Sydney Harbour Federation Trust

Management Plan - Mosman No. 1

Lower Georges Heights

13th OCTOBER 2003

Australian Government
Sydney Harbour Federation Trust

Table of Contents

Introduction 3

Commencement Date 3

Land to which the Management Plan Applies 4

Aims of this Plan 4

Relationship with the Trust's Comprehensive Plan 5

Relationship with other Trust Management Plans 5

Related Policies and Guidelines 5

Relationship with the Headland Park Design Framework 6

- PRECINCTS 6
- STREETS AND PATHS 7
- ENTRIES 7
- SIGNIFICANT PUBLIC PLACES 8
- LANDMARKS 8
- EDGES 8

Plans Prepared for Neighbouring Lands 8

- SYDNEY HARBOUR NATIONAL PARK MANAGEMENT PLAN 8
- MOSMAN BICYCLE PLAN 9
- SHARING SYDNEY HARBOUR – INTEGRATED LAND AND WATER ACCESS PLAN 9

Site Description 9

Site Identity 10

Site Analysis 11

- HERITAGE CONSERVATION – ARCHAEOLOGY, BUILDINGS, PLACES AND PLANTINGS 11
- ABORIGINAL HERITAGE 12
- BUSH LAND AND NATURAL VALUES 12
- PHYTOPHTHORA CINNAMOMI 14

BUSHFIRE RISK 14
GEOLOGY AND SOILS 15
STORMWATER 15
HAZARDOUS MATERIALS 16
CONTAMINATION 16
SERVICES 17
COMPLIANCE WITH THE BUILDING CODE OF AUSTRALIA 17
TRANSPORT MANAGEMENT 17
TRAFFIC AND PARKING 18
Summary Statement of Cultural Significance 19
Outcomes 20
PARK DESIGN CONCEPT 20
CRITERIA FOR THE ADAPTIVE RE-USE OF BUILDINGS 23
WATER SENSITIVE URBAN DESIGN 28
REMEDIATION 29
Implementation 33
Related Studies 38

Introduction

The Trust's Comprehensive Plan sets out its vision for the harbour sites under its control and includes a process for the preparation of more detailed management plans for specific precincts, places or buildings.

The Comprehensive Plan proposes the creation of a Headland Park that integrates Middle Head, Georges Heights and Chowder Bay.

The vision for the park is a place where the area's rich natural and cultural heritage, including its early aboriginal and military occupation will be protected and interpreted and where access will be provided to areas that have long been inaccessible to most people.

The Trust has identified the creation of the Headland Park as one of its highest priorities. Its goals are to ensure that:

- The natural and cultural assets of Middle Head, Georges Heights and Chowder Bay are conserved;
- The bushland area is increased in size;
- A network of walking tracks is created that links the various former military precincts and other places of interest; and
- Existing facilities and buildings are adaptively re-used for appropriate educational, community, recreational and commercial uses.

The Comprehensive Plan identifies the site of the former 30 Transport Terminal Squadron at Lower Georges Heights as part of the park and the Trust has decided that this precinct should be developed as the first stage of the park.

The purpose of this Management Plan is to guide this work.

Commencement Date

This plan was adopted by the Trust on 13th October 2003 and came into force on that date.

Land to which the Management Plan Applies

The land covered by the Management Plan is shown by broken black edging on the plan at *Figure 1*. All of the land is included within Lot 202 DP1022020 and is in the ownership of the Sydney Harbour Federation Trust.

Aims of this Plan

The Headland Park will be developed in stages. This plan aims to:

- Create the first stage of a Headland park that is a place of beauty, solace and respite;

In doing this it also aims to:

- Unify the elements of Middle Head - its topography, natural heritage, aboriginal use, defence and military training, so that Lower Georges Heights is representative of the Headland Park's major themes;
- Enhance an understanding of the natural terrain in particular the narrowing of the headland to a bluff offering views to the harbour, the outer heads and ocean;
- Enhance views to and from the park;
- Create a sense of arrival to the Headland Park;
- Achieve a clear and simple park design that achieves maximum potential for the interpretation of the site;
- Conserve, enhance and interpret the site's natural and cultural heritage;
- Regenerate and expand the bushland so that the sense of a "green" gateway to Sydney Harbour is reinforced;
- Protect the bushland from the spread of *Phytophthora cinnamomi*;
- Assist the conservation of heritage structures by ensuring that they are occupied and used;
- Interpret the site's connection to HQ Training Command and the gun emplacements located there;
- Establish appropriate criteria for the adaptive reuse of heritage structures;
- Provide for site interpretation, education and appropriate community and commercial uses;
- Provide visitor facilities and amenities including parking, picnic areas, shelter, walking tracks, lookout points and access to the historic fortifications;
- Realise the potential for easy access including access for the disabled;
- Apply the principles of Ecologically Sustainable Development;
- Improve the quality of storm water runoff in order to reverse the adverse impact on the surrounding bushland and the harbour;
- Remediate site contamination and hazardous materials.

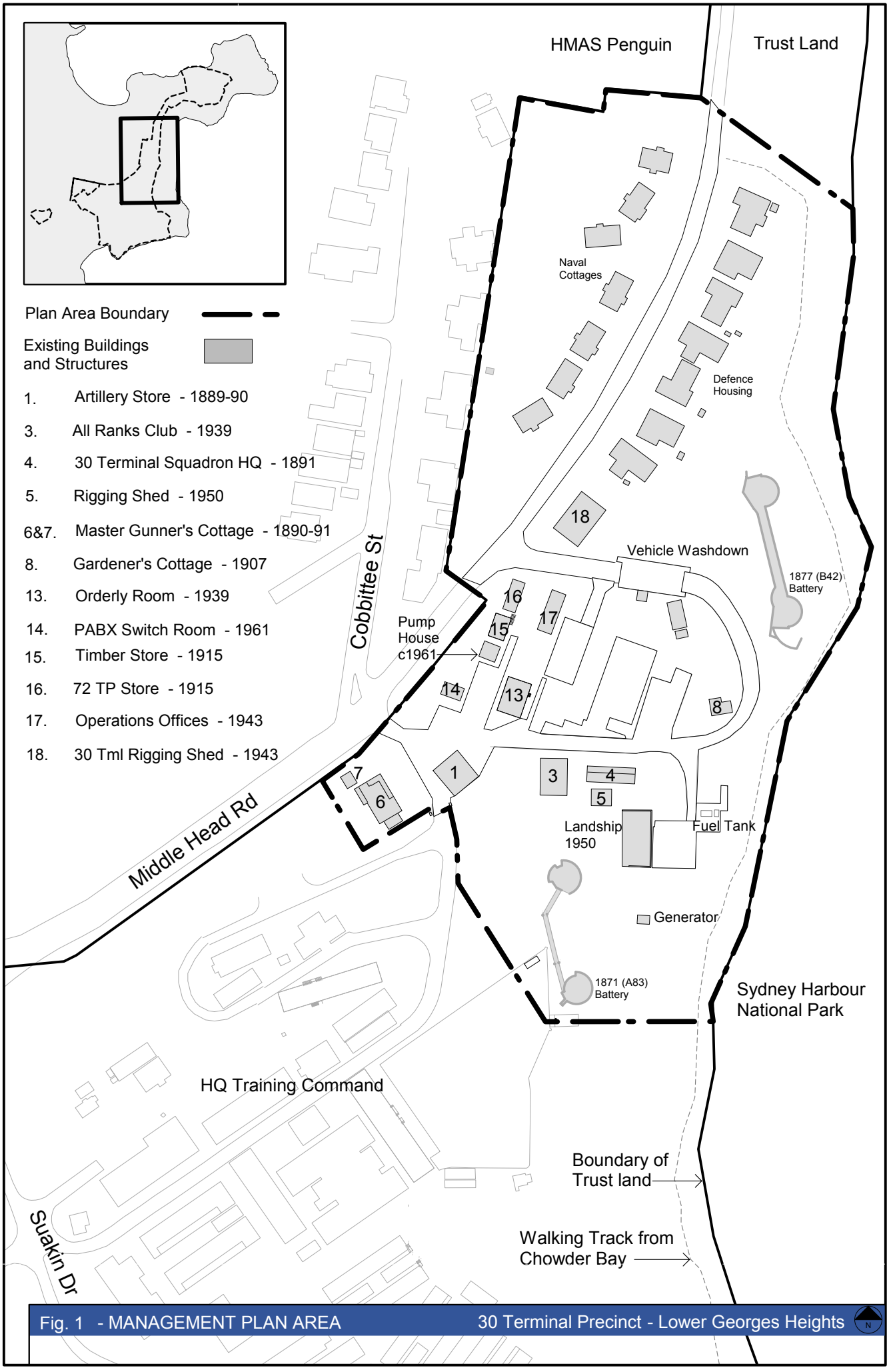


Fig. 1 - MANAGEMENT PLAN AREA 30 Terminal Precinct - Lower Georges Heights

Relationship with the Trust's Comprehensive Plan

This Management Plan is the middle level of a three tiered comprehensive planning system developed to guide the future of the Trust's lands.

The other levels are:

- The Trust's Comprehensive Plan - this is an overarching plan that was prepared in accordance with the *SHFT Act* and provides the strategic direction and planning context for all of the management plans; and
- Specific projects or *actions* - *actions* are defined in the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and are similar to the concept of *development* in the NSW planning legislation. Part 11 of the Trust's Plan requires a Management Plan to be in place before an *action* is determined by the Trust.

This Management Plan describes specific outcomes for Lower Georges Heights. It interprets the Trust's Comprehensive Plan and guides its implementation by providing more explicit detail about the way the site is developed, adaptively reused or conserved.

The Management Plan must be consistent with the Comprehensive Plan. In particular it must be consistent with the *Outcomes* identified in Part 7 of the Comprehensive Plan and must address the *Objectives and Policies* in Part 3.

The *Outcomes* diagram in Part 7 of the Comprehensive Plan for Middle Head, Georges Heights and Chowder Bay is reproduced at *Figure 2.*

The *Objectives and Policies* that are most relevant to this Management Plan are those relating to the conservation of the natural environment, the conservation of cultural and aboriginal heritage, transport management, storm water management and catchment protection, bushfire management, access and the adaptive reuse of buildings. These *Objectives and Policies* were addressed during the assessment of the site and are discussed in more detail in the relevant sections of this plan.

Relationship with other Trust Management Plans

This Management Plan is the first to be prepared in the Mosman local Government Area. Others will be prepared as subsequent stages of the Headland Park are developed - gradually building up the mosaic until the park is completed. All of the Management Plans must be consistent with each other as well as any plans for neighbouring lands.

Related Policies and Guidelines

There are a number of overarching Policies and Guidelines foreshadowed in the Trust's comprehensive plan that will also guide the development of the Headland Park. These policies will be adopted by the Trust. However, at this stage only a few have been completed. As others are prepared they will also apply. Current policies include:

- The Threat Abatement Plan for *Phytophthora cinnamomi* prepared by the Dept. of Environment and Heritage, 2002;
- The Trust's draft Phytophthora Root-rot Management Strategy and Best Practice Procedures for Bush Regeneration Activities; and
- The Trust's draft Leasing policy;

This Management Plan has to be interpreted having regard for these policies.

Relationship with the Headland Park Design Framework

There are six Defence bases at Middle Head, Georges Heights and Chowder Bay. The transformation of these bases into a unified area of parkland requires consideration of all of the elements that make up the public domain. It also needs to satisfy expectations about public access to and enjoyment of the site, the conservation of its natural and cultural heritage and its integration with the harbour, the foreshore and the local neighbourhood.

The development of the design framework and the design treatment of each of its elements must be drawn from the heritage values and characteristics of the lands, rather than imposing an arbitrary new "design statement".

The design framework for the Headland Park is shown at *Figure 3*. It identifies all of the elements that make up the public domain - how they need to work together as a network of spaces and the principles that will guide their detailed design development within each of the Management Plan areas.

