone footings to reinstate the footprint of the Waiting Shed in this large triangular asphalt area. Preserve the footings with approved method in accordance with the AMP and Heritage Office (HO) advice. This area is nominated as being of high archaeological sensitivity and work is to be done in accordance with recommended practices and procedures in the approved AMP.

Summary Actions for A5 Waiting shed

No.	Action	Implementation
5.1.3.6a	Carefully remove the remains of the asphalt to the west of building A14-17 and re-seal a new thin asphalt surface.	Stage 1
5.1.3.6b	Fill the gaps between the funicular rails and existing asphalt surface with suitable substance.	Stage 1
5.1.3.6c	Resurface the asphalt extending from the Wharf around the buildings to the end of the Wharf Precinct buildings (A9) with a thin new layer of adherent material with crushed sandstone surface.	Stage 2 to correlate with the completion of A6 adaptation
5.1.3.6d	Carefully remove the asphalt surface to reveal the sandstone footings of the former A5 Waiting Shed in accordance with guidelines included in the AMP. Adequately protect the former footings, once exposed, in accordance with HO advice.	Stage 2 to correlate with the completion of A6 adaptation.

5.1.3.7 Funicular stairway

PHOTO 5.1-7 VIEW OF FUNICULAR CIRCA 1940 ILLUSTRATING CLEARED ROUTE OF VARYING WIDTH CIRCA 1940 SOURCE: STATE ARCHIVES

Rationale

The funicular inclinator and railway system transported luggage from the Wharf up the escarpment for distribution of the luggage through the accommodation precincts, and terminated at Third Class. There is inadequate information available to determine whether this inclinator system was a true 'funicular' system or one that operated with a single locomotive, however, for the purposes of this plan this railway system is referred to as the funicular. To construct and maintain the funicular system vegetation was initially cleared and then trimmed away from the edges of the track for access and maintenance, as shown in **Photo 5.1-7** and ***Figure 5.1~8***.

Historical aerial photographs show the funicular route cleared in 1929 and 1951. The funicular system ceased operation during the 1950's (in the Aviation Phase), however it was an important external structure that was integrally linked to effective operation of the Station during the phases of quarantine. The 1970 aerial photo shows the route has partially regrown. In 1978, the route has almost entirely been overgrown. In the PAS, the construction of stairway over the former funicular route has been approved, to assist with interpretation of the site. The proposed stairway system is to be used for access between the Wharf Precinct and the accommodation and Administration Precincts by guests on interpretive tours. The Approval Conditions (Schedule 3) states that the stairway will be the minimum width necessary and have no viewing or landing platforms except where these may be necessary to achieve compliance with the Building Code of Australia (BCA). The BCA has been referred to during the design of the stairway and requires the following:

FIGURE 5.1~8 SKETCH VIEW OF FUNICULAR CIRCA 1940 SOURCE: SYDNEY MORNING HERALD 1955

- suitable landings to avoid undue fatigue
- in the case of a stairway, suitable safe passage in relation to the nature, volume and frequency of use shall be provided.

In the PAS the stairs are planned to be used by tour groups hourly with an average size of 25 persons along with individual guests moving between the Wharf Precinct (with the only restaurant on the site), the accommodation and administration areas. Additionally groups using building A2 meeting space, which accommodates groups of approximately 80 people, will use the stair system to access the restaurant for meals. It is therefore anticipated there will be a regular flow of individuals and small groups, along with larger tour groups of approximately 25 people hourly, and infrequent use by larger groups of up

to 80 people. This degree of use requires a design width of the stair system of 1.8 metres to accommodate safe pedestrian movement and passage.

Based on existing contour data supplied by the DEC, there is estimated to be a 30 metre level difference between the top and bottom of the escarpment, and equates to approximately 220 stairs to transition over this distance. To avoid undue fatigue, four landing and resting platforms have been included in the stair system design to meet the minimum BCA standards. These four platforms are designed to meet the minimum size to accommodate 25 people standing to the sides of the stair system (approximately 12.5 persons per side) to allow people to pass up and down the stairs when tour groups are using the stair system. The platform size also meets the minimum size required to set up a stretcher in case of an injury on the stairway system. In addition to the four platforms, the minimum sized landings every eighteen steps are also provided in accordance with the BCA. These interim landings are the same width of the stairs and the minimum length of 0.75 metres.

The following is a description of the four resting platforms proposed on the stair system:

- The lowest of the four platforms is located at the top of the one or two entry stairs, which will be approximately 2.5 metres above natural surface level with approximately 18 stairs to reach it. This is an elevated point that allows people with low levels of fitness and physical ability to rest, view and interpret the Wharf Precinct from this elevated position. It is anticipated a large number of day visitors who will not have the physical ability and fitness to walk up the stair system, or have the ability to walk through the site on a formal tour, will gain some appreciation of the site from the platform, including the position of the hospital and the extent of the Wharf Precinct from this platform. It is also a gathering and assembly point at the start and conclusion of the stair system for tours, and provides space for people to move aside and give way for those ascending and descending.

PHOTO 5.1-8 VIEW OF THE WHARF PRECINCT FROM THE PROPOSED LOWER RESTING PLATFORM TBLD 2003

- The second platform is a further approximately 34 steps from the first platform with an elevation of approximately 7 metres from natural surface level, and is at the edge of the Wharf Precinct. This platform is the point at which day visitors are required to return unless on a tour. There will be a gate with signage at the point to advise day visitors to return. The view of the Wharf Precinct with Hospital and Isolation Precincts in the background provides an interpretation opportunity in the site. Visitors with limited physical abilities may choose to rest and return from this point.
- The third platform is approximately half way and a further approximately 100 steps on from the second platform, which is a significant climb for visitors of limited fitness, or on the descent approximately 70 steps from the top. This will be an important rest section for all users and an interpretation point for tours. This third platform is intended to be co-located in proximity to an existing sandstone outcrop which is visible in the historical photographs of the funicular when it was cleared, refer to **Photo 5.1-7**. The platform will be designed to nestle in the stair system alongside the sandstone outcrop to minimise visual intrusion of this platform along the route.
- The fourth platform located at the top of the stairs provides a resting point for those who have climbed the approximately 220 stairs prior to continuing on the path system or the further gentle climb to the accommodation areas and administration. This platform will also function as an assembly point for tours commencing the descent of the stairs.

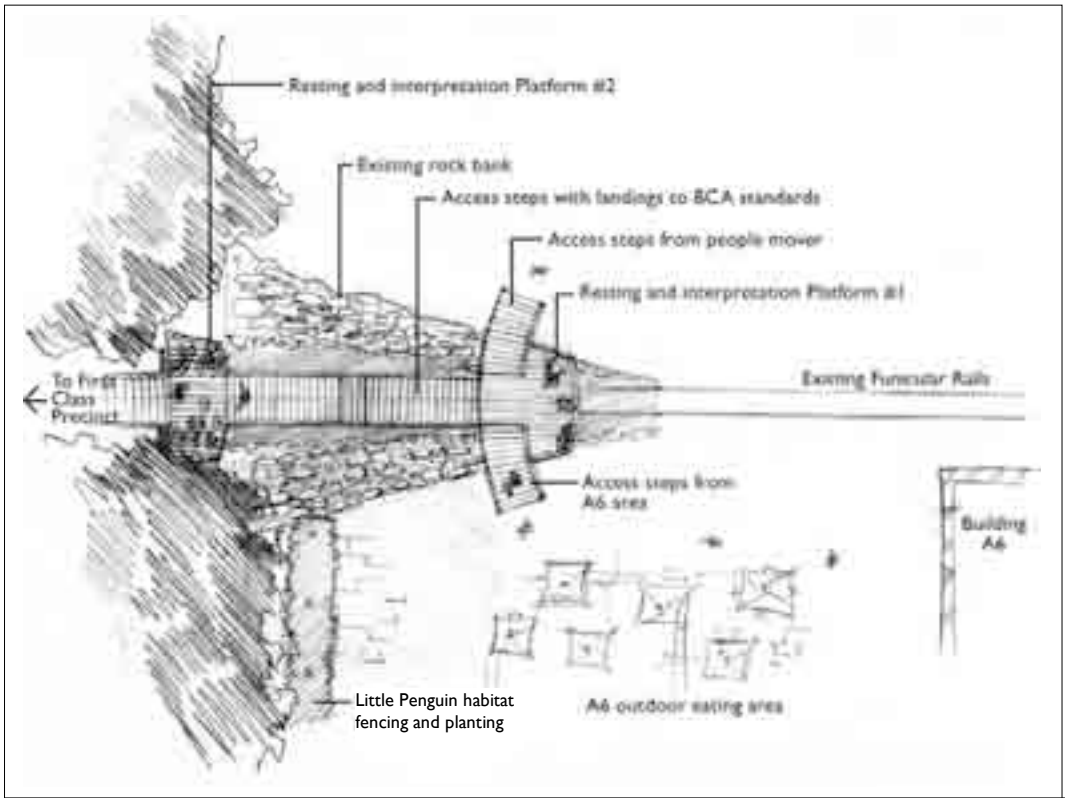


FIGURE 5.1~9 SKETCH PLAN VIEW OF THE PROPOSED FUNICULAR STAIRS NTS

Recommendation

The funicular stairway is a major new feature in the site and is designed as a contemporary structure in keeping with its natural setting and heritage landscape context. The following design principles have been used in the stairway design:

- Stairway to be elevated slightly above the ground to minimise impact on archaeological values, retain flora and allow fauna movement beneath the structure.
- Constructed primarily of steel with bearers set at a similar width to the original funicular rails, and the width of the structure minimised the provide safe access, meet Australian Standards and BCA requirements, and minimise disturbance to the site.
- Hand rail and support system is designed with steel as this allows the use of the smallest dimensioned material to minimise the visual intrusion in the site.
- The design of the shaped hand rail support system is reflective of marine values and derivative of the shape of a whale bone which engenders respect for both the cultural and natural values of the site.
- Australian hardwood timber platforms and surface of stairs to meet BCA Standard, minimise noise and integrate with the natural setting. The timber platforms are also reflective of the original materials used to construct the funicular trolleys, refer to **Photo 5.1-9**.

PHOTO 5.1-9 FUNICULAR TROLLEYS TBLD P/L 2003

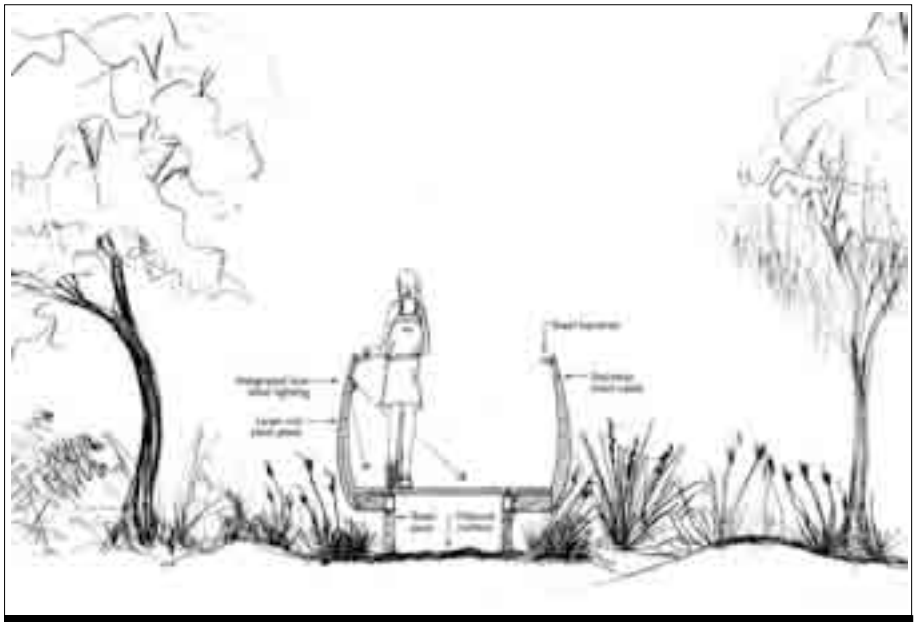


FIGURE 5.1~10 CONCEPT SKETCH CROSS SECTION OF PROPOSED FUNICULAR STAIRS NTS

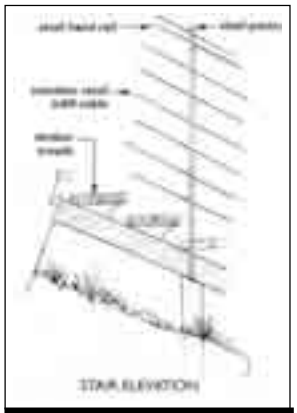


FIGURE 5.1~11 CONCEPT SKETCH ELEVATION FUNICULAR STAIRS

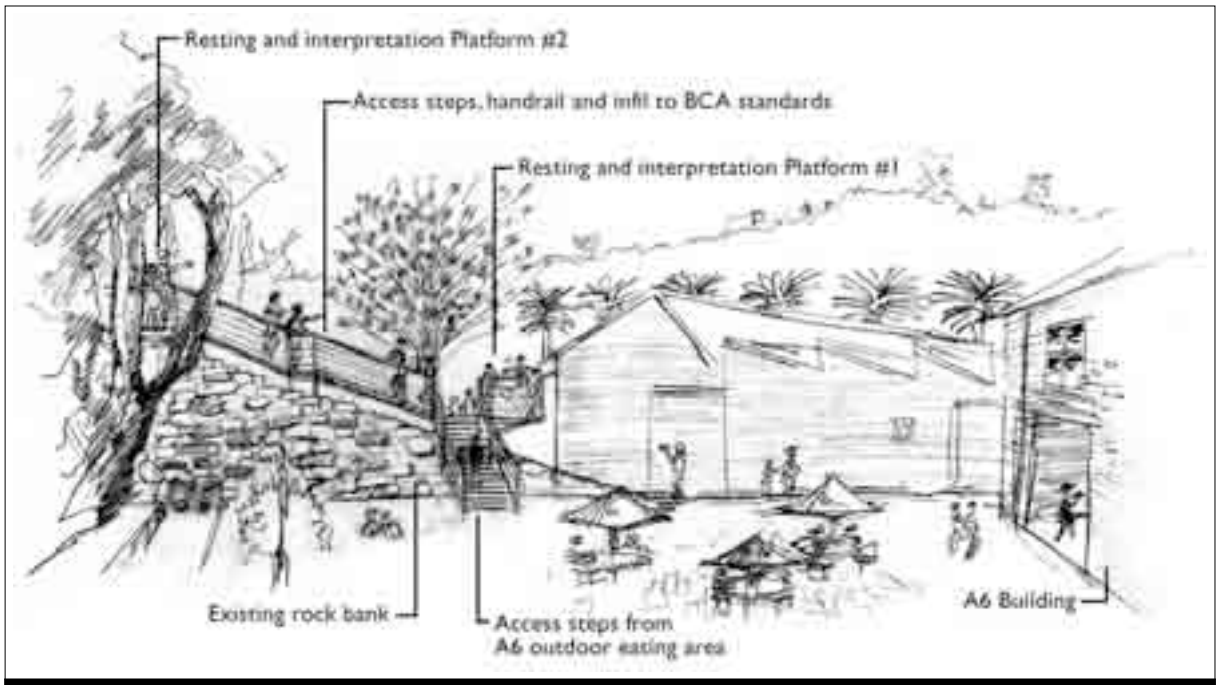


FIGURE 5.1~12 SKETCH PERSPECTIVE VIEW OF FUNICULAR STAIRS FROM PROPOSED OUTDOOR EATING AREA NTS

Summary Actions for the funicular stair system

No.	Action	Implementation
5.1.3.7a	Detailed survey and design of the funicular stairway to meet the minimum BCA requirements, and the design intent described in Section 5.1.4.7.	Stage 1
5.1.3.7b	Carefully assess existing vegetation and clear a corridor of vegetation of up to 4m width from the base to the top of the funicular in accordance with vegetation management recommendation 4.2.3.1k.	Stage 1
5.1.3.7c	Construction of the funicular stairway in accordance with the approved detailed design drawings.	Stage 2

5.2 FIRST AND SECOND CLASS PRECINCT

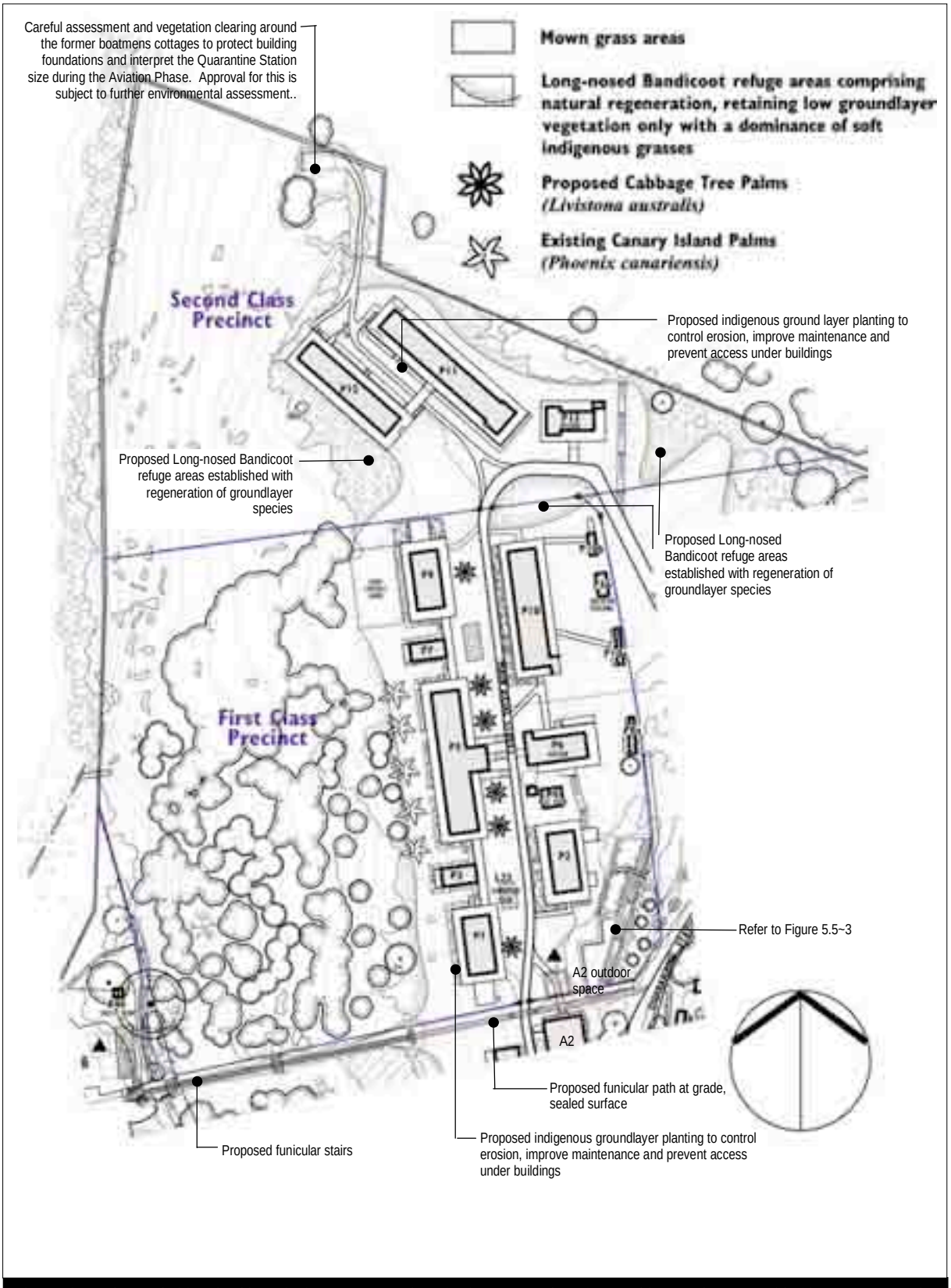


FIGURE 5.2~1 FIRST AND SECOND CLASS PRECINCT PLAN EXTRACT FROM QUARANTINE STATION LANDSCAPE MASTERPLAN QS-10C NTS

5.2.1 Statement of significance

5.2.1.1 Summary of Statement of Significance (Freeman et al., 2000)

The following is a summary of relevant points for the Heritage Landscape Masterplan from the full statement of significance.

- Reflects the class structured society of the time.
- First and Second Class occupy sites of outstanding aesthetic value that relate to land and building form.
- Collectively First, Second and Third Class and Asiatics are significant as components of the Quarantine Station and have aesthetic value because of their form, building materials and their relationship to each other.

5.2.1.2 Summary of the Landscape Significance (Davies et al., 2001)

Cultural Landscape : High

- Main Axial Street is highly significant.
- The lack of adornment and institutional nature of the buildings.
- The precinct being largely unaltered with minimal planting and grassed areas which reflects the patterns and use and the microclimate of the site.

Natural Landscape : Medium

- Regenerated bushland on escarpment towards the Wharf Precinct.

5.2.1.3 Quotation about the landscape character of this precinct

The Sydney Mail 2/9/1903
'For the second and first classes ....is a large drawing and music room for the ladies and billiard room for the men' the two last delightful airy apartments with superb outlook'

PHOTO 5.2-1 VIEW OF CLEARED ESCARPMENT IN FRONT OF FIRST CLASS ACCOMMODATION, LATE 1800'S EARLY 1900'S SOURCE: STATE ARCHIVES

5.2.2 Overall landscape design intent of First and Second Class Precinct

The overall design intent is to retain the Main Axial Street through First Class as the focus of social gathering and recreational activity in the precinct. The landscape to the east and south of Main Axial Street is to be more contemplative and restful, with the exception of the former tennis court which is to be retained as an active area, but adapted to be a croquet lawn. In Second Class the design will reinstate the former access path between the buildings bringing activity and movement to this area whilst retaining the expansive view sheds from the building verandahs over the low heathland vegetation to North Harbour.

5.2.3 Design rationale and recommendations

5.2.3.1 Cultural plantings

EXISTING AND PROPOSED PALMS IN FIRST CLASS

Rationale
The existing Canary Island Date Palms *Phoenix canariensis* to the western side of P5 are a distinctive planting which appears to have been planted during the late 1930's to early 1940's. **Photo 5.2-2** shows the relatively young palms on the right hand side of the buildings.

Recommendation
These Palms were assessed as being in good health and show no signs of decline. They are to be retained and managed. **Refer to 5.2.3.3** for further details and description.

PROPOSED PLANTING OF CABBAGE TREE PALMS

Rationale

PHOTO 5.2-2 VIEW OF FORMER PALM PLANTING IN MAIN AXIAL STREET CIRCA 1940 SOURCE: STATE ARCHIVES

The 1940's photo's reveal there were more palms in the site in the 1940's including a line of what appear to be Cabbage Tree Palms *Livistona australis* or Fan Palm *Washingtonia filifera* along the western side of Main Axial Street. The DACMP notes the trees are likely to be *Washingtonia sp.*, however it is very difficult to identify the difference between the two species without detailed photographs of foliage.

Recommendation
Cabbage Tree Palms are native to Sydney (however they are not indigenous to this site) and have been selected for planting into Main Axial Street. These were selected over Fan Palms to be consistent with the environmental character of Sydney Harbour National Park and achieve the cultural intent.

The Cabbage Tree Palms are proposed to be re-planted along the western side of Main Axial Street (to the east of Building P5, P9 and P1).

They will provide scale and some shade in the street to encourage the use of the Main Axial Street as a social gathering and seating space in its adaptive re-use for accommodation. This is consistent with the DACMP, the PAS and the EIS.

MOWN GRASS AREAS

Rationale
The grassed embankments along the western side of Main Axial Street were well used during the phases of quarantine for informal seating and viewing areas whilst games were being played on the lawn and Badminton Court. Refer to **Photos 5.2-3** and **5.2-4**.

Recommendation
These grassed embankments are proposed to be retained, with some minor improvements to grading and shaping (refer to **5.2.3.2** description).

SHRUBS

Rationale
The Oleander in front of Building P4 is overgrown and requires some pruning. There is evidence of other planting on the eastern side of Main Axial Street in front of building P2,

however, there is no evidence of this planting remaining today (Refer Photos 5.2-2 and 5.2-5.)

Recommendation
The remaining Oleander in front of P4 is to be pruned, with no further additional shrub plantings, with the exception of replacing the existing Oleander if required.

Summary Actions for cultural plantings

No.	Action	Implementation
5.2.3.1a	Plant 6 semi-advanced Cabbage Tree Palms into the western side of Main Axial Street.	Stage 3
5.2.3.1b	Re-grade western bank of Main Axial Street and re-grass to improve usability and maintenance of this grassed embankment.	Stage 3
5.2.3.1c	Prune Oleander in front of P4, and replace if required with same species.	Year 4

5.2.3.2 Main Axial Street

Rationale
The overall design intent for Main Axial Street is to reflect some of its former character as a social gathering place with some minor landscape treatment. Historical photographs during busy phases of quarantine (i.e. not during the Aviation Phase) indicate the street was used for games and walking, people used the building verandahs as informal seating to observe the activity in the street, and the grassed areas were used informally as meeting places and for games. The grassed embankment between the buildings and the road was also used as informal seating. Young Palms are evident in the photographs at this time. Refer to **Photo 5.2-5**.

PHOTO 5.2-3 VIEW OF MAIN AXIAL STREET C1930 - 1940 SOURCE: STATE ARCHIVES

PHOTO 5.2-4 VIEW OF FIRST CLASS BUILDING VERANDAS FACING MAIN AXIAL STREET SOURCE: STATE ARCHIVES

Recommendations

This includes planting Cabbage Tree Palms along the western side of Main Axial Street (as noted in **5.2.3.1a**) to enhance the street character and create spaces that can be used for seating, socialising and passive recreation. The palms are located in formal regular intervals, which differs slightly from original layout due to modification to the street over time.

The grassed embankments on the western side of the road are to be re-graded to achieve an even grade on the embankment to encourage use as informal seating as illustrated in **Photo 5.2-3** and **5.2-4** (and as noted in **5.2.3.1b**). Works are to be undertaken in accordance with the requirements of the AMP. The kerb and channel, although not present during the era when there was intense use of the site for Quarantine purposes, is to be retained consistent with the Aviation Phase. When the kerb requires full replacement in the future, its retention may be reviewed at that time for consistency with adaptive re-use of this area. The grassed embankment is to achieve a usable grade that allows informal seating on the bank.

The Badminton Court is to be restored utilising the existing surface where possible, subject to archaeological restoration work, as this area is identified to have high Archaeological significance. An additional smaller court is to be re-established to the northern end of Main Axial Street for Bocce. This court appears in historical photographs and aerial photos from the 1940's and oral history Jackson, M (2003) confirmed its use for this purpose. Establishing a Bocce Court in this location is consistent with the adaptive re-use intent of the street as a social gathering and recreation space. Refer to **Photo 5.2-5**.

PHOTO 5.2-5 VIEW OF MAIN AXIAL STREET BADMINTON COURT C1930 - 1940 SOURCE: STATE ARCHIVES

PLANTING TO PREVENT ACCESS UNDER BUILDINGS ON EASTERN SIDE OF MAIN AXIAL STREET

Rationale
Since the preparation of the DACMP it has become apparent that the pesticides used to control termites around buildings were toxic and residue of this remains in the soils under buildings today. (Refer to **Section 3.1.3**) The buildings on the eastern side of Main Axial Street are elevated and are easily accessible. The DACMP supports retention of mown grass areas to reinforce the unadorned and functional character of the Station. In order to restrict access without the need for structural additions (i.e. barriers), the plan proposes planting non-decorative indigenous grasses that will appear as grass from a distance and retain the functional, unadorned character, whilst discouraging access under buildings. Historical photos of the site reveal the presence of this rough-cut planting style in areas where native vegetation is trimmed, rather than mown. Refer to **Photo 5.2-5**.

Recommendation
Access under the buildings is to be discouraged by planting indigenous local provenance grasses including Spiny Matt-rush, Dianella sp., Kangaroo Grass and Weeping Grass in place of lawn grass to have a similar visual effect, but discourage access to underside of buildings. From a distance the evergreen, non-decorative nature of these plant species will not have the appearance of decorative garden beds. Whilst these beds are primarily for discouraging access under buildings and erosion control, they may also provide some Long-nosed Bandicoot refuge. Where the gap between ground level and the underside of the building, a higher proportion of grasses could be planted to improve the Long-nosed Bandicoot refuge values.

COVERED WALKWAY BETWEEN BUILDINGS P5 AND P6

Rationale
Originally there was a covered walkway extending across Main Axial Street sheltering access between the kitchen located in P6, and the main First Class dining area in P5. The shelter was removed during the Aviation Phase as it restricted vehicle access along Main Axial Street.

Recommendation
Maintenance vehicle access along Main Axial Street will be required in the PAS. Reinstatement of the covered walkway will restrict this movement and is not intended to be reconstructed at this stage.

Summary Actions for Main Axial Street

No.	Action	Implementation
5.2.3.2a	Reinstate Badminton Court along Main Axial Street.	Stage 3
5.2.3.2b	Establish Bocce Court along Main Axial Street.	Stage 3
5.2.3.2c	Establish indigenous planting areas to the perimeter of elevated buildings on the east side of Main Axial Street.	Stage 2

5.2.3.3 Escarpment side of First Class Buildings

PALMS AND GRASSED AREA

Rationale

The existing Canary Island Date Palms are to be retained and protected (as described in 5.2.1.1). They significantly contribute to the cultural heritage landscape character of First Class Precinct. They are planted into a mown grass surface which has some surface erosion along with an undefined edge to the bushland area at the top of the escarpment. In recent years scattered native and indigenous plantings have occurred through the grassed area. Refer to **Photo 5.2-6**.

PHOTO 5.2-6 CANARY ISLAND PALMS ON ESCARPMENT SIDE OF FIRST CLASS PRECINCT TBLD P/L

Recommendation

The surface around the Palms is to be carefully re-graded to establish a sustainable grass cover, using appropriate grass seed mix and no fertiliser. Care is to be taken around the base of Palms to not alter surface levels in the immediate vicinity of the base of trees. Scattered recent native plantings in this area are to be removed and the area re-grassed. Where areas are damp or eroding due to surface runoff, minor re-shaping is to occur to create shallow drainage swales that are to be planted with appropriate indigenous soil binding species, which may include *Carex breviculmus*, *Carex appressa*, Knobby Club-rush*, Lomandra sp.* to stabilise them. Informal pedestrian access will occur through here, and therefore any shaping of swales will need to provide for access. These swales will be directed towards and along the top of the escarpment to areas that area allowed to naturally regenerate with indigenous groundlayer species only. This area will provided shelter for the Long-nosed Bandicoots as described in **Section 4.2.4**.