The elements of the public domain comprise:
- Precincts – areas with distinct characteristics by virtue of land uses or physical factors such as topography, building scale and form;
- Streets and Paths – the network of routes that provide access to and through the site for all modes – walking, cycling, public transport and private motor vehicles;
- Entries - to a precinct or significant public places;
- Significant Public Places – the destinations, the spaces used for gatherings, relaxation, ceremony or cultural or sporting activity;
- Landmarks – places, structures or natural features of public interest;
- Edges – the boundaries between precincts, the borders to parks and gardens, dramatic level changes, the interfaces between buildings and the public domain.

Precincts

The terrain and its relationship to the harbour is the first and most fundamental consideration for all of these elements. It is the terrain that has given rise to the historic uses and it is its relationship to the harbour that makes these lands special.

The early fortifications located at the escarpment and the associated defence facilities on the knolls form identifiable precincts. These precincts include –
- The former World War I Hospital precinct on the highest knoll at Georges Heights;
- The former barracks and fortifications at Georges Head;

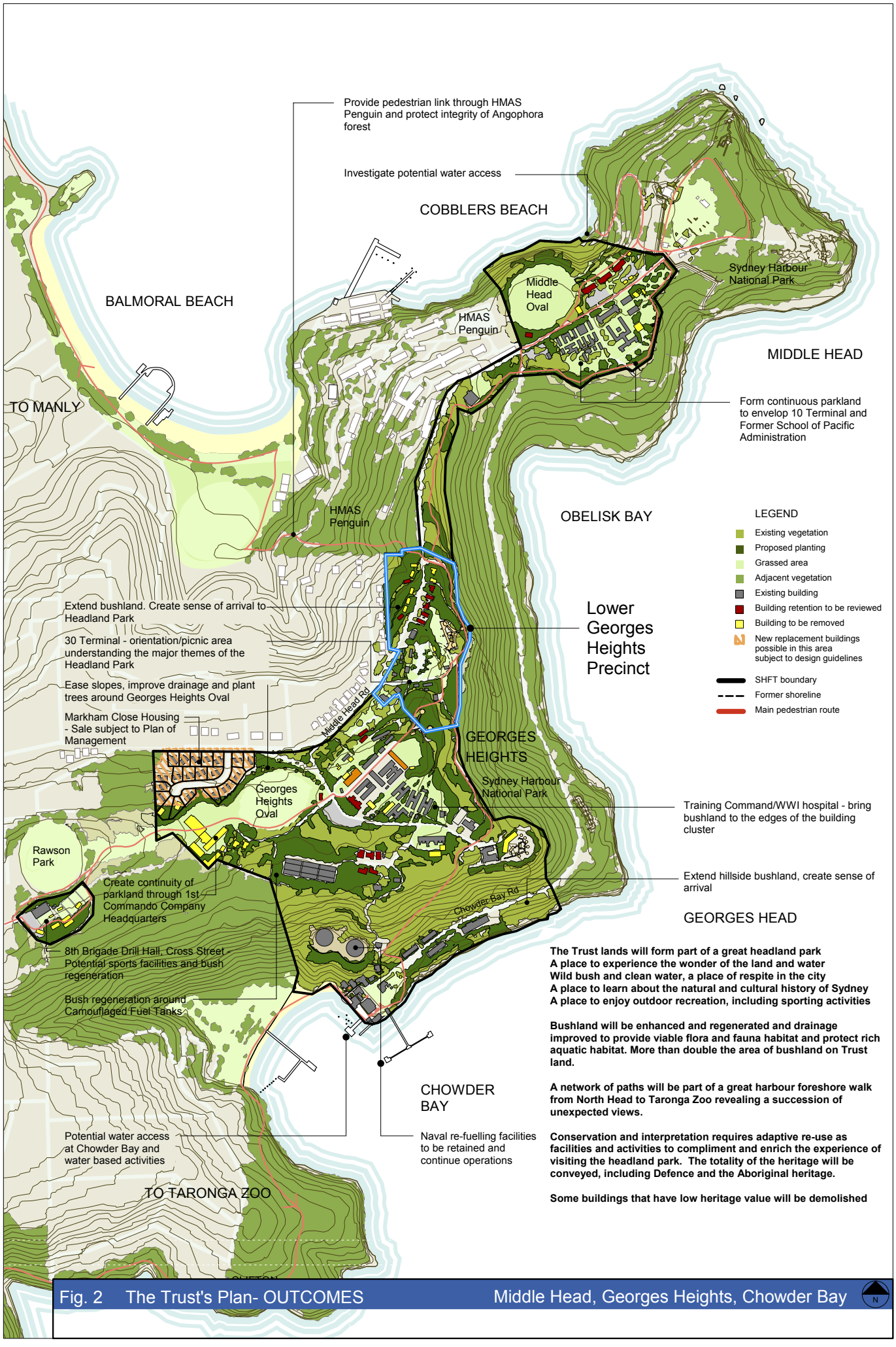


Fig. 2 The Trust's Plan- OUTCOMES Middle Head, Georges Heights, Chowder Bay

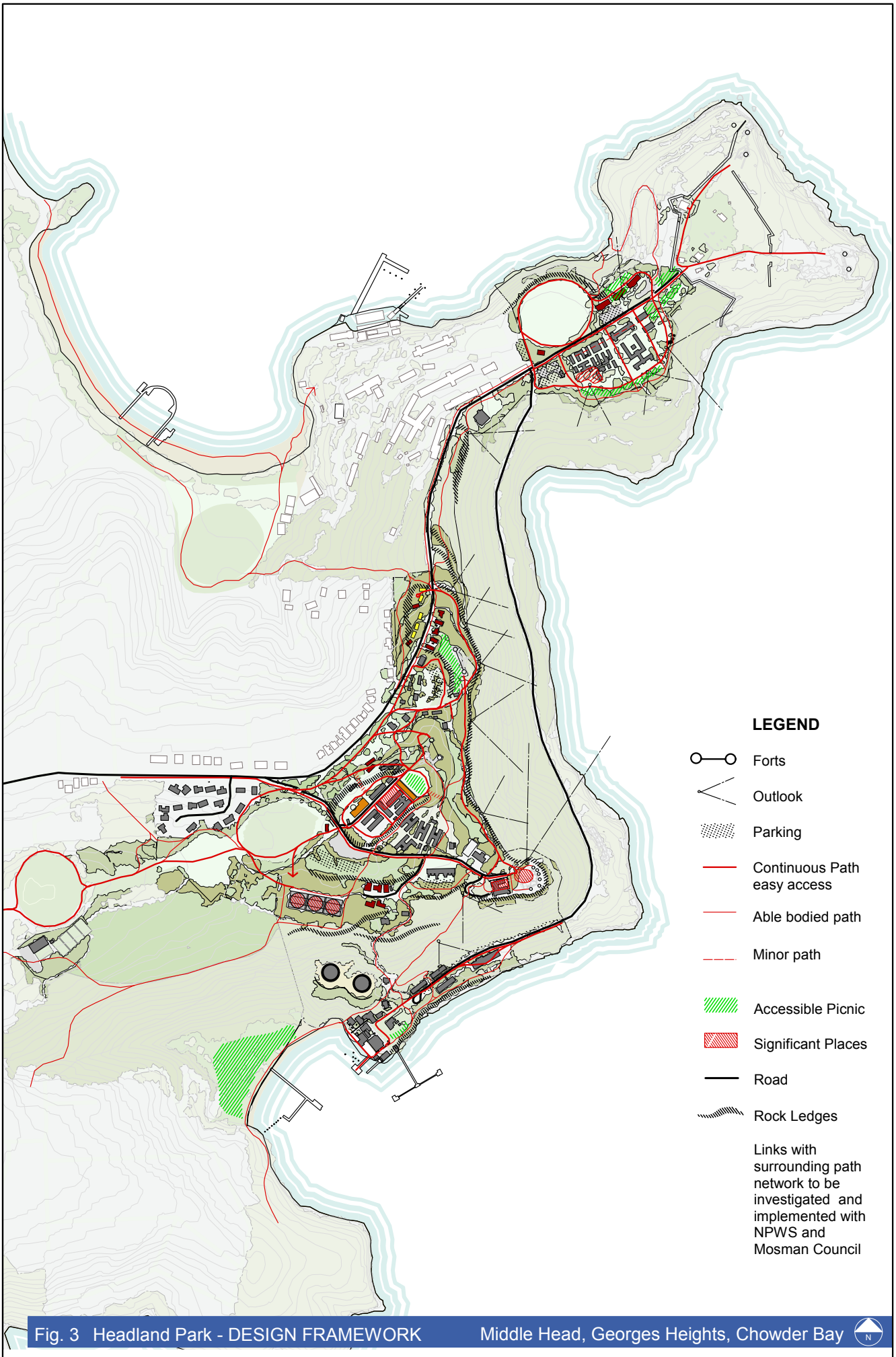


Fig. 3 Headland Park - DESIGN FRAMEWORK Middle Head, Georges Heights, Chowder Bay

- The fortifications, sheds and barrack buildings at the spur terminating the Georges Heights plateau, before the ridge drops to Middle Head;
- The Middle Head barracks; and
- The cluster of buildings on the rock ledges at Chowder Bay.

Generally, these precincts have an institutional - parkland character, with the buildings forming small scale, civic spaces.

The open spaces on the saddles of the undulating plateau and the steep slopes also create distinct precincts. These include:

- The steep, wooded slopes below the escarpment;
- The plateau which is generally characterised by coastal heath and exposed rock ledges; and the
- Institutional parkland areas of the former bases.

The Headland Park will form a succession of spaces from hill tops with a sense of openness and height above all the surrounding land – such as the former Training Command HQ, through to more enclosed areas in the saddles and valleys and to places along escarpment edges. As the plateau narrows and winds towards the headland, these spatial experiences will vary – as the views into Middle Harbour unfold and gain equal prominence to the views to the outer harbour and the ocean.

Streets and Paths

The access network needs to provide clear and convenient access to and through the Headland Park. Each of the elements of the network will be designed to reflect its role and function, and the desire to create an unfolding sequence of experiences in response to the environment it passes through. The network consists of the following elements, as shown in *Figure 3:*

- The approach roads adjoining and leading into the park – Middle Head Road, Chowder Bay Road and Suakim Drive;
- Internal streets and laneways within each precinct (within the former bases);
- A major pathway circuit that provides access for people with all levels of mobility and that links the significant public places, features and landmarks, the entry roads, car parks and local neighbourhood;
- A minor pathway network providing more variety, intimacy and seclusion, and access for able-bodied walkers to limited areas within the bushland; and
- The car parks and bus set down areas.

As a general principle cycling should not take place on walking paths.

Entries

It is proposed that there will be numerous *"Entry Points"* so that access opportunities are maximised and dispersed. This will accommodate people arriving from many different directions and by different modes of travel and will avoid concentrations of visitors.

Entries in the public domain will not usually be built structures. Rather, they will be spaces that serve as an entry and do not need to be given strong emphasis.

Significant Public Places

The Headland Park will have a range of public spaces offering a diversity of activities. These will include:

- Passive recreational areas for picnics and social relaxation;
- Areas for community sporting activities;
- Places of contemplation within a bushland setting or on the escarpment with spectacular views; and
- Small civic spaces defined by former defence buildings for community gatherings or simply watching the passers by.

They will form a series of experiences connected by the main pathway network. All of these spaces are located and chosen to enhance an understanding and appreciation of the natural environment and the succession of historical uses.

Landmarks

Within each of the precincts, there are significant features that relate to the history or the natural beauty of the place. They are often beautiful or unusual structures, buildings or natural features that provide the focus in public places or points of interest along the way. The setting of these features will be designed to assist in a greater understanding and appreciation of their significance and the Headland Park as a whole.

Edges

The most dramatic edges are along the escarpment. Here the primary consideration is the protection and enhancement of the bushland on the slopes by effective stormwater management and bush regeneration.

Where environmental conditions are suitable public access will be provided. This will be in locations related to the fortifications and scenic lookouts.

Some of the edges currently include untidy service areas, sheds and paved areas of low heritage value. In these cases intrusive elements will be removed and landscaped to reveal the natural terrain and to clearly identify the precincts.