PLANTING TO PERIMETER OF ELEVATED BUILDINGS

Rationale

The accommodation has been constructed on a slope falling in a westerly direction from Main Axial Street. The smaller outdoor areas between buildings P1, P3, P5, P7and P9 are currently grassed, with erosion and uneven gradients close to the building edges. There are scattered individual plant species that have colonised these edges including sedges and ferns. These areas are difficult to maintain as evidenced by erosion, and poor maintenance. Refer **photos 5.2-7** and **5.2-8**

PHOTO 5.2-7 VIEW OF COURTYARDS IN FIRST CLASS TBLD P/L

In the PAS this area is to be used for guest accommodation. It is anticipated that informal pedestrian access around the buildings, within the courtyard areas and

along the grassed area with the palms will increase. As noted in **5.2.3.2**, toxic residues have been identified under buildings from former termite control treatment. Access under buildings is to be actively discouraged, and the design proposes this be achieved through planting to address a number of other issues including:

PHOTO 5.2-8 DETAIL OF EDGE TREATMENT BETWEEN BUILDING AND COURTYARD AREAS WHICH ARE DIFFICULT TO MAINTAIN TBLD P/L

- Control erosion and establish a maintainable edge along the unevenly graded edges.
- Improve ongoing management and maintenance.
- Limit access to the underside of buildings, particularly in light of recent information highlighting residual pesticides present (Refer to **Section 3.1.3**).
- Reduce the spread of organochlorides into the broader landscape by redirecting stormwater runoff flow under the buildings into these planted areas.
- Improve appreciation of indigenous flora with the use of selective species from the surrounding bushland areas, and planting on mass to display their textural qualities. Refer to ***Figure 5.2~2*** to illustrate a typical treatment. Each area will use two or three local provenance species, to suit the changing conditions for each.
- In areas where the height of the building above ground is less than 0.3m increase the percentage of soft indigenous grasses to make these areas more attractive for potential shelter by Long-nosed Bandicoots.

It is not considered an acceptable treatment to leave these edges unmanaged.

Recommendation

Planting is proposed between the building edge and uneven surface to a satisfactory distance that controls erosion and allows successful establishment of planting which will vary, but generally be two metres measured from the rear of the posts, around the perimeter of the courtyard spaces between P9, P7, P5, P3 and P1.

The planting areas will be edged with small dimensioned sandstone edging to clearly define this new edge in a material that is not visually intrusive and complementary to the natural values of the escarpment. Other options were considered, including a spade cut edge, however, this is a common technique used in earlier times for defining garden bed edges and may lead to confusion of the era of this planting. Refer to ***Figure 5.2~2*****.**

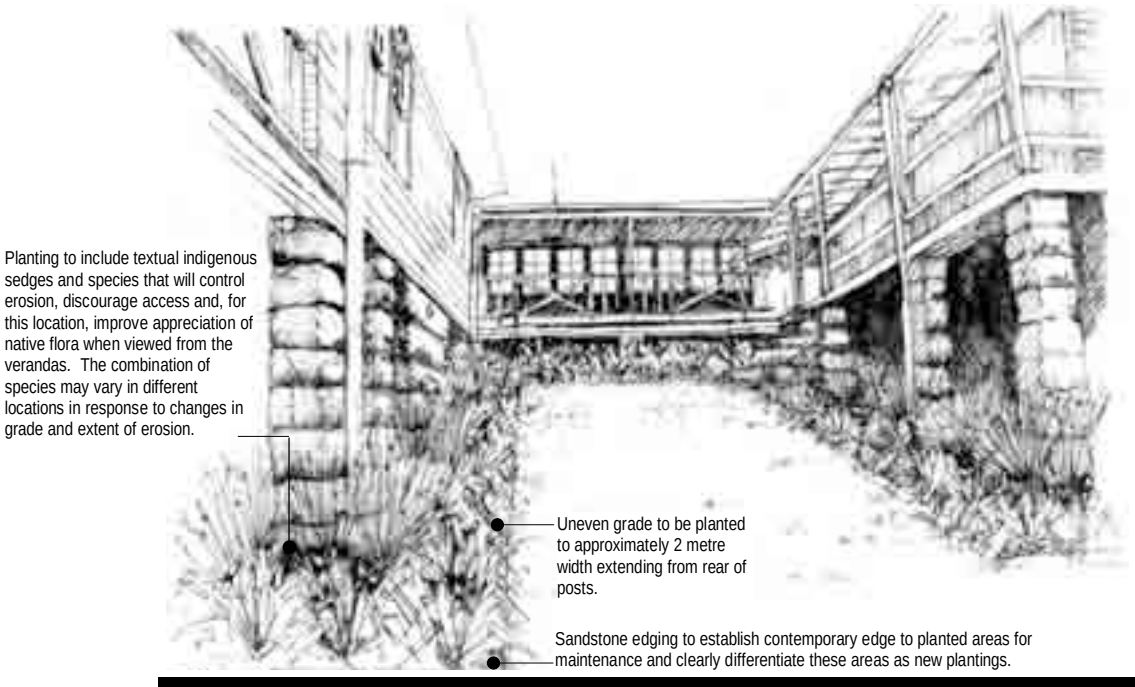


FIGURE 5.2~2 SKETCH VIEW OF PROPOSED INDIGENOUS PLANTING TO ELEVATED BUILDINGS ON ESCARPMENT SIDE OF FIRST CLASS

FORMER TENNIS COURT

Rationale
The former tennis court (L22), was located below building P9, and is clearly evident on the site today as a level, cleared grassed area used for volleyball, (although the fencing has been removed). The PAS for this area includes accommodation and to encourage recreational activities in this precinct consistent with its former use during phases of quarantine.

Recommendation
The former tennis court is to be re-graded and cleared extending out to the existing stone retaining wall. The area is to be grassed with a surface suitable for games including croquet. The fence around the tennis court will not be reinstated. An appropriate grass is required to establish this surface without the use of fertilisers.

FIRST CLASS ESCARPMENT

Rationale
This escarpment is located to the west of the First Class Accommodation buildings in a north-westerly aspect. It is evident from historical photos in the site that this escarpment has had previous vegetation clearing, refer to **Photo 5.2-1**. There were historic view corridors from first class accommodation to the Hospital and the broader landscape and this was an important feature of the Quarantine Station's original layout and design. There is potential for Long-nosed Bandicoot refuge areas to be established along the top of the escarpment without impacting on the cultural landscape values of this area.

Recommendation

Establish Long-nosed Bandicoot refuge areas along the top of First Class Escarpment as shown on Drawing No. QS-10b. This area has the potential to integrate redirecting roof runoff via overland vegetated swales to improve the potential habitat values. Refer to Section 4.2.4 for further information.

Summary of Actions for escarpment side of first class buildings

No.	Action	Implementation
5.2.3.3a	Re-grade and re-establish grassed area on the escarpment side of First Class buildings, including removal of scattered re-vegetation. Incorporate graded vegetated swales to accommodate stormwater runoff and drainage.	Stage 3
5.2.3.3b	Establish Long-nosed Bandicoot refuge areas along the top of First Class escarpment, as indicated on Drawing No. QS-10b.	Stage 2
5.2.3.3c	Establish garden beds to the perimeter of First Class buildings on the escarpment side with robust indigenous species that deter access.	Stage 3
5.2.3.3d	Re-grade former tennis court and establish level grassed area.	Stage 3
	Refer to 4.2.4.2 for Long-nosed Bandicoot habitat enhancement actions.	

5.2.3.4 Second Class Accommodation area

Rationale
The existing asphalt road and parking turnaround area in front of Building P12 dominates the entry and character of Second Class accommodation. Maintenance vehicle access to this area is required in the adaptive re-use proposal and presents the opportunity to reduce the sealed asphalt surface. Historical aerial photographs from 1929 and other site photos identified the large turnaround was not present until late in the Aviation Phase, and the path originally continued between P11 and P12, to the former boatmens cottages. Consistent with the character of the first class accommodation, this area is to be primarily a pedestrian priority area. The level of informal pedestrian activity will increase in the adaptive re-use creating the need to provide defined pedestrian access

paths. This will reduce incidents of unwanted trampling and erosion, and provide reasonable access to buildings.

Recommendation

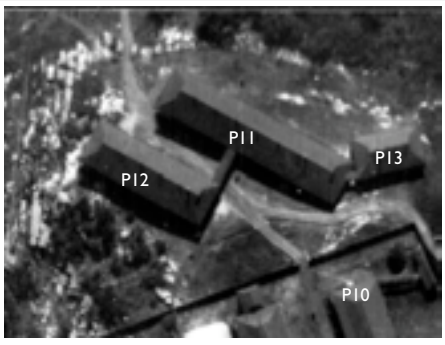


PHOTO 5.2-9 1929 AERIAL PHOTO EXTRACT OF 2ND CLASS BUILDINGS SOURCE: STATE ARCHIVES

The existing asphalt parking area be removed and grassing re-established in its place. A pedestrian path will be reinstated in accordance with the previous path alignment that extended between Buildings P11 and P12 and down to the former boatmens/staff cottages, refer to Photo **5.2-9** and **5.2-10**. This path system will support the adaptive re-use of Second Class accommodation providing a logical pedestrian access system to this accommodation area, and reduce uncontrolled pedestrian access. Planted areas with indigenous groundlayer species will control access under buildings to achieve intent as described 5.2.3.2.

FORMER STAFF COTTAGES (BOATMENS ACCOMMODATION)

Rationale

The former buildings in this area were established early in the Station's history (late 1830s) and remained cleared of vegetation during the Aviation Phase, as illustrated in the 1978 aerial photograph. The more recent heathland re-growth has the potential to damage former building foundations. Given this area was one of the first parts of the site to be constructed in the late 1830s, and remained cleared for the majority of the Station's life including the Aviation Phase, it is considered to be appropriate to trim and clear the re-growth to protect the building remains, and to interpret the former use of the Quarantine Station.

PHOTO 5.2-10 VIEW OF FORMER COTTAGES CIRCA 1940 STATE

Recommendation

The Masterplan proposes to assess, carefully trim and clear the re-growth from around the former buildings to conserve the remaining foundations and improve interpretation of the former extent of the Quarantine Station during the Aviation Phase and earlier phases of quarantine. This area is identified as being of high archaeological sensitivity and therefore appropriate procedures outlined in the AMP will need to be adhered to in undertaking these works. Similarly the vegetation assessment and removal will need to be undertaken in consultation with the Quarantine Station Environmental Manager, and guidelines included in the EIS Vol 1, Section 10. The recommendations will need to be implemented in close co-operation with the DEC, to ensure they are to continue management of limited access to Store Beach. A locked gate may be one option. This recommendation is subject to an environmental assessment prior to implementation.

Summary Actions for Second Class Precinct

No.	Action	Implementation
5.2.3.4a	Remove existing asphalt parking area in front of Second Class accommodation and construct pedestrian path as shown in Figure 5.1~1.	Stage 4
5.2.3.4b	Reinstate an unsealed path to the former boatmens accommodation, north of Second Class accommodation, subject to an environmental assessment as described in Action 4.2.3.1o. Monitor visitor behaviour and use to assist DEC determine how they will limit visitor access to Store Beach.	Stage 4 (subject to an environmental assessment)
4.2.3.10	Carefully assess and remove vegetation and establish a mown grassed or trimmed area around former buildings north of Second Class buildings, subject to an environmental assessment. (Refer to **Action No. 4.2.3.10.**	Refer 4.2.3.10

5.3 THIRD CLASS/ASIATICS PRECINCT

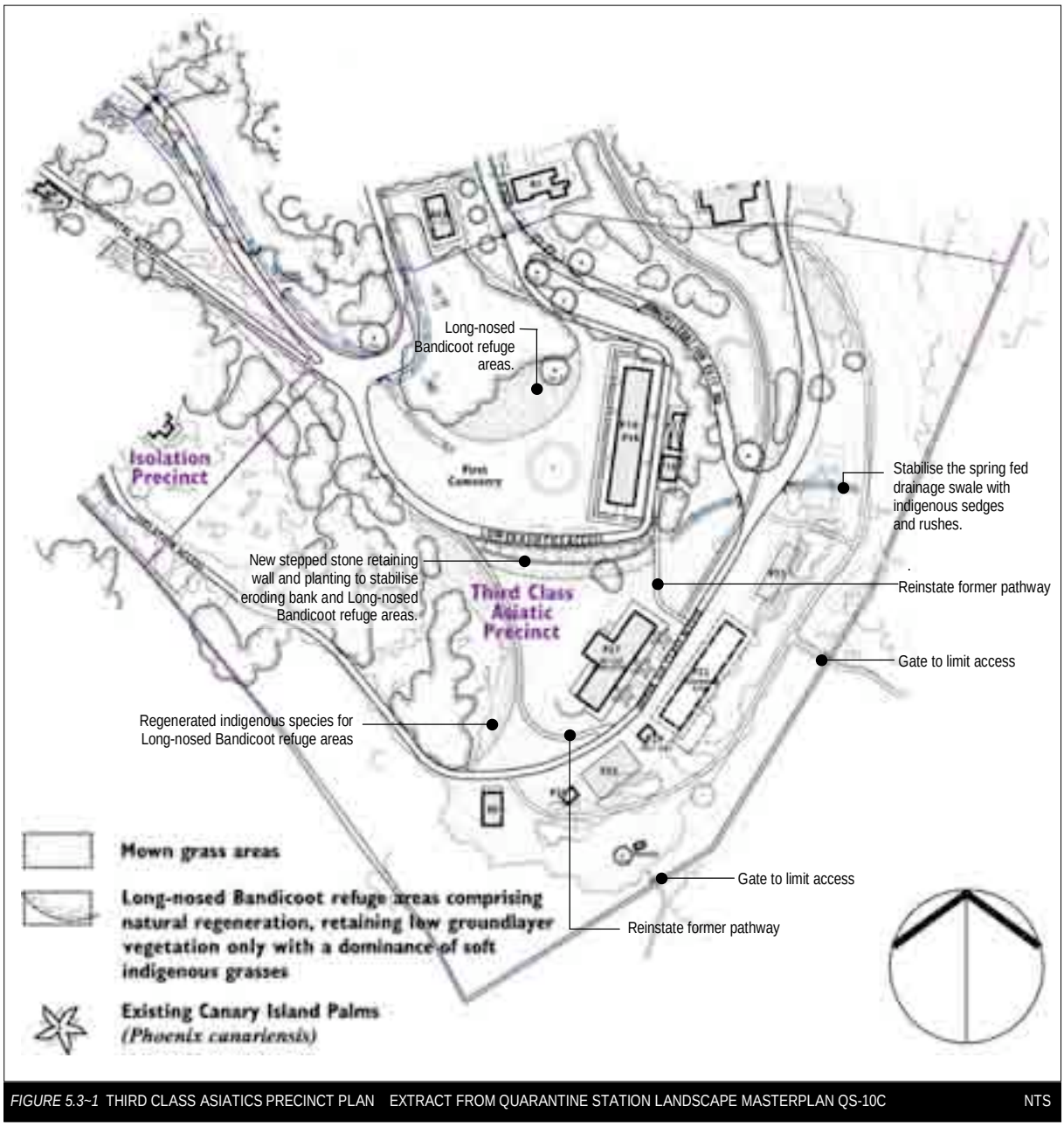


FIGURE 5.3~1 THIRD CLASS ASIATICS PRECINCT PLAN EXTRACT FROM QUARANTINE STATION LANDSCAPE MASTERPLAN QS-10C NTS

5.3.1 Statement of significance

5.3.1.1 Summary of Statement of Significance (Freeman et al., 2000)

The following is a summary of relevant points for the Heritage Landscape Masterplan from the full statement of significance.

- This group of buildings occupies a site of outstanding aesthetic value that relates to landform and building form.
- The site is relatively remote from other building groups and precincts.
- A high degree of uniformity.

5.3.1.2 Summary of the Landscape Significance (Freeman et al., 2001)

Cultural Landscape : High

- The precinct is fringed by natural bush forming a backdrop to the clear areas.
- The open nature of the slopes and grassed areas.

Natural Landscape : Medium

- The natural bush is typical of the general natural conditions of the site.

5.3.2 Overall landscape design intent of Third Class Asiatics Precinct

The overall design intent is to retain the sense of separateness of this area in the site and reveal the former extent of this precinct during quarantine phases whilst improving the environmental character. This will be achieved by the reconstruction of P21, P22 and P23, as outlined in the PAS, along with reinstatement of former paths and the funicular path. Other changes include stabilising eroding banks and creation of Long-nosed Bandicoot refuge areas. The First Cemetery will remain cleared and unadorned.

5.3.3 Design rationale and recommendations

5.3.3.1 Cultural Plantings

RADIATA PINES

Rationale
The two Radiata Pines present in this precinct are some of only a few cultural plantings remaining. The 1929 aerial photograph reveals extensive plantings in this precinct, refer to **Photo 5.3-1** and Appendix A for a the whole aerial photo.

Recommendation
The Radiata Pine in front of Asiatics accommodation P15-16 is to be protected in all external works to this area as it is in excellent health. A second Radiata Pine located to the rear of Asiatics is to be retained with some trimming of dead wood.

PHOTO 5.3-1 1929 AERIAL PHOTO OF THIRD CLASS
SOURCE: STATE ARCHIVES

CANARY ISLAND PALMS IN FRONT OF P27

Rationale
A row of three Canary Island Palms in front of P27 significantly contribute to the landscape character of this area.

Recommendation
The Palms are to be retained and protected with the unadorned grassed surface retained to trees.

TREES NEAR CONSTITUTION MONUMENT

Rationale
The Norfolk Island Pine is in good condition and is a key character species on the horizon line in this area. The location of the tree near the monument contributes to the sense of settlement and layering of the cultural landscape in this area. The specimen Cheese

Tree *Glochidion ferdinandi* is indigenous to North Head and has grown to a large spreading specimen tree given the lack of competition of other bush around it.

Rationale
Both species are to be retained. Bushland vegetation is to be regularly trimmed to retain an open area around the Norfolk Island Pine and its visual prominence in the landscape.

Summary Actions for cultural planting
Refer to section **4.2.3.1.**

5.3.3.2 Funicular path

Rationale
The former funicular track alignment terminates in this precinct. The funicular transported goods and luggage from the Wharf Precinct to Third Class/Asiatics and its termination point is immediately north of P27. The proposal intends to adaptively re-use this funicular track alignment as a pedestrian path for interpretive and functional access between the Administration Precinct and Third Class/Asiatics.

Recommendation
The path will be constructed along the former funicular route. In order to do this, the vegetation will be assessed, and selectively removed and trimmed to create a clearing of approximately 2 metres width. Minor variations may be required to reflect the changes in topography, geology and mature remnant trees. The edges will be regularly trimmed to maintain walking access. The proposed path is to have a concrete surface with a crushed sandstone exposed aggregate finish. Symbolic inlaid steel at the termination point, and both sides of road crossings will clearly differentiate the funicular path from other paths in the site. The path will terminate at the historical point of termination. This is consistent with the DACMP Policy No. 13.3.33 to 13.4.41. Approval of this recommendation is subject to an environmental assessment.

Summary Actions for funicular path

No.	Action	Implementation
5.3.3.2a	Undertake vegetation assessment of future funicular path alignment as per Action 4.2.3.1g	Stage 3
5.3.3.2b	Detailed design and construction of the pedestrian path along the former funicular track alignment including detail of symbolic steel inlay, and alignment to take account of archaeology and natural site conditions. Approval for this work is subject to an environmental assessment. (Refer to Actions 5.3.3.2a and 5.5.3.7b).	Stage 3 (subject to an environmental assessment)

5.3.3.3 Asiatics


PHOTO 5.3-2 ASIATICS P16-17 FORMER PATH TBLD 2003

ASIATICS ACCOMMODATION P16-17

Rationale
There are remnants of a former asphalt path around the Asiatics accommodation. This area is to be adaptively re-used as student classrooms, along with an interpretive stop on the storytelling tours. This will increase informal pedestrian access and use of the area around P14-P16. Currently, a mown grassed surface extends up to the verandah edge and steps descend to grass. The building is elevated on this western side and there are remnants of an asphalt path through the grass on the western side of the building. Refer to **Photo 5.3-2.**
In front of Asiatics the remnant Southern Mahogany is a key character specimen tree. The arboricultural assessment identified it has some dead wood and hollows in this specimen tree.

Recommendation

- The former asphalt path will be reinstated as a new sealed asphalt path around the building. Indigenous groundlayer vegetation with robust species to deter access will be planted between the path and the underside of the building to discourage access under it, particularly given there will be large numbers of children in this precinct. (For planting rationale refer to **5.2.3.2**).
- The Southern Mahogany tree is to be retained, with dead wood removed. The surface under the tree is to naturally regenerate with indigenous groundlayer species only, and a high proportion of soft indigenous grasses as the preferred species for the Long-nosed Bandicoot shelter. Refer to **Section 4.2.4**.

LOWER ASIATICS TRACK EMBANKMENT

PHOTO 5.3-3 LOWER ASIATICS TRACK EMBANKMENT TBLD 2003

Rationale

The embankment between the lower Asiatic track and P27 is eroding and some stabilisation works have been recently undertaken with rolls of Jute mat which are unsuccessful and not complementary to the heritage values of the Station, refer to **Photo 5.3-3**. There is evidence of sandstone behind the lower end of the embankment, refer to **Photo 5.3-4** The erosion is resulting in high sediment loads being washed down the track and entering the stormwater system.

Immediately north of this eroding embankment is a natural sandstone escarpment behind building P14 - P16. The future use of sandstone to stabilise the eroding bank is considered appropriate given the presence of sandstone nearby.

PHOTO 5.3-4 REMNANT SANDSTONE IN EMBANKMENT FROM FORMER PATH BEHIND THE WALL TBLD 2003

Recommendation

The recommendation includes stabilisation of this eroding bank with the construction of stepped sawn sandstone retaining walls. The sandstone is to be of similar tones and colours present in the natural escarpment immediately north of the eroding site. The erosion control works will extend from the existing sandstone escarpment north of the embankment south to the meet the grade of proposed new path. Refer to ***Figure 5.3~1***. Detailed design is required to determine the extent and number walls required to minimise loss of open grassed area in front of P27 and the visual dominance of the new wall and is subject to further environmental assessment. Indigenous soil binding ground layer plants are proposed to be planted to the top of the walls to assist with stabilising and soften the visual character.

NATURAL SPRING/SURFACE RUNOFF

Rationale

The natural spring fed channel behind Asiatics is currently in poor condition and eroding. This flows from upstream of Upper Third Class Road near the funicular route to the sandstone escarpment south of P16. The channel flows through a grassed area, and the former building footprint P19. Appropriate procedures outlined in the AMP will need to be adhered to prior to any works to stabilise the channel with indigenous vegetation.

Recommendation
Following archaeological assessment, in accordance with the AMP, plant the length of the natural spring with soil-binding indigenous sedges and rushes to stabilise the channel. This will reduce sediment loads and make it more visually prominent in the landscape to reduce the risk of pedestrians falling into and tripping over the channel.

Summary Actions for Asiatics

No.	Action	Implementation
5.3.3.3a	Plant indigenous groundlayer species between path and building line to discourage access under buildings.	Stage 3
5.3.3.3b	Detailed design and construction of sandstone retaining walls to stabilise bank between Lower Asiatics and Third Class dining. This will include planting with soil-binding indigenous ground layer vegetation to assist with stabilisation, subject to environmental assessment.	Stage 4, subject to further environmental assessment.
5.3.3.3c	Plant natural spring drainage line east of buildings P16 and P17 with indigenous sedges and rushes to stabilise as shown on Landscape Masterplan.	Stage 4
	For Long-nosed Bandicoot habitat enhancement refer to recommendations in Section 4.2.4	Refer to 4.2.4

5.3.3.4 First Cemetery

Rationale
The First Cemetery was used as a burial ground from 1837 to 1853. The use of the site as a burial ground ceased early in the sites history due to its location on a drainage line above the water supply well and its location in front of healthy ground. The headstones were removed but the graves were not exhumed. There are estimated to be approximately 228 people buried in this site. The area was being disturbed by rabbits, which have more recently been controlled.

Recommendation
This area is to be retained in its current state as a mown grass, with ongoing rabbit control to be provided by DEC.

Summary Actions for First Cemetery
No specific actions for this area, but rabbit control will require some hole filling and ground stabilisation.

5.3.3.5 Third Class

Rationale


PHOTO 5.3-5 FORMER TRACK ALIGNMENT IN THIRD CLASS

In the PAS this area is proposed to be used for accommodation and an assembly area for educational uses in this precinct. P27 is the dining room and proposed to be used for large functions and conferences accommodating up to 200 people. Reconstruction of the P21, P22 and P23 will be used for education accommodation. There is some ESBS vegetation growing over the building footprints which will require removal as approved in the PAS. The increased pedestrian activity will generate increased pedestrian flow and access in the precinct which can largely be accommodated on the road, but will require two additional paths along former alignments which have been investigated in accordance with Approval Condition 92 (i) - Third Class/Asiatics Precinct. There are remnants of a former path extending from the end of the funicular to Asiatics, and includes remnant asphalt surface and brick edging. The second path is evident in the landform and DACMP *Illustration 18*. Refer to **Photo 5.3-5**.

The grassed area in front of Third Class dining is steeply graded and is currently experiencing erosion from rabbit burrows, which require control by DEC (as part of their broader feral animal control of North Head). Former historical photos of this area reveal there were former plantings in this grassed area during different phases of the Station's history. Refer to **Photo 5.3-6**. The open grassed areas are noted as Long-nosed Bandicoot habitat areas. Further habitat enhancement will assist in improving these values.

Recommendation

PHOTO 5.3-6 1951 AERIAL VEGETATION AT P27

Two pedestrian paths are proposed along former path alignments to accommodate the increased pedestrian access and use of this area. A path from the end of the funicular route to Asiatics accommodation (P14-16) is the reinstatement of remnant asphalt path with brick edging. The reinstatement of this path will utilise an asphalt surface and protect remaining edging, but no additional edging is to be installed.

The second path is proposed on the former track alignment between the Wharf and Third Class, and is subject to further environmental assessment. There are no visible remnants of the track remaining and it is proposed this track will be the concrete with exposed sandstone aggregate surface finish. The sealed surface is proposed due to steep grades and likelihood of continued erosion of an unsealed crushed sandstone path. The path is to be approximately 1.2 - 1.5 metres wide. Between this proposed path and the existing bushland the steeply graded site is proposed to be regenerated with indigenous groundlayer vegetation to stabilise this area, provide Long-nosed Bandicoot refuge areas adjacent to the mown grass areas and improve maintenance whilst retaining views of the Wharf Precinct.

The three existing Canary Island Palms in front of the Third Class dining will be retained in accordance with **5.3.3.1**. The remaining open mown grassed landscape in front of Third Class dining, P27, will be retained in its current form, and has become more stable since rabbits have been controlled in the site. Additional Long-nosed Bandicoot refuge area is proposed at the top of the embankment in accordance with recommendations in **Section 4.2.4.**

FORMER BUILDINGS TO THE SOUTH EAST OF THIRD CLASS

Rationale

PHOTO 5.3-7 1951 AERIAL CLEARED AREA AROUND FORMER BUILDINGS SOUTH EAST OF THIRD CLASS

To the rear of Third Class, in an area currently overgrown with ESBS, was much earlier accommodation for the Quarantine Station, established in the late 1830's. This area continued to be used throughout many phases of the Station's history with buildings still evident in the 1951 aerial (refer to photo 5.3-7) and overgrown in the 1978 aerial. It is likely, therefore, that it was still visible during at least part of the Aviation Phase. The building foundations remain and are potentially being damaged by the by Tea-tree regrowth. The presence of the Endangered ESBS community in this location precludes the opportunity to remove the vegetation from the former building footprints at this time. However it is noted this area is of archaeological interest and methods to potentially protect these building foundations and allow interpretation of the former extent of the Quarantine Station requires review. An acceptable solution to protect the archaeological values will need to be negotiated with NSW Heritage Office and DEC.

CONSTITUTION MONUMENT AND TRACK TO THE OLD MANS HAT

Rationale

Constitution Monument and the specimen Cheese Tree and Norfolk Island Pine are well established and contribute to the cultural landscape values of this area. The entry to Old Mans Hat track is located within the lease boundary area and access is proposed to be limited.

Recommendation

The existing specimen Cheese Tree and Norfolk Island Pine are to be retained in their current form.

The existing access track to The Old Man's Hat will have a gate installed with signage to confirm access is not permitted. The gate will be installed in a location out of view from Constitution Monument and the entry point to the track will remain concealed from view.

Summary of Actions for Third Class

No.	Action	Implementation
5.3.3.5a	Construction of new path, on the former alignment, from Lower Asiatics Rd to Upper Third Class Access. (Refer to *Figure 5.3~1* for alignment), subject to further environmental assessment.	Stage 4 (Subject to further environmental assessment)
5.3.3.5b	Install gate and signage to several metres along the track to Old Mans Hat to prevent independent access.	Stage 3
5.3.3.5c	Mawland to liaise with Heritage Office and DEC to determine an appropriate treatment to, as a minimum, protect the former building foundations south-east of Third Class which are located in an area of ESBS vegetation.	Ongoing
	For Long-nosed Bandicoot habitat enhancement actions refer to Section 4.2.4.	
	For vegetation removal around P21, P22 and P23 refer to actions in Section 4.2.3.	

5.4 HOSPITAL AND ISOLATION PRECINCTS

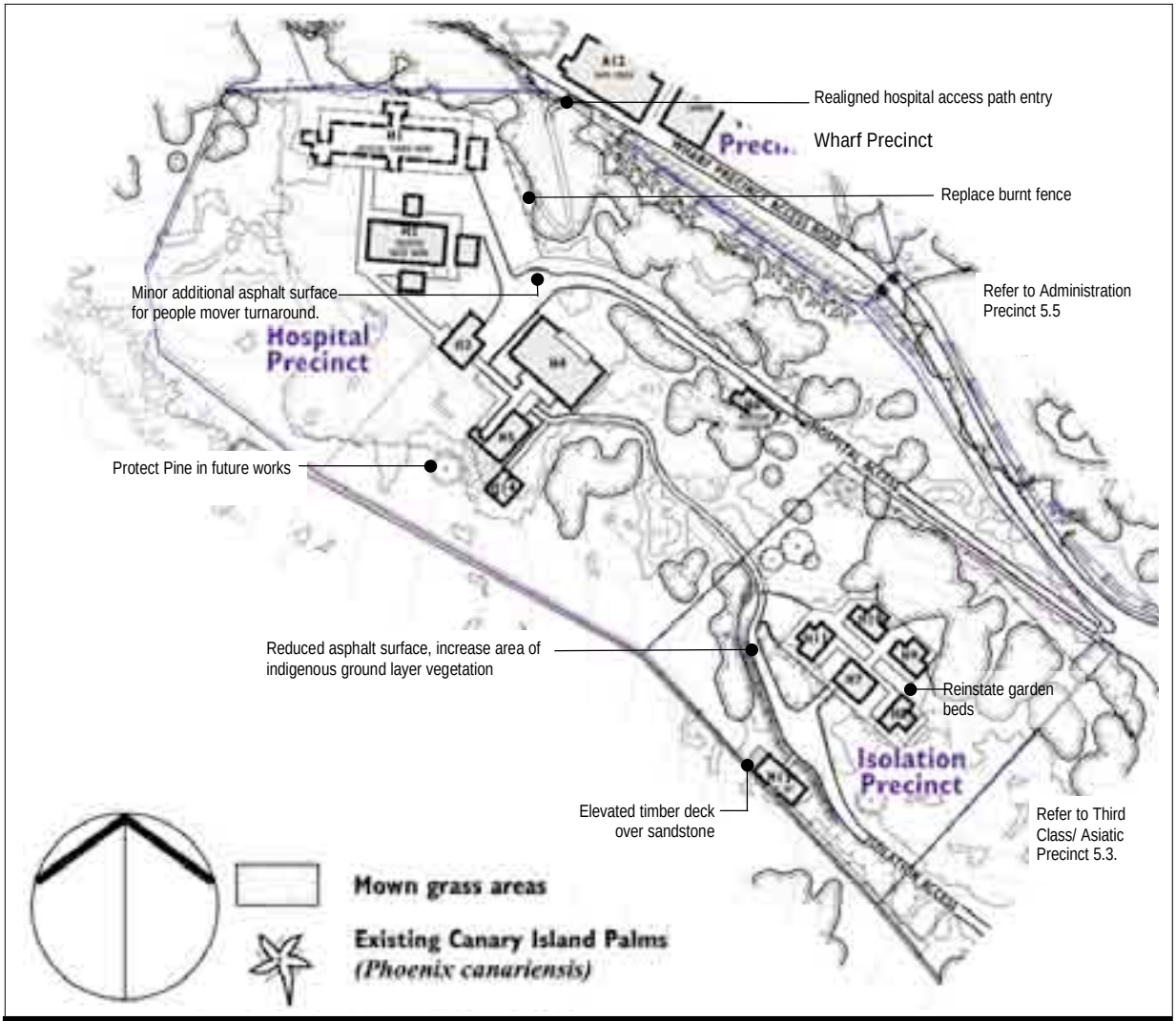


FIGURE 5.4~1 HOSPITAL ISOLATION PRECINCT PLAN EXTRACT FROM QUARANTINE STATION LANDSCAPE MASTERPLAN QS-10C NTS

5.4.1 Statement of significance

5.4.1.1 Summary of Statement of Significance (Freeman et al., 2000)

The following is a summary of relevant points for the Heritage Landscape Masterplan from the full statement of significance.

- The windy location of the hospital is reflective of the medical knowledge at the time the Quarantine Station was established. Wind was thought to dissipate vapours and miasmas that were assumed to spread infection and disease.
- The sense of isolation.
- The expansive views from the hospital down Port Jackson were tantalising for the sick who had travelled so far.

5.3.1.2 Summary of the Landscape Significance (Davies et al., 2001)

Cultural Landscape : High

- The remaining secure fencing of the precincts.
- Its sense of isolation.
- The cleared landscape contrasting with heavily vegetated areas.

Natural Landscape : High

- The well established natural environment.

5.3.1.3 Quotation about the landscape character of the Hospital Precinct

The Sydney Mail 2/9/1903
'But it is one of the cosiest hospitals we have seen and its beautiful breezy situation, wide, sunny or shading (according to aspect) verandahs and exquisite outlook are such as to make any sick man well if there is any possibility of doing it'.

5.4.2 Overall landscape design intent for Hospital and Isolation Precincts

The overall intent in the Hospital Precinct is to emphasise the contrast between the cultivated and the natural landscape. Fencing will be retained and view corridors reinstated from the Hospital to the wharf and the unadorned mown grass will continue to flank the hospital. The Isolation Precinct will retain and enhance its sense of separation from the remainder of the Station by retaining the existing fencing, restoring the remnant gardens and long term reinstatement of the historic view corridors to Administration Precinct.

5.4.3 Design rationale and recommendations

5.4.3.1 Cultural Plantings

RADIATA PINES

Rationale
There are two Radiata Pines located in the Isolation Precinct on the eastern side of the entry road, and one located in Hospital Precinct. Their presence in the landscape contributes to the layering of the cultural landscape history of the site, and whilst not indigenous, are important cultural plantings. The tree in Hospital Precinct is located on the coastal side Building H5 and is in reasonable health. The two pines in Isolation Precinct are in poor condition, one dead and the other with only a few live branches.

Recommendation
Retain and protect the existing Radiata Pine in Hospital Precinct by regularly trimming the coastal heathland vegetation to at least 1.5 metres around the tree. This will retain its visual dominance.
The dead Radiata Pine in Isolation is to be replaced with same species, and the second Pine retained and monitored. If this second Pine dies, it is to be replaced with same species.

MOWN GRASS AREAS

Rationale
The definition between grassed areas and the coastal heath remains a strong element in the cultural landscape of the Hospital Precinct. There has been regrowth into the grassed area over time as illustrated on the vegetation maps QS-04a, QS-04b and QS-04c.

Recommendation
The future management intent is to retain the mown grass aesthetic around all buildings in Hospital Precinct. This will involve some regular trimming of heath to retain the existing open mown grass areas.

GARDEN BEDS

Rationale
There are remnants of former garden beds in Isolation Precinct including garden bed edging. Refer to Photo 5.4-1. There are no photos available of former plantings present in these beds, or their former extent and era of construction.

Recommendation
Retain garden bed edging in-situ and undertake a detailed assessment of existing vegetation. The planting design is to complement any remaining cultural plantings, and strengthen the existing character.

PHOTO 5.4-1 REMNANT GARDEN BEDS IN ISOLATION PRECINCT TBLD 2003

Summary Actions for cultural plantings

No.	Action	Implementation
5.4.3.1a	Remove dead Radiata Pine in Isolation Precinct and replace with new tree same species.	Stage 4
5.4.3.1b	Assess cultural plantings in garden beds in Isolation Precinct and plant to complement existing character.	Year 3

5.4.3.2 Hospital Precinct

LANDSCAPE AROUND THE BUILDINGS IN HOSPITAL PRECINCT

Rationale
Historical aerial photographs illustrate a more extensive cleared area extending to the existing precinct fence boundaries on the south-western edge. From the Harbour the Hospital was highly visible which was a historically important view as the first key view of the Quarantine Station when arriving by water. The elevation and visual prominence of the Hospital (currently in the process of being rebuilt) is an important interpretive feature of the Station.

Recommendation
The contrast between the open cleared mown grassed areas and the coastal heath is to be retained with some simplification to the boundary between indigenous vegetation and the mown grass that will reinforce this distinct contrast.

ESCARPMENT VEGETATION

Rationale
Expansive views over Port Jackson and North Harbour from the Hospital, and its exposed and highly visible location on the site are now less distinct due to vegetation regrowth. The visual prominence of the Hospital from other parts of the site, and from the water is important to the interpretation and understanding of the quarantine phases of the Station's history.

Recommendation
Views are to be re-instated in the longer term, with review of the method to achieve this in the first revision of this HLMP. Care must be taken to ensure all remnant vegetation (i.e. prior to settlement) is retained and protected including the Port Jackson Figs. Refer to 4.2 for further information on vegetation management.

PATHS

Rationale

The access path between the Wharf and Hospital is to be extensively used by tours as described in the PAS. Currently the existing entry to the path from the Wharf Precinct is located directly adjacent to inscriptions. If retained in this location there is no space to install a barrier to protect the significant inscriptions adjacent to it. Towards the top of the path a concrete block retaining wall has been constructed to retain the steep grades. This is out of character with the remaining landscape and built infrastructure in the Quarantine Station. Whilst the wall is of stable construction, it impacts on the natural and cultural landscape the character of the site, particularly on this important interpretive route. The path was originally aligned further up the slope and there is a former timber and steel handrail remaining in the vegetation along this former alignment.

As this precinct will not contain accommodation areas it is anticipated the informal pedestrian access will be less than for the remaining precincts. The designated pedestrian access routes for tours need to be consistent with the cultural character of the Station. The existing path between Hospital and Isolation Precincts is currently eroding and has been more recently repaired and reconstructed during the NPWS/DEC Phase. This is an important part of the interpretive tour route and needs to be consistent with the cultural values.

The ongoing safe access to and use of building H14 creates the need to establish a new path link to it.

Recommendation

The path entry at the Wharf Precinct is to be realigned to protect the inscriptions. This has been described and included in the Wharf Precinct Section 5.1.3.2. The handrail will be upgraded to meet the new infrastructure design elements in the site described in Section 4.3. The older handrail on the former path alignment will be retained in-situ. In the next plan the concrete retaining wall should be considered for replacement with a sandstone wall as it was reportedly introduced in the NPWS Phase. The sandstone used in the construction of this wall should be derivative of the colours in the Wharf Precinct sandstone escarpment. In the interim this wall will be reduced in visual prominence by planting indigenous ground layer species to grow over it.

An additional unsealed path is proposed to be reinstated from the existing path to building H14 to facilitate its safe use, subject to further environmental assessment.

The path between Hospital and Isolation is to be upgraded in accordance with recommendations included in 4.3 of this Plan.

PARKING AREA

Rationale

The narrow rectangular shape of the existing asphalt parking area makes it difficult for service vehicles to turn in. The people mover will need to regularly visit the Hospital Precinct and at night will be transporting groups of up to 50 people with a passenger trailer attached. Tests have concluded that even with the latest turning base technology, the space is slightly too narrow to turn the people mover with a trailer attached.

The fence between the parking area and the hospital buildings has been burnt by the hospital fire and needs replacement as part of the hospital reconstruction project.

Recommendations

Widen the entrance to the Hospital parking area by expanding the asphalt to the north-west one metre deep and three metres long (See ***Figure 5.4~1***) in accordance with relevant guidelines included in the AMP.

FORMER BUILDINGS IN THE SOUTHERN AREA OF HOSPITAL PRECINCT

Rationale

Section 3.4 described the cultural significance of interconnecting views between this precinct and Administration buildings, and of staff viewing ships. Tom maintain this historic view, the vegetation is to be regularly trimmed along the fencelines to retain historic views. The former buildings in this area, which included nurses quarters, and the

re-growth will be selectively cleared around the former building sites to assist with interpretation of this former use. The procedure for this work will be undertaken in accordance with the AMP, and in consultation with the site's Environmental Manager.

Summary of Actions for Hospital Precinct

No.	Action	Implementation
5.4.3.2a	Plant indigenous groundcover plants along the top of the wall to climb down over the wall and reduce its visual prominence in the site.	Stage 4
5.4.3.2b	Construct crushed sandstone unsealed path on former path alignment to Building H14 as shown, subject to further environmental assessment.	Year 4, subject to further environmental assessment.
5.4.3.2c	Upgrade existing path between Hospital and Isolation Precincts to address erosion and safety.	Stage 4
5.3.4.2d	Widen the entrance to the Hospital entry parking area so that the people mover can turn within the space.	Stage 2
5.3.4.2e	Replace steel mesh fence between parking area and hospital buildings.	Stage 2

5.4.3.3 Isolation Precinct

Rationale

The Isolation block is a significant purpose built building complex constructed around 1914. Whilst there were some modifications undertaken during the Aviation Phase to the buildings, they are relatively minor particularly to the external appearance. The external appearance of the buildings, their symmetry and elevated location all contribute to the sense of place and character of this precinct, which is to be retained and enhanced with the recommendations. The expanse of asphalt dominates the character of the Isolation Block, and carries significant surface runoff causing erosion to path and surrounding landscape. The PAS identifies that people mover traffic access only will be required to this area, which provides the opportunity to reduce the extent of asphalt and the volume of stormwater runoff into surrounding area. The aerial photo from 1929 shows this road as a much smaller area. It was expanded in the Aviation Phase, presumably to accommodate vehicle turnaround.

There is approval to build an elevated timber outdoor platform to the north of building H15. This will protect the remaining inscriptions from pedestrians congregating and seeking views over Port Jackson.

Recommendations

The asphalt road surface will be retained and the vehicle turnaround area will be reduced in size to reduce surface stormwater runoff and redirect the runoff through a wide vegetated swale to direct it away from the path. An asphalt area, large enough to accommodate the people-mover turnaround will be retained. Low indigenous groundlayer species will be used in revegetation of areas formerly covered by asphalt.

Currently all the outdoor spaces around Isolation Precinct are paved with an asphalt surface that is deteriorating. As identified in the DACMP, the asphalt surface is to be retained and repaired where required. Some of the spaces have the original exposed sandstone which is to be retained. As noted in 5.4.3.1, the remnant garden bed areas will be restored.

Building H15 is to have an elevated timber outdoor platform constructed over the sandstone platforms to protect the remaining inscriptions from pedestrians congregating and seeking views over Port Jackson. The platform is to be designed low to the ground to eliminate the need for handrails, which would be highly visible. This is in accordance with the PAS.

Summary Actions for Isolation Precinct

No.	Action	Implementation
5.4.3.3a	Detailed design and construction to reduce asphalt road area in Isolation Precinct including redirection of runoff into vegetated swales.	Stage 3
5.4.3.3b	Repair asphalt surface in the immediate vicinity of the Isolation buildings where required.	Stage 3
5.4.3.3c	Detailed design and construction of low elevated timber platform to Building H15.	Year 3

5.5 ADMINISTRATION PRECINCT

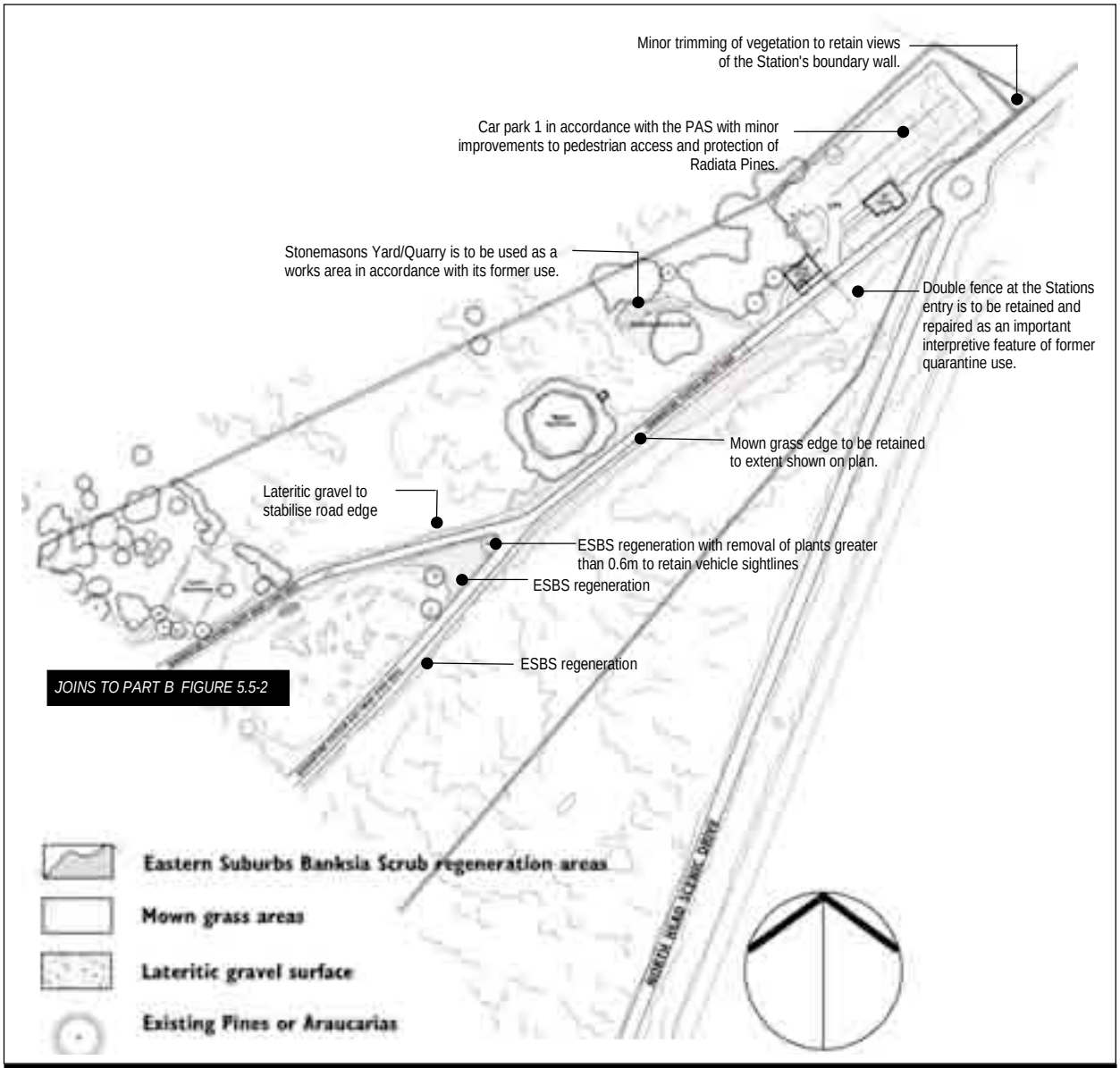


FIGURE 5.5~1 ADMINISTRATION PRECINCT PART A PLAN EXTRACT FROM THE QUARANTINE STATION LANDSCAPE MASTERPLAN QS-10C NTS

For Administration Precinct Plan Part B, refer to next page

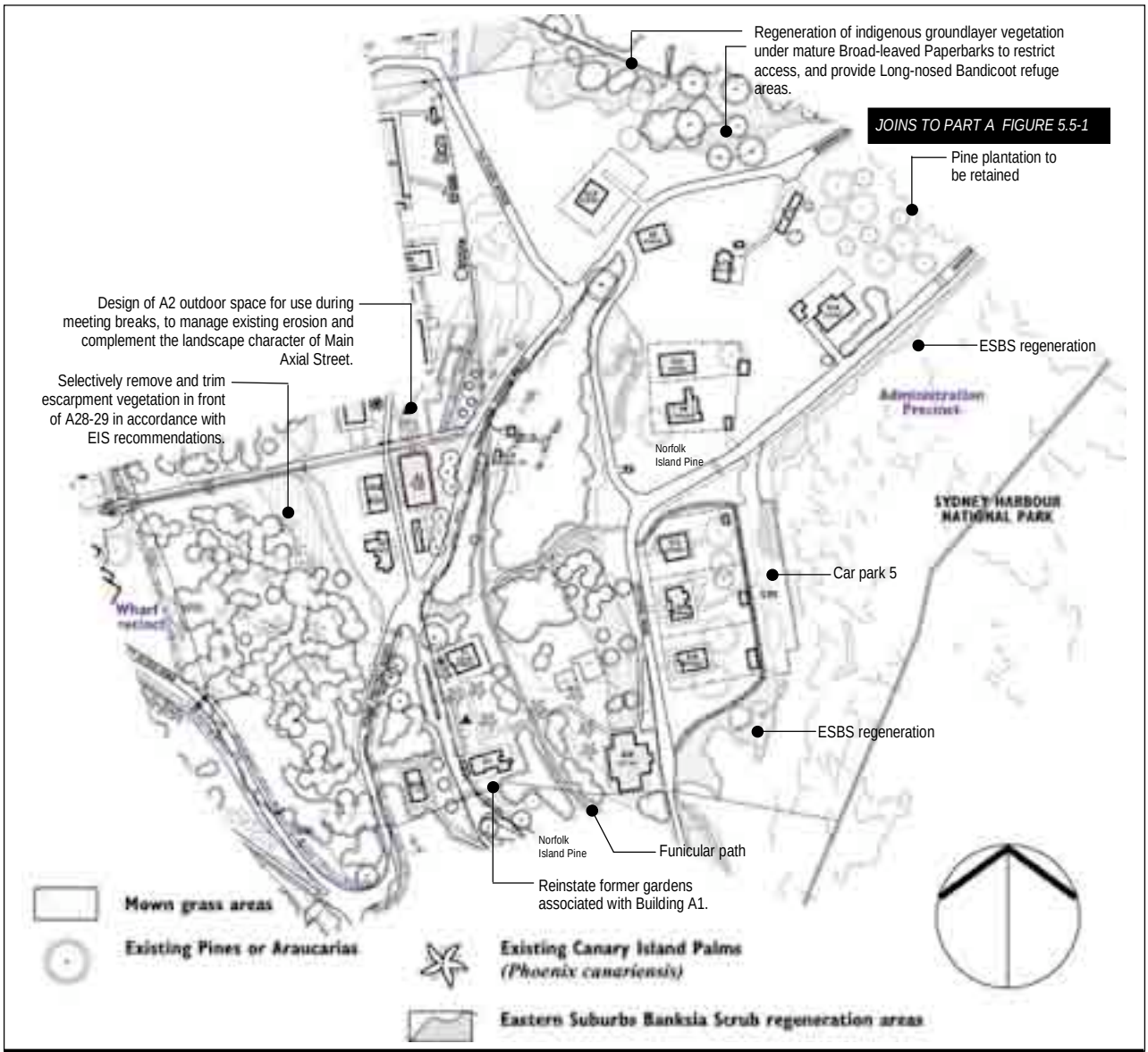


FIGURE 5.5~2 ADMINISTRATION PRECINCT PART B PLAN EXTRACT FROM THE QUARANTINE STATION LANDSCAPE MASTERPLAN QS-10C NTS

5.5.1 Statement of significance

5.5.1.1 Summary of Statement of Significance (Freeman et al., 2000)

The following is a summary of relevant points for the Heritage Landscape Masterplan from the full statement of significance.

- Location in the site separating First and Second Class from Third Class/Asiatics accommodation.
- Dominance of the land and access road reinforces its role of quarantine and the social behaviour of those quarantined.
- Provide centralised services for the healthy.
- Staff cottage placement and siting are part of their significance.

5.5.1.2 Summary of the Landscape Significance (Davies et al., 2001)

Cultural Landscape : High

- Not bounded by precincts.
- Generally intact.

- Small areas are of lower value due to degraded state, but these are to be recovered in the proposal.

Natural Landscape : Medium

- The natural environment encroaches with active bush regeneration around the perimeter and in the centre of the precinct.

5.5.2 Overall landscape design intent for Administration Precinct

The overall design intent is to reinforce the role of the Administration Precinct in providing core services and management with reinstatement of the historic view corridors between Administration Buildings and the Staff cottages. The cottages are to have their gardens re-established to reinforce the contrast between the unadorned functional mown grass landscape of Administration and the domestic landscapes of residences. The large areas of existing Long-nosed Bandicoot foraging areas are to be enhanced with shelter areas, and there are areas of the endangered ESBS vegetation community regeneration.

5.5.3 Design rationale and recommendations

5.5.3.1 Cultural Plantings

CANARY ISLAND PALMS *Phoenix canariensis*

Rationale
These are located between S1 and A1 and to the east of the Funicular route outside A20 and the former A3. Their presence and scattered planting style in the garden layout, contributes to the landscape character of this area. The scattered planting style is clearly different from other row style plantings of this species in the other precincts. There is a younger Palm in front of S1 which may have replaced a former older established species.

Recommendation
All these species are to be retained and replaced with same species as required.

RADIATA PINES *Pinus radiata*

Rationale
The largest planting is the stand north east of building S14 which is to be retained with some minor maintenance work required in accordance with the Arboricultural assessment (refer to Appendix A). The majority of the remaining Radiata Pines in this precinct are located in the cottage gardens and contribute to their character. They are visible along the ridgeline from other points within the site.

Recommendation
Where possible, Radiata Pines will be retained, though specimens in poor health may require replacement over time with the same species. The two Radiata Pines at Car Park 1 are to be retained in the future design of the car park.

NORFOLK ISLAND PINES *Araucaria heterophylla*

Rationale

One of the most prominent trees in historical photographs from all phases of quarantine is the Norfolk Island Pine in the front garden of Cottage S10. This tree is to be retained and protected in all future works undertaken to the cottage or gardens. Earlier photographs show two Norfolk Island Pines in front of S10, however, the second is absent from the photos during the Aviation phase and therefore will not be replaced (refer to Photo 2.2-1).

The Norfolk Island Pine located south of A1 has been assessed as being in poor health potentially due to a fungal infection. A more detailed assessment of this tree is required

so that treatment can be undertaken to protect and retain it as it is a prominent cultural planting denoting the extent of the former remnant garden in front of A1.

Recommendation
Existing Norfolk Island Pines are to be retained and replaced with same species if they die. The specimen near building A1 requires a detailed arboricultural assessment and if it cannot be treated should be replaced with same species.

GARDENS AT ADMINISTRATION BUILDINGS A1, S1 AND A2

Rationale

PHOTO 5.5-1 GARDENS TO A1 AND S1 CIRCA 1940 SOURCE: STATE ARCHIVES

Historical photographs reveal the gardens associated with Buildings S1 and A1 were quite extensive to support their central role and importance, refer to **Photo 5.5-1** and **Section 3.**4. Remnant plantings evident on the site include established Hibiscus shrubs on the west bank, at the corner of Wharf and Administration Access Road and in front of building A2. Other species in this area include Oleanders and some spring bulbs. The garden area has overgrown with native vegetation and there may be additional exotic plantings remaining amongst the regrowth. The majority of the landscape of the Quarantine Station was predominantly bushland or mown grass. Gardens were restricted to the staff cottages and around the main administration buildings of S1 and A1. In the PAS A1 and S1 are to be used by Mawland as the main administration centre for the site, including hotel reception. It is appropriate that the presence of the exotic gardens and decorative planting is reinstated in the vicinity of A1 and S1 to reinforce the central and important administration focus of these buildings.

The other scattered Oleanders and Hibiscus through the remainder of the Administration area form a landscape link to the other parts of Administration located in Main Axial Street.

Recommendation

The garden area to the western embankment in front of S1 and A1, and the garden area to the south of A1 is to be re-established. This will require detailed site assessment of existing remnant cultural plantings, and preparation of a planting design that complements the remnant species utilising exotic and native species that are non-invasive in the natural landscape. The Oleanders outside A1 are to be retained and pruned to retain visual prominence of building A1. There are spring bulbs along the top of the embankment south of building A1 and these are to be incorporated into the garden restoration. Refer to ***Figure 5.5~3*** and **Section 5.5.3.10** for more detailed description.

There are two Hibiscus in front of building A2 with garden bed edging surrounds to their base. These are to be retained and the garden bed restored around the base of the Hibiscus.

The row of existing shrubs between building S7 and the Entry Road are to be retained and incorporated into the detailed design of Car Park 1.

THE COTTAGE GARDENS

Rationale
The staff cottages in this precinct originally had domestic scale gardens within their fenced boundaries. There are remnant features of the gardens including stairs, garden bed edging, paths and retaining walls, along with remnant plantings. The most visually dominant feature of these gardens is the overstorey trees which have been identified and described in Section 4. The PAS proposes that the former staff cottages are to continue to retain their domestic scale with replacement of timber fencing.

Recommendation
With the adaptive re-use of the cottages as individual dwellings for accommodation, it is appropriate to reinstate domestic scale gardens to the cottages. These gardens are essential to differentiate the ongoing residential use of these buildings from all other buildings on site. Mawland have collected valuable oral history from past residents to inform re-establishment. This will include a more detailed assessment of each garden, undertaking repairs to the built landscape features present, and planting with species that reflect their original plantings, where practical (ensuring no weeds are re-introduced). No snail bait will be used in the gardens to protect the Long-nosed Bandicoots. The gardens are to be reinstated progressively, and require further detailed site investigation and design prior to construction. **Refer to 5.5.3.3** for description.

MOWN GRASS AREAS

Rationale
The existing open grassed areas contribute to the functional and unadorned character of the Quarantine Station which is identified as significant to retain in the DACMP. The changes in vegetation cover over the life of the Quarantine Station has been described in Section 2. Whilst the extent of mown or cleared areas was greater in the Aviation Phase, it is acknowledged in Section 2.3 that there is a contemporary understanding of environmental values and that extensive clearing of the bushland regrowth is not appropriate. Reinstatement of some cleared areas is considered appropriate where it achieves the aims of:

- reinstate historic views corridors between former Staff Cottages and Administration;
- interpret the Aviation Phase and former phases of quarantine; and
- protect former building foundations which may be damaged by tree roots.

Recommendations
There is some reduction in the mown grass areas around the established Broad-leaved Paperbarks to establish Long-nosed Bandicoot refuge areas, prevent access under them, and an increase in cleared grassed areas between S12, S4 and S10, and buildings S1 and A1. These are detailed in the Landscape Masterplan **Drawing No. QS-10C**, and illustrated on the Bushland Management Zones, **Drawing No. QS-06**.

Specific Actions for Cultural Plantings

Refer to Section 4.2.1 and 4.2.2 in addition to those listed below.

No.	Action	Implementation
5.5.3.1a	Minor arboricultural work to the Radiata Pine plantation	Year 4
5.5.3.1b	Detailed assessment of Norfolk Island Pine near building A1 to determine cause of decline and undertake remedial action	Stage 1

5.5.3.2 Entry Road and adjoining areas

CAR PARK 1

Rationale
The design of Car Park 1 was prepared by Sinclair Knight Mertz (SKM 2002) as part of the EIS and PAS process. The quantity of spaces, location, vegetation removal and stormwater drainage were resolved as part of the same process. There are some minor modifications recommended to the car park to address some more detailed issues associated with the design.

Recommendations
Some minor modifications to the layout of Car Park 1 are proposed as part of the landscape design including:

- Retain of both Radiata Pine trees in the car park design.
- Provide disabled parking close to the south-west end of the car park with a graded pedestrian path to A26 waiting area for the people mover.

- Establish a new garden bed between the Entry Road and Car Park 1 to reduce the visual prominence of the car park on entry. This garden bed is to be planted with textural indigenous ground layer species which may include *Gahnia sp.* and *Lepidosperma sp.*, reflective of the natural character of the heathland.

In the detailed design of the car park motorcycle and bicycle parking will be included along with low level lighting to allow drivers to see fauna.

SANDSTONE BOUNDARY WALL AT ENTRY (included in lease area)

Rationale

The sandstone boundary wall is a significant landscape feature. It extends beyond the lease boundary, however, one of the most powerful sections of the wall for interpretation of the Quarantine Station is its visual presence at the entry. Currently this section of the wall substantially screened from view by vegetation.