Plans Prepared for Neighbouring Lands

In addition to the Trust's policies there are plans and policies prepared by neighbouring land managers that provide a context for the Trust's Management Plan. The majority of these plans are identified in Section 7 of the Trust's Comprehensive Plan. However, the following are particularly relevant to this Management Plan:

Sydney Harbour National Park Management Plan

Lower Georges Heights immediately adjoins the Sydney Harbour National Park. The National Parks and Wildlife Service (NPWS) has prepared a Management Plan that applies to the whole of the Sydney Harbour National Park including Middle Head and Georges Heights. The Management Plan outlines general and specific objectives for the National Park with the overall strategy for the Park being the protection and where necessary restoration of the Park's natural vegetation, and the maintenance and

adaptive reuse of important historic places. The Park is divided into precincts with emphasis to be given to the following strategies in the Middle Head Georges Heights Precinct:

- Interpretation of fortifications and defence history; and
- Rehabilitation of the natural vegetation.

High priority projects, that are relevant to the Trust's Headland Park, include the preparation of a weed control program, feral animal management at Middle Head and the preparation of a fire management plan.
The plan proposes that the Middle Head and Georges Head fortifications will continue to be used for historic tours and passive recreation. It also proposes that no additional facilities will be provided until improved access and parking can be provided.

The NPWS has also prepared a draft amendment to the Plan of Management that facilitates the adaptive reuse of historic buildings and structures in the park. The historic buildings and structures identified in the amendment do not include any at Middle Head.

Mosman Bicycle Plan

Bicycle planning in the Mosman Municipality is currently directed by a regional plan prepared by Loder and Bayly-Stapleton in 1982 and the *Integrated Land and Water Access Plan* released by the State Government in February 2003.

Recommendations contained in the Loder and Bayly-Stapleton plan for implementation in and around the Headland Park include the marking of 3 metre centre lanes along Middle Head Road to facilitate the creation of kerb lanes for car parking and cycling and the provision of an on-road cycle route along Chowder Bay Road to the Chowder Bay precinct.

Mosman Council has also resolved to prepare a Bicycle Plan that will replace the regional plan.

The Trust will collaborate with the Council in the development of this plan and will give careful thought to the identification of Trust areas where cycling will be permitted so that that there is no conflict with walkers.

Sharing Sydney Harbour – Integrated Land and Water Access Plan

In February 2003 the State government released a draft plan that proposes to increase the amount of accessible foreshore around the harbour through the provision of new walking and cycle tracks and improved public open space, landscaping and picnic areas. The plan makes no recommendations in respect of Lower Georges Heights.

Site Description

The plan area is approximately 3.2 hectares and is located on a plateau that overlooks the harbour and is bounded by steep bushland slopes.

On its western side the site fronts Middle Head Road while on its eastern side it is bounded by the Sydney Harbour National Park. Its southern boundary is another Trust site known as HQ Training Command while at its northwestern edge there are seven former Defence houses.

Access is from Middle Head Road, at a point just before it narrows and where its character changes from a suburban street to one of a road through parkland.

Erected on the site are 15 former defence buildings, the 1871 (A83) and the 1877 (B42) Batteries and 15 dwellings – see *Figure 1*.

Most of the defence buildings are simple timber-framed structures and most are identified as heritage items.
The most important of the dwellings was constructed in 1890-91 as the Master Gunner's cottage. It is located near the southwestern entrance off Middle Head Road and is identified on the *Register of the National Estate*. Seven of the dwellings are constructed from vertical weatherboard and were prefabricated in Sweden before being erected at Lower Georges Heights in either late 1951 or early 1952 as married quarters for the Navy. These cottages are currently unoccupied and a heritage assessment has been carried out to determine their heritage significance. The remaining dwellings are brick veneer homes and were built by Lend Lease in the mid1960s. These cottages have no heritage value and are currently leased by the Trust as private housing.

There is also a concrete block building associated with a vehicle wash-down area and two colour bond sheds – one of which is erected on part of an earlier concrete structure.

The boundary with HQ Training Command is presently marked out with a chain wire fence that bears no relationship to the former connection between these two sites. The fence divides the A83 Battery Gun Emplacement in two.

Bushland exists to the northeast of the site from where the topography falls sharply down to the National Park, Chowder Bay Road and the harbour.

The roadway through the site is presently horseshoe in configuration. The point of arrival via this road is short and dramatic, gradually revealing ocean and harbour views as one rises over a small knoll.

Another access path to the site is via the Trust's Middle Head walking track. This track commences at Middle Head Road at the northwestern corner of the site and follows the escarpment edge past HQ Training Command before descending to Chowder Bay.

Site Identity

The site embodies all of the qualities that characterise Middle Head and Georges Heights – the scenic beauty, the bushland and the aboriginal and military heritage.

It is located on a plateau above the sandstone cliffs and steep, wooded slopes of Middle Head and Georges Heights that are important elements in Sydney Harbour's character and which contribute to the impression of a "*green*" entry to the harbour.

However, the plateau at Lower Georges Heights is a highly modified landscape having been used for military purposes since 1871. It has large cleared areas and areas of hard paving and although much of the original vegetation has been removed there are areas of mature re-growth and some ornamental plantings that envelop the former defence buildings while still allowing panoramic views of the harbour and out to sea.

Middle Head was the home of the *Borogegal* clan and although there are a number of archaeological sites that provide evidence of their occupation there are none within the Lower Georges Heights site. However, in 1815 Governor Macquarie established an aboriginal settlement and farm - known as *Bungaree's Farm*, which included most of Lower Georges Heights. The farm was not a success and by 1826 had ceased although aboriginal people were still living at the site of the settlement (near Gunshot Alley) at the time that the first gun emplacements were built.
Middle Head and Georges Heights played a very important role in the defence of Sydney. Firstly as a series of defensive gun emplacements, then as a World War 1 hospital and finally as a series of military bases. All of these occupations are represented at Lower Georges Heights where the sequence of structures, buildings and site features were largely retained and adaptively reused. See *Figure 4*.

Site Analysis

Heritage Conservation – Archaeology, Buildings, Places and Plantings
Lower Georges Heights is listed on the *Register of the National Estate – see Australian Heritage Commission Database Number 103339*. This is in recognition of its historical significance as one of the locations of major defence works for Sydney Harbour during the 19th and 20th centuries as well as the subsequent military occupation of the site.

Section 30 of the *Australian Heritage Commission Act 1975* places an obligation on the Trust not to take any action that adversely affects a building or place that is identified on the Register unless the Minister for the Environment and Heritage is satisfied that there is no feasible or prudent alternative and the Australian Heritage Commission has had the opportunity to comment on the proposal.

The three phases of military occupation represented at Lower Georges Heights are:

- Phase 1 - 1870 to1915. Over the years a series of gun emplacements were constructed along the escarpment. These emplacements reflected new threats, different defence strategies and changed weapon technology. Two sets of gun emplacements and several buildings from this phase remain at Lower Georges Heights;
- Phase 2 - 1915 to 1922. During World War 1 a military hospital was erected at Georges Heights for repatriated soldiers. The bulk of this complex is intact and is located on the adjoining HQ Training Command site - three buildings are also located within the plan area; and

- Phase 3 – 1922 to 1997. During this phase the site was used by a number of army units such as the 2nd Fortress Company and the 1st Transport Squadron. The last of these units was 30 Terminal Squadron – a stevedoring or army dock unit that was originally formed during the Second World War, and it is for this reason that the site is still commonly referred to as 30 Terminal.

The buildings and structures remaining from these phases of military occupation are shown in *Figure 4.*

The Trust engaged Robertson & Hindmarsh, Architects to prepare a Conservation Management Plan (CMP) for Lower Georges Heights and HQ Training Command. This work commenced in January 2003.

At Lower Georges Heights the study assessed all of the built items including buildings, sheds, roads, paths, gun emplacements and archaeology and provides a statement of significance and recommendations for each building.

The study recommended that the Master Gunner's cottage should remain in residential use and that buildings 1,3,4,5,8,13,14,15,16,17,18 and the "*landship*" should be retained and repaired. These buildings are identified in *Figure 1*.
The study also identified the 1961 Pump House and PABX Building as intrusive and recommended that if possible they should be removed. The Trust has adopted this recommendation. However, both of these buildings are still functioning and in the case of the PABX serves all of the Trust's sites. The removal of the buildings will take place once alternative services are provided.

The study noted that in preparing the Management Plan for the site it should be borne in mind that the primary significance of the place depends on its development as part of the coastal artillery defence network. Therefore, any interpretation should include an interpretation of the support buildings that no longer exist.

Aboriginal Heritage

The Trust engaged the Australian Museum to undertake a survey to identify Aboriginal archaeological sites and any associated issues related to Aboriginal heritage for six sites at Middle Head. This included Lower Georges Heights.

The Museum advised that no Aboriginal archaeological sites were found. It also advised that notwithstanding this, all of the areas surveyed have a moderate archaeological sensitivity. As a result it recommended that a monitoring program for archaeological material is carried out during subsurface exposure or removal of superficial layers and that a qualified archaeologist should conduct the monitoring.

Bush Land and Natural Values

Conacher Travers Environmental Consultants were engaged to prepare a flora study of Trust and NPWS lands at Middle Head and Georges Heights.

The conclusions of the study are that:

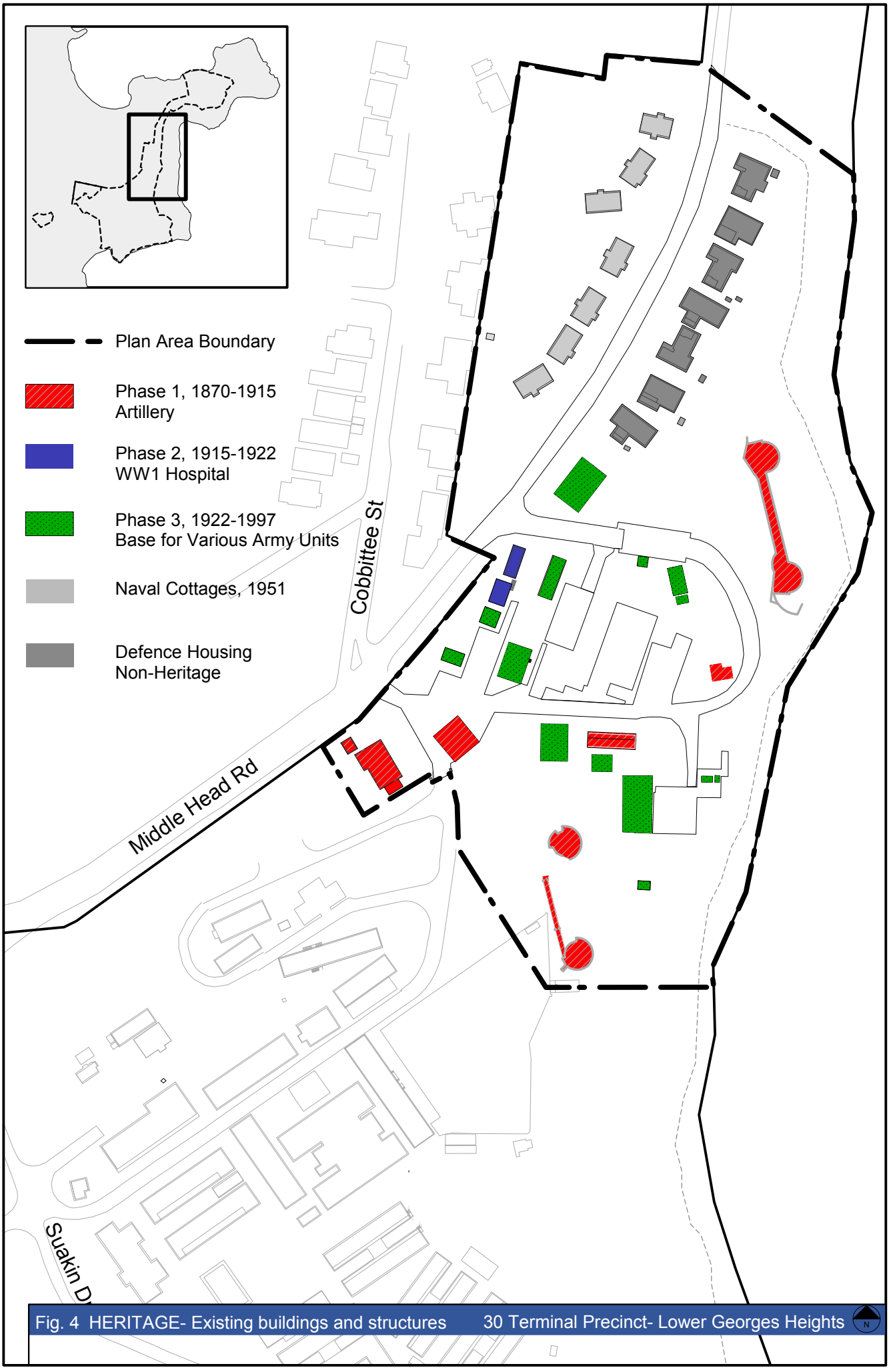


Fig. 4 HERITAGE- Existing buildings and structures 30 Terminal Precinct- Lower Georges Heights

- The area supported a number of vegetation communities and sub-communities, all of which are relatively common in similar environmental conditions;
- *Acacia terminalis ssp. terminalis* was found in discrete areas close to Lower Georges Heights. This species is listed as *"Endangered"* in Schedule 1 of the *Threatened Species Conservation Act (1995)* and as *"Endangered"* in the *Environmental Protection and Biodiversity Conservation Act (1999)* and contributes to the biological significance of the site vegetation; and
- The vegetation communities within this site exhibit significant weed problems.