Recommendation

Minor trimming of regrowth to approximately 0.5 metres either side of the wall is recommended to improve the walls' visibility on entry to the site. This minor trimming will retain adequate screening of Car Park 1 from the main entry.

A26 WAITING SHED, DOUBLE FENCING AND ENTRY ROAD

Rationale

The entry road is an extremely important feature and experience in the Quarantine Station. The long road extending through the landscape reinforces the sense of isolation from the greater urban extent of Sydney. Important to the sense of isolation is the presence of the bushland areas to both sides of the road.

The double row of fencing at the entry is an original feature from the former quarantine use of the Station, with visitors kept on one side of the fence, and those held in detention separated behind the other. The unadorned landscape at the entry with the visual dominance of the fencing is a strong interpretation feature of the landscape and this will be retained. The fencing footings are deteriorating and the wire is rusting which requires repair.

Recommendation

- The boom gate is to be relocated to the north-eastern side of A26 to improve entry control. A garden bed is to be established between the shed and the road to enhance the longer views down the Entry Road. Planting will be consistent with planting established between the Entry Road and Car Park 1.
- The double fencing is an important feature at the entry and is to be retained, repaired and restored to stabilise the structure and replace rusted components. In the longer term fencing may require replacement with the same style, dimensions and colour. Native vegetation is to be trimmed to retain the cleared area around this fencing.
- The northern verge is to be stabilised with a compacted lateritic gravel approximately 1.5 metres wide. Beyond this width, the area is to be managed as natural bushland in accordance with **Section 4.2** and areas of ESBS to be regenerated as described in **Section 4.2.5**.
- The southern verge is to be regenerated with the endangered ESBS community with mowing to the road edge to an adequate width to retain safe vehicle sightlines. The sandstone retaining wall is to be retained and maintained by qualified stonemason in accordance with Section 4.3. This area is to be retained as recognised Long-nosed Bandicoot foraging habitat.
- The surface of the road is to be retained as asphalt with minor maintenance repair works as required to maintain a trafficable surface. Three speed control devices are proposed on the entry road to minimise vehicle speeds within the site. These are located on the Masterplan, and are in accordance with Conditions of Approval 145.

STONEMASONS QUARRY/YARD

Rationale
The Stonemasons Yard was used as a works area and depot during the former quarantine phases. The isolated nature of the Quarantine Station reinforced the need to undertake repair and building works on site. The perimeter appears to have changed in size and form several times during the various phases, including during the Aviation Phase. In January 2006 the DEC marked out a perimeter from which to create a consistent boundary, and trimmed vegetation to this boundary accordingly. Within the surrounding regrowth there is a scattered collection of quarried sandstone. This stone was introduced during the NPWS Phase to assist with conservation repairs, and what remains is considered poor quality by DEC.

Recommendation
Consistent with the adaptive re-use of the Station, this area will continue to be used for storage of materials, plant and equipment, and should be maintained in accordance with relevant storage and stockpile standards. The Stonemasons Yard will be maintained at an area of approximately 320m2. The 2006 perimeter will be maintained through periodic trimming (no trees or native shrubs with a base diameter of greater than 10cm should be removed without DEC approval). Existing cut stone within the Stonemasons Yard may be stockpiled and used on site for repair and conservation works that are consistent with the Conservation Works Program. The recovery of cut stone from vegetated areas will require approval from the DEC.

UPPER RESERVOIR

Rationale
The Upper Reservoir, established early in the sites history, has a fence surrounding it and associated buildings which housed pumps etc. The area was formerly cleared and regrowth is threatening the viable conservation of these features.

Recommendation
The intent is to retain screen vegetation between the entry road and the fence to prevent unwanted access to this area. The fence to the reservoir is to be upgraded and the gate reinstated and locked.

LOWER RESERVOIR

Rationale
The Lower Reservoir is a roofed reservoir and may be used for garden and emergency water supply on site.

Recommendation
Some screen planting to be established on the southern side of the Reservoir to discourage informal access to the reservoir. Refer to Landscape Masterplan QS-10C.

FORK IN QUARANTINE STATION ENTRY ROAD

Rationale
This division in the entry road is important to the entry experience, particularly for visitors arriving to the site for the first time. The sense of entry to isolated area is reduced at the fork in the road, where the sense of enclosure by bushland is broken by the open grassed and eroding surface area at this intersection. There is a sense of anticipation at the fork and the required change in direction needs to reinforce the sense of entry and arrival with increased vegetation cover at the fork. The surface erosion, which is caused by stormwater runoff from the asphalt road surface, requires stabilisation.

Recommendation
This area is to be regenerated with ESBS to stabilise eroding soil, and reinforce the sense of entry to the Station. For the first 10 metres or similar distance as necessary to establish safe vehicle sightlines, selectively remove all species taller than 0.6 metres from

the regenerated ESBS. The threatened Camfield's Stringybark *Eucalyptus camfieldii* will be protected and retained, in accordance with recommendations in EIS Vol 1, Section 10, and SIS Vol 5.

Specific Actions for Entry Road and adjoining areas

No.	Action	Implementation
5.5.3.2a	Detailed design and construction of Car Park 1 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1i for vegetation clearing.	Stage 1 and Year 3
5.5.3.2b	New garden bed planting between Quarantine Station Entry Road and car park	Stage 1
5.5.3.2c	Minor trimming of vegetation along stone boundary wall at the entry to the Quarantine Station.	Stage 3
5.5.3.2d	Restoration and repair to double fences at Quarantine Station entry.	Stage 1
5.5.3.2e	Relocate boom gate to north-east side of A26, towards S7.	Stage 1
5.5.3.2f	Minor upgrade works to Quarantine Station Entry Road including installation of three speed control devices, and stabilise northern edge with compacted gravel surface, and minor realignment of road around mature Paperbark near intersection with Cottages road.	Stage 2
5.5.3.2g	Reinstate gate, repair fence and secure at Upper Reservoir	Stage 4
	For ESBS regeneration actions refer to Section 4.2.5.	Refer 4.2.5

5.5.3.3 Cottage gardens

Rationale

Remnants of cottage gardens remain in the site including stairs, retaining walls, garden bed edging and some plantings in addition to the trees noted earlier. The historical records in the site indicate that Cottage gardens included vegetable patches and decorative gardens planted with at least some native species in them. There are no specific detailed records of the gardens, however, the remaining infrastructure indicates former layout, garden bed areas and grassing.

Additionally, some oral historical research has been undertaken by Mawland, speaking with former residents of the Station. This has given some indication of the former garden character including types of planting. The gardens progressive upgrade will emphasise the point of difference between the functional and institutional landscape of the broader Station, and the domestic landscapes of staff residences. This will assist the interpretation of the former Quarantine Station to tell the story of the staff who worked at the Station, and who were also quarantined.

Recommendations

The cottage gardens will be progressively re-established over time and will need to consider the following during their detailed design and implementation:

- Species used in the Cottage Garden designs are not to include species that are known weeds in bushland environments in the Sydney Harbour National Park;
- The existing remnant exotic trees and shrubs in the gardens are to be retained and include some more decorative species including Frangipani *Plumeria sp.* and Irish Strawberry tree *Arbutus unedo;*
- The other landscape features in the gardens including stone walls, paths, edging etc are to be retained where possible, with clear differentiation between remnant and new features;
- New landscape features will be clearly differentiated and any proposed new fencing will permit Long-nosed Bandicoot access; and
- Planting to incorporate species noted in research undertaken for the plan by Jackson, M (2003) and noted in Section 3.5.1.7.

Galvanised rail fencing is to be replaced with timber fencing in keeping with the cottage garden character and in accordance with the approved Masterplan EIS Appendix I, pages 39-41.

Specific Actions for Cottage Gardens

No.	Action	Implementation
5.5.3.3a	Detailed design and construction of cottage gardens.	Stages 3, 4 and Year 3
5.5.3.3b	Replace galvanised rail fencing with horizontal timber fence to Cottages, new fence design to permit Long-nosed Bandicoot access.	Year 3

5.5.3.4 Greenhouse

Rationale
The Greenhouse was constructed during the Aviation Phase, possibly in the late 1950's and upgraded during the 1980's by NPWS for contemporary use. Whilst the building is noted as being of limited significance in the DACMP, its adaptive re-use potential is noted.

Recommendation
The Interpretation Plan recommends ongoing use and retention of the greenhouse for propagation of plant material for use in the site, including in the cottage garden re-establishment, garden beds and bushland revegetation. Appropriate hygiene methods will be adhered to including the need to provide mesh tables for potting, no plants be stored on the ground, no recycling of soil, soil to be weed free and ensure no Phytopthora is spread. A new path is proposed between the former stable and the greenhouse to facilitate its ongoing use.

Specific Actions for Greenhouse

No.	Action	Implementation
5.5.3.4a	Restoration to a working greenhouse.	Stage 2
5.5.3.4b	Install path between the former stable and the greenhouse, subject to further environmental assessment.	Stage 3, subject to further environmental assessment.

5.5.3.5 Upper slopes

OPEN GRASSED AREAS

Rationale
The cleared and open mown grass character of these areas is characteristic of the functional and institutional landscape of the Quarantine Station. There were no defined additional uses in this area and the landscape reflects the treatment of the site during the Station's operation. The area is recognised as foraging habitat for the Long-nosed Bandicoots.

Recommendation
The habitat will be protected with no additional use, or change in use, of this area of the Station, in accordance with the EIS, Vol 1, Section 10. Various areas may be re-turfed where required.

BROAD-LEAVED PAPERBARKS *Melaleuca quinquenervia*

Rationale
These established remnant trees are a significant natural landscape feature in the upper slopes. The arboricultural assessment identified some limbs may fall from these old trees. Whilst pedestrian access in this area is not encouraged, mown grass will allow pedestrians to walk beneath these trees.

Recommendation

To address the risk management issues it is recommended that walking is discouraged through planting by allowing natural regeneration of indigenous groundlayer species under the mature trees. The regeneration will need to have taller shrub species selectively removed to retain groundlayer species only. This is described fully in **Section 4.2.4** and referred to in **Action 4.2.2b.**

AREA BETWEEN SECOND CLASS ACCESS ROAD AND FIRST CLASS ACCOMMODATION

Rationale
This area was formerly cleared during the Aviation Phase to provide uninterrupted views of accommodation from the Administration Precinct. This is an important visual connection that was present during the Aviation Phase and other phases of quarantine. Refer to **Photo 5.5-2**

PHOTO 5.5-2 VEGETATION COVER CIRCA 1940 SOURCE: MAWLAND

Recommendations
There are no specific recommendations at this stage. This will be reviewed in the first Revision of the HLMP.

Summary Actions for upper slopes
Refer to ***Action 4.2.2b*** and ***Section 4.2.4***.

5.5.3.6 A2 outdoor space

Rationale
The area between A2 and P2 is in extremely poor condition with extensive erosion and site disturbance. The adaptive re-use of A2 as a conference meeting room means that this external area will become a functional outdoor space for conference breaks. This use has been detailed in the PAS and resolved in this plan in accordance with Conditions of Approval 911 (I). A more detailed concept plan of this area has been prepared. Refer to *Figure 5.5~3.*

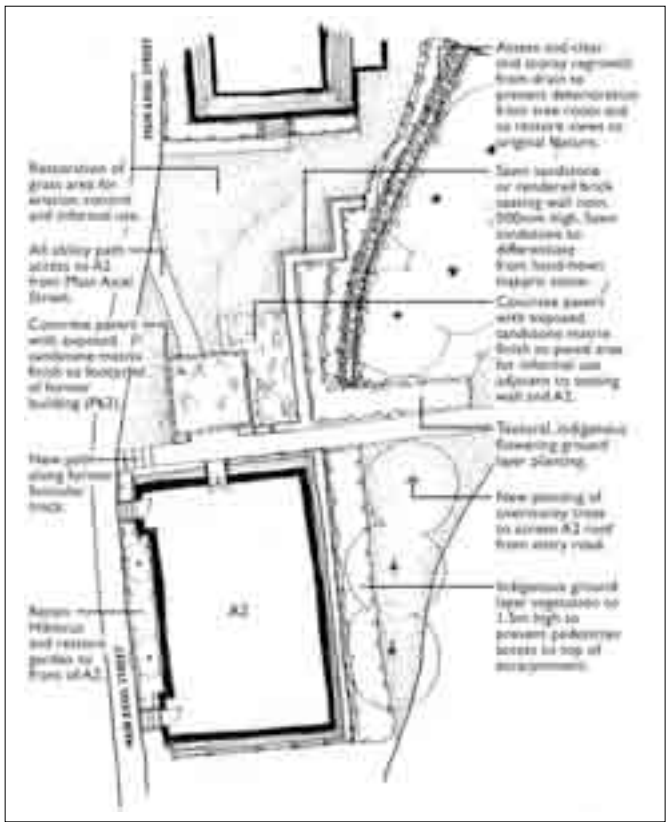


FIGURE 5.5~3 CONCEPT PLAN A2 OUTDOOR AREA NTS

Recommendation
The design proposes a new graded access path to the former building footprint of P62 which is highlighted as a benched level area defined with concrete pavers with exposed sandstone aggregate finish. This former building was the Station's Bar, and its interpretation in the outdoor functional space is an appropriate adaptive re-use of the site.

To stabilise the site a stone or rendered brick retaining wall will be constructed to the eastern side of this space at seating height for informal use. This informal seating will be consistent with the spirit of the landscape treatment in First Class where informal seating is integrated into other structures - eg on the edge of verandahs and grassed

embankments. The retaining wall will allow the site to be graded more gently to achieve a sustainable grassed surface which is consistent with the other grassed areas in Main Axial Street.

To the east of the retaining the wall, the original stone drain will be exposed as it is one of the unique stone landscape features in the site. Removal of Tea-tree regrowth around the drain will prevent further damage to it by tree roots. Textural indigenous ground layer species will be planted to restrict access to the drain whilst retaining views to it.

The Hibiscus to the front of the building on Main Axial Street will be retained with garden beds established beneath them using exotic or native species that complement the exotic character of the Hibiscus.

The Funicular path will be re-instated east-west through the site and is integrated as an alternative access point in the redesign of this entry area.

Specific Actions for A2 Outdoor Space

No.	Action	Implementation
5.5.3.6a	Detailed design and construction of external area to A2, including design of garden beds in front of A2.	Stage 1
5.5.3.6b	Planting to the perimeter of A2 in accordance with design developed in 5.5.3.6a.	Stage 2

5.5.3.7 Funicular path

Rationale

The former funicular railway continues from the top of the escarpment north past Building A2, where trolleys were unloaded to the top of the winch system. The luggage was pulled by a locomotive along the graded path through the Administration Precinct to Third Class/Asiatics Precinct. Refer Photo 5.5-3

This track was used throughout a number of operational phases of the Station to transport luggage and goods from the point of arrival through the site. The adaptive re-use is to reinstate the route for tours and guests to move through the site.

PHOTO 5.5-3 FUNICULAR CIRCA1940 SOURCE: MAWLAND

Recommendation

The proposed steel and timber stairs constructed on the Funicular alignment finish at the top of the escarpment in the Administration Precinct. (For description of stairs, refer to 5.1.3.7). From the top of the escarpment the path along the funicular will be a sealed concrete paved surface with the exposed sandstone aggregate finish. Between the top of the escarpment and the winch point (near the locomotive shed), the path may require some steps to be constructed to traverse the relatively steep grades. At the commencement of the path, steel inlays will be installed to symbolically represent the former track alignment and clearly differentiate this path from other pedestrian paths in the site. The steel inlay will occur where the funicular track recommences, eg. on the eastern side of Main Axial Street.

From the winch point to Asiatics the path runs at grade along the former locomotive route. Regrowth will be cleared to an average total width of 2.0 metres, with variations to accommodate existing established trees and variations in rock formations and topography. The original benched area including any remaining material, e.g. crushed sandstone, sandstone edging or rails should be retained in-situ, and the path designed to accommodate these features. The works will be undertaken in accordance with procedures included in the AMP, the EIS Vol 1 p 10 -27 and the SIS Vol 5. Approval of this recommendation is subject to an environmental assessment.

Summary Actions for funicular path

No.	Action	Implementation
5.5.3.7a	Detailed design and construction of funicular path from top of escarpment to the winch point. Approval of this recommendation is subject to an environmental assessment.	Stage 2 (subject to outcomes of environmental assessment).
5.5.3.7b	Detailed design and construction of funicular path from the winch point to Asiatics. Refer to Action 4.2.3.1g for assessment of vegetation clearing prior to approval of this Action. Also refer to Action 5.3.3.2b.	Stage 3 (subject to an environmental assessment)

5.5.3.8 Escarpment in front of building A28-29

Rationale

Over periods of the Station's history, the escarpment vegetation has been variously trimmed and cleared to minimise risk and provide visual connection between buildings, refer to Photo 5.2-1.

There are numerous dead, overstorey trees on the escarpment which the EIS describes as possibly being affected by changed runoff.

Recommendation

The escarpment vegetation in front of Building A28 - 29 is to be trimmed to a maximum height of 2 metres to provide views of the Hospital Precinct, in accordance with EIS Vol 1 p 10 -27. This vegetation is to be assessed in further detail by an ecologist to confirm the presence of native fauna prior to trimming. It is anticipated this may affect up to 10 overstorey trees. In the long term, it may be more sustainable to remove some trees, rather than regular trimming. This will be undertaken in consultation with the Quarantine Station Environmental Manager.

Summary Actions for escarpment in front of building A28-29

Refer to Action 4.2.3.1k, part 2.

5.5.3.9 Car park 5 and surrounds

CAR PARK 5

Rationale

This car park location, capacity and design was prepared by SKM during the EIS process. The ESBS vegetation community extends to the east of the car park.

Recommendation

Some minor modifications are proposed to Car Park 5 from that presented and approved in the EIS process including:

- Retain the rear boundary fencelines of the cottages and set the car park in slightly from the fences to create room for a vegetated swale to be established between the car park and the fences to assist in treatment of stormwater runoff. This may incorporate the existing remnant bluestone swale which is partially exposed in the southern area of the proposed car park.
- Remove the northern most car parks which are potentially the most visible when viewed from Sydney Harbour.
- Replace the Atlantis system with vegetated swales, to reduce excavation and increase bandicoot habitat.
- Minor replanting/regeneration near the southern and northern ends to minimise visual impact.

PEDESTRIAN PATH

Rationale
Earlier aerial photographs show a pedestrian path from A1 to the Cottages roughly following the powerline easement. A direct access route for guests who use their cars during their stay is required to reinstate historic pedestrian movements, keep pedestrians off roads used by cars and reduce the need for additional people mover vehicle trips in the site.

Recommendation
A new pedestrian path is proposed between Car Park 5, along the power line easement that links to the Funicular path and building A1 (Hotel Reception).

Summary Action for car park 5 and surrounds

No.	Action	Implementation
5.5.3.9a	Detailed design and construction of car park 5 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1f for vegetation clearing.	Stage 1 and Year 3
5.5.3.9b	Construction of pedestrian path along power easement linking CP5 and funicular track, subject to further environmental assessment.	Stage 2, subject to further environmental assessment.

5.5.3.10 Central Administration Hotel Reception at A1

Rationale

The Administration area associated with buildings A1 and S1 forms a core component of the central administration of the site. The A1 building is architecturally prominent and the associated remnant cultural plantings reinforce the cultural values of this precinct. The adaptive re-use proposal locates the reception at building A1, which is consistent with its former use. Previous aerial photos from earlier periods reveal the mown grass areas were more extensive around the Administration area, including between the funicular route and the buildings. Refer to Photos 5.5-4 and 5.5-5.

The cleared area around the buildings reinforced its more intense use and prominence in the operation of the Station.

PHOTO 5.5-4 ADMINISTRATION AREA SOURCE: MAWLAND

PHOTO 5.5-5 1978 ADMINISTRATION AREA MAWLAND

Recommendation

A more detailed Sketch Plan has been prepared for this area. Refer to *Figure 5.5~4.*

PHOTO 5.5-6 BUILDING A1 TBLD 2003

The design includes a graded access path and decorative planting to complement the original stone stairs, refer Photo 5.5-6. The original garden bed to the south of building A1 is to be reinstated with careful attention to retain cultural plantings and in consultation with the site's Environmental Manager regarding native vegetation removal. The parking arrangements will be modified to allow a pedestrian path to be designated on the asphalt road through this area due to anticipated vehicle movement and need for safe access by tour groups. A new boom gate will be installed at the southern end of Administration Precinct at the control point where guests leave their cars. The cars will be valet driven to Car Park 5.

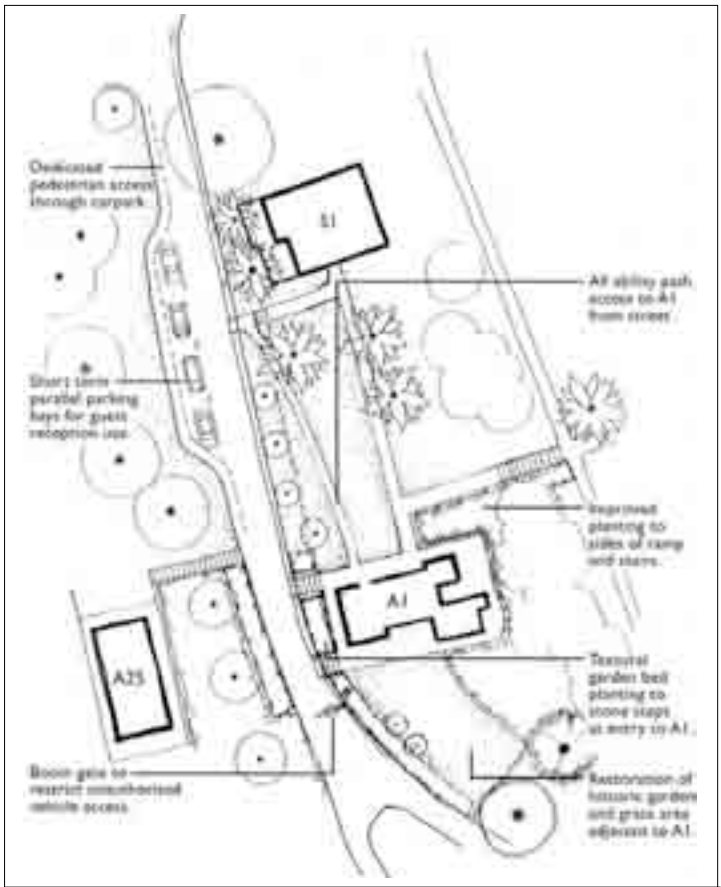


FIGURE 5.5~4 SKETCH PLAN OF HOTEL RECEPTION AT BUILDING A1 NTS

POST OFFICE BUILDING A25

Rationale

Bushland regrowth has recently been thinned around the Post office building (A25). The Post Office was a prominent building in the Station during its quarantine use, and retaining visual access to it is important to the future management of this landscape.

Recommendation

Bushland regrowth will be continue to be managed in accordance with the DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse

Precinct) National Parks (DEC, 2004). In the first Revision of the HLMP review the need to reinstate the former historic view corridors between A1 and A25.

VEGETATION CLEARING AND SELECTIVE REMOVAL BETWEEN COTTAGES AND REMAINDER OF ADMINISTRATION PRECINCT

Rationale
Cottages S16, S6 and S12 had views to the central part of Administration Precinct during the Stations operation, as there were additional buildings between these cottages and A1. The aerial photograph from 1978 clearly illustrates the area remained cleared after the buildings were demolished, refer to **Photo 5.5-5**. The link between the cottages and administration is important in understanding the Station's operation during the phases of quarantine particularly in reinforcing the story of staff living on the site and being quarantined as well.

Recommendation

- Bushland re-growth is recommended to be assessed with some clearing and selective removal of vegetation in accordance with the procedures outlined in the EIS Vol 1, Section 10. The presence of former buildings between the Cottages S4 and S10, and A1 and S1 need to be assessed and vegetation clearing and future works are to be in accordance with the procedures outlined in the AMP. Selective removal of this re-growth will allow reinstatement of the driveway access to Building A20, and interpretation of the former building locations of A4 and A3 in the site. During the clearing work, selectively retain some existing overstorey trees, if appropriate, and any exotic vegetation that may be uncovered. Approval of this recommendation is subject to an environmental assessment.
- The re-established mown grass areas will potentially provide Long-nosed Bandicoot foraging areas, and the low indigenous groundlayer vegetation remaining on the graded banks will provide Long-nosed Bandicoot refuge areas value. Refer to **Section 4.2** and **4.2.5** for further information.
- A new path will be reinstated between A20 and A1 on its former alignment

Specific Actions for Central Hotel Reception at A1

No.	Action	Implementation
5.5.3.10a	Prepare detailed design for the landscape and planting treatment of S1 and A1 including re-establishment of former garden to south of Building A1, all ability access path, short term parallel parking bays between building S1 and A1, boom gate, planting around building A1 and stairs as illustrated in *Figure 5.5~3*.	Stage 1
5.5.3.10b	Construct path between A1 and A20.	Stage 4
	For vegetation clearing and selective removal refer to 4.2.3.	

5.5.3.11 Sewer pumping station

Rationale
The existing sewer pumping station is noisy and visually intrusive. It was built in the NPWS phase and therefore has no cultural significance.

Recommendation
To reduce noise impact the Infrastructure Control Plan should investigate potential noise attenuation through internal modification to the sewer pumping station. Some screen planting is recommended. Proposed species will be indigenous and selected for minimal impact on the surrounding infrastructure.

Specific Actions for Sewer Pumping Station

No.	Action	Implementation
5.5.3.11a	Screen planting to sewer pumping station.	Year 4
5.5.3.11b	DEC to investigate noise attenuation of sewer pumping station through internal modifications to the station.	Year 4

5.5.3.12 Second Cemetery

Background

PHOTO 5.6-2 GRAVE IN 2ND CEMETERY TBLD 2003

The Second Cemetery, located in bushland behind healthy ground, was used as a burial ground from 1853 to 1881, contains approximately 102 graves. In 1872 the burial ground was dedicated as a Church of England Cemetery and from 1881 formal services were performed there.

The informality of the access path to the Second Cemetery through the Tea-tree contributes to the sense of separation of the Second Cemetery from the occupied areas of the Station. Refer to Photo 5.6-2. The path travels through ESBS vegetation which is described in Section 4. The future ongoing management of the path is to minimise impacts on the ESBS vegetation community and retain the existing form and character.

The existing path through the cemetery is an unsealed dirt path through parent sandy soils that weaves through the existing vegetation. There is evidence of trampling in the vicinity of this informal track as there is no defined return route.

The vegetation includes the Endangered ESBS vegetation community. As illustrated in the Vegetation Cover Plans QS-04a, b and c, the extent of cleared areas has changed over time, and until 2004, re-growth has progressively encroached over the former extent of the Second Cemetery. Some boundary fence posts still remain on the site to designate its former extent. As vegetation grows back over the next few years, a strategy to manage the cemetery boundary will be needed. The significance of the size and extent of the Cemetery was severely reduced by the extent of this re-growth. In early 2004, a prescribed burn by DEC burnt all vegetation surrounding the cemetery, changing the cultural landscape once again.

Rationale

PHOTO 5.6-1 ACCESS TRACK TO CEMETERY TBLD 2003

The Interpretation Plan identified that the ideal situation to correctly present the Aviation Phase cultural landscape would be to trim the vegetation back to the original and larger boundary. However, following consultation with the DEC, this was found to be problematic as it would require trimming ESBS vegetation, and such a proposal would require an 8 Part Environmental Test and significant replanting of ESBS at another site to compensate. Consequently, this plan recommends the DEC trim and manage this vegetation to the Aviation Phase boundary in accordance with the DEC ESBS Recovery Plan.

The Interpretation Plan also stated that the ideal way to assist interpret the Second Cemetery would be to provide a symbolic means of presenting the 101 people buried on the site and no longer represented by the single gravestone, such as planting 101 low indigenous plants, of the same species, randomly in the existing cleared areas around the single gravestone. This tangible representation of the scale of death is fundamental to demonstrating the scale of death associated with Quarantine, which is the

Interpretation Plan's fundamental reason for providing access to the site. However, after consultation with the DEC and NSW Heritage Office, this was found to be problematic as the DEC stated that planting within ESBS would not be permitted. Consequently, the physical interpretation of the Second Cemetery has been delayed for consideration in a future Landscape Plan.

Approval Condition 124 required options to be identified to provide access to the Second Cemetery within 18 months of the commencement date, and that if any adverse impacts were identified, measures should be introduced to reduce impacts. Options considered included:

a) maintaining the path in its current form so as to maintain the path in its current low key form, and spraying all shoes with disinfectant to minimise Phytopthora spread;
b) surface the path with compacted crushed sandstone laid over the top of the parent material without any excavation, and spraying all shoes with disinfectant to minimise Phytopthora spread;
c) constructing an elevated pathway to avoid any contact with the ground, but this would be a costly treatment for the entire length of the path.

The preferred approach would be to apply option a) along the access route and option c) as a short loop within the Second Cemetery. However, without the physical stimuli to assist interpret the scale of the Second Cemetery, there is limited value in pursuing access options at this point.

Recommendation

Install a gate just inside the beginning of the track towards the Second Cemetery, to prevent access by visitors and guests. This would be the same design as the gate for the access track to Old Mans Hat. Continue discussions between the DEC and NSW Heritage Office to determine a long term solution to how the cultural landscape can be presented and interpreted in sufficiently powerful way to warrant access and associated track work.

Liaise with NSW Heritage Office and DEC to determine a suitable method of identifying/marking the perimeter of the Second Cemetery. This should be undertaken prior to extensive re-growth occurring as the boundary is visible after the 2004 fire. This may include measures to preserve the former fence, or mark the fence alignment in a manner that can easily be re-established.

Specific Actions for Second Cemetery

No.	Action	Implementation
5.5.3.11a	Install a gate and signage just inside the beginning of the track towards the Second Cemetery, to prevent access by visitors and guests.	Stage 3
5.5.3.11b	DEC to mark the perimeter of the Second Cemetery as at the Aviation Phase and keep the boundary trimmed to this point.	Stage 2

6.0 IMPLEMENTATION

The following tables list all Actions from Sections 4 and 5 of this Heritage Landscape Management Plan by priority. Within each of the stages the Actions are grouped into the three categories of:

- Vegetation (Section 4 of the report)
- Infrastructure (Section 4 of the report)
- Precinct (Section 5 of the report)

Under each of the three categories, the Actions are listed by numerical order.

The Stages nominated in this plan are consistent with the staging described in the approved PAS.

6.1 STAGE 1

No.	Vegetation	Actions	Implementation
4.2.1c	Norfolk Island Pine *Araucaria heterophylla* and Hoop Pine *Araucaria cunninghamii*	❑ Remove Native Grape from eastern side of Hoop Pine in wharf Precinct.	Stage 1
4.2.1f	Coral trees *Erythrina x sykesii*	❑ Undertake tree surgery work required on the two Coral trees nearest the Wharf to make it safe. ❑ Significantly prune and/or remove the Coral tree adjacent to the Building A6.	Stage 1 Stage 1
4.2.1i	Exotic shrub plantings	❑ Prune Oleanders in front of A1 to a height of approximately 1 - 1.5 metres to reinstate visual prominence of the administration building.	Stage 1
4.2.1k	Cottage Gardens	❑ Undertake detailed survey of cottage gardens and prepare design plans for reinstatement prior to commencement of works on individual gardens.	Stage 1-2
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1e	**ESBS1**	When reconstruction of P23, P22 and P21 commences, carefully assess and clear ESBS from the building footprints to allow reconstruction. Methods of clearing to be in accordance with the AMP, the EMP and the EIS.	Stages 1 and Year 3
4.2.3.1f	**ESBS2**	Prior to construction of CP5, some vegetation clearing will be required as approved in the PAS. Carefully clear ESBS in accordance with the AMP, EMP and the EIS.	Stage 1
4.2.3.1f	**ESBS3**	Prepare bushland management program for the fork in the road, consistent with the ESBS Recovery Plan (DEC, 2004), to allow natural regeneration of ESBS. A minimum of 10 metres back from the fork in the road is to have all weed species and species greater than 0.6 metres in height selectively removed to retain clear vehicle sightlines.	Stage 1 and ongoing.
4.2.3.1i	**SH1**	Prior to the detailed design and construction of Car Park 1 some vegetation clearing will be required as approved in the PAS. During detailed design documentation assess the vegetation to be cleared consistent with the requirements of the AMP, EMP and EIS Vol 1p10-27, followed by vegetation	Stage 1

No.	Vegetation	Actions	Implementation
		clearing consistent with the approved methods.	
4.2.3.1k	**RW5**	To provide access to interpret the former funicular route some vegetation clearing will be required as approved in the PAS. During the detailed design, and prior to construction of the Funicular stairs, assess the vegetation to be cleared consistent with the requirements of the AMP, EMP and the EIS Vol1, p10-27, followed by clearing consistent with the approved methods, and the design requirements described in this HLMP, Section 5.1.3.7.	Stage 1
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.4.2b	Long-nosed Bandicoot habitat enhancement	To provide Long-nosed Bandicoot refuge areas and prevent access under the Broad-leaved Paperbarks, mark out the area for natural regeneration and confirm in Administration Precinct. Cease mowing and allow natural regeneration of indigenous groundlayer species up to approximately 1 metre high. Encourage a reasonable proportion of soft indigenous grasses to predominate as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Stage 1
4.2.5.2a	ESBS Regeneration Areas	Cease mowing/slashing in the areas shown on Drawing No. QS-10b to allow ESBS regeneration. Develop a management program for the ongoing management of this vegetation consistent with the Recovery Plan and the future DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004).	Stage 1 and ongoing
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.3.1	Stormwater runoff from carparks CP1 and CP5	❑ Preparation of Detailed designs and specifications for carpark stormwater detention and swale systems.	Stage 1 to 2
No.	**Precinct**	**Action**	**Implementation**
5.1.3.1a	Wharf Precinct	Undertake initial pruning of Coral trees and develop a replacement strategy for the group of four Coral trees near the Wharf as described in 4.2.1e and 4.2.1f in Cultural Plantings. Construct temporary barrier with wire and star pickets to prevent access onto the grass area directly beneath the Coral trees in the wharf area.	Stage 1
5.1.3.1b	Wharf Precinct	Undertake a more detailed assessment and tree surgery work or total removal of Coral tree near the outdoor eating area of A6 as described in 5.2.1f in Cultural Plantings.	Stage 1
5.1.3.3a	Wharf Precinct	Detailed design and construction of the external eating area to A6 which could include proposed paving, treatment of former building footprint or elevated timber deck, garden bed layout, shade structure to the rear of the building near the funicular, and treatment of existing concrete surfaces.	Stage 1
5.1.3.3b	Wharf Precinct	Plant low indigenous species between A6 and the Penguin Habitat fence in accordance with approved detailed design.	Stage 1
5.1.3.5a	Wharf Precinct	Prepare detailed design documentation and construct the approved Little Penguin habitat protection fence in accordance with the design description adjacent to the outdoor eating area of A6.	Stage 1
5.1.3.5b	Wharf Precinct	Develop detailed design and construct two black-coated mesh fence barriers to the north and south ends of Quarantine Beach, in consultation with DEC and the Aboriginal representation, to protect the Little Penguin critical habitat.	Stage 1
5.1.3.6a	Wharf Precinct	Carefully remove the remains of the asphalt to the west of building A14-17 and re-seal a new thin asphalt surface.	Stage 1

No.	Vegetation	Actions	Implementation
5.1.3.6b	Wharf Precinct	Fill the gaps between the funicular rails and existing asphalt surface with suitable substance.	Stage 1

No.	Precinct	Action	Implementation
5.1.3.7a	Wharf Precinct	Detailed survey and design of the funicular stairway to meet the minimum BCA requirements, and the design intent described in Section 5.1.4.7.	Stage 1
5.1.3.7b	Wharf Precinct	Carefully assess existing vegetation and clear a corridor of vegetation of up to 4m width from the base to the top of the funicular in accordance with vegetation management recommendation 4.2.3.1k.	Stage 1
5.5.3.1b	Administration Precinct	Detailed assessment of Norfolk Island Pine near building A1 to determine cause of decline and undertake remedial action	Stage 1
5.5.3.2a	Administration Precinct	Detailed design and construction of Car Park 1 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1j for vegetation clearing.	Stage 1 and Year 3
5.5.3.2b	Administration Precinct	New garden bed planting between Quarantine Station Entry Road and car park	Stage 1
5.5.3.2d	Administration Precinct	Restoration and repair to double fences at Quarantine Station entry.	Stage 1
5.5.3.2e	Administration Precinct	Relocate boom gate to north-east side of A26, towards S7.	Stage 1
5.5.3.6a	Administration Precinct	Detailed design and construction of external area to A2, including design of garden beds in front of A2.	Stage 1
5.5.3.9a	Administration Precinct	Detailed design and construction of car park 5 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1f for vegetation clearing.	Stage 1 and Year 3
5.5.3.10a	Administration Precinct	Prepare detailed design for the landscape and planting treatment of S1 and A1 including re-establishment of former garden to south of Building A1, all ability access path, short term parallel parking bays between building S1 and A1, boom gate, planting around building A1 and stairs as illustrated in *Figure 5.5~3*.	Stage 1

6.2 STAGE 2

No.	Vegetation	Actions	Implementation
4.2.1k	Cottage Gardens	❑ Undertake detailed survey of cottage gardens and prepare design plans for reinstatement prior to commencement of works on individual gardens.	Stage 1-2
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW1**	Refer to RH2.	Stage 2
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1c	**RW4**	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004)	Stage 3
4.2.3.1d	**RW4**	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004). Recognise presence of both Rough-barked and Smooth-barked Apple in this vegetation community.	Stage 3

No.	Vegetation	Actions	Implementation
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.3.1k	**RW5**	To open up historic view corridors in front of A28-29, as approved in the PAS, assess vegetation on the escarpment in front of A28-29 in accordance with the process outlined in EIS Vol 1, p10-27. Undertake selective removal and trimming in accordance with agreed outcomes from the assessment work.	Stage 2
4.2.4.2c	Long-nosed Bandicoot habitat enhancement	To provide Long-nosed Bandicoot refuge areas (top of First Class Precinct escarpment, the area north of building P10 and west of buildings P14-15) mark out the area for natural regeneration and confirm. Cease mowing and allow natural regeneration of indigenous groundlayer species with a high proportion of soft indigenous grasses as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Stage 2
4.2.4.2c	Long-nosed Bandicoot habitat enhancement	Investigate the potential to redirect building roof runoff, and stormwater runoff into this regeneration zone via broad, above ground grassed or planted swales. Detailed design investigation is required prior to implementation.	Stage 2
4.2.5.3a	ESBS Regeneration Areas	Allow natural regeneration of the dune area on Quarantine Beach with indigenous species to extent shown on Landscape Masterplan Drawing No. QS-10C. If natural regeneration does not occur, undertake supplementary planting with local provenance indigenous species.	Stage 2
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.3b	Sealed paths	❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels ❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels, including former building foundations	Stage 2 to 4 Stage 2 to 4
4.3.1.4b	Unsealed paths	To reduce erosion add and compact suitable granitic sandstone based path material, and carry out suitable improvements to localised stormwater flows, i.e. improved planted swales and installation of minor cross path sub surface slotted pipe drainage lines, to remove water erosion from pathways.	Stage 2 to 4
4.3.1.20b	Funicular Rails	❑ Remove asphalt covering funicular rails, with final surface treatment informed by detailed investigation of rail condition.	Stage 2
4.3.3.1	Stormwater runoff from carparks CP1 and CP5	❑ Preparation of Detailed designs and specifications for carpark stormwater detention and swale systems.	Stage 1 to 2
4.3.3.1	Stormwater runoff from carparks CP1 and CP5	❑ Install grassed stormwater detention swales, to allow infiltration to trenches, in accordance with engineering recommendations (SKM 2002), subject to detailed design. ❑ Install Atlantis or similar sub surface detention systems, in accordance engineering recommendations (SKM 2002), subject to detailed design. ❑ Install planted swales in addition to grassed swales, to capture sediment runoff from carparks, and to assist with biological treatment of pollutant loads from carpark. ❑ For CP5, adhere to the AMP for guidance in this area of moderate to high Archaeological significance.	Stage 2 Stages 2 to 3 Stage 2

No.	Infrastructure	Actions	Implementation
4.3.3.2	Bank and surface erosion, caused by natural spring surface flows, surface runoff from uncontrolled stormwater flows, road or roof runoff, uncontrolled vehicle access, and lack of effective vegetative surface cover	❑ Control upslope and bank erosion with increased vegetative cover, i.e. grass or indigenous ground covers, to increase infiltration rates, and slow surface water flow velocities. Where appropriate, if grades are not steep, grass can be used without the need for native ground covers with soil stabilising characteristics. Where erosion of swale is likely to occur, or continues to occur, plant with appropriate indigenous ground layer vegetation to stabilise soils and reduce erosion. (**Refer also to 4.2.4.2d**) ❑ Establish shallow vegetated cut off swales upslope of bank erosion where required, to increase infiltration rates, and slow surface flow velocities. ❑ Install adequate stormwater connections to existing stormwater systems where flows cannot be accommodated in surface swale systems. Investigate in conjunction with Long-nosed Bandicoot habitat enhancement works outlined in **4.2.4**.	Stages 2 to 4 Stages 2 to 4 Stage 2
4.3.3.4	Unsealed path erosion	❑ Install vegetated cut-off swales to control surface erosion in minor drains that enter path area.	Stage 2
4.3.4.5b	Feature infrastructure and area lighting	❑ Integrated stainless steel covered down lights to be installed on the funicular stairway to minimise light spill, subject to detailed design. ❑ Detailed design and installation of integrated bollard type lights for outdoor area at A2. The lights will be focused downward style light source, be clearly modern in appearance and designed to limit light spill to surrounding area. ❑ Detailed design and installation of integrated bollard type lights in the outdoor area at A6 with a focused downward style light source, be clearly modern in appearance and design, and minimise light spill into the surrounding Little Penguin site.	Stage 2 Stage 2 to 3 Stage 2
No.	**Precinct**	**Action**	**Implementation**
5.1.3.2a	Wharf Precinct	Detailed design and construction of Inscriptions Barrier in the Wharf Precinct and associated works including clearing of the existing drain between the escarpment and proposed barrier.	Stage 2
5.1.3.2b	Wharf Precinct	Detailed design and planting of a 3 metre wide area adjacent to the existing drain on Wharf Access Road with indigenous groundlayer species. This is to prevent access to the inscriptions adjacent to Wharf Access Road behind the existing row of Canary Island Date Palms.	Stage 2
5.1.3.2c	Wharf Precinct	Detailed design and construction of the realigned hospital access path entry as described, including installation of constructed inscription barrier.	Stage 2
5.1.3.3c	Wharf Precinct	Construct the outdoor slab and paved surface in accordance with detailed design (5.1.3.3a)	Stage 2
5.1.3.3d	Wharf Precinct	Install concrete pavers between outdoor eating area and the new beach fence opening, in a random pattern in accordance with the detailed design (5.1.3.3a(.	Stage 2
5.1.3.4a	Wharf Precinct	Detailed design and installation of the beach fence and gate opening in accordance with the described alignment.	Stage 2
5.1.3.4b	Wharf Precinct	Remove existing beach fence and construct timber and chain walkway over the dune area between the opening in the beach fence and Quarantine Beach. One section of the existing beach fence will be retained north of A46.	Stage 2

No.	Precinct	Actions	Implementation
5.1.3.6c	Wharf Precinct	Resurface the asphalt extending from the Wharf around the buildings to the end of the Wharf Precinct buildings (A9) with a thin new layer of adherent material with crushed sandstone surface.	Stage 2 to correlate with the completion of A6 adaptation
5.1.3.6d	Wharf Precinct	Carefully remove the asphalt surface to reveal the sandstone footings of the former A5 Waiting Shed in accordance with guidelines included in the AMP. Adequately protect the former footings, once exposed, in accordance with HO advice.	Stage 2 to correlate with the completion of A6 adaptation.
5.1.3.7c	Wharf Precinct	Construction of the funicular stairway in accordance with the approved detailed design drawings.	Stage 2
5.2.3.2c	First and Second Class Precinct	Establish indigenous planting areas to the perimeter of elevated buildings on the east side of Main Axial Street.	Stage 2
5.2.3.3b	First and Second Class Precinct	Establish Long-nosed Bandicoot refuge areas along the top of First Class escarpment, as indicated on Drawing No. QS-10b.	Stage 2
5.3.4.2d	Third Class Asiatics Precinct	Widen the entrance to the Hospital entry parking area so that the people mover can turn within the space.	Stage 2
5.3.4.2e	Third Class Asiatics Precinct	Replace steel mesh fence between parking area and hospital buildings.	Stage 2
5.5.3.2f	Administration Precinct	Minor upgrade works to Quarantine Station Entry Road including installation of three speed control devices, and stabilise northern edge with compacted gravel surface, and minor realignment of road around mature Paperbark near intersection with Cottages road.	Stage 2
5.5.3.4a	Administration Precinct	Restoration to a working greenhouse.	Stage 2
5.5.3.6b	Administration Precinct	Planting to the perimeter of A2 in accordance with design developed in 5.5.3.6a.	Stage 2
5.5.3.7a	Administration Precinct	Detailed design and construction of funicular path from top of escarpment to the winch point. Approval of this recommendation is subject to an environmental assessment.	Stage 2 (subject to an environmental assessment).
5.5.3.9b	Administration Precinct	Construction of pedestrian path along power easement linking CP5 and funicular track, subject to further environmental assessment.	Stage 2 (subject to further environmental assessment)
5.5.3.11b	Second Cemetery	DEC to mark the perimeter of the Second Cemetery as at the Aviation Phase and keep the boundary trimmed to this point.	Stage 2

6.3 STAGE 3

No.	Vegetation	Actions	Implementation
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1c	**RW4**	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC Fire Management Plan for the Quarantine Station.	Stage 3
4.2.3.1d	**RW4**	Develop and implement a bushland management program to address weed issues within the lease boundary, consistent with DEC Fire Management Plan for the Quarantine Station. Recognise presence of both Rough-barked and Smooth-barked Apple in this vegetation community.	Stage 3

No.	Vegetation	Actions	Implementation
4.2.3.1g	**F1**	To interpret the former funicular alignment, a pedestrian path is proposed to be constructed along its length. Carefully assess, and selectively clear vegetation to a total width of 2 metres along the former funicular alignment. This action cannot proceed until further environmental assessment has been undertaken.	Stage 3 (subject to an environmental assessment)
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.4.2a	Long-nosed Bandicoot habitat enhancement	Allow natural regeneration of indigenous species, regularly removing vegetation of a height greater than approximately 1 metre, to retain view corridors to North Harbour. Encourage a higher percentage mix of soft indigenous grasses which are preferred by the Long-nosed Bandicoot for refuge and nesting purposes.	Stage 3, 4 and Year 3
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.3b	Sealed paths	❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels ❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels, including former building foundations	Stage 2 to 4 Stage 2 to 4
4.3.1.4b	Unsealed paths	To reduce erosion add and compact suitable granitic sandstone based path material, and carry out suitable improvements to localised stormwater flows, i.e. improved planted swales and installation of minor cross path sub surface slotted pipe drainage lines, to remove water erosion from pathways.	Stage 2 to 4
4.3.1.20b	Funicular Rails	Assess to potentially clear re-growth over the funicular route to re-establish the legibility, as described in Action 4.2.3.1g, 5.3.3.2b and 5.5.3.7b, and subject to an environmental assessment).	Stage 3 to 4 (Refer to Actions 4.2.3.1g, 5.3.3.2b and 5.5.3.7b)
4.3.3.1	Stormwater runoff from carparks CP1 and CP5	❑ Install Atlantis or similar sub surface detention systems, in accordance engineering recommendations (SKM 2002), subject to detailed design.	Stages 2 to 3
4.3.3.2	Bank and surface erosion, caused by natural spring surface flows, surface runoff from uncontrolled stormwater flows, road or roof runoff, uncontrolled vehicle access, and lack of effective vegetative surface cover	❑ Control upslope and bank erosion with increased vegetative cover, i.e. grass or indigenous ground covers, to increase infiltration rates, and slow surface water flow velocities. Where appropriate, if grades are not steep, grass can be used without the need for native ground covers with soil stabilising characteristics. Where erosion of swale is likely to occur, or continues to occur, plant with appropriate indigenous ground layer vegetation to stabilise soils and reduce erosion. (**Refer also to 4.2.4.2d**) ❑ Establish shallow vegetated cut off swales upslope of bank erosion where required, to increase infiltration rates, and slow surface flow velocities. ❑ Control vehicles, to reduce surface erosion with posts and barriers (**Refer 4.3.3**	Stages 2 to 4 Stages 2 to 4 Stages 3, 4 and Year 3
4.3.4.5b	Feature infrastructure and area lighting	❑ Detailed design and installation of integrated bollard type lights for outdoor area at A2. The lights will be focused downward style light source, be clearly modern in appearance and designed to limit light spill to surrounding area.	Stages 2 to 3

No.	Precinct	Action	Implementation
5.2.3.1a	First and Second Class Precinct	Plant 6 semi-advanced Cabbage Tree Palms into the western side of Main Axial Street.	Stage 3
5.2.3.1b	First and Second Class Precinct	Re-grade western bank of Main Axial Street and re-grass to improve usability and maintenance of this grassed embankment.	Stage 3
5.2.3.2a	First and Second Class Precinct	Reinstate Badminton Court along Main Axial Street.	Stage 3
5.2.3.2b	First and Second Class Precinct	Establish Bocce Court along Main Axial Street.	Stage 3
5.2.3.3a	First and Second Class Precinct	Re-grade and re-establish grassed area on the escarpment side of First Class buildings, including removal of scattered re-vegetation. Incorporate graded vegetated swales to accommodate stormwater runoff and drainage.	Stage 3
5.2.3.3c	First and Second Class Precinct	Establish garden beds to the perimeter of First Class buildings on the escarpment side with robust indigenous species that deter access.	Stage 3
5.2.3.3d	First and Second Class Precinct	Re-grade former tennis court and establish level grassed area.	Stage 3
5.3.3.2a	Third Class Asiatics Precinct	Undertake vegetation assessment of future funicular path alignment as per Action 4.2.3.1g	Stage 3
5.3.3.2b	Third Class Asiatics Precinct	Detailed design and construction of the pedestrian path along the former funicular track alignment including detail of symbolic steel inlay, and alignment to take account of archaeology and natural site conditions. Approval for this work is subject to an environmental assessment. (Refer to Actions 5.3.3.2a and 5.5.3.7b).	Stage 3 (subject to an environmental assessment)
5.3.3.3a	Third Class Asiatics Precinct	Plant indigenous groundlayer species between path and building line to discourage access under buildings.	Stage 3
5.3.3.5b	Third Class Asiatics Precinct	Install gate and signage to several metres along the track to Old Mans Hat to prevent independent access.	Stage 3
5.4.3.3a	Third Class Asiatics Precinct	Detailed design and construction to reduce asphalt road area in Isolation Precinct including redirection of runoff into vegetated swales.	Stage 3
5.4.3.3b	Third Class Asiatics Precinct	Repair asphalt surface in the immediate vicinity of the Isolation buildings where required.	Stage 3
5.5.3.2c	Administration Precinct	Minor trimming of vegetation along stone boundary wall at the entry to the Quarantine Station.	Stage 3
5.5.3.3a	Administration Precinct	Detailed design and construction of cottage gardens.	Stages 3, 4 and Year 3
5.5.3.4b	Administration Precinct	Install path between the former stable and the greenhouse, subject to further environmental assessment.	Stage 3 (subject to further environmental assessment)
5.5.3.7b	Administration Precinct	Detailed design and construction of funicular path from the winch point to Asiatics. Refer to Action 4.2.3.1g for assessment of vegetation clearing prior to approval of this Action. Also refer to Action 5.3.3.2b.	Stage 3 (subject to an environmental assessment)
5.5.3.11a	Second Cemetery	Install a gate and signage just inside the beginning of the track towards the Second Cemetery, to prevent access by visitors and guests.	Stage 3

6.4 STAGE 4

No.	Vegetation	Actions	Implementation
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.3.1m	**RW6**	Develop a bushland management program for this First Class Precinct escarpment, consistent with the broader DEC management objectives, and consistent with the cultural objectives of this zone.	Stage 4
4.2.3.1n	**CH1**	Develop a bushland management program for Second Class Precinct escarpment consistent with the adjoining bushland management direction by DEC and the cultural objectives of this zone.	Stage 4
4.2.3.1o	**RW7**	To interpret the former extent of the Quarantine Station operation during the Aviation Phase in the vicinity of the former Boatmens cottages, assess potential clearing. This would be assessed in accordance with the process outlined in EIS Vol 1, p10-27, and in accordance with the AMP and EMP. This proposal will require environmental assessment prior to approval. If approved, undertake removals in accordance with agreed outcomes from the assessment work.	Stage 4 (subject to an environmental assessment).
4.2.4.2a	Long-nosed Bandicoot habitat enhancement	Allow natural regeneration of indigenous species, regularly removing vegetation of a height greater than approximately 1 metre, to retain view corridors to North Harbour. Encourage a higher percentage mix of soft indigenous grasses which are preferred by the Long-nosed Bandicoot for refuge and nesting purposes.	Stage 3, 4 and Year 3
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.3b	Sealed paths	❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels ❑ Repair remnant asphalt sealed pathways as required to match existing surface treatment and levels, including former building foundations	Stage 2 to 4 Stage 2 to 4
4.3.1.4b	Unsealed paths	To reduce erosion add and compact suitable granitic sandstone based path material, and carry out suitable improvements to localised stormwater flows, i.e. improved planted swales and installation of minor cross path sub surface slotted pipe drainage lines, to remove water erosion from pathways.	Stage 2 to 4
4.3.2.19b	Fences	Steel pipe fences around staff cottages are to be replaced with timber fences, which permit Bandicoot access, as described in Appendix I of EIS, page 39-41.	Stage 4
4.3.1.20b	Funicular Rails	Assess to potentially clear re-growth over the funicular route to re-establish the legibility of the route, as described in Action 4.2.3.1g, 5.3.3.2b and 5.5.3.7b, and subject to an environmental assessment).	Stage 3 to 4 (Refer to Actions 4.2.3.1g, 5.3.3.2b and 5.5.3.7b)

No.	Infrastructure	Actions	Implementation
4.3.3.2	Bank and surface erosion, caused by natural spring surface flows, surface runoff from uncontrolled stormwater flows, road or roof runoff, uncontrolled vehicle access, and lack of effective vegetative surface cover	❑ Control upslope and bank erosion with increased vegetative cover, i.e. grass or indigenous ground covers, to increase infiltration rates, and slow surface water flow velocities. Where appropriate, if grades are not steep, grass can be used without the need for native ground covers with soil stabilising characteristics. Where erosion of swale is likely to occur, or continues to occur, plant with appropriate indigenous ground layer vegetation to stabilise soils and reduce erosion. (**Refer also to 4.2.4.2d**) ❑ Establish shallow vegetated cut off swales upslope of bank erosion where required, to increase infiltration rates, and slow surface flow velocities. ❑ Control vehicles, to reduce surface erosion with posts and barriers (**Refer 4.3.3**).	Stages 2 to 4 Stages 2 to 4 Stages 3, 4 and Year 3
4.3.4.2b	Security lighting	Detailed design and installation of security lights at entry and internal boom gates for driver visibility.	Stage 4
4.3.4.3b	Pedestrian lighting	Detailed design and installation of pedestrian lighting along key pedestrian routes, in accordance with Management Guidelines.	Stage 4
No.	**Precinct**	**Action**	**Implementation**
5.1.3.5c	Wharf Precinct	Undertake staged dune revegetation in consultation with DEC at the northern end of the Quarantine Beach to protect Little Penguin habitat.	Stage 4
5.2.3.4a	First and Second Class Precinct	Remove existing asphalt parking area in front of Second Class accommodation and construct pedestrian path as shown in Figure 5.1~1.	Stage 4
5.2.3.4b	First and Second Class Precinct	Reinstate an unsealed path to the former boatmens accommodation, north of Second Class accommodation, subject to an environmental assessment as described in Action 4.2.3.1o. Monitor visitor behaviour and use to assist DEC determine how they will limit visitor access to Store Beach.	Stage 4 (subject to an environmental assessment)
5.3.3.3c	Third Class Asiatics Precinct	Plant natural spring drainage line east of buildings P16 and P17 with indigenous sedges and rushes to stabilise as shown on Landscape Masterplan.	Stage 4
5.3.3.5a	Third Class Asiatics Precinct	Construction of new path, on the former alignment, from Lower Asiatics Rd to Upper Third Class Access. (Refer to *Figure 5.3~1* for alignment), subject to further environmental assessment.	Stage 4, subject to further environmental assessment
5.4.3.1a	Hospital and Isolation Precincts	Remove dead Radiata Pine in Isolation Precinct and replace with new tree same species.	Stage 4
5.4.3.2a	Third Class Asiatics Precinct	Plant indigenous groundcover plants along the top of the wall to climb down over the wall and reduce its visual prominence in the site.	Stage 4
5.4.3.2c	Third Class Asiatics Precinct	Upgrade existing path between Hospital and Isolation Precincts to address erosion and safety.	Stage 4
5.5.3.2g	Administration Precinct	Reinstate gate, repair fence and secure at Upper Reservoir	Stage 4
5.5.3.3a	Administration Precinct	Detailed design and construction of cottage gardens.	Stages 3, 4 and Year 3
5.3.3.3b	Third Class Asiatics Precinct	Detailed design and construction of sandstone retaining walls to stabilise bank between Lower Asiatics and Third Class dining. This will include planting with soil-binding indigenous ground layer vegetation to assist with stabilisation, subject to environmental assessment.	Stage 4, subject to further environmental
5.5.3.10b	Administration Precinct	Construct path between A1 and A20.	Stage 4

6.5 YEAR 3

No.	Vegetation	Actions	Implementation
4.2.1i	Exotic shrub plantings	Prune the Oleander outside building P4 to a height of approximately 1 - 1.5 metres to reinstate view of building facade.	Year 3
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1e	**ESBS1**	When reconstruction of P23, P22 and P21 commences, carefully assess and clear ESBS from the building footprints to allow reconstruction as approved in the PAS. Methods of clearing to be in accordance with the AMP, the EMP and the EIS.	Stages 1 and Year 3
4.2.3.1g	**F1**	To interpret historic view corridors between the Cottages and Administration, carefully assess, and selectively remove overstorey and mid-storey vegetation in accordance with the AMP and EMP. Retain and improve groundlayer vegetation to improve use as refuge by Long-nosed Bandicoots. This action cannot proceed until an environmental assessment has been undertaken.	Year 3 (subject to an environmental assessment)
4.2.3.1g	**F2**	To interpret the historic view corridors and the extent of the former Quarantine Station operation during the Aviation Phase, carefully assess and clear the existing vegetation around the former building footprints of A3 and A4 and re-establish as grass. This action cannot proceed until an environmental assessment has been undertaken.	Year 3 (subject to an environmental assessment)
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.4.2a	Long-nosed Bandicoot habitat enhancement	Allow natural regeneration of indigenous species, regularly removing vegetation of a height greater than approximately 1 metre, to retain view corridors to North Harbour. Encourage a higher percentage mix of soft indigenous grasses which are preferred by the Long-nosed Bandicoot for refuge and nesting purposes.	Stage 3, 4 and Year 3
4.2.4.2d	Long-nosed Bandicoot habitat enhancement	To provide Long-nosed Bandicoot refuge areas adjacent to Buildings S6 and S16, mark out the area for natural regeneration and confirm. Cease mowing and allow natural regeneration of indigenous groundlayer species with a high proportion of soft indigenous grasses as these are preferred habitat for Long-nosed Bandicoot. If required, undertake supplementary planting with local provenance soft grass species.	Year 3
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.5b	Open stone drains	❑ Install protection barriers outside stone pit area, to make drivers aware of stone pit locations, using two square 1m x 125 x 125 hardwood timber posts (natural clear finish, not painted) installed either side in close proximity to the pit, with reflective markers	Year 3
4.3.1.18b	Fire hydrant covers	Fire hydrant covers replaced with a new cover, subject to detailed design.	Year 3
4.3.3.2	Bank and surface erosion, caused by natural spring surface flows, surface runoff from uncontrolled stormwater flows, road or roof runoff, uncontrolled vehicle access, and lack of effective vegetative surface cover	❑ Control vehicles, to reduce surface erosion with posts and barriers (**Refer 4.3.3**).	Stages 3, 4 and Year 3