The report recommended that:

- A survey to specifically locate and map the occurrence of *Acacia terminalis spp. terminalis* is undertaken, and that these areas be protected, monitored and interpreted;
- Current weed management should continue and communities containing *Acacia terminalis spp. terminalis* should be given priority; and
- The future use of the site must maintain and/or improve the existing two main bush corridors so that the transfer of genetic material - both the flora and fauna, is maintained.

As recommended a targeted survey of *Acacia terminalis ssp terminalis* was undertaken. No specimens were found within the Management Plan area. However, 81 specimens were located just to the north of the site.

Conacher Travers Environmental Consultants also prepared a comprehensive fauna study of Trust and Department of Defence lands at Middle Head and Georges Heights, which included the Lower Georges Heights Precinct.

The survey identified a number of native fauna species on the site that are considered to be common in the area.

Less common species observed were the Tawny Frogmouth, Boobook Owl, Diamond Python and White-striped Mastiff Bat. These species are considered to be vulnerable to numerous ecological threats.

No threatened species were found.

The report recommends that:

- An appropriate fire regime for the area is instigated;
- The hydrology of the site is managed to reduce the amount of disturbance and pollution;
- The integrity of the site is maintained and enhanced by:
    - Minimising disturbance such as rubbish dumping and trampling by walkers;
    - Providing nest boxes for species such as Powerful Owls and Black Cockatoos;
    - Regenerating native bushland; and
    - Undertaking exclusion and trapping programs for feral animals; and

- Reintroducing native species.

Although the study did not identify any rare or endangered species the NPWS has advised that Bent Wing Bats *Miniopterus schreibersii* are known to use the underground chambers of the Middle Head gun emplacements during winter. These bats are identified as a *"vulnerable species"* under the NSW *Threatened Species Conservation Act (1995).* However, they are not listed under Commonwealth legislation. Neither NPWS nor the Trust has prepared a Recovery Plan for this species. However, the Trust has provided new security grilles to the B42 Battery that have been specifically designed to allow access by the Bent Wing Bat. The A83 Battery has unrestricted bat access.

Phytophthora cinnamomi

Dieback related to the root-rot fungus *Phytophthora cinnamomi* has been listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* and Department of Environment and Heritage has prepared a *Threat Abatement Plan* to guide actions by Commonwealth agencies to prevent the spread of this disease and to limit its affects on vulnerable or endangered native species.

Sampling carried out by the Royal Botanic Gardens (RBG) on behalf of the Trust has identified the presence of *Phytophthora cinnamomi* in areas of dieback within the National Park, down slope from the Trust's existing walking track and the Management Plan area.

As a consequence Environmental Resources Management Australia (ERM) were engaged to undertake additional sampling on the walking track and at Lower Georges Heights. Nineteen samples were collected and sent to the School of Botany at Melbourne University for analysis. Phytophthora was not detected in any of these samples.

The Royal Botanic Gardens advised that existing vectors for the introduction of the pathogen included stormwater and nutrient laden run-off from the urban interface and to a lesser extent from Middle Head Road. It recommended that the Trust improve these conditions in order to reduce the risk of the spread of the disease into the adjoining healthy bushland areas.

Bushfire Risk

In 2002 the Trust commissioned Geospatial Integrity to undertake an interim review of the fire risks and to identify necessary mitigation works for the lands at Middle Head, including Lower Georges Heights.

The study recommended that an Asset Protection Zone (APZ) be maintained to the North and East of the seven former Defence houses fronting Middle Head Road. This APZ incorporates the back yards of the dwellings and extends 20 metres beyond the fence line.

Mitigation works within this APZ, include the ongoing removal of the vegetative cover, the regular mowing of lawns and any planting to be restricted to fire retardant native shrubs.

Geology and Soils

The weathered Hawkesbury Sandstone geology that characterises the precinct has resulted in shallow, yet locally variable, organic skeletal soils. Sandstone bedrock is at shallow depths – ranging from the surface where it outcrops at locations near the ridgeline, to 1m or greater nearer the eastern boundary and escarpment. These soils support Scrub to Open Woodland vegetation formations associated with the Sydney Sandstone Complex vegetation type.

Fill is present in many areas and ranges in depth from 0.2 m to 0.5 m. The nature of the fill material varies, but is generally crushed sandstone and sands. Gravels are also found at the surface, or under concrete or bitumen. However, there are localised areas where the fill contains ash and slag or where the fill is comprised wholly of these materials. Significant pockets of fill containing demolition rubble and rubbish have also been placed along the escarpment on the eastern boundary of the site.

The quality of these soils combined with the changes to the natural topography carried out by successive occupiers has significant implications for the type and form of new plantings and landscape treatment as well as the management of stormwater and contamination.

Stormwater

Lower Georges Heights is part of two stormwater catchments both draining to the Harbour. One drains to Obelisk Bay and the other to Balmoral Beach.

In 2003, the Trust engaged consultants ERM to sample and analyse surface water on the site as part of an Environmental Site and Catchment Investigation. This was carried out to assess water quality and determine the potential impact of surface water migrating from the site. The water quality results indicated that there were elevated levels of acidity and high concentrations of biologically available nitrogen (NOx), along with other forms of nitrogen and phosphates. This indicates potential sewage contamination of surface waters. This sewage impact is most pronounced in the northeast corner of the site, behind the brick cottages.

There were also levels of lead, copper and zinc in surface water leaving the site that exceeded applicable water quality criteria. The source for these metals in surface water may be from natural mineralisation or site contamination. There were also trace levels of other parameters such as arsenic and petroleum hydrocarbons.

ERM concluded that there are a number of potential sources contributing to these exceedences and that these may include landfill on the site, existing buildings and the existing sewerage system. Of these it concluded that the sewerage system represented the greatest potential for ongoing exceedences. It recommended that a number of design objectives and integrated control measures to minimise surface water impacts such as rainwater reticulation gardens, grassed swales, gross pollutant traps etc. These recommendations have been incorporated into the design outcomes.

Hazardous Materials

In June 2002 Hibbs and Associates Pty Ltd undertook a Hazardous Materials Survey of buildings and structures remaining at Lower Georges Heights. For the purposes of this survey, *'hazardous materials'* included materials containing asbestos, synthetic mineral fibre (SMF) materials, deteriorating lead based paints and fluorescent light ballast capacitors containing the class of compounds known as polychlorinated biphenyls (PCB's).

The survey found that:

- Asbestos cement (AC) has been used extensively in the buildings. However, in general, the identified asbestos materials were in a stable condition and do not pose a significant health risk;
- SMF is present in the batt insulation in the roof space of the PABX switch room but is in a stable condition;
- Capacitors containing PCBs are present in the fluorescent light fittings in most buildings. It recommended that any capacitors that are to be replaced, should be disposed of appropriately; and
- Lead based paints were used in most buildings, particularly on external metal and timber cladding. The majority of the lead based paints are showing signs of deterioration and it recommended that paint removal or remedial works be an integral part of building refurbishment and that these works are performed in accordance with the requirements of the appropriate Australian Standard.

Contamination

In 1999, PPK – Environment and Infrastructure was engaged to conduct a two-stage contamination assessment and geotechnical study of lands to be transferred to the Trust, including Lower Georges Heights.

The purpose of this assessment was to provide information regarding contamination on the lands so that potential land uses and initial requirements and costs for remediation could be determined.

In January 2003, the Trust engaged Environmental Resources Management Australia (ERM) to conduct an environmental site and catchment investigation of Lower Georges Heights.

The purpose of this investigation was to obtain supplementary information, so that a detailed design of remediation, drainage and stormwater improvements could be made in relation to the proposed concept for Lower Georges Heights.

The ERM study identified elevated levels of lead, asbestos, Total Petroleum Hydrocarbons (TPH), copper, Zinc, Polyaromatic Hydrocarbons (PAHs), fragments of asbestos cement sheeting and very low levels polychlorinated biphenyl (PCB) in a number of locations. This contamination will be remediated in accordance with the relevant standards for the proposed use of the land - see the Other Outcomes section of this plan.

Services

In 2002 PPK Consulting undertook a detailed survey in order to establish the extent and condition of site services. The study looked at electricity, telephone, water, fire, sewerage and stormwater services and made a number of recommendations to rationalise and upgrade the services.

Compliance with the Building Code of Australia

Trevor R Howse & Associates Pty Ltd was engaged to assess each building at Lower Georges Heights to determine the need and consequently the nature and extent of works necessary to achieve compliance with the Building Code of Australia (BCA).

Each building was assessed in respect of:

- Fire Compartmentation;
- Fire Resistance;
- Protection of Openings;
- Occupant Egress;
- Access for Disabled Persons;
- Fire Safety Protection Services;
- Sanitary Facilities.

In summary the study found that:

- No existing building provides compliant BCA access for disabled persons while the site's topography also makes it difficult for a disabled person to reasonably access and traverse it; and
- Toilet facilities are inadequate.

It recommended that the construction of strategically located toilet blocks, incorporating facilities for both ambulant and disabled persons. It also recommended the provision of on-site carparking facilities for disabled persons.

Transport Management

In 2003 the Trust commissioned Maunsell Australia Pty Ltd to prepare a Transport Management Plan (TMP) for Middle Head, Georges Heights and Chowder Bay.

The TMP identifies measures to minimise reliance on access by private motor vehicles and to maximise access by public transport, walking and cycling. The TMP also considers the cumulative impacts of the development of Trust lands and neighbouring sites such as HMAS Penguin, Sydney Harbour National Park and local sporting facilities.

Consultation with key agencies such as HMAS Penguin, National Parks and Wildlife Service, Mosman Council and State Transit was integral to the development of the plan.

In general, recommendations of the TMP relevant to the Lower Georges Heights include the:

- Preparation of a submission to the State Transit Authority regarding the subsidisation of additional bus services on weekends to the Trust sites;

- Installation of bicycle facilities including bicycle storage in appropriate areas within the main precincts of the site;
- Installation of consistent public transport directional signage and timetable information across the sites; and
- Provision of consistent pedestrian directional signage and information similar to signs currently provided by the Trust.

The more specific recommendations of the TMP for Georges Heights and Middle Head relevant to the Lower Georges Heights include:

- The installation of signage on Middle Head Road east of Cobbittee Street warning of turning traffic from that street;
- Facilitation of pedestrian (Taronga Zoo to Balmoral walking track) access across Middle Head Road including speed control devices and appropriate warning signage some distance either side of the pedestrian 'crossing' area;
- The upgrade of signage along Middle Head Road warning that the road narrows and for the need to reduce speed;
- The making of representations to Mosman Council regarding the installation of traffic calming measures on Middle Head Road to slow traffic entering the Cobbittee Street and Middle Head Road intersection; and
- The continued use of Georges Heights Oval as a public parking facility for large special events.

Where appropriate these recommendations have been considered in the overall design concept for the site.

Traffic and Parking

Traffic management and accessibility by motor vehicle are issues that are particularly important in the Middle Head and Georges Heights area. In June 2003 the Trust engaged Chris Hallam and Associates Pty Ltd to undertake an initial assessment of a *"preliminary"* concept for Lower Georges Heights. This assessment provided advice on traffic, parking and transport issues.

This initial advice was used to inform the development of the preliminary concept into a final design concept. A further assessment was then undertaken of the final design. This assessment reviewed the road network, bus routes, traffic flows and supply and demand for car parking. It also reviewed the access and layout of the Headland Park, car parking, external traffic implications and provided traffic management options and recommendations for the site.

It concluded that:

- There are a number of site access options at the junction of Middle Head Road and Cobbittee Street. However, improving visibility for drivers and pedestrians and slowing down traffic at this intersection is the preferred option;
- Provision for coach access is recommended to be within the Training Command area. However, given the very low estimated generation of traffic at Lower Georges Heights existing bus stops on Middle Head Road are an adequate short term option;

- The site layout provides for 30 car parking spaces, and this level of parking provision is considered adequate to meet the likely peak parking requirements;
- The traffic generation from the reuse of buildings at Lower Georges Heights and improved public domain areas is likely to be moderate and mainly occurring on the weekend. Apart from the possibility of 'No Standing' restrictions on Middle Head Road (north of the southern entrance) and works to improve visibility and to slow traffic at the intersection of Cobbittee Street and Middle Head Road, no external traffic management works are required.

Summary Statement of Cultural Significance

The Lower Georges Heights Management Plan area is culturally significant because of the interrelationship between its location and topography and the many layers of its aboriginal and military heritage.

The plan area straddles the descending ridgeline on the peninsula, between Sydney Harbour and Middle Harbour. It occupies the high ground on either side of the ridge and is divided by Middle Head Road - this road still follows its original alignment leading to the gun batteries on Middle Head.

The area's location and physical characteristics were ideal for the location of gun emplacements to overlook and defend the main harbour channels giving access to Sydney. The geology of the Hawkesbury sandstone also provided a solid foundation for the gun emplacements.

Although largely cleared for military purposes, the defence occupation of the site has enabled the preservation of native vegetation and rock shelves in the lower areas and the obsolescence of the gun batteries has enabled the regrowth of native vegetation in some areas.

The site has no known significance for the area's original inhabitants, the *Borogegal* clan. However, it lies mostly within an area surveyed in 1841 and known as *King Bungaree's Farm*. This was an experiment by Governor Macquarie in trying to introduce a selected group of Aboriginals to the ways of European farming.

The plan area embodies a number of layers of military use and periods of occupation from the harbour batteries of the later 19th century, the World War 1 hospital, to the post World War 2 period and the cessation of that use.

The different and evolving approaches to the defence of locations are recorded in the construction and changes to the 19th and 20th centuries gun batteries, their associated buildings, the 20th century military bases and the establishment of anti-aircraft batteries.

The sites represent a series of rational responses to the fear of invasion as shown by the gun batteries and military bases and the fear of subversion from within society by the construction of the unique *Landship* for training in cargo handling and its associated elements.

The Plan area is part of or contains items listed in 8 entries on the *Register of the National Estate* and 3 items under the *Mosman Local Environment Plan 1998 (Amendment No1 – Heritage Conservation)*

Outcomes

Park Design Concept

The Trust engaged Craig Burton of CAB Consulting - Architect and Landscape Architect, to prepare the concept design for Lower Georges Heights.

The design concept proposes the interpretation of the site's natural and cultural values and the repair of the land through the design of the park and associated recreational facilities. The proposed design is shown at *Figure 5.*

The design is derived from the intrinsic values of the site and in response to the recommendations of the various specialist studies described in the previous section and listed in the *Related Studies* section of this plan. The findings of these studies are synthesised in following diagrams:

Appendix 1 - Existing Condition of Landscape. This illustrates:

- The fragmentation of the area by the extensive areas of pavement and roads;
- The predominance of exotic plant species within the core, built-up areas;
- Degraded areas suffering from poor drainage;
- Areas of indigenous woodland in good condition; and
- Visually intrusive elements such as the 1960s brick Defence housing.

Appendix 2 - Cultural Heritage. This shows the succession of historic uses including:

- The north eastern boundary to Bungaree's farm;
- Early road and pathway patterns;
- The gun emplacements and associated facilities;
- Existing and demolished buildings of the World War I Hospital; and
- 30 Terminal facilities, such as the *land ship*.

Appendix 3 - *Environmental Considerations*. This shows:

- Areas of contamination including areas with a high nutrient level that require remediation;
- Bush fire protection zone;
- Areas that have a sense of spatial enclosure;
- Connection with adjacent areas of the Headland Park; and
- Vehicular access arrangements.

The design is also derived from the Trust's objectives to:

- Conserve the site's natural and cultural heritage;
- Provide for areas of quiet recreation;
- Educate and inform people about the special qualities of the place;
- Repair past damage to the land; and
- Minimise any adverse impacts on surrounding areas.

Figure 5 PARK DESIGN CONCEPT

The topography of the Middle Head and Georges Heights is characterised by a central ridgeline and this is used in the park design to generally limit buildings and vehicular access (apart from emergency access) to the western side of the ridge.

The layout and form of the park interprets the succession of past occupations of the site - from Aboriginal use through to the various Military uses.

Significant elements of the site's existing built fabric are conserved and integrated into the park providing the opportunity for new community uses in a manner that is sympathetic to their heritage and character.

The visual and physical connection between these facilities and the succession of open vistas and framed views of the Harbour and the Tasman Sea are integral ingredients of the park design.

The design proposes the removal of large areas of paving and roadways and the re-contouring of ground levels. It also proposes the early removal of the two northern most brick cottages.

This will reveal the underlying terrain and integrate the now fragmented areas of bushland.

Landscape Character
The landscape character of the park is a balance between bushland and “institutional” parkland.

Selected areas of natural sandstone are exposed as outcrops and existing grassland is extended to reduce the extent of hard impermeable surfaces and increase the opportunities for passive recreational and spectacular scenic views – see *Figure 6.*

The existing bushland is conserved and extended where possible. However, adjacent to the existing brick houses the ground cover will be limited to approximately 40%. This is to comply with the recommendations relating to the bushfire protection zone. On the western side of the 1877 B42 Battery the bushland will be expanded. This will provide shade for the park and help conceal a safety fence required to isolate hazards within the fortifications – see *Figure 7.*

Along the ridge, grassed landforms are proposed to screen adjacent housing, gain and direct views and to redirect stormwater to a system of grassed swales connected to detention areas. These grassed landforms are evocative of the defensive earthworks known as merlons that were traditionally placed around gun batteries.

The largest of the detention areas is located on the site of the former Parade Ground adjacent to the *Landship*. This will trap nutrients and control the dispersal of stormwater into the down slope bushland areas.

New planting will be indigenous flora, adapted to the new park function.

It is proposed that existing vegetation, that has cultural value, will be conserved until its useful life is complete. It will then be replaced with indigenous flora with an emphasis on the use of *Angophora costata* (Sydney Red Gum).

It is also proposed to extend the Angophora tree planting along both sides of Middle Head Road and to under-plant with scrub species. This will reduce the visual impact of the suburban character in this section of Middle Head Road.

Access and Circulation
One of the guiding principles for the Headland Park is to maintain the low intensity of activity by providing dispersed entry points and small parking areas so as to not overwhelm the quiet ambience of the Headland Park nor the amenity of the adjacent residential neighbourhood.

The park concept gives priority to pedestrian access with a multiplicity of entry and exit points which link facilities within the larger Headland Park including the existing walking track from Chowder Bay. The network of paths is designed to provide easy grade access to all of the main places and features and provide a varied sequence of views along the way. As a general rule cycling will not be allowed on the walking paths. - see *Appendix 4*.

Vehicular access is located along the original entrance road to the 1877 B42 Battery. It provides a dramatic sense of arrival as the entrance rises towards the ridge, gradually revealing views of the ocean, outer heads and the harbour.

The entrance roadway is to be a shared pedestrian-vehicle zone as far as the proposed carpark. Beyond this point it will be re-aligned, providing pedestrian only access to the entry of the B42 Battery. The existing loop road will be removed to help integrate the grassed slopes of the parkland.

A small carpark is centrally located within the footprint area of former Barrack, Ward, and Mess buildings. The carpark is well located to allow easy access for both able and disabled visitors to the whole park. This includes the grassed open space, park pavilions, the interpretative complex of buildings, terraces associated with the *Landship* and the village buildings running parallel to Middle Head Road.

Additional parking and access will be available in other areas within the Headland Park.

Access may be shared with other park uses, particularly if there is a need for special bus access with acceptable gradients for pedestrians.

Toilet facilities are proposed in a new building located on the site of former buildings within the village group of buildings near the main entrance.

A separate vehicular access for service vehicles is allowed for, if required.