No.	Infrastructure	Actions	Implementation
4.3.4.4b	Street Lighting	Detailed design to replace lighting armatures to reflect the heritage designs of gently curving steel armatures, as seen in historic photos in the Administration, First, Second, Third and Wharf Precincts.	Year 3
No.	**Precinct**	**Action**	**Implementation**
5.4.3.1b	Third Class Asiatics Precinct	Assess cultural plantings in garden beds in Isolation Precinct and plant to complement existing character.	Year 3
5.4.3.3c	Third Class Asiatics Precinct	Detailed design and construction of low elevated timber platform to Building H15.	Year 3
5.5.3.2a	Administration Precinct	Detailed design and construction of Car Park 1 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1i for vegetation clearing.	Stage 1 and Year 3
5.5.3.3a	Administration Precinct	Detailed design and construction of cottage gardens.	Stages 3, 4 and year 3
5.5.3.3b	Administration Precinct	Replace galvanised rail fencing with horizontal timber fence to Cottages, new fence design to permit Long-nosed Bandicoot access.	Year 3
5.5.3.9a	Administration Precinct	Detailed design and construction of car park 5 in accordance with Engineering recommendations (SKM 2002). Refer to 4.2.3.1j for vegetation clearing.	Stage 1 and Year 3

6.6 YEAR 4

No.	Vegetation	Actions	Implementation
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
4.2.3.1g	**F3**	Prepare and implement bushland management programs for the bushland areas in Administration Precinct to manage primarily for protection and enhancement of species diversity. Review the extent of Native Grape and the impact this may be having on overstorey canopy trees in the wet gully adjacent to Wharf Road as part of the bushland management program.	Year 4
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.1b	Sealed roads	Where a section of road requires major repair or replacement (due to failure or collapse), such as in front of the Mortuary and approach to Isolation, remove or replacement of whole sections of roadway, but not short sections. This would entail removal of successive top surface layers of asphalt, to the original sandstone base, then replacement of top surface with a rolled in crushed sandstone finish, over a asphalt top layer. This will re-establish the correct levels to sandstone edges, and provide a practical wearing top surface that reflects the original surface material and colour. All works are to be in accordance with procedures outlined in the AMP.	Years 4 to 5
4.3.1.6b	Drainage infrastructure	❑ To protect slate pit covers from accidental vehicle damage, install two square 1m x 125 x 125 hardwood timber posts (natural clear finish, not painted) either side in close proximity to the pit.	Year 4

No.	Precinct	Action	Implementation
5.2.3.1c	First and Second Class Precinct	Prune Oleander in front of P4, and replace if required with same species.	Year 4
5.4.3.2b	Third Class Asiatics Precinct	Construct crushed sandstone unsealed path on former path alignment to Building H14 as shown, subject to further environmental assessment.	Year 4, subject to further environmental assessment.
5.5.3.1a	Administration Precinct	Minor arboricultural work to the Radiata Pine plantation	Year 4
5.5.3.11a	Administration Precinct	Screen planting to sewer pumping station.	Year 4
5.5.3.11b	Administration Precinct	DEC to investigate noise attenuation of sewer pumping station through internal modifications to the station.	Year 4

6.7 YEAR 5

No.	Vegetation	Actions	Implementation
4.2.3.1a	**RH1**	Retain existing mown grass areas within Hospital Precinct.	All stages
4.2.3.1b	**RW2**	Regularly trim branches along the perimeter fence to protect the fence and retain visual access to it.	All stages
4.2.3.1j	**F4**	Maintain the existing cleared area of the Stonemasons Yard clear for continued use as a store area.	All stages
No.	**Infrastructure**	**Actions**	**Implementation**
4.3.1.1b	Sealed roads	Where a section of road requires major repair or replacement (due to failure or collapse), such as in front of the Mortuary and approach to Isolation, remove or replacement of whole sections of roadway, but not short sections. This would entail removal of successive top surface layers of asphalt, to the original sandstone base, then replacement of top surface with a rolled in crushed sandstone finish, over a asphalt top layer. This will re-establish the correct levels to sandstone edges, and provide a practical wearing top surface that reflects the original surface material and colour. All works are to be in accordance with procedures outlined in the AMP.	Years 4 to 5
4.3.1.10b	Concrete retaining walls	The interlocking concrete block retaining wall, located on the pedestrian walkway from the Hospital to Wharf Precincts, is to be planted with appropriate indigenous groundcover species to reduce its visual prominence in the site.	Year 5
4.3.1.11b	Stone steps	The stone and gravel infill steps leading from Isolation Precinct to Hospital Precinct are to be upgraded, with installation of the concrete path with crushed sandstone surface finish (refer to 4.3.2 New material use in infrastructure design). Localised stormwater is to be adequately controlled, with redirection of surface runoff away from steps via a vegetated stormwater drain. Painted markings are to be removed if possible.	Year 5

No.	Infrastructure	Actions	Implementation
4.3.1.13b	Road and pedestrian barriers	❑ Existing Steel barriers that have been installed during the NPWS/DEC phase are to be removed when required by condition and replaced with new barriers in accordance with new design materials refer to 4.3.2 9 New material use in infrastructure design. ❑ Steel post and handrail on descent track from hospital to wharf precinct is to be removed when required by condition and replaced with an appropriate design (refer to 4.3.2.11 New material use in infrastructure design).	Year 5 Year 5

6.8 ONGOING

No.	Vegetation	Actions	Implementation
4.2.3.1f	**ESBS3**	Prepare bushland management program for the fork in the road, consistent with the ESBS Recovery Plan (DEC, 2004), to allow natural regeneration of ESBS. A minimum of 10 metres back from the fork in the road is to have all weed species and species greater than 0.6 metres in height selectively removed to retain clear vehicle sightlines.	Stage 1 and ongoing.
4.2.5.2a	ESBS Regeneration Areas	Cease mowing/slashing in the areas shown on Drawing No. QS-10b to allow ESBS regeneration. Develop a management program for the ongoing management of this vegetation consistent with the Recovery Plan and the future DEC requirements of Fire Management Plan Sydney Harbour & Botany Bay (La Perouse Precinct) National Parks (DEC, 2004).	Stage 1 and ongoing
5.3.3.5c		Mawland to liaise with Heritage Office and DEC to determine an appropriate treatment to, as a minimum, protect the former building foundations south-east of Third Class which are located in an area of ESBS vegetation.	Ongoing

6.9 ANNUAL

No.	Infrastructure	Actions	Implementation
4.3.3.3	Sediment accumulation in stormwater drainage systems	❑ Informally monitor and clear stormwater pits and pipes to ensure capacity is not compromised.	Annual

7.0 MONITORING

Many aspects of the natural and cultural landscape need to be monitored to check on their health and to determine whether management procedures and actions need to be adjusted (adaptive management). Formal monitoring will be coordinated through an Integrated Monitoring and Adaptive Management System. As this Plan has been prepared prior to this System, it is recommended that the System consider the following indicators:

Infrastructure

- Bi-annual proportion of buildings whose drainage system are fully functioning and robust.
- Bi-annual presence of ground settlement underneath roads, paths and structures.
- Annual proportion of road surface and edges alongside historic drains and walls showing no damage.
- Bi-annual proportion of wharf planking and steps firmly fastened and showing no splits, holes or failure.
- Annual proportion of fencing that remains structurally stable.
- Bi-annual proportion of historic stormwater drains that are operational.
- Annual volume of stormwater released from stormwater catchment flows.
- Bi-annual percentage of oil and grease released from stormwater catchment flows.
- Bi-annual percentage of suspended solids released from stormwater catchment flows.

Vegetation

- Annual proportion of clearly differentiated cultural landscape matching to the Aviation Phase.
- Annual proportion of all cultural trees showing no signs of active termites.
- Annual number of flora displaying vegetation dieback near carpark areas.
- Annual fuel load in bushland areas on the edge of the Lease Area.
- Annual number of Camfield's Stringybark within Lease Area.
- Annual number of Sunshine Wattle within Lease Area.
- Annual weed coverage within selected bushland areas (including ESBS).
- Annual level and extent of soil erosion and sedimentation.
- Annual condition of coral trees within the Wharf Precinct.
- Five yearly health of cultural plantings.

Some indicators where change is not expected for some time and that require a considerable amount of research or analysis (such as the health of cultural plantings) may be better suited to be a part of the five yearly Environmental Audits.

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APPENDICES

APPENDIX A

A1 CHANGES TO VEGETATION COVER

QS-04a North Head Quarantine Station Vegetation Cover 1929

QS-04b North Head Quarantine Station Vegetation Cover 1978

QS-04c North Head Quarantine Station Vegetation Cover 2000

A2 HISTORICAL AERIAL PHOTOGRAPHS OF THE QUARANTINE STATION

A2.1 North Head Quarantine Station 1929

A2.2 North Head Quarantine Station 1951

A2.3 North Head Quarantine Station 1970

A2.4 North Head Quarantine Station 1978

A2.5 North Head Quarantine Station 2000

Source of vegetation cover:
Aerial Photograph dated 1978

DRAWING KEY

Proposed Lease Boundary

Vegetation cover

METRES

NORTH HEAD QUARANTINE STATION

HERITAGE LANDSCAPE MANAGEMENT PLAN

QS-04b

APR 2006

SCALE 1:4000 @ A3

Vegetation Cover 1978

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies P/L and Arborcraft

NHQS HERITAGE LANDSCAPE MANAGEMENT PLAN PREPARED FOR MAWLAND HOTEL MANAGEMENT BY TBLD P/L MAY 2006

Source of vegetation cover: Aerial Photograph dated 1929

Note: the aerial photograph did not cover the full extent of the site therefore vegetation cover north of the Cottages is unknown.

DRAWING KEY

- Proposed Lease Boundary
- Vegetation cover

NORTH HEAD QUARANTINE STATION

HERITAGE LANDSCAPE MANAGEMENT PLAN

QS-04a
APR 2006
SCALE 1:4000 @ A3

METRES

Vegetation Cover 1929

NHQS HERITAGE LANDSCAPE MANAGEMENT PLAN PREPARED FOR MAWLAND HOTEL MANAGEMENT BY TBLD P/L MAY 2006

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies P/L and Arborcraft
PO BOX 2157 PRAHRAN VIC 3181 E: info@tbld.com.au

Source of vegetation cover:
Aerial Photograph dated 2000

DRAWING KEY

Proposed Lease Boundary

HERITAGE LANDSCAPE MANAGEMENT PLAN
NORTH HEAD QUARANTINE STATION

QS-04c
APR 2006
SCALE 1:4000 @ A3
0 METRES

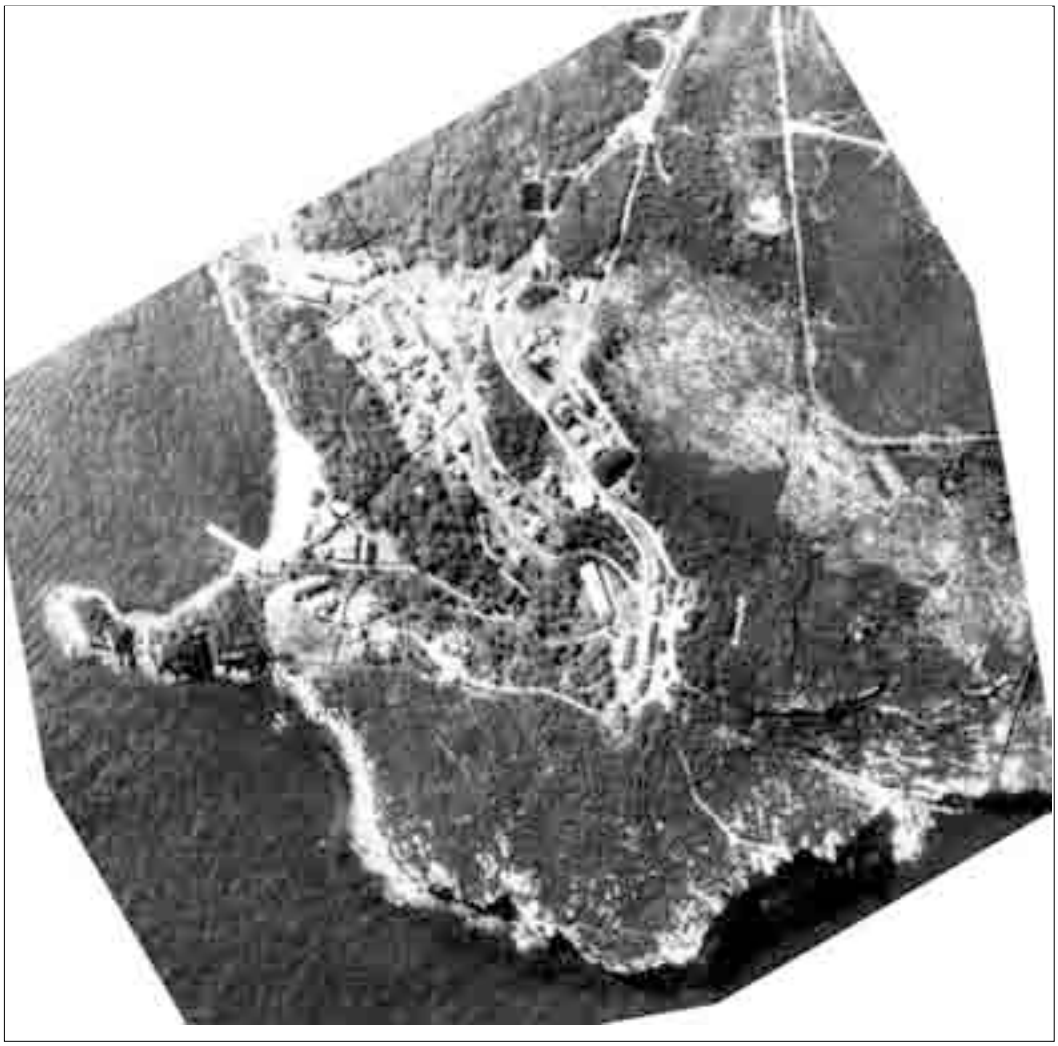
Vegetation Cover 2000

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies P/L and Arborcraft

NHQS HERITAGE LANDSCAPE MANAGEMENT PLAN PREPARED FOR MAWLAND HOTEL MANAGEMENT BY TBLD P/L MAY 2006

A2.1 North Head Quarantine Station 1929

A2.2 North Head Quarantine Station 1951



A2.3 North Head Quarantine Station 1970

A2.4 North Head Quarantine Station 1978

A2.5 North Head Quarantine Station 2000

APPENDIX B

Summary of Tree Survey, North Head Quarantine Station

Prepared by Arborcraft
as part of the
Heritage Landscape Management Plan for the Adaptive Re-Use of the Quarantine Station

THOMPSON BERRILL LANDSCAPE DESIGN P/L in association with Paul Davies P/L and Arborcraft

HERITAGE LANDSCAPE MANAGEMENT PLAN

NORTH HEAD QUARANTINE STATION

QS-03
APR 2006

SCALE 1:1000 @ A0

0 10 METRES

Tree Survey Plan

NHQS HERITAGE LANDSCAPE MANAGEMENT PLAN PREPARED FOR MAWLAND HOTEL MANAGEMENT BY TBLD P/L MAY 2006

Summary of Tree Survey, North Head Quarantine Station

Prepared by Arborcraft as part of the
Heritage Landscape Management Plan for the Adaptive Re-Use of the Quarantine Station

Method of Tree Survey

Arborcraft's role was to provide an assessment for groups of trees and nominated individual trees identifying their species, age, health, structure and future management recommendations. Most of the trees that we surveyed are exotic trees planted in lawn areas near buildings. These included Radiata Pines, Phoenix Palms, Coral trees and an Irish Strawberry Tree. There were also some Australian trees (Southern Mahoganies, Paperbarks, Araucarias, Port Jackson Figs, a Cheese tree and a Coast Banksia). Not all of the Australian trees would naturally occur on this site.

The survey was undertaken on July 4 2003 by Arborcraft (including Bruce MacLeod, Stephen O'Sullivan and Susan Aenishaenslin). The trees surveyed were in accordance with those confirmed in a preliminary site visit with Arborcraft and TBLD Pty Ltd. In some areas only a few individual trees in groups of trees were surveyed (eg Pines, Paperbarks and Phoenix Palms), and this was taken to be a representative sample. In other areas individual trees were inspected. The inspections were from ground level and no trees were drilled.

The Tree Survey is presented in a spreadsheet.

For location of tree numbers in spreadsheet on the site, refer to Drawing No. QS-04

Guide to spreadsheets / Code for tree survey

The trees were inspected from ground level.
Their heights and crown spread were estimated, and the trunk measurements were generally taken at Medium Breast Height (mbh). Multi-trunked trees were often measured at ground level (g.l.). Heights of forks or other details were estimated above ground (a.g.)

Health was rated on leaf cover and the number and diameter of dead branches. The presence of epicormic growth and the prevalence and history of borer damage were also taken into account as signs of stress.

Structure refers to the attachments of the trunk and branches and/or cavities or wounds.
The ratings for both Health and Structure were Good (G), Fair (F) and Poor (P).
Ages were categorised as
Y = Young, rapidly growing, usually juvenile form
SM = Semi-mature, approaching adult form
M = Mature, adult form, growing more slowly
OM = Over-mature, senescent or about to decline

Safe Useful Life Expectancy (**SULE**) was categorized basically as the remaining lifespan of these trees if they were left undisturbed (so perhaps another name should be used, like straight Life Expectancy to account for site conditions, but not the impact of the proposals). The time estimates were: - less than 5 years, 5-15 years, 15-40 years, and 40 years plus.

Tree #	Name	Height (m)	Spread (m)	Dia (mm)	Health	Structure	Age Class	SULE	Comments
1	Radiata Pine (*Pinus radiata*)	12.5	15	1.035	G-F	G	M	15-40+	forked at 1.5m, major internal dead wood, good leaf coverage at tips, exposed roots, grass sand surface
2	Radiata Pine (*Pinus radiata*)	11	9	540	F	G	M	15+	west of bldg 7, outside of perimeter fence, lawn area, some small internal dead wood & at tips
3	Southern Mahogany (*Eucalyptus botryoides*)	8.5	8	330 200 160	G	G	M	15 - 40+	multi trunk at 1.4m, unusual form, Brown lace lerp, small Leptospermum laevigatum & Monotoca elliptica around base
4	Radiata Pine (*Pinus radiata*)	13	9	640	P	G	M	15 -40	Strand of 19, Bldg S14 and A24, *5 declining to remove, outside 5 trees surveyed,.640 at .700, N/W dead wood, N/E major dead wood, hangers
5	Radiata Pine (*Pinus radiata*)	14	13	670	G-F	G	M	15-40	internal small diameter dead wood, to the East major deadwood 100dia.
6	Radiata Pine (*Pinus radiata*)	15	13	760	G	G	M	15-40	spread N/S, service line to bldg S14, minor dead wood, major to East
7	Radiata Pine (*Pinus radiata*)	14	7	440	F-G	G	M	15	one sided overshadowed by tree # 6, major dead wood
8	Radiata Pine (*Pinus radiata*)	13	7	580	G-F	G	M	15-40	exposed southern side, wind damage, low dead wood
9	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	11	12	600 920 555	F-G	F-P	OM	15	one of a stand of 6 Paperbarks. Located 3.5m from road, 920mm a.g two trunks grafted together. Structure unusual, minimal dead wood, Hibbertia, Monotoca, Pittosporum, & Cheese tree around base. Recommend low fence to protect trees and ensure public safety for trees 1 and 2 of stand.
10	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	13	18	830 820 680 720	F	P	OM	15	E/W spread, gradually falling apart, no low foliage, *Gahnia spp* around base
11	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	13	10	855	G	G	M	15-40	some small dia. dead wood, exposed roots circling to N, *Gahnia spp* at base
12	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	11	8	695	G	G	M	15-40	upright, good health considering exposure, group of 4 small trees 12m north of tree # 12
13	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	11.5	8	700 760 1.140	G	P	M	15	decay in W. trunk, small dia. off western trunk, hollow off N. trunk. Centre wound at 6m a.g.,150dia., 500mm length, exposed roots.
14	Radiata Pine (*Pinus radiata*)	12.5	10.5	760	G	P	M	R	decay S/W from g.l. up to 4m a.g., dia. wound 600mm, termite damage, major dead wood.
15	Radiata Pine (*Pinus radiata*)	10	8	600	G - s P - n	G	M	<5	17m north of tree #15, major leader N dead, southern side of tree healthy.
16	Southern Mahogany (Eucalyptus botryoides)	9	12	360 220 250 600	F-G	F-G	M	<15	4 trunks from gr. Level, storm damage , major dead wood, decay on trunk to East, wound from gr. Level to 1.2m, grass in between trunk
17	Canary Island Date Palm (*Phoenix canariensis*)	8	7	720	G	G	M	15-40	stand of P. canariensis in lawn area in front of Bldg P5, 5m west of Bldg, 4 m to crown, spring, wet soil, drain cuts between tree #3 and #4 southern end. Tree ferns growing from drain.
18	Canary Island Date Palm (*Phoenix canariensis*)	9	8	830	G	G	M	15-40	5m to crown, 2.5 m from southern side Hydro
19	Southern Mahogany (Eucalyptus botryoides)	15	13	690 160 420	F	P	M	<15	termite arboreal at 7m, eastern trunk leans to east, cavities eastern trunk overhanging grassed area, remove to collar or fence area off, major dead wood, Habitat potential, western side trunk 100 above gr. Level, exposed root shallow rock shelf
20	Canary Island Date Palm (*Phoenix canariensis*)	6.5	7	920	G	G	M	15-40	3m to crown, Bldg S1 -A1
21	Canary Island Date Palm (*Phoenix canariensis*)	9	8	730	G	G	M	15-40	5m to crown, service wire to Bldg S1, 3m to kerb footpath both sides
22	Southern Mahogany (*Eucalyptus botryoides*)	10	12	620 500	F	P	m	<5	twin trunk at 1m a.g. broken branch to east, hollow branch and dead branch to south, major dead wood. Difficult to assess because thick understorey
23	Norfolk Island Pine (*Araucaria heterophylla*)	24	8.5	640	P	G	M	<15	Foliage sparse, die back from top of central leader, 30% leaf coverage, Cockatoo damage or potentially Blue Fungus.
24	Eucalyptus - Dead, over road			700					20m fork in road Bldg P14 - P15, leans west over road, remove to ground level unless critical for habitat, in which case remove to a height where the trunk could not fall on the road.
25	Southern Mahogany (*Eucalyptus botryoides*)	11	12	420	P	P	M	R	3 m to sandstone wall, located 1.5m from road, leans to the south. Dead wood, north centre big cavity on right swelling. Dangerous. no way to improve, recommend removal.
26	Southern Mahogany (*Eucalyptus botryoides*)	12	17	750	G	G	M	15-40	multi trunked, south- torn branch, swelling 300mm back from tear out, some dead wood.
27	Southern Mahogany (*Eucalyptus botryoides*)	13.5	17.5	620	G	P	M	<5	some dead wood, hollow N. side, poor health north side, cavity from base to 1.5m deep basal cavity good callus roll. tertiary wood decay wood moth larvae, elongated branch N, presume hollow links up with basal cavity, fence off or remove
28	Radiata Pine (*Pinus radiata*)	15.5	13.5	820	G	G	M	15-40+	good foliage, small dia. internal dead wood
29	Radiata Pine (*Pinus radiata*)	12	9.5	640	F-N G	P	M	15	top 2m die back, dead wood, good lower foliage, dwarf foliage,

Tree #	Name	Height (m)	Spread (m)	Dia (mm)	Health	Structure	Age Class	SULE	Comments
30	Canary Island Date Palm (*Phoenix canariensis*)	11	8	690	G	G	M	15-40+	stand of 3, survey on southern end, 7m to crown, electricity over road
31	Norfolk Island Pine (*Araucaria heterophylla*)	20	13	720	G	G	M	15 - 40+	one of two isolated trees near the memorial
32	Cheese Tree (*Glochidion ferdinandi*)	4	7	100 to 200	G	F	M		Located near the memorial. Multi-trunked from g.l., 4 trunks ranging from 100 to 200 dia.
33	Radiata Pine (*Pinus radiata*)	7	7	390				R	Dead, 1.5m from road edge. 4m to the east another dying Pinus radiata, 2 live branches, 1.5m from edge of road.
34	Radiata Pine (*Pinus radiata*)	10.5	13.5	620	G	G	M	15-40	stunted growth, wind exposure, rock shelf, some dead wood, roots lifting slab of rock to the west.
35	Port Jackson Fig (*Ficus rubiginosa*)								overhanging cliff face, Dead wood over road should be removed, Geotech advice for rock, roots growing in fissures, south end of Quarantine beach, above rock carvings, fence area to protect carvings
36	Coral Tree (*Erythrina x sykesii*)	12	13	410 680 550	G	P	M	<15	2m off fence, 500 m from inside of fence line, multi trunked at g.l.
37	Coral Tree (*Erythrina x sykesii*)	11	10	680 720	G	P?	M	<15	
38	Coral Tree (*Erythrina x sykesii*)	10	13	460 920	G	P	M	<15	2m off fence, opp. other side Bldg. Included bark at 1m, branch over hanging beach has wound-beam, remove
39	Coral Tree (*Erythrina x sykesii*)	8	8	330 320 320	G	P	M	<15	Branch to south tear out-remove, possible inclusion 500mm a.g., a hollow in western trunk.
40	Norfolk Island Pine (*Araucaria heterophylla*)	16	9	620	G	G	M	40+	soil test may be required, strange dwarfing of foliage, stunting, growth occurs at one point all over tree, 2m from stone wall edge, 200mm from stone wall edge, dead branches to N, twisting , no sign of failure,
41	Coral Tree (*Erythrina x sykesii*)	14	9	600	G	P	M	<5	major tear out, remove southern side, storm damage at 3.5m and 5m. Beautiful Fig behind Coral tree.
42	Coral Tree (*Erythrina x sykesii*)	14.5	15	830 580	G	P	M	R	multi trunk g.l., fused - rubbing, cavity on Western side, tear out cavity in central trunk, cavity on northern trunk, remove tree for public safety or fence off.
43	Hoop Pine (*Araucaria cunninghamii*)	23	15	910	G	G	M	15-40	Good health, poor form, top crown sparse foliage and dual terminal leader. Remove Cissus vine off eastern side of tree. Change usage of drive way over grass to prevent compaction of area and damage to roots of tree.
44	Canary Island Date Palm (*Phoenix canariensis*)	11	8	700	G	G	M	15-40	8m to crown, 1.5m south of drain, powerlines to north. Inscriptions in sandstone rocks. Exposed aerial roots at base are typical of the species.
45	Canary Island Date Palm (*Phoenix canariensis*)	12	8M	600	G	G	M	15-40	8m to crown, 2.5m from drain, powerlines to North.
46	Southern Mahogany (*Eucalyptus botryoides*)	20	17	330 470	G	?	M	15?	structure stability may be damged due to root pruning, roots pruned south side of road, when were the roots cut?, multi trunk a.g., some dead wood, low voltage electricity
47	Port Jackson Fig (*Ficus rubiginosa)*	11	21	300 600	G	G	M	15 - 40+	remove Cissus on North side of tree, multi trunk g.l. (5), sitting on rock shelf, 5m from road at the fork in road, structure /stability of tree is questionable.
48	Southern Mahogany (*Eucalyptus botryoides*)	17	22	600	G	G	M	15-40+	indented into the east of road, dead wood over road, cavity on south side at 7m.
49	Broad Leaved Paperbark (*Melaleuca quinquenervia*)	10	12	900	G	G	M	15-40+	1m from kerb, multi trunk a.g. 1.5m, possible inclusions
50	Southern Mahogany (*Eucalyptus botryoides*)	10	8	450	P	P	M	<5	dead leader to south, 200mm from foot path, remove.
51	Coast Banksia (*Banksia integrifolia*)	9	8	400	G	F	M	15-40	Located 1.5m from road. Twisted branch, lots of staining in fork at 4.5m east side. Inclusion at 3m. Roots interconnected with tree #52.
52	Southern Mahogany (*Eucalyptus botryoides*)	11	10	680	F-P	F	M	<15	Leaning to north, 3 major branches to the north, wound to west 1.5m. Exposed, damaged roots south east side. Shallow rock shelf.
53	Southern Mahogany (*Eucalyptus botryoides*)	9	11	420 460	F	P	M	<15	leans to north, multi trunk, one sided over car park, tear out at 4.5m a.g. on western side, no top, consider removing.
54	Canary Island Date Palm (*Phoenix canariensis*)	13	8	750	G	G	M	15-40	stand of 3, surveyed tallest out of 3. 9 m to crown, shallow rock shelf, 3m from house. clean tools between maintenance of groups of Phoenix palms with bleach. Note dead trees along road up from Bus stop
55	Radiata Pine (*Pinus radiata*)	10	8	680	F-G	G	M	15-40	stunted growth
56	Radiata Pine (*Pinus radiata*)	14	13	930	G	G-F	M	15-40	200 mm from fence, 2m from wall, twin trunk 1.5m a.g., rubbing, bark swelling on north east side, eastern side dead wood, some dead branches, rear of S10 Bldg.
57	Radiata Pine (*Pinus radiata*)	14	13	830	G	G	M	15-40	2.5 m from court yard, internal dead wood and some dead branches
58	Radiata Pine (*Pinus radiata*)	12	7	545	G	G	M	15-40	one sided overshadowed to the south east, 1.5 m from fence, internal dead wood

Tree #	Name	Height (m)	Spread (m)	Dia (mm)	Health	Structure	Age Class	SULE	Comments
59	Irish Strawberry Tree (*Arbutus unedo)*	6	8	100-400	G	G	M	15-40	multi trunked at g.l.
60	Radiata Pine (*Pinus radiata*)		11	990	G	G	M	15-40	middle of ground, along southern fence line multi trunked at 1.5m a.g. (11m North of tree # 60 dead Pinus radiata - hail storm, *Diplodea pinea* fungus)
61	Dead Radiata Pine (*Pinus radiata*)		920						dead tree from *Diplodia pinea* fungus, remove
62	Norfolk Island Pine (*Araucaria heterophylla*)	23	13.5	1.06	G	G	M	15-40+	3.5m off corner of house, dead tips wind
63	Radiata Pine (*Pinus radiata*)	11.5	11	960	F	G	M	<15	Ficus spp. - growing out of forks, deadwood, stunted, *Diplodia pinea* fungal damage, possibly dying.

APPENDIX C

Inscriptions Management Plan

Prepared by Mawland Hotel Management
as part of the
Heritage Landscape Management Plan for the Adaptive Re-Use of the Quarantine Station

Honouring the past
by securing the future

Inscriptions Management Plan

for the conservation and adaptive re-use of the Quarantine Station

Final Draft - May 2006

prepared by Mawland Constructions for

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Declaration and approval

This Inscriptions Management Plan has been prepared to meet the requirements of Condition 95 of the Conditions of Planning Approval for the conservation and adaptive reuse of the North Head Quarantine Station.