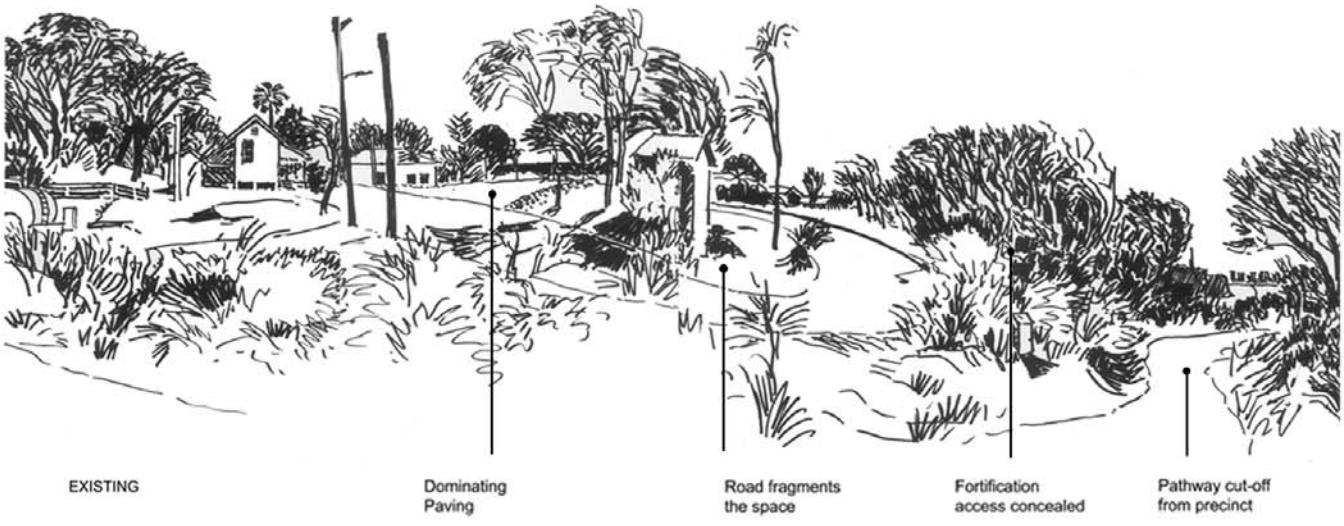
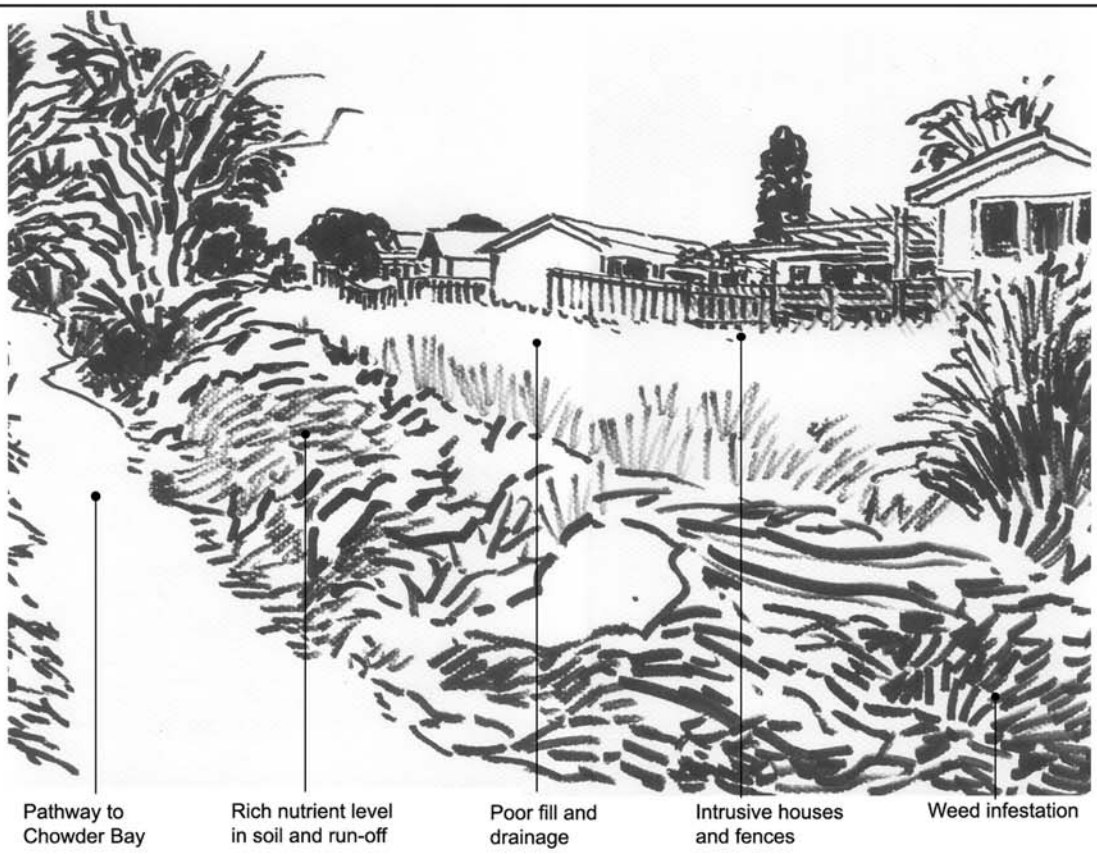
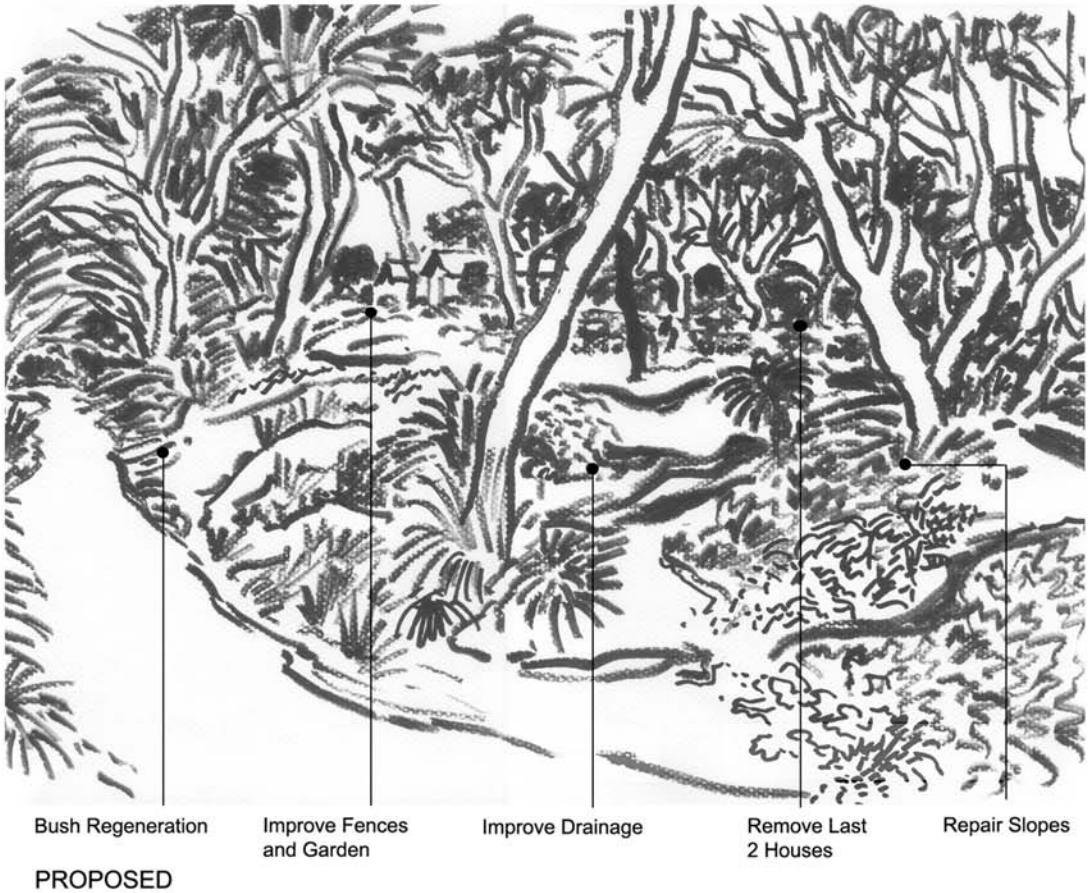


Fig. 6 VIEW OF PROPOSED HEADLAND PARK AT LOWER GEORGES HEIGHTS



EXISTING - View towards the Middle Head Road end of the walking track



PROPOSED

Fig. 7 VIEW OF LAST TWO HOUSES ALONG MIDDLE HEAD ROAD

Criteria for the Adaptive Re-Use of Buildings

The Lower Georges Heights precinct contains three main groups of buildings:

- Those used by 30 Terminal Squadron;
- The seven brick veneer cottages on the eastern side of Middle Head Road; and
- The seven former Navy cottages on the western side of Middle Head Road.

In general, the buildings on the former 30 Terminal Squadron site are simple timber framed structures clad in either weatherboard or corrugated iron. All the buildings are small scale and utilitarian.

Most of these buildings are listed on the *Register of the National Estate* and this influences the changes that can be made to them and the types of uses that they can be put to.

Given the nature of the buildings, their heritage value and their location, the re-use of the buildings will need to be low-key uses that generate little traffic or noise and require minimal structural alterations.

The buildings adjacent to Middle Head Road include a number of sheds with limited services. These building are suitable for uses such as community classes, meeting rooms, small scale art and craft studios, storage and 'back of house' activities related to the management of the park.

The group of buildings fronting the road leading to the 1877 B42 Battery will have a more significant role in the interpretation of the Headland Park, the historic defence occupation and natural environment. The priority for these buildings will be uses that facilitate this interpretation. Suitable uses may be artists' or writers' workshops, artists in residence, community, history or environmental projects, meeting rooms, offices or kiosk. It is envisaged that any kiosk or refreshment type facility would be predominately providing a service to the passive recreation visitors and other site users. The uses indicated at the bottom of the following table are only examples that may be considered to fit these requirements and the criteria in the table.

The seven brick veneer cottages in Middle Head Road have no heritage value and are visually intrusive. To open up the views from Middle Head Road to the harbour it is proposed to demolish the two northern most cottages. However, the rental income from the remaining cottages is importance to the implementation of the Trust's plan and for the time being it is proposed to retain them for lease as residences. It is also proposed that the Trust will review the need to retain the cottages each four years and that as a consequence they may be demolished. In the meantime the cottages will be better integrated into the parkland by screening and the replacement of unsympathetic fencing.

The Trust's comprehensive plan requires the heritage importance of the former Navy cottages to be assessed. These Åmåls Sågverks Atktiebolag (ASA) prefabricated cottages were imported from Sweden and erected at Lower Georges Heights in either late 1951 or early 1952. Robertson and Hindmarsh Architects were engaged to undertake a heritage assessment of the cottages. This assessment has now been

completed and concluded that the cottages are culturally significant as rare survivors of their type. However, the Trust believes the value of the area occupied by the cottages as a regenerated bushland entrance to the Headland Park is much greater than the heritage significance of the cottages. Accordingly it is proposed that the cottages are

removed and the area is revegetated using indigenous species. Removal of the cottages will follow consideration under s.30 of the *Australian Heritage Commission Act.*

Future uses will need to satisfy the criteria identified in the following table. These criteria have been informed by the conservation, traffic, transport and environmental studies undertaken during the preparation of this plan. Services constraints and BCA considerations are also included.

Building Uses Criteria	Artillery Store (Building 1)	All Ranks Club (Building 3)	30 Terminal Squadron HQ (Building 4)	Rigging Shed (Building 5)	Master Gunner's House & laundry (Buildings 6&7)	Gardeners' Cottage (Building 8)
Heritage Constraints / Opportunities						
Compliance with Conservation Management Plan	✔	✔	✔		✔	✔
Building to be retained	✔	✔	✔			✔
Repainting of exterior of building required	✔	✔	✔		✔	
Retain original built form	✔	✔	✔		✔	✔
Demolition or removal of elements required	Remove tree on South side of building	Demolish Beer garden (retain mural)	Remove amenities to return to original layout. Remove verandah sheeting	Remove following consideration under s.30 of AHC Act.		
Replacement of elements required	Asbestos roofing (with metal roof)				Replace fence	
Repair / new work required	New sliding doors and fire egress					Weatherboards / chimney
Special building features to be retained	Original sliding doors	Original front steps and entrance porch	Original layout		All out buildings	
Public Domain and Site Access Considerations						
Provision of public access required	✔					
Provision of public access preferred if possible			✔			
Provision of disabled access preferred if possible	✔	✔	To western end of verandah			
Possible public use facility						
Amenity and Environmental Considerations						
Activities with limited parking requirements	✔	✔	✔		Off street parking provided	✔
Low traffic generating activity	✔	✔	✔		✔	✔
Low noise generating activity	✔	✔	✔		✔	✔
Trading Hours may need to be restricted	✔	✔	✔			✔
Services and BCA considerations						
Safety requirements			Modify handrails and verandah balustrades			
Services currently provided		Water, sewer	Water, sewer		Water, sewer, power, phone	
Services required	✔	✔	✔		✔	✔
Examples of possible Building Uses	Workshop, storage, studio space, plant nursery	Café, kiosk, meeting room, interpretive building	Interpretive building, community classrooms, studios		Residential, bed and breakfast, artist in residence	Information booth, office, interpretive point, studio

Building Uses Criteria	30 Terminal Squadron - Orderly Room (Building 13)	30 Terminal – PABX (Building 14)	30 Terminal - Timber Store (Building 15)	30 Terminal - 72TP Store (Building 16)	30 Terminal - 72 TP Store (Building 17)	Rigging Shed (Building 18)
Heritage Constraints / Opportunities						
Compliance with Conservation Management Plan	✔		✔	✔	✔	✔
Building to be retained	✔	If in use as PABX only	✔	✔	✔	✔
Repainting of exterior of building required	✔		✔	✔	✔	✔
Retain original built form	✔		✔	✔	✔	✔
Demolition or removal of elements required		Aesthetically intrusive building to be removed once alternative PABX facilities are provided.				
Replacement of elements required						
Repair / new work required			Fire protection to North wall	Fire protection to South wall		
Special building features to be retained	Original main steps and porch					
Public Domain and Site Access Considerations						
Provision of public access required						
Provision of public access preferred if possible	✔		✔	✔		
Provision of disabled access preferred if possible	To eastern door		✔	✔	To at least one of the rooms to remain interconnected	
Possible public use facility						
Amenity and Environmental Considerations						
Activities with limited parking requirements	✔		✔	✔	✔	✔
Low traffic generating activity	✔		✔	✔	✔	✔
Low noise generating activity	✔		✔	✔	✔	✔
Trading Hours may need to be restricted	✔		✔	✔	✔	✔
Services and BCA considerations						
Safety requirements						
Services currently provided						
Services required	✔		Additional fire safety measures	✔	Additional fire safety measures	✔
Examples of possible Building Uses	Offices, studios, exhibition area, Meeting room, information booth.	PABX room	Workshop, storage, studio space, plant nursery	Workshop, storage, studio space, plant nursery	Workshop, storage, studio space	Workshop, storage, studio space