In preparing and granting approval for this Interpretation Plan all efforts have been made to comply with the Conditions of Planning Approval and relevant legislation. However, in the event of an inconsistency with this plan and any requirements of the Conditions of Planning Approval or relevant statutes; the Conditions of Planning Approval or the relevant statutes will prevail. Furthermore, the granting approval for this plan does not relieve the co-proponents of the obligation to obtain all other approvals from relevant authorities required under any other legislation.

This plan was prepared by:

Simon McArthur,

General Manager,

Mawland Hotel Management and Q-Station Pty Ltd

This plan was presented to the Quarantine Station Community Committee at its meeting on August 17 2005.

This plan was approved by:

Tony Fleming, Deputy Director-General, Parks and Wildlife Division on behalf of the Department of Environment and Conservation on 15/9/06, and

Reece McDougall, Executive Director, Heritage Office, Department of Planning (as delegate of the Heritage Council of NSW) on 15/9/06.

Acknowledgements

The Inscriptions Management Plan was prepared by Simon McArthur (Mawland). Simon has a Bachelor of Applied Science (Natural Resource Management), Master of Business Administration and Doctorate in Tourism Impact Management. He has several years experience working in conservation and visitor management of Mayan temple sites in Guatamala and Belitze, including the World Heritage listed Tikal site. His work included managing tree root-induced temple splitting, installation of drip lines over Mayan rock carvings, removal of mosses and lichens and repainting selected Mayan carvings on human sacrificial block stones.

The Inscriptions Plan was largely based on:

- condition status reports by Thorp (1983), Aitken and Kotter (1986), Lambert (1999) and Lambert (2003); and
- conservation policies and directions by Lambert (1999), Thorp (1999), Freeman *et. al.* (2000), Gojak (2000) and Davies *et. al.* (2001).

The first two drafts of the Plan were reviewed by Siobhan Lavelle (a qualified and experienced archaeologists with the Heritage Office), as well as Stephen Thompson and Joanne D'Urso (DEC), Paul Davies Architects and Thompson Berrill Landscape Design.

The Third Draft Plan was then reviewed by David Lambert, a qualified and experienced archaeologist with the DEC. David has a Bachelor of Arts (Geology – major) and 20 years experience undertaking rock art conservation projects. He is currently employed as a Rock Art Conservator with the NSW Department of Environment and Conservation, Parks and Wildlife Division.

Relevant Approval Conditions for Inscriptions / Engravings Management Plan

Relevant approval condition	Location in document where addressed
95) Qualifications and experience of authors and review of plan	The Acknowledgements Section documents the qualifications and experience of the author, the sourcing of much of the content from reports written by qualified and experienced archaeologists, and the final review by two qualified and experienced archaeologist (one from the DEC and one from the NSW Heritage Office)
95a) Brief description of the location, significance and condition of all engravings and inscriptions within the site	Section 2 maps the location and density of inscriptions, the age distribution of inscriptions, the type of inscriptions, significance and condition overall and by precinct Section 2 also contrasts this information with the significance and condition of inscriptions outside the lease area, at Old Mans Hat
95b) Need for further recording or documentation	Section 4 (Table 4.4) provides policies for monitoring and further research Section 6.5 (Table 5.4) provides monitoring and research actions
95c) Objectives and strategies	Section 4 provides policies / objectives Section 5 provides strategies and actions Section 6 provides an assessment of potential environmental impacts of works, particularly those requiring direct contact
95d) Prioritised schedule of works	Works including conservation and maintenance are identified in Section 5 Where incorporated into the Conservation Works Program
95e) Ongoing monitoring program	Section 4 (Table 4.4) provides policies for monitoring and further research Section 5 (Table 5.4) provides monitoring and research actions This monitoring will be transferred to the Integrated Monitoring and Adaptive Management System
97) No works shall be undertaken on, or in respect to the inscriptions or engravings prior to the adoption of the Inscriptions Management Plan. Interim arrangements to manage access to inscriptions for interpretive purposes to be approved by DEC and Heritage Council	No works will be undertaken on inscriptions prior to the adoption of the Inscriptions Management Plan. The Visitor Management Plan explains how visitor access to the inscriptions areas will be managed. In the Wharf Precinct group access only until a barrier is installed, and for Old Mans Hat a gate across the path access route.
98) Works to be done by qualified and experienced conservation specialist	See Section 4.1 where requirement has been transferred as a new policy

1 Background

1.1 Reason for preparing this Plan

The requirement for an Inscriptions Management Plan to be prepared was documented in the Detailed Area Conservation Plans (Davies *et. al.* 2001). The requirement (CPP10.1) stated:

> A management plan for the engravings, inscriptions, pit cover engravings and wall inscriptions is to be provided with any proposal for the use of the Station. It is to set out the management practices to be established to be provided with any proposal for the use of the Station. It is to set out the management practices to be established to manage and protect this resource, with details of barriers, maintenance works, fences and signs etc to achieve the protection of this resource.

The requirement was echoed in the Approval Conditions for the Proposal (Approval Condition 95). Approval Condition 95 also requires this plan to be approved by both the NSW Department of Environment and Conservation (DEC) and the NSW Heritage Council, and will need to be reviewed and again approved by the same organisations every five years after the plan's first approval date.

1.2 Definition of inscriptions

Inscriptions are written or carved words or designs on a surface, whereas engravings have a narrower context of being carved or deeply impressed words or designs on a surface. This plan will use the more inclusive term of inscriptions. It is acknowledged that Lambert (1999) used the term engravings with reference to a conservation plan for what in essence was inscriptions, and that most of the more recent plans use the terms inscriptions – such as Gojack (2000), Freeman et al (1999) and Davies *et. al.* (2001).

1.3 Limitations to the scope of the Plan

This Plan provides an account of inscriptions within the lease area and those within the Old Mans Hat area, as together these form the total collection. The Plan does not provide any actions to conserve, interpret or monitor inscriptions outside the lease area, as these are the responsibility of the DEC. The Plan does not address inscriptions associated with cemetery headstones or purpose built monuments, as these are beyond the scope set down in the DACMP and Approval Condition 95 requirement.

2 Locations, significance and condition of inscriptions

2.1 General locations

There are up to 1,500 inscriptions associated with the Quarantine Station (lease area and Old Mans Hat area). Thorp (1983) recorded 854 inscriptions within the Quarantine Station lease area. Other groups of institutional inscriptions within Sydney exist at places such as Garden Island and Rozelle Hospital.

There are inscriptions located in every precinct of the Quarantine Station lease area. The Wharf Precinct contains the greatest collection (over 575), found on sandstone cliffs to the north and south of the natural valley, and on Cannae Point. The second largest collection is within the Old Mans Hat area (approximately 300), predominantly found on horizontal sandstone rock faces.

To manage the large number of dispersed sites, Thorp (1983) divided the Quarantine Station into 11 precincts:

- Cannae Point;
- The (road) entrance to the Quarantine Station;

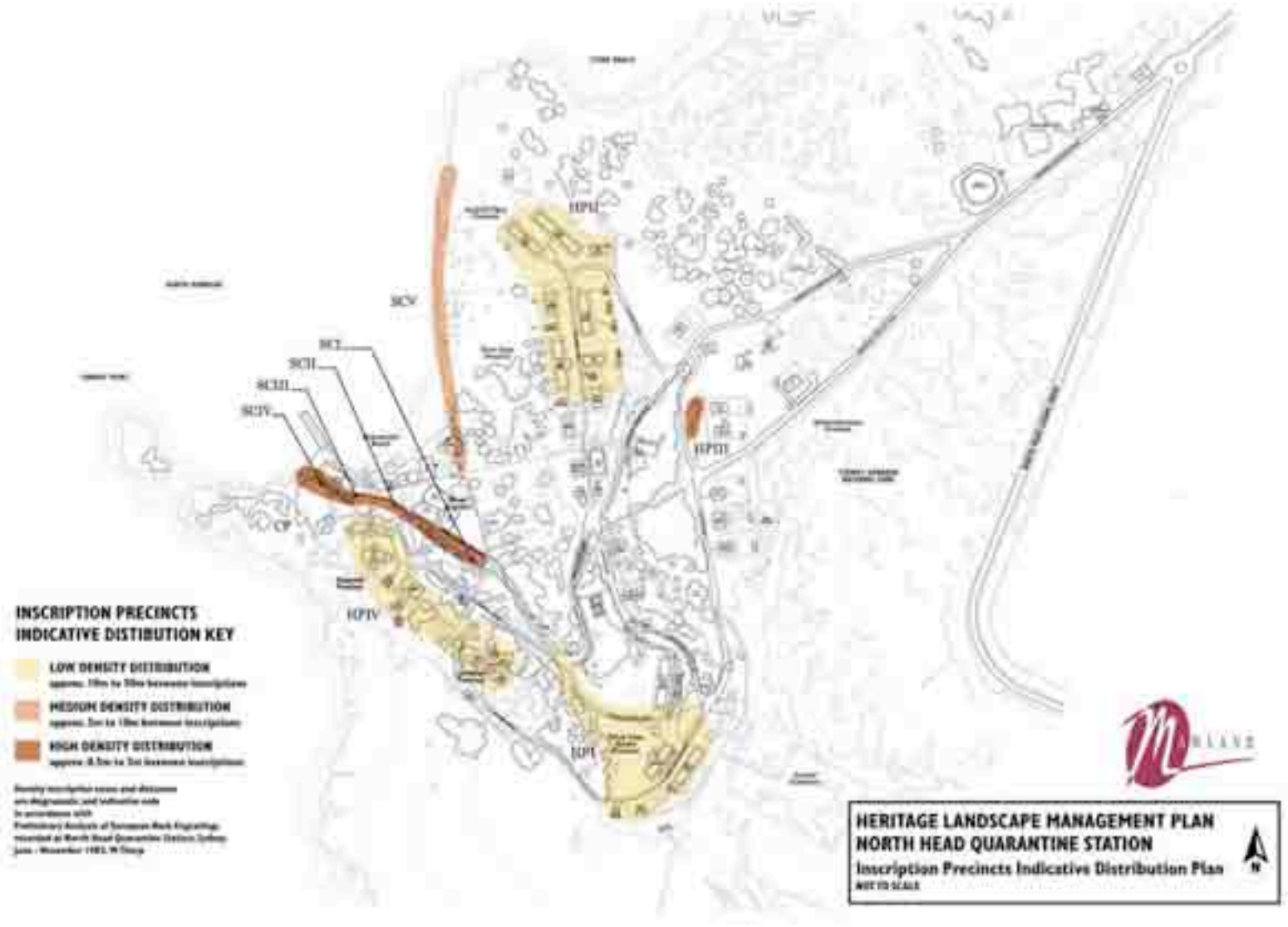
- Five precincts adjacent to Spring Cove; and
- Four hospital precincts (not all of which are within or near the true Hospital Precinct).

Figure 2.1 presents the Thorp (1983) inscription precincts and the clusters of inscriptions within each. **Figure 2.1** is designed to present the relative density of inscriptions rather than the presence of all inscriptions. **Figure 2.1** shows that the densest area of inscriptions is located along the cliff face of the north-western part of the Wharf Precinct. The high density and accessibility of inscriptions within this area suggests that it should receive the highest level of conservation, presentation, interpretation and monitoring.

Thorp (1983) produced individual maps for each of the 11 inscription precincts and located each coded inscription on one of the maps. The Thorp (1983) precinct maps and 854 records of inscriptions are located within the Quarantine Station Archives.

Inscriptions have been created on flat horizontal sandstone rock faces, on sandstone cliffs, on the inside and outside of buildings, and on stone drains and slate pit/manhole covers. Thorp (1983:15) reported that “almost all inscriptions were located on natural or quarried sandstone faces. A very small number had the natural surface prepared before engraving by smoothing the surface or creating a plaque, panel or frame. Even less had an artificial surface such as cement or plaster laid over the natural rock”.

Figure 2.1 The relative density of inscriptions within the Quarantine Station lease area



2.2 General significance

The inscriptions speak of the cultural diversity of the migration process and the seafaring community. The Conservation Management Plan (Freeman *et. al.* 2000:83) introduces the significance of the inscriptions as follows:

> "The memorial inscriptions at the Quarantine Station reflect, as a phenomenon, the effects of boredom on the quarantined, mixed with a recognition of the unusual circumstances in which they found themselves, and sorrow at the death of family and friends from contagious disease.
>
> The inscriptions are a documentary resource in their own right, reflecting the sentiments that their makers wished posterity to hear. They also include the only known documentary record of the experience of Asian quarantine inmates, in a number of Asian-text inscriptions.

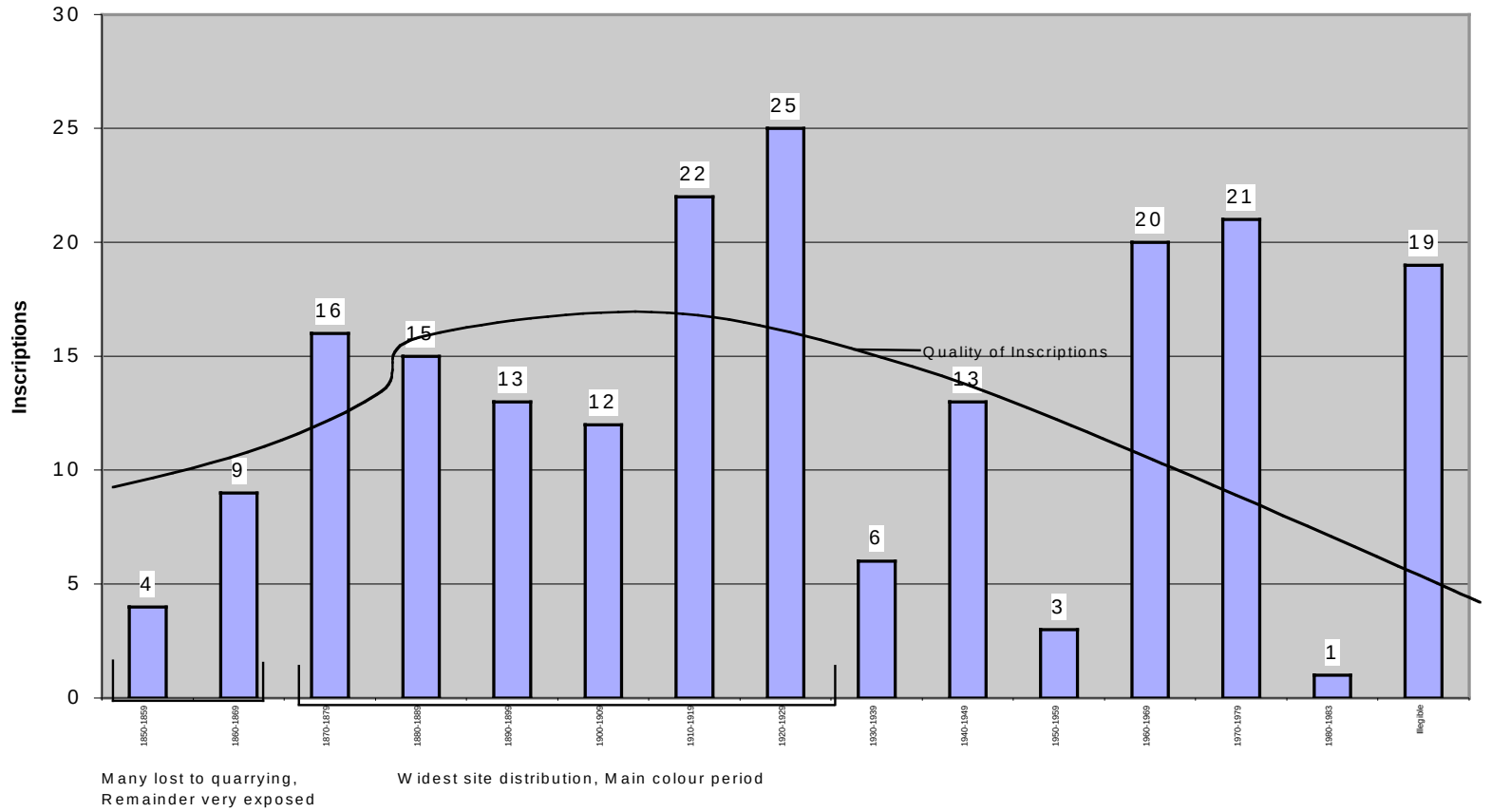
The Conservation Management Plan (Freeman *et. al.* 2000:226-227) includes the inscriptions in its primary statement of significance:

> "Evidence of the hardships experienced by European and Asian internees during their detention in Quarantine, and the tragic deaths of some of them, is powerfully conveyed by the inscriptions on the gravestones, monuments and amongst the random inscriptions scattered throughout the site (page 226).

Approximately 25% of the 854 inscriptions recorded by Thorp (1983) were dated. The dates ranged from 1832 to 1983 inclusive. The earliest inscriptions date back to the 1830s within the Wharf Precinct, because this was where quarantine activity was concentrated at the time. The inscriptions then date to the Wharf/Hospital precinct verge, then the Hospital Precinct and Old Mans Hat, then the remainder of the site. The first inscription recording the experience of being quarantined was that by John Dawson, a 48 year old bounty immigrant agricultural labourer from Lincolnshire, arriving at the Canton in 1835. The inscription (located within the Wharf Precinct) records John's arrival on 11 September 1835, with his wife, three sons and five daughters.

Figure 2.2 presents the age distribution of inscriptions recorded by Thorp (1983). **Figure 2.2** shows that between 1870 1929 was when the peak of production of inscriptions occurred was when the best quality inscriptions were made.

Figure 2.2 The age distribution of inscriptions at the Quarantine Station recorded by Thorp (1983)



The inscriptions range from simple text or short images, through to elaborate bas-relief inscriptions. Thorp (1983) described the inscriptions as falling into 15 groups. **Table 2.1** lists the types of inscriptions against the number and proportion found within the lease area, and shows that the majority of inscriptions (63%) are words only.

Table 2.1 The number and proportion of different types of inscriptions found by Thorp (1983) within the lease area

Type of inscription	Number	Proportion
Words only (Type 1)	545	63.82%
Illegible (Type 2)	72	8.43%
Painted inscription (Type 14)	57	6.68%
Frame and words only (Type 3)	41	4.81%
Motif only (Type 9)	33	3.86%
Panel and words only (Type 5)	21	2.46%
Plaque and words only (Type 7)	21	2.46%
Engraved foreign language (Type 12)	17	1.99%
Panel, words and motif (Type 6)	15	1.75%
Motif and words only (Type 10)	9	1.05%
Plaque, words and motif (Type 8)	7	0.81%
Frame, words and motif (Type 4)	5	0.59%
Engraved foreign language and motif (Type 13)	5	0.59%
Motif and frame (Type 11)	3	0.35%
Painted motif (Type 15)	2	0.24%

Table 2.1 also shows that only a small proportion (7%) of the inscriptions have been painted or sealed with bitumen. Thorp (1983) found approximately 60 of these within the Wharf Precinct (Inscription sites SC.I and SC.II), and approximately 30 more have been identified at Old Mans Hat. There are also several examples of painted inscriptions (involving no engraving), located on external building walls (such as P28) and internal building walls (such as building A20). The colours used are: black; white; green; blue; red; yellow; pink; grey; maroon; cream; orange; brown; burf; silver; ochre; pink and mauve. Quarantine staff report traces of gold gilt but Thorp (1983) could find none.

Thorp (1983) reported that the coloured inscriptions were only to be found on the best quality inscriptions that were created in the later 19th and early 20th centuries. Thorp (1983) also reported a history of Quarantine Station staff repainting painted inscriptions to as similar a colour as possible, as a means of restoring them. This is probably why some of the painted inscriptions from the 19th century that are exposed to the elements are today still visible as painted inscriptions.

Since the Quarantine Station closed in 1984, several inscriptions have been scratched onto rock surfaces within the Wharf and Second Class Precincts. As recently as 2002, a small slab of concrete has been poured within the Isolation Precinct and a form of inscription has been etched into the setting mix that refers to a maintenance team.

2.3 General condition

In 1983 Thorp (1983:15) found:

> "A large percentage of the engravings may be said to be in a good condition. They may be located readily and the majority of the inscription may be easily read. The remainder of the engravings remain faint to illegible".

Twenty years later, the cultural landscape has become overgrown, rock has been worn down or covered with soil, lichens and moss, and paint has faded. It is now almost impossible to locate all of the inscriptions that were located and catalogued by Thorp (1983). **Figure 2.3** provides evidence of various forms of impact upon the condition of inscriptions at the Quarantine Station.

There are four forms of impact upon the inscriptions: physical weathering, chemical weathering, rock collapse and pigment loss.

Physical weathering occurs mainly via the action of surface water, either from rain or surface runoff. The quality of the stone will also influence the rate of erosion with friable or weathered sandstone deteriorating much more rapidly.

The second influence is chemical erosion, which can occur from soil cover, rising damp, lichen growth and pooling of salty water. These impacts are particularly pronounced on inscriptions located on horizontal semi-submerged sandstone within the Hospital Precinct, and to some extent within the Isolation Precinct and Old Mans Hat. Soil and associated vegetation cover is a major factor in the chemical weathering process.

The third form of deterioration is the collapse of rock from cliff faces. The collapses are mainly stimulated by water seepage, and to some extent from vegetation roots splitting the rock along natural fractures. This impact is particularly pronounced within the Wharf Precinct, but is also occurring to a small extent at Old Mans Hat.

The fourth form of deterioration is the loss of paint and bitumen from painted inscriptions. The loss of paint follows from breakdown of the pain by prolonged exposure to sun and rain, Paint loss also occurs in cases where the underlying sandstone is weathering due to the processes outlined above.

Figure 2.3 Evidence of various forms of impact that have and continue to reduce the condition of engravings at the Quarantine Station.

Encroaching vegetation

Friable, eroding sandstone

Algal growth and chemical weathering due to overgrown vegetation

Overgrown vegetation sending down intruding roots from above

3. Significance and condition by precinct

3.1 Significance and condition of inscriptions within the Wharf Precinct

The Quarantine Station's most significant collection of inscriptions are located within the Wharf Precinct, and specifically on the rocky outcrops and south east slope of the precinct. The inscriptions form a natural gallery on the main access walkway / driveway from the landing stage to the passenger accommodation on the higher ground. There are also five inscriptions on the base of Cannae Point.

In describing the significance of the inscriptions within the Wharf Precinct, the Conservation Management Plan stated:

> The extensive collection of rock inscriptions adjacent to the wharf area buildings include some of the finest and most historically important on the Station. The placement of so many inscriptions at this spot indicates the desire of their makers to have their messages and work seen and appreciated by new arrivals, either

> as memorial to those who had died, or as a message of camaraderie from those who survived (Freeman *et. al.* 2000:227).
>
> The significance of the Wharf Area inscriptions relates to the extent, intactness and variety of the inscriptions; and the role of the Wharf Area inscription wall as an entrance *palimpsest* of the Station and its internees (Freeman *et. al.* 2000:241).

Further significance of these inscriptions is also provided within the Detailed Area Conservation Management Plans, which stated:

> The inscriptions within the Wharf Precinct are of outstanding social importance as they are valuable and tangible evidence of the multicultural nature of Australian immigration (Davies *et. al.* 2001:12).

Thorp (1983:20) found that "a large percentage of the engravings can be regarded as good, certainly more than half. Slightly less than half are faint and the rest are in varying states of disrepair - fourteen are totally illegible". **Table 3.1** contrasts the last documented condition of inscriptions within the Wharf Precinct with their condition in April as documented by Lambert (2003). Thorp (1983) suggests a massive loss of inscriptions from the 1830s to 1850s, which were located on the cliff-face behind building A14-17, since quarried to construct the jetty and rail shed at Spring Cove. This loss makes remaining inscriptions from this period particularly significant.

In late 2003 vegetation around the inscriptions in SCI, SCII and SCIII was cut back to re-expose the inscriptions and reduce rubbing. There were no drip lines installed to control increased water runoff on the exposed areas.

Table 3.1 Condition of known inscriptions within the Wharf Precinct

Inscription site	Last documented condition	Condition as at April 2003
CPI	Thorp (1983) noted that the all of the inscriptions were located on a horizontal plane, making them extremely exposed to wind and salt. There were no coloured inscriptions identified. All but one of the inscriptions was extremely faint, due to erosion. No condition notes specific to this area were by Lambert (1999)	No professional assessment was undertaken in 2003.
SCI	Thorp (1983) noted the topography had changed during the last century, reducing access to the cliff face than what was available when most inscriptions were made. A large land-slip that cracked and brought down a large section of cliff face. These inscriptions were then resurrected as a separated monument, away from the cliff, close to the drain. Apart from land-slips, the other impact noted was the build up of loose soil. Only in a few cases had vegetation hidden inscriptions. Some 39 inscriptions displayed either full colour penetration or had traces of colour adhering. The majority of the inscriptions were in good condition, with slightly less than half being faint and 14 being illegible. Lambert (1999) noted that inscriptions in this area were subject to chemical weathering, stimulated by overgrown vegetation reducing light and assisting mosses, lichen and algae to grow. Soil and vegetation encroachment was removed from these inscriptions in 1999.	There is some evidence of deterioration since 1999. This is in the form of small pockets of salt spalling where some loss of detail can be observed in the stonework. Washing and re-painting would help to alleviate this type of deterioration. It is pleasing to note that maintenance of the precinct has lead to some improvement in stability regarding the level of soil build up. Vegetation encroachment has improved since 1999 although lantana and some native plants (notably Pittosporum and Cheese Tree were rubbing against some inscriptions). There is no discernable increase in lichen growth since 1999. There is currently no evidence of vandalism. This indicates that the restricted access with guides and the use of low barriers has been successful as a visitor management strategy.
SCII	Thorp (1983) noted the topography had changed during the last century, reducing access to the cliff face than what was available when most inscriptions were made. The lack of access also suggested sections of the original cliff face had been removed. The area is exposed to salt and salt laden wind and erosion was identified as a major problem. A massive lantana growth was noted over these inscriptions, and partial soil cover was noted to occur following heavy rain. Localised problems of ground water run-off and the growth of moss, lichen and algae were also noted. A significant proportion of inscriptions had the surface prepared beforehand and there were 53 examples of inscriptions either fully coloured or showing traces of colour. Approximately half the inscriptions were in good condition, 30% were faint and the remainder were indistinct or illegible. Lambert (1999) noted that these inscriptions are subject to	This precinct contains some of the finest examples of inscriptions at the Quarantine Station. It is also the area where painted inscriptions are most frequent and where the rock surface has been carefully prepared prior to engraving. There is no specific evidence of deterioration since 1999 although there is a marked deterioration in pigments and paint infill. This is presumable since the 1980s around the time of Wendy Thorp's report. Some photos, which were re-printed in 1992, are shown in plates 3 – 10 below and compared with the present. Loss of paint has also permitted some active salt spalling. There is also evidence of lichen growth. Washing and re-painting would help to alleviate this type of deterioration. It is pleasing to note that maintenance of the precinct has lead to some improvement in stability regarding the level of soil and leaf build up. Vegetation encroachment has improved since 1999. There is currently no evidence of vandalism. This indicates that the restricted access with guides and the use of low barriers has

Inscription site	Last documented condition	Condition as at April 2003
	partial soil cover following heavy rain and some degree of chemical weathering due to overgrown vegetation. Lambert (1999) also noted that white infill and black bitumen paint were having a preserving effect. Formerly engraved letters were then higher than the weathered salt damaged stone. Soil and vegetation encroachment was removed from these inscriptions in 1999.	been successful as a visitor management strategy.
SCIII	Thorp (1983) noted that this site is the location of the earliest inscriptions, later quarried off the cliff face. The only survivor is SS Panda, inscribed in the 1890s. The area is well protected from wind and rain by the cliff and luggage shed. Minimum erosion was found. The main threats were water run-off and lichen growth. Four coloured and three purely painted inscriptions were found. Approximately half the inscriptions were in good condition and the other half were faint. Only one inscription was illegible. Lambert (1999) noted significant structural problems resulting from overgrown vegetation. The roots of encroaching vegetation was splitting rock and causing structural damage beyond the normal rate and extent of natural deterioration. These inscriptions were also subject to land-slips and partial soil cover following heavy rain. Lambert (1999) also noted that white infill and black bitumen paint were having a preserving effect. Formerly engraved letters were then higher than the weathered salt damaged stone. Soil and vegetation encroachment was removed from these inscriptions in 1999.	There is no evidence of deterioration since 1999. The inscriptions occur on a vertical cliff or on a vertical surface quarried in the early 1900s for construction of the jetty. There are 22 inscriptions on SC3 of which four are coloured. There are 14 inscriptions in SC4, none of which are coloured. The main threat to the inscriptions are salt weathering, lichen growth, tree roots causing the rock to split and vegetation rubbing on the inscriptions. There is currently no evidence of vandalism. This indicates that the restricted access with guides has been successful as a visitor management strategy.
SCIV	Thorp (1983) noted that the majority of these inscriptions were Asian painted words. There are two inscriptions on the wall of the luggage shed and one a nearby Aboriginal shelter. Erosion was present , mainly due to wind, salt and sand spray. There are no painted inscriptions, other than the painted Asian words. Approximately 35% the inscriptions were in good condition, 42% were faint and three were totally illegible. Lambert (1999) noted significant structural problems resulting from overgrown vegetation. The roots of encroaching vegetation was splitting rock and causing structural damage beyond the normal rate and extent of natural deterioration. These inscriptions were also subject to land-slips and partial soil cover following heavy rain. Lambert (1999) also noted that white infill and black bitumen paint were having a preserving effect. Formerly engraved letters were then higher than the weathered salt damaged stone	There is no evidence of deterioration since 1999. The inscriptions occur on a vertical cliff or on a vertical surface quarried in the early 1900s for construction of the jetty. There are 22 inscriptions on SC3 of which four are coloured. There are 14 inscriptions in SC4, none of which are coloured. The main threat to the inscriptions are salt weathering, lichen growth, tree roots causing the rock to split and vegetation rubbing on the inscriptions. There is currently no evidence of vandalism. This indicates that the restricted access with guides has been successful as a visitor management strategy.
SCV	Thorp (1983) noted that the inscriptions in this area are more widespread and face more exposure than elsewhere in the Wharf Precinct. The inscriptions on the lower cliffs are threatened by salty winds, seawater, erosion, and ground water run-off, moss and lichen growth. The inscriptions on the upper cliffs are in areas of high humidity and the majority have ground water running off them after rain. Eight inscriptions showed signs of being painted. Approximately half the inscriptions were in good condition and the other half were faint, 17 were illegible. Beach access to the lower inscriptions has resulted in some rubbing and some modern additions. Lambert (1999) noted many problems in this area. The dominant problem was overgrown vegetation restricting light, dropping leaf litter and assisting moss, lichen and algae to grow, The result of the overgrown vegetation was significant chemical weathering. The vegetation was also creating direct rubbing of the inscriptions. The area is also subject to partial soil cover following heavy rain	As SC5 was not assessed in 1999; it is not possible to determine whether deterioration of inscriptions has occurred in this precinct. The inscriptions occur on vertical cliffs, boulders or in rock shelters. The main threat to the inscriptions is salt weathering, lichen growth and vegetation crowding or rubbing directly on the inscriptions. The dense, moist vegetation creates an environment for lichen growth, which may cover and damage the inscriptions. There is currently no evidence of vandalism. This indicates that the restricted access with guides has been successful as a visitor management strategy.