Building Uses Criteria	Landship	Defence Housing (Middle Head Road) (Buildings 18-25)	Former Navy Cottages (Buildings 20062-20068)	30 Terminal Squadron - B42 Gun Battery	Pumphouse
Heritage Constraints / Opportunities					
Compliance with Conservation Management Plan	✔			✔	
Building to be retained	✔	In short term		✔	
Repainting of exterior of building required					
Retain original built form	✔			Required safety structures should not be intrusive	
Demolition or removal of elements required		Two in short term. Others longer term	Remove cottage following s.30 of AHC Act		Aesthetically intrusive building to be removed if possible once alternative fire fighting services are provided.
Replacement of elements required	Examine feasibility of recreating crane and other mechanisms on deck level				
Repair / new work required	Timber Hatch / hand rails	Sewerage lines		Prevention of water entering battery and ensure water that enters is drained away quickly	
Special building features to be retained				Conserve remaining fabric	
Public Domain and Site Access Considerations					
Provision of public access required	✔			Restricted to tours	
Provision of disabled access preferred if possible	✔				
Possible public use facility	✔			Restricted tours	
Amenity and Environmental Considerations					
Activities with limited parking requirements	✔	Off street parking provided		✔	
Low traffic generating activity	✔	✔		✔	
Low noise generating activity	✔	✔		✔	
Trading Hours may need to be restricted	✔			✔	
Environmental Considerations		Bushfire Asset Protection Zone		Protection of Common Bent Winged Bat access and habitat	
Services and BCA considerations					
Safety requirements	Modify Hand rail around deck level.			Safety fences and barriers in accordance with BCA	
Other BCA Considerations	Light and ventilation depending on building use				
Services currently provided	Power	Power, phone, water, sewer, stormwater		Nil connected	Water
Services required	Power, phone	✔		Power	
Examples of possible Building Uses	Public domain, interpretation point	Residential		Organised interpretive tours	As existing until removed

Water Sensitive Urban Design

The principles of Water Sensitive Urban Design (WSUD) are to be incorporated into the redevelopment of the Lower Georges Heights precinct in order to achieve water quality, water conservation and ecological objectives. Effective integration of these objectives will require the application of concepts on a catchment wide basis. The key concepts to be applied are:

- *Source controls* – removal or mitigation of the pollutant source, and on-site rainwater use;
- *Conveyance controls* – applied during the conveyance of stormwater to bushland, streets or channels;
- *Discharge controls* – applied at the point where water leaves the site or the catchment;
- *Natural systems planning* – applied to the entire area. Natural systems planning recognises essential hydrological and ecological functions of watercourses, wetlands and native vegetation.

A number of measures are available to achieve the stormwater management objectives by applying these concepts in the redevelopment of the Lower Georges Heights precinct.

Concept	Issue	Application at Lower Georges Heights
Source controls	Sewer overflows and discharges	The identification, repair and removal of the causes of sewage contamination in the northeast corner of the site.
	Street sweeping and landscaped maintenance	Roads and organic matter are a source of many pollutants. Sweeping and maintenance will be part of the on-going management of the site.
	Rainwater tanks	The use of rainwater for toilet flushing, irrigation etc will reduce water use and stormwater flow peaks.
	Rainwater detention gardens	A detention area will be created on the site of the former parade ground adjacent to the landship. This will control the dispersal of nutrients downslope.
Conveyance controls	Gross pollutant traps	Gross pollutant traps will be used to minimise surface water impacts on the site.
	Water sensitive road design	The installation or improvement of buffer strips and bioretention grass

		swales, connected to detention areas. These measures will reduce run-off velocities and reduce contaminant transport to receiving waters.
Discharge controls	Energy dissipaters at pipe outlets	The installation of energy dissipaters at pipe outlets, particularly along the foreshore to reduce discharge velocities.
Natural systems planning	Weed removal and revegetation with native species	This will improve water retention and site amenity.
	Phytophthora cinnamomi	Reduce nutrient impact to bushland areas. Reduce ponding and concentrated stormwater flows.
	Dieback areas	Regenerate to reduce erosion, water retention and amenity. To be carried out in parallel with a strategy for controlling *Phytophthora cinnamomi*.

Remediation

The protection of human health is of primary concern to the Trust in determining the requirements for remediation and management of contamination. An additional important environmental outcome is to reduce the potential for offsite migration and environmental impact of site contamination. This includes nutrient or other pollutant transported in surface water.

In respect of these matters it is proposed that the remediation requirements for the protection of human health must satisfy the following land use objectives:

- Residential - for the former Master Gunner's residence and the residences in Middle Head Road; and
- Park and Recreational Open Space, including community and similar uses - for the former 30 Terminal operational area

The following objectives for protection of the environment have also been identified:

- Reduction in contaminant load in surface water (including nutrients) that may impact the bushland of the neighbouring Sydney Harbour National Park;
- Reduction in the contaminant load in surface water that may impact the environmental values of the Sydney Harbour receiving waters (both this and the above objective are also considered in the management of stormwater and run-off); and
- Management of contamination to protect site biodiversity values.

Statutory and community accepted standards relevant to these land use categories will be applied, including those defined in the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM) 1999.

The remediation and management actions and requirements that have been identified are:

Park and Open Space

Hazardous Materials	Identified hazardous materials will be removed or appropriately managed to remove the potential for continued release of contamination to the environment. This is particularly important for asbestos materials and lead based paint systems that are in a poor condition.
Petroleum Hydrocarbons	The extent of soils affected by petroleum hydrocarbons is a relatively small. However, they have an aesthetic and environmental impact and are to be remediated following the NSW EPA, *Guidelines for Assessing Service Station Sites* (1994). Contaminated soils associated with the former washbay, fuel tank and localised and visually identifiable hydrocarbon staining will be excavated and remediated to reduce contaminant levels for offsite disposal. The threshold criteria for sensitive landuse from the above guidelines will be applied as remediation criteria. The approach to contamination within the machine store shed (building 1) will be to clean off hydrocarbon staining from the internal concrete slab, and repair this slab as required to provide a continuous surface.
Polyaromatic Hydrocarbons	In some locations where elevated PAHs were recorded, ash, coke or slag are visually identifiable in fill. Where PAH contamination can be visually identified as discrete (discontinuous) contamination at the surface, this will be excavated for appropriate containment on-site. Sampling and analysis may also be used to delineate lateral extent for excavation. The objective for this exercise will be to remove this material from the surface. Where rock is not exposed by this work, sampling and analysis of the underlying soils will be carried out for validation. Subject to final volume and risk assessment, excavated contaminated soil may be retained on site, appropriately capped or sealed under pavement. However, the approach to capping materials on-site will be to appropriately consolidate materials in a localised area, to aid subsequent monitoring and management.

Lead	The area of lead contamination in fill to the south east of the B42 battery has been largely capped by clean crushed sandstone placed for the construction of the walking track through this area. However, there are areas of exposed fill remaining along the top of the escarpment that may be eroding. These areas are to be stabilised by installing jute matting (or similar) system and vegetation. No specific actions have been identified for isolated lead levels in the remainder of the parkland area, apart from management as detailed below.
Asbestos	Areas of soil containing asbestos cement fragments will be excavated and disposed as part of the asbestos removal works. Some further sampling for free asbestos fibres in soils surrounding buildings with AC sheet roofs may be carried out to identify further soils warranting removal.
<u>Residential</u>	
The former Master Gunners' Residence	Lead (Pb) contamination in the garden beds and lawn areas will be excavated. The objective will be for residual soils to meet the Health Investigation Level applicable for standard residential use (HIL-A, as defined in the NEPM), on an appropriate statistical basis. Excavated areas are to be reinstated with clean validated material. Subject to final volume and risk assessment, excavated contaminated soil may be retained in the park area, appropriately capped or sealed under pavement. Hazardous materials, particularly the asbestos panel fence and deteriorating lead based paint systems will also be addressed. All works in this area shall be conducted in accordance with environmental management protocols as detailed below.
The seven defence residences	No remedial requirements have been identified for this area, apart from rehabilitation of the sewer system to correct sewage overflow or discharge. This area is deemed to meet the standards appropriate for continued residential use.
Former Navy cottages	Areas of soil containing asbestos cement fragments will be excavated and disposed as part of the asbestos removal works. No requirements for remediation of PCBs in soils in this area have been identified at this stage. However, as a minimum surface shall be stabilised by vegetation or other mechanisms to limit erosion. This area shall also be subject to environmental management protocols as detailed below.

Management Requirements	
Remediation Action Plan	All works are to be conducted according to a Remediation Action Plan (RAP), which will include appropriate environmental management requirements for construction. These will include protocols for landscaping and civil works, requirements for addressing the risk of spread of Phytophthora, management of contaminated materials, importation of clean fill and site validation.
Environmental Management Plan	An Environmental Management Plan (EMP) will be prepared and implemented for the site that addresses requirements for retention and management of contaminated soils, site maintenance, flora and fauna management, phytophthora and monitoring.

Phytophthora cinnamomi

The Trust is developing and implementing a Phytophthora Management Strategy in cooperation with neighbouring managers, as part of an inter-agency Phytophthora Working Group.

Key components of the Trust's strategy include:

Risk of spread or introduction by -	*Management Strategy*
Bush regeneration activities	Implementation of best practice hygiene procedures for bush regeneration or related activities; Soil and plant materials to be sourced from suppliers accredited under the Nursery Industry Accreditation Scheme, Australia (NIASA).
Water flows, and increased surface water nutrients	Introduce stormwater measures so that flows are remediated to approach the natural condition in bushland areas, or direct flows away from bushland; Reduce nutrient impact to bushland areas, by remediating nutrient and contaminant sources or nutrient removal.
Walkers	Introduction of a phytophthora community education program;

	Walking track design that limits the potential for spread by walkers, including: – Integrated drainage controls; – Clean crushed sandstone capping; – Mulched edges; Confine walkers to tracks in bushland areas.
Construction/ earthworks/ landscaping activities	Implement hygiene protocols for personnel, machinery and tools; Soil and plant materials to be sourced from Phytophthora-free certified suppliers, or low risk sources; Use only well composted soil free mulch.

Implementation

The development of Stage 1 of the Headland Park at Lower Georges Heights is considered to be one of the highest priorities for the Trust. It is envisaged that the implementation of Stage 1 will provide maximum community benefit and increased public access to Lower Georges Heights and surrounding Trust lands, as well as providing a number of significant cultural heritage benefits and environmental improvements. The sites visual prominence and accessibility will ensure the broader community can experience the park and gain a greater understanding of the place.

The implementation of this Management Plan will take place over a number of years and the Trust has the discretion as to when and what work is carried out. Priorities for implementation of the Headland Park project have been determined in a manner consistent with those identified in the Trust's Comprehensive Plan. In particular the project benefits of early remediation and rehabilitation of the area to prevent further deterioration of lands and buildings will be the highest priority. Making the site available to the public as quickly as possible is also a significant factor in the determination of priority projects. Early occupation of the site can also help to reduce costs to the Trust for maintenance and security.

The following table summarises the outcomes to be achieved through the implementation of the Headland Park Stage 1 project. The table identifies individual elements of the project and prioritises those elements in a manner consistent with those priorities identified in the Plan. The relevant sections of the Management Plan and supporting studies which detail each element are also included in the table as a quick reference point.