The Wharf Precinct represents the largest collection of high significance, high quality, good condition and highly accessible inscriptions associated with the Quarantine Station. It is therefore logical to place the greatest conservation, presentation and interpretation effort in this precinct, particularly in the inscriptions found within SCI to SCIV.

3.2 Significance and condition of inscriptions in other precincts

In comparison with the Wharf Precinct and Old Mans Hat, the inscriptions within other precincts are thinly spread out, more difficult to locate and in poorer condition. Thorp (1983) identified approximately:

- 50 inscriptions within the Hospital Precinct – surrounding the hospital and doctors and nurses buildings are all made on semi-submerged sandstone, close to ground level;
- 57 inscriptions within the Isolation Precinct – surrounding the Isolation Ward and H14 bunkhouse are all made on semi-submerged sandstone close to ground level;
- 5 inscriptions within the Third Class Precinct – on the southern side of the men's amenities building P29, made as painted Chinese words;
- 54 inscriptions within the First and Second Class Precinct – most located on 10 slate drain covers (5-20 inscriptions per cover), a few on semi-submerged rock between the cliff line and accommodation buildings, one on the base of a stone cairn and one on a navigation beacon near P12; and
- 85 inscriptions within the Administration Precinct – most below former staff cottages S6 and S16 on semi-submerged sandstone, a few scattered across the Precinct on slate drain covers and on open sandstone drains, and the only known internal painted inscriptions inside building A20 (Administration Precinct), containing various Asian writings from the 1950s.

The slate drain covers are predominantly rectangular or square slabs typically engraved with Asian characters, and to a lesser extent English names and symbols (such as the bust of a man in a seaman's uniform). Davies *et. al.* (2001) stated:

> The Inscribed drain covers are a distinctive element of the Quarantine Station. They have rarity value and a high degree of social significance (Vol 3: Archaeological site 1C/12).

The Asian inscriptions are found across the site and are the only inscriptions made on the walls of buildings. Freeman *et. al.* (2000) stated that they are significant as the only known documentary record of the experience of Asian quarantine inmates. These inscriptions have been translated by Xia and Zhou (1986).

Table 3.2 contrasts the last documented condition of inscriptions across all other precincts (beyond the Wharf Precinct) with their condition in April 2003.

Table 3.2 Condition of known inscriptions within other precincts

Inscription site	Last documented condition	Condition as at April 2003
HPII (First & Second Class Precinct)	Thorp (1983) noted that all of the inscriptions were legible, most were in good condition and only approximately 30% were faint. There were no painted inscriptions identified. The slate drain covers appeared to resist weathering, but with few exceptions the quality of inscriptions on these were so poor that any deterioration is not immediately obvious.	The slate drain cover is in a sound condition, although the edges of the cover are flaking. There are 54 inscriptions recorded in this area. The area includes the major group of hospital buildings and service huts. Some of the inscriptions in this precinct are of questionable conservation value e.g. There are four recorded sites, which are drain cover numbers, and sixteen sites, which are undated initials. (See plate 14). On the other hand there are some unique Asian inscriptions, which are engraved on slate (See plates 15 & 16). There are no painted inscriptions. The Asian inscriptions engraved on slate remain in good condition although there is excessive lichen cover obscuring the images. There is additional material held at the Quarantine Station, which interprets the Chinese figures. The low barrier fences serve to identify the sites and provide boundaries for visitors walking onto the sites and also help prevent damage from machinery driving over the inscriptions.
HPI (Third Class / Asiatic Precinct)	Thorp (1983) noted that inscriptions along the road and bushland were more exposed than those in the immediate vicinity of buildings. No widespread serious problems were recorded. Some localised threats from ground water and lichen were reported. There were nine coloured inscriptions identified. Half	There are 26 inscriptions recorded in this area. Soil encroachment is an issue at the upper part of Spring Cove Road and the management issues for his area are similar to those of the Spring Cove precinct. Chinese inscriptions occur at HP I 18 & 19 (near the Asian quarters). These inscriptions remain in good condition. The quality of the stone is inferior and subject to weathering. There is little that can be done to assist in the

Inscription site	Last documented condition	Condition as at April 2003
	the inscriptions were said to be in good condition and the other half were faint, with only three illegible.	conservation other than repainting. There in additional material held at the Quarantine Station, which interprets these Chinese figures. See plates 11 & 12. Vegetation encroachment resulting in lichen cover is an issue in the vegetated area below third class notably at HP 1:14 see plate 13. In this type of situation the vegetation needs to be pruned and the site washed to remove the lichen cover. There is currently no evidence of vandalism. This indicates that the restricted access with guides has been successful as a visitor management strategy.
HPIII (Administration Precinct)	Thorp (1983) noted that all of the inscriptions were located on a highly exposed rock outcrop, and that the major threat was wind erosion. There were no coloured inscriptions identified. The majority of the inscriptions were faint and 10 were totally illegible.	There are 85 inscriptions recorded in this area. The area includes the upper reaches of the hospital buildings and the houses as staff living quarters. As with HPII there are no painted inscriptions and many of the figures are initials, which are possible of low conservation value when compared with the more elaborate inscriptions at Spring Cove. Of some interest however are two engraved heads. The main factor contributing to deterioration is soil and moss encroachment. The general location is shown in plate 17 and soil encroachment can be easily removed by brushing as shown in plate 18.
HPIV (Hospital and Isolation Precincts)	Thorp (1983) noted a large proportion of the inscriptions are on a horizontal plane. Some wind erosion was recorded, but the main impact recorded was water run-off and lichen growth. There were no coloured inscriptions identified. The majority of inscriptions were in good condition, with approximately 30% being faint and 10 being illegible.	There are 104 inscriptions recorded n this area. The area takes in the remote hospital buildings and the surrounding landscape. There are number of sandstone outcrops containing inscriptions. There are no painted inscriptions and 41 are initials which are possibly of low conservation value when compared with the more elaborate inscriptions at Spring Cove. The main factor contributing to deterioration in soil and gravel encroachment. Examples of this type of damage are shown in plates 19 and 20.
EQI (entrance area of Admin Precinct)	Thorp (1983) noted that the two inscriptions are exposed (one being cut into a gutter stone and the other scratched into wet cement). There were no coloured inscriptions identified and both inscriptions were in good condition.	There are 2 inscriptions recorded in this area but only one was located. This being the inscription of a name in a gutter stone. The inscription was in good condition and is considered to have low conservation significance compared with the other inscription precincts.
Cannae Point	No record of assessment by Thorp (1983).	There are 5 inscriptions recorded in this area. The inscriptions are all located on or near the base of the flagpole the Point itself. The inscriptions in rock are threatened by salt erosion however it is considered that there is little more that can be done to conserve these inscriptions in such an exposed position.

3.3 Significance and condition of inscriptions at Old Mans Hat

Old Mans Hat is outside the lease area, to the south east of the Third Class Precinct. The area is highly exposed to salt, rain and sunlight. The soil is shallow and sandy and the vegetation is dominated by heath. Visitation is very low (estimated at less than 50 people per annum) and mainly comes from bushwalkers and anglers accessing the site through the bushland from North Head. There is a walking track from the Quarantine Station to Old Mans Hat.

The 100m long trail that was first developed by internees looking to temporarily escape the confined built areas of the Quarantine Station, and in some instances, create their own inscription. The walking track is well formed, level but overgrown. The entrance is discreetly located in overgrown bushland behind Third Class Amenities building P23, near the Constitution Monument, and most people would not easily locate it unless looking for it. Where the walking track reaches the inscriptions area, it passes directly over some of the figures set in semi-submerged sandstone.

In January 2004 vegetation in the area of Old Mans Hat was burnt by a fuel reduction fire.

There are no documented references to the significance of the inscriptions at Old Mans Hat. Thorp (1983) did not include the area in her assessments. Lambert (1999) assessed the condition of these inscriptions but did not comment on their significance as a separate unit to the overall collection. Neither Freeman *et. al.* (1999) or Davies *et. al* (2000) provided a statement of significance specific to the inscriptions at Old Mans Hat.

The general significance of these inscriptions is consistent with the general statement of significance for inscriptions.

What appears to be individually significant about the inscriptions at Old Mans Head, is their location well away from the main quarantine area, and the likely effect this had on internees visiting the site. The location of these inscriptions demonstrates that while internees could not leave the formal boundaries of quarantine, they had some freedom of access to walk into the bushland towards North Head. This freedom of access would have brought some consolidation to the sense of entrapment. Old Mans Hat would have provided more extensive views of the ocean, Sydney Harbour and Heads, and the spreading residential areas of Sydney. These views and the physical separation from the main quarantine area would have stimulated internees to reflect on their journey, their time in quarantine and their future lives in Australia (Mary Worthington *pers. comm.* 2004). Old Mans Hat provided a poignant point for contemplation that was difficult to achieve in the developed and sometimes crowded areas of the Quarantine Station, and the inscriptions are the physical demonstration of this association and meaning.

Table 3.3 contrasts the last documented condition of these inscriptions with their condition in April 2003.

Table 3.3 Condition of known inscriptions within the Old Mans Hat area

Inscription site	Last documented condition	Condition as at February 2004
Old Mans Hat	Lambert (1999) noted that some of the inscriptions were subject to partial soil cover following heavy rain Lambert (1999) found the main problem was overgrown vegetation. The vegetation was directly rubbing away the inscriptions, was splitting the rock with its roots, and was covering inscriptions with leaf litter and plant debris, and thus creating chemical weathering. Lambert (1999) also noted that white infill and black bitumen paint were having a preserving effect. Formerly engraved letters were then higher than the weathered salt damaged stone. Soil and vegetation encroachment was removed from these inscriptions in 1999.	No professional assessment was undertaken. However the recent fire burnt away all of the vegetation that had been rubbing inscriptions. Vegetation regrowth may see the situation return with several years time.

4. Management policies for inscriptions

4.1 Conservation and maintenance policies

Table 4.1 Existing and proposed conservation and maintenance policies

Existing conservation and maintenance policy and source	Refinements to conservation policy
Inscriptions should be preserved and where necessary protected by barriers (Freeman *et. al.* 2000:267)	Support policy with the following proposed modification… Inscriptions should be preserved and where necessary protected by barriers *that restrict physical access but do not impede the opportunity to present and interpret the inscriptions*
Inscriptions should be kept in situ or retained on site (Gojak 2000:21)	Support policy
Any building fabric or stone surface (whether buried or exposed) should be examined for inscriptions prior to its removal (this may involve the removal of surface deposit in accordance with separate minimum standards) (Gojak 2000:21)	Support policy
Where there is a potential development impact upon an archaeological resource (such as an inscription), the following actions must occur 1. Undertake an archaeological assessment in accordance with the NSW Heritage Office Archaeological Assessments Manual. 2. Prepare a research design in line with the AMP requirements.	Support policy

Existing conservation and maintenance policy and source	Refinements to conservation policy
3. Obtain consent through the DEC manager, Cultural Heritage Division and Heritage Office Heritage Advisor. 4. Undertake archaeological work in accordance with all permit conditions and ensure that the archaeological management process specified in the AMP is followed.	
The following policy is sourced from a report rather than approved plan… Inscriptions with still intact paint or bitumen sealing should be repainted as a means of assisting long term conservation. A press release should be generated to create the opportunity for relatives or representatives of the original engravers to be aware of the initiate and participate (as some have reputedly already done) (Lambert 1999:5).	Support policy with the following addition… Focus repainting of inscriptions on those within the Wharf Precinct that have some form of record of the colour used, to correctly inform the works in their entirety. The colour, repainting method and date should be recorded within individual inscription records, so the process can be monitored and consistently replicated.
Reconstruction, by re-inscription of original inscriptions or re-painting of surfaces, is generally not considered to be an appropriate conservation approach, though in specific cases it might be determined to be appropriate (Freeman *et. al.* 2000:267 and 302)	Support policy with the following modification… Re-engraving of inscriptions is generally not considered to be an appropriate conservation approach, though in specific cases it might be determined to be appropriate
	Propose a new policy… Inscriptions within the Wharf Precinct should receive the focus of an active and ongoing conservation maintenance program that minimises the impacts of vegetation, erosion, rock falls and water seepage, due to the area representing the greatest number, density and diversity, and the greatest access for interpretation.
	All conservation works shall be undertaken by an appropriately qualified and experienced rock art or stone conservator

4.2 Visitor management policies

Table 4.2 Existing and proposed visitor management policies

Existing conservation policy and source	Refinements to conservation policy
The significance of these elements and their susceptibility to vandalism warrant strict controls over public access (Freeman *et. al.* 2000:267)	Support policy with the following modification… The significance of these elements and their susceptibility to *inadvertent damage and* vandalism warrant *a comprehensive approach to visitor management*
Visitation to isolated inscription areas, such as The Old Mans Hat, needs to be managed so as to limit the risk of vandalism or inadvertent damage to the sites. This issue should be addressed in the context of both the Interpretation Plan and the Access Management Plan for the place (Freeman *et. al.* 2000:267)	Support policy
Any stone engraving or inscription within public access is to be protected by a physical barrier designed to prevent visitors touching the engraving but allowing unrestricted viewing. Barriers are to be designed with a consistent approach and in a way that provides minimal visual intrusion while providing protection. The design must be clearly recognisable as a new element on the site and not as part of the quarantine period construction (Davies *et. al.* 2001:134)	Support policy with the following modification to the first sentence… *Inscriptions within the Wharf Precinct are* to be protected by a physical barrier designed to prevent visitors touching the engraving but allowing unrestricted viewing.
Unrestricted access to remote engraving sites should not be permitted. Where guided access is provided, access routes must not traverse engraving sites and tours must not be able to physically impact on sites (Davies *et. al.* 2001:135).	Support policy
	New policy Do not promote the location of inscriptions outside of the Wharf Precinct in any promotional or interpretive media

4.3 Presentation and interpretation policies

Table 4.3 Existing and proposed presentation and interpretation policies

Existing conservation policy and source	Refinements to conservation policy
Consideration should be given to using innovative techniques to reproduce an accurate record for monitoring and as a basis for replicating inscriptions for interpretive purposes (Freeman *et. al.* 2000:267)	Support policy
Inscriptions in building A20 should be preserved in situ and kept visible (Freeman *et. al.* 2000:267)	Support policy
The various inscriptions and engravings (both within and outside the QS core area) are to be interpreted as part of the Site Interpretation Plan (Davies *et. al.* 2001:135).	Support policy with the following additions… Insitu interpretation of the inscriptions should be focussed on those within the Wharf Precinct, where there is ready access and the greatest potential for effective visitor management. Interpretation of inscriptions beyond the Wharf Precinct should focus on guided tours that can provide effective visitor management and a personal interpretation of the significance of the inscriptions. Interpretive signs or displays beyond the Wharf Precinct should be avoided to maintain the immediate cultural landscape surrounding the inscriptions.

4.4 Monitoring and research policies

Table 4.4 Existing and proposed monitoring and research policies

Existing conservation policy and source	Refinements to conservation policy
Inscriptions on rocks and building materials throughout the Quarantine Station should be thoroughly documented and preserved. Existing documentation of inscriptions should be reviewed, and updated in the light of current condition and integrity (Freeman *et. al.* 2000:267)	Support policy
Any inscriptions found are to be recorded on standard pro formas (Gojak 2000:21)	Support policy
Monitoring of the inscriptions is necessary for understanding the rate of site deterioration. This may allow the site manager to observe the effectiveness of ongoing site conservation work; justify the urgency of new or further conservation work; justify more drastic proposals such as the introduction of surface consolidants; and correlate deterioration with other events such as bushfires, animal damage, climatic events etc. (Thorp 1999)	Support policy
A continued monitoring program will require a five-yearly visit. The monitoring component of the visit should be one day's duration and allow for re-photographing and the establishment of any new monitoring sites on each visit. The monitoring program should be reviewed after each visit. In this way it is considered that a more complete understanding of the conservation requirements and processes of deterioration at the Quarantine Station will emerge. Conservation intervention will be better directed to the areas of need and the results of intervention works will be assessable (Thorp 1999)	Support policy with the following revision… Inscriptions should be qualitatively monitored to identify condition, using digital colour photography and a colour scale to record colour fading and weathering of a select sample of inscriptions

5. Strategies and actions

Table 5.1 Conservation and maintenance actions

Conservation and maintenance actions	Explanation	Timing
Train maintenance staff to avoid inadvertently damaging the inscriptions or their host material	The most likely threats are mowers and edging cutters directly or indirectly cracking host material, and vehicles driving into or over the material and breaking it	Stage 1
Locate and clean out drains within the Wharf Precinct	Remove soil build up around inscriptions as part of the regular maintenance program. This work will prevent soil build up that aids chemical weathering	Stage 1
Regularly mow any grass that is obscuring inscriptions	Incorporate into the regular maintenance program the mowing and trimming of grass (especially bladey grass) so that inscriptions are not covered over	Stage 2
Introduce a bi-annual maintenance program designed to minimise the effects of vegetation (shading and tree root rock splitting) erosion, rock falls, water seepage and build up of salt	Place the greatest maintenance emphasis on inscriptions within SCI to SCIV part of the Wharf Precinct. - Remove soil build-up around inscriptions. - Remove or prune vegetation by pulling or cutting. Apply 'Roundup' to cut stems of plants that are particularly invasive and likely to continue wearing at inscriptions. - Remove a strip of vegetation approximately 3m above the inscriptions within southern Wharf Precinct (SCI-IV) by cutting and treatment with roundup. Also target hanging roots. - Remove pittosporums within 2.5m of any inscriptions, particularly those growing between the date palms within the Wharf Precinct. - After vegetation works, wash inscriptions within the Wharf Precinct and those upon slate drain covers. Use a soft bristle brush (not plastic or nylon) and low pressure fresh water (avoid water blasting or aggressive cleaning)	Stage 3 Ongoing every six months

Table 5.2 Visitor management actions

Visitor management actions	Explanation	Timing
Upgrade the existing physical barrier protecting the Wharf Precinct inscriptions	Provide and maintain a simple fencing system that limits physical visitor access to inscriptions on cliff faces within SCII to SCIV but does not impede the view field and minimises visual impact on the cultural landscape. The barrier should clearly present itself as a contemporary structure.	Stage 2
Establish a natural barrier between the Wharf Access Road and the drain where inscriptions are located beyond	The specific area is east of A12 where inscriptions are set back but clearly visible. Partially plant with low growing indigenous species approximately 3m wide parallel with the drain. Maintain a grassed edge to the road to maintain its cultural landscape.	Stage 2
Install clear coverings over inscriptions in building A20	The clear coverings would probably be perspex and need to be mounted 1-2cm off the wall (to avoid moisture build-up). The technique should provide ready viewing and personal interpretation of their significance	Stage 3
Install a gate just inside walking track to Old Mans Hat	Proposed gate is within lease area and documented in the Visitor Management Plan. The gate should not be visible from the cleared area in front of the track	Stage 3
Install a minimal impact sign on the gate preventing access to Old Mans Track	Proposed sign is documented in the Sign Plan.	Stage 3
Install a physical barrier that protects the slate pit covers from visitors walking over them or vehicles driving into or over them	The barriers should replace the white plastic chain fencing and should be designed in a consistent way across the site that provides ready viewing and personal interpretation of their significance.	Stage 5

Table 5.3 Presentation and interpretation actions

Presentation and interpretation actions	Explanation	Timing
Regularly repaint or re-bitumen inscriptions that have been painted or sealed with bitumen	Concentrate on inscriptions within the Wharf Precinct SCI, SCII and SCIII. Re-sealing and the colour of repainting should use historical records (Thorp 1983) photographs and remaining pigment to provide as accurate a colour match as possible. Re-painting should involve consultation with a stone conservator / engraver. The bitumen sealing should use a similar material and match the colour as close as possible	Stage 1 and Year 4
Produce and install an interpretation sign(s) in front of inscriptions within the SCII and SCIII areas of the Wharf Precinct	The interpretation sign is documented in the Sign Plan (within the Interpretation Plan)	Stage 2

Table 5.4 Monitoring and research actions

Monitoring and reserach actions	Explanation	Timing
Establish a monitoring program based on photographing the same locations on a regular basis	Locations to include all of those established in the Lambert Report. Photography should be taken every five years as part of an environmental audit. Photographs should be taken using a colour digital camera from the same position each time, and a colour scale. The integrated monitoring and adaptive management plan should consider a small annual sample of the same technique.	Year 5
Establish an informal monitoring system of guest and visitor access and behaviour towards the inscriptions, to identify potential impact behaviour needing a response.	Informal monitoring should be undertaken by staff that regularly work within the Wharf Precinct. This activity is a part of the integrated monitoring and adaptive management system.	Stage 1
Map the location of all inscriptions on a whole of site GIS	DEC shall transfer the Thorp (1983) pro forma recordings of SCI-VI, HPI-IV, EP and CP onto a GIS database. The inscription locations and relevant information about them should be recorded onto the GIS database.	Year 3
Investigate whether inscriptions exist at other Quarantine Stations or similar industrial sites	This research could be offered to an academic and would provide valuable significance context to North Head collection of inscriptions. Similar sites include Rozelle Hospital and Garden Island in Sydney.	Stage 5

6. Environmental assessment of proposed works

Vegetation management recommendations included in **Section 4.2** of the Landscape Plan refer to appropriate measures to protect remnant vegetation in the vicinity of the inscriptions.

The proposed conservation and maintenance works are not in direct contravention of any conservation management polices or guidelines stipulated in the CMP (Freeman 2000), DACMP (Paul Davies 2001), or AMP (Historical Archaeologist 2000).

The Archaeological Management Plan (Historical Archaeologist 2000, p.21) states that any inscriptions discovered are to be recorded and 'kept in situ or retained on site'. The CMP (Freeman 2000) proposes that 'Inscriptions should be preserved and where necessary protected by barriers. Reconstruction, by re-inscription of original inscriptions or repainting of surfaces, is generally not considered to be an appropriate conservation approach, though in specific areas it might be determined to be appropriate' (p.287).

More recently, the DACMP (Paul Davies 2001) advocates the preparation of a management plan for the inscriptions, as well as access management and interpretation provisions. It notes the recommendations of Lambert (1999) who advocates the 'distribution of a press release to canvas a restoration program involving repainting the engravings, followed by the instigation of a program'. This appears a direct result of Lambert's

finding that ‘white infill and black bitumen paint have a preserving effect. Restoration of pigments needs to be addressed and considered’ (p.9).

There is the possibility that at the time of preparation of the CMP there was insufficient information on the preserving effect of repainting, as Lambert later observed, hence the minor modification to the policy in **Table 4.1.** Furthermore, the interventionist preservation work is proposed to occur on what represents only 9% of the total number of inscriptions across the site. The intervention is also clearly counterbalanced with the conservation benefit, increased visual impact, and increased interpretation value.

7. Further works approval from the NSW Heritage Office

The works on inscriptions can occur on the basis of an Exemption under Section 57(2) of the NSW Heritage Act, 1977. Lodging for an Exemption application requires a brief statement indicating work methods for the restoration and demonstrating that there would be no adverse heritage impacts.

Should taking of moulds be considered, extreme care and testing on bare sandstone should be considered beforehand. Silicone or other sealing agents can permit moisture to build up behind the seal and cause further problems. Surfaces that are fragile and fretting should not be targets for casting/latex moulds, as they may first require consolidation.

Aggressive solvents/cleaning methods to remove graffiti should be avoided, as these may leave a residual 'ghost' of the treated area.

Removal of lichen and moulds should be weighed up agains the re-exposure of the surface to weathering. Inscriptions in exposed areas may better remain covered by lichens and moulds. Site and inscription-specific conditions should be individually assessed. For information on cleaning there may be value in consulting the Heritage Office Technical Advisory Group, Australian Museum (Dr. Val Attenbrow) or University of Sydney (John Clegg).

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APPENDIX D

The following is a summary list of works which are subject to further environmental assessment prior to their implementation.

PATHS

Location	Description
Third Class/Asiatics Precinct	Reinstatement of a former path link between Wharf Road and Third Class Access which is one of the earliest access routes illustrated on plans dating from 1838 *(Foley, 1995*), refer Figure 2.2~1.
Funicular path Administration to Third Class/Asiatics	The former funicular route is proposed to be adapted to provide pedestrian access between the top of the funicular stairs (which were previously proposed in the EIS and PAS) and Third Class/Asiatics. The surface treatment in the funicular route will clearly differentiate it from other paths and road systems, which is in accordance with the approval conditions and DACMP Policy numbers 13.3.33 to 13.3.41.
Second Class Precinct	Through Second Class accommodation and to the former early Boatmen's accommodation to the north of Second Class, consistent with DACMP Policy number 13.3.27. The initiative will require close co-operation with the DEC to ensure guests do not find / utilise the track to Store Beach (outside the lease area), and is subject to further environmental assessment.
Hospital Precinct	Path to H14 to be reinstated in accordance with previous path alignment, to facilitate safe access.
Administration Precinct (near Car Park 5)	A proposed path along the cleared overhead power easement that connects the former funicular route and Car Park 5. This is reinstatement of a former pedestrian track (on a slightly different alignment) which is evident on the 1929 aerial photograph.
Administration Precinct (near Greenhouse)	Path between A24 and L13 the Greenhouse, to allow the functional adaptive re-use of the Greenhouse as approved by PAS.
Administration Precinct (near A1)	Graded path access to A1 to provide for all-ability access from the existing road, and proposed short-term parking area.

OTHER BUILT LANDSCAPE WORKS

Location	Description
Third Class/Asiatics Precinct	Construction of a stone retaining wall and planting to stabilise eroding embankment in front of P27 adjacent to the 'Lower Asiatics Access'. This area currently has jute mat rolls which are only partially effective.

VEGETATION REMOVAL (Refer Dwg No. QS-05)

Location	Description
Administration to Third Class/Asiatics Precinct	Clear vegetation along the former funicular route to a width of approximately two metres to establish a pedestrian path that assists with interpretation of the funicular route (this excludes the funicular stairs section where vegetation clearing has already been approved previously in the EIS).
Second Class Precinct	Clearing vegetation around the former Boatmens Cottages to assist with interpretation of the former extent of the Quarantine Station and protect former building foundations.
Administration Precinct	Clearing vegetation around the former building footprints of A3 and A4 to assist with interpretation of the Aviation Phase landscape and reinstate the historic view corridors between A1 and the cottages.
Administration Precinct	Selective removal of vegetation between the cottages and A1 to reinstate the historic view corridors, whilst retaining scattered indigenous overstorey trees and groundlayer vegetation to enhance the Long-nosed Bandicoot habitat values.

APPENDIX E

E1 APPROVAL - NATIONAL PARKS & WILDLIFE SERVICE

E2 APPROVAL - HERITAGE COUNCIL OF NSW

NSW
NATIONAL
PARKS AND
WILDLIFE
SERVICE

NPWS is part of
the Department of
Environment and
Conservation

ABN 30 841 387 271

Mr Max Player
Principal
Mawland Hotel Management Pty Ltd
45 Hume St
CROWS NEST NSW 2065

Attn: Mr Simon McArthur

Dear Mr Player

Re: Approval of the Heritage Landscape Management Plan and the Inscription Plan

I am please to advise you that I, on behalf of the Department of Environment and Conservation, have approved the Heritage Landscape Management Plan including the Inscription Plan for the North Head Quarantine Station Conservation and Adaptive Reuse Project.

Please provide the Department with two additional copies of the plans for our active use, documentary records and the publicly-accessible library collection.

Yours sincerely

DR TONY FLEMING
Head, National Parks and Wildlife
Deputy Director-General
Department of Environment and Conservation

15/9/06

cc Ms Siobhan Lavelle
Senior Heritage Advisor
Dept of Planning, Heritage Office
Locked Bag 5020
PARRAMATTA NSW 2124

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Contact: Siobhan Lavelle
Telephone: 9873 8546
Siobhan.Lavelle@heritage.nsw.gov.au
File: H04/00060
HRL: 39825

Mr Simon McArthur
Project Director and General Manager
Q-Station
Mawland Hotel Management Pty Ltd
PO Box 905
CROWS NEST NSW 2065

Dear Mr McArthur,

Re: Quarantine Station – North Head Quarantine Station Heritage Landscape Management Plan, prepared by Thompson, Berrill Landscape Design Pty Ltd, Final draft report, April 2006.

I refer to the revised Heritage Landscape Management Plan for the Quarantine Station dated April 2006 prepared for the Mawland by consultants Thompson Berrill Pty Ltd and submitted to the Heritage Office, Department of Planning in April 2006. The report has been prepared in accordance with Conditions attached to the approval of the Quarantine Station adaptive reuse proposal for the preparation of a heritage landscape management plan (HLMP) as specified in conditions 90-94; and an inscription management plan (IMP) as specified in conditions 95-98. The revised report has now been reviewed by the Heritage Office, Department of Planning. Previous comments on earlier drafts were provided by the Office in 2003 and 2005.

In accordance with advice provided by the Heritage Office, Department of Planning, the revised version of the document *Heritage Landscape Management Plan, including a Heritage Landscape Master Plan, for the conservation and adaptive re-use of the North Head Quarantine Station, Fourth Draft, April 2006*, has been Endorsed under delegated authority.

It is considered that overall the HLMP is a comprehensive document which will provide a good basis for future management of the Heritage Landscape of the Quarantine Station. Revisions made to incorporate prior comments have enhanced the document's effectiveness to protect and manage the natural and historic cultural landscape resources of the Station.

I trust that the above information will be of assistance to you. If you have any queries on this matter please contact Siobhan Lavelle using the contact details provided above.

Yours sincerely,

Reece McDougall
Executive Director
Heritage Office
Department of Planning

5/4/06

cc. Ms Siân Waythe, Environmental Manager, Quarantine Station, North Head
Department of Environment and Conservation, PO Box 703, MANLY, 1655