Implementation and Action Plan

	Outcomes	Elements	Priority	Relevant Management Plan or Supporting Study (in addition to the Park Design Concept)
Public Domain (East of Middle Head Road)	Increased Public access - pedestrian links, facilities for cyclists, disabled access, limited parking	▪ Pedestrian links	High	▪ Traffic Management Plan ▪ Transport Management Plan ▪ Traffic Management Plan ▪ Transport Management Plan
		▪ Links to cycle network and bike storage facilities	High	▪ Mosman Council Bike Plan
		▪ Encourage improvement of public transport services (possibly through subsidisation)	Medium / High	▪ Transport Management Plan
		▪ Provision of clear and accurate information on available public transport services	High	▪ Transport Management Plan ▪ Mosman Council Bike Plan
		▪ Clear and safe pedestrian and cycle links both internal to the site and to and from site	High	▪ Traffic Management Plan ▪ Transport Management Plan
		▪ Treatment of road and intersection at entry point to site	Low	▪ Traffic Management Plan
		▪ Identification and provision of suitable area for bus let down and layover (temporary)	Medium / High	▪ Traffic Management Plan
	Improved Public Amenity and providing parkland	▪ Removal of buildings and structures identified for removal	High	▪ Hazardous Materials Survey
		▪ Removal of excess roadway and paved areas and extension of grassland	High	
		▪ Bush regeneration and screen planting	High	
		▪ Provision and / or upgrade of on site services for public domain areas	High	▪ Contamination Report ▪ Site Services Survey ▪ BCA Audit Report
		▪ Provision of public facilities such as toilets, parking, disabled parking, lighting, picnic areas	High	▪ Conservation Management Plan

	Outcomes	Elements	Priority	Relevant Management Plan or Supporting Study (in addition to the Park Design Concept)
Public Domain (East of Middle Head Road) continued…	Improved Environmental Conditions	▪ Control run off from developed areas by on-site detention	High	▪ Site and Catchment survey
		▪ Manage bushland around housing to comply with asset protection from bushfire threats	High	▪ Review of Bushfire risk
		▪ Weed removal	High	▪ Site and Catchment Survey
		▪ Replanting wetland	High	▪ Site and Catchment Survey ▪ Flora Study
		▪ Conservation of existing bushland and extension of bushland where possible	High	▪ Site and Catchment Investigation
		▪ Remediation of contaminated areas and hazardous materials in public areas in accordance with a Remediation Action Plan (reviewed by Auditor)	High	▪ Contamination Report ▪ Hazardous Materials Survey
	Works to enable use / leasing of buildings - services	▪ Provision and / or upgrade of on site services for building uses	High	▪ Site services survey ▪ BCA Audit Report
		▪ Repair and conserve building fabric	High	▪ Conservation Management Plan
Construction or conversion of existing buildings for interpretive use eg. Landship, Pavilion	Improved interpretation of sites natural and cultural heritage	▪ Preparation and presentation of interpretive material and signage in public domain areas including pavilion structures, car park etc.	Medium	▪ Conservation Management Plan
		▪ Landscape improvements that respond to and convey the sites natural and cultural heritage	High	▪ Conservation Management Plan
		▪ 1877 Battery Interpretation	Medium	▪ Conservation Management Plan
		▪ Interpretive complex of buildings and terraces associated with the Landship structure	High	▪ Conservation Management Plan
		▪ 1871 Battery (Arcs of Fire) interpretation	Medium	▪ Conservation Management Plan
		▪ Interpretation of merlons	Low	▪ Conservation Management Plan
		▪ Interpret North-Eastern corner of former Bungaree Farm and Aboriginal Occupation	Low	▪ Conservation Management Plan

	Outcomes	Elements	Priority	Relevant Management Plan or Supporting Study (in addition to the Park Design Concept)
Conservation of Heritage Buildings and Gun Emplacements	Conservation and adaptive reuse of Heritage structures and features	▪ Master Gunners Cottage - conserve and adapt for continued residential use	High	▪ Conservation Management Plan
		▪ Original access road entry to Battery	Medium	▪ Conservation Management Plan
		▪ WW1 Military Hospital complex	High	▪ Conservation Management Plan
		▪ Landship and surrounding buildings	Medium	▪ Conservation Management Plan
		▪ 1871 (A83) Battery Gun Emplacement	Medium	▪ Conservation Management Plan
		▪ Conserve and adapt 1877 Battery for public access (to be integrated with bushland)	High	▪ Conservation Management Plan ▪
Public Domain (West of Middle Head Road)	Increased public access - pedestrian	▪ Pedestrian links to Trust walking track including pedestrian crossing area	High	▪ Transport Management Plan ▪ Traffic Management Plan
		▪ New footpaths along Middle Head Road (up to Cobbittee Street)	Medium	▪ Traffic Management Plan
		▪ Improved public transport services and links	Medium	▪ Transport Management Plan
	Improved public amenity	▪ Removal of buildings and structures identified for removal.	Medium	▪ Conservation Management Plan ▪ Hazardous Materials Survey
		▪ Extension of Angophora tree planting along Middle Head Road to extend bushland character and reduce visual impact of suburban landscape	High	
		▪ Landscape and screening between park and adjoining residential areas (weed removal and planting)	Medium	
	Conservation and Adaptive reuse of buildings	▪ Provision and / or upgrade of on site services for building uses	High	▪ Site Services Survey ▪ BCA Audit Report

	Outcomes	Elements	Priority	Relevant Management Plan or Supporting Study (in addition to the Park Design Concept)
Public Domain (West of Middle Head Road) Continued…	Improved Environmental conditions	▪ Improved drainage and stormwater quality ▪ Proposed new planting to utilise indigenous flora adapting it to the new park function ▪ Remediation of contaminated areas and hazardous materials in accordance with a Remediation Action Plan (reviewed by Auditor) ▪ Introduce management controls to minimise the risk of the spread of Phytophthora	High Medium / Low Medium High	▪ Site and Catchment Survey ▪ Flora Survey ▪ Hazardous Materials Survey ▪ Contamination Survey ▪ Threat Abatement Plan

Related Studies

Australian Museum Business Services, 2003, Aboriginal Heritage Survey of Middle Head, Georges Heights and Chowder Bay.

Conacher Travers Environmental Consultants, 2003, Flora Study of Sydney Harbour Federation Trust Land and National Parks and Wildlife Service Land at Middle Head – Georges Heights.

Conacher Travers Environmental Consultants, 2003, Acacia Terminalis ssp terminalis Threaten Species Management Plan at Middle Head – Georges Heights

Conacher Travers Environmental Consultants, 2001, Comprehensive Fauna Survey of Interim Sydney Harbour Federation Trust Land and National Parks and Department of Defence land at – Georges Heights and Middle Head.

Design 5 Architects, 1996, Conservation Management Plan - A83, A84, B42 & C9a Batteries and Tunnels, Georges Heights.

Environmental Resources Management Australia, 2003, 30 Terminal Site and Catchment Investigation.

Environmental Resources Management Australia, 2003, Occurrence and Distribution of Phytophthora cinnamomi at 30 Terminal, Georges Heights.

Geospatial Integrity, 2002, Interim Review of Fire Risk.

Chris Hallam and Associates Pty Ltd, July 2003, Transport Planning Assessment of Preliminary Concept Plan for Headland Park, Stage 1 – Lower Georges Heights.

Chris Hallam and Associates Pty Ltd, June 2003, Transport Planning Assessment of Preliminary Middle Head 30 Terminal Gateway Project.

Hibbs and Associates, 2002, Hazardous Materials Survey, 30 Terminal Regiment, Georges Heights.

Maunsell Australia Pty Ltd, 2003, Transport Management Plan for Middle Head – Georges Heights and Chowder Bay.

PPK Environment and Infrastructure, 1999, Final Draft Stage 1 Contamination Assessment and Geotechnical Study, Defence Sites at Middle Head, Georges Heights, Chowder Bay and Mosman;

PPK Environment and Infrastructure, 2001, Final Draft Stage 2 Contamination Assessment and Geotechnical Study, Defence Sites at Middle Head, Georges Heights, Chowder Bay and Mosman;

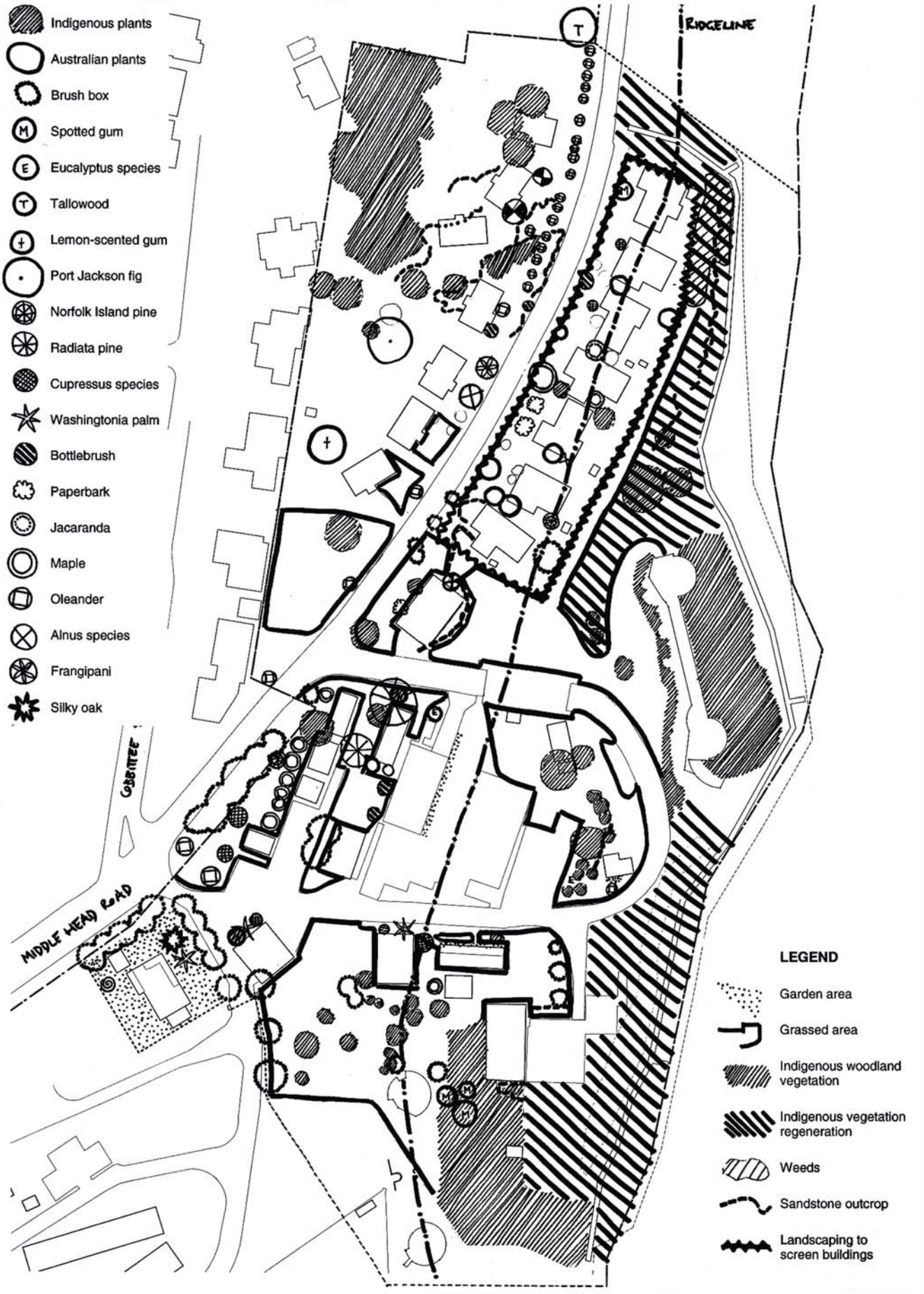
PPK Environment and Infrastructure, 2001, Summary Report, Stage 2 Contamination Assessment and Geotechnical Study, Middle Head, Georges Heights, Chowder Bay and Mosman Defence Sites, PPK Environment & Infrastructure Pty Ltd, May 2001;
PPK Environment and Infrastructure, 2001, Site Services Survey – Middle Head.

Robertson and Hindmarsh Architects, 2003, Conservation Management Plan for 30 Terminal and HQ Training Command.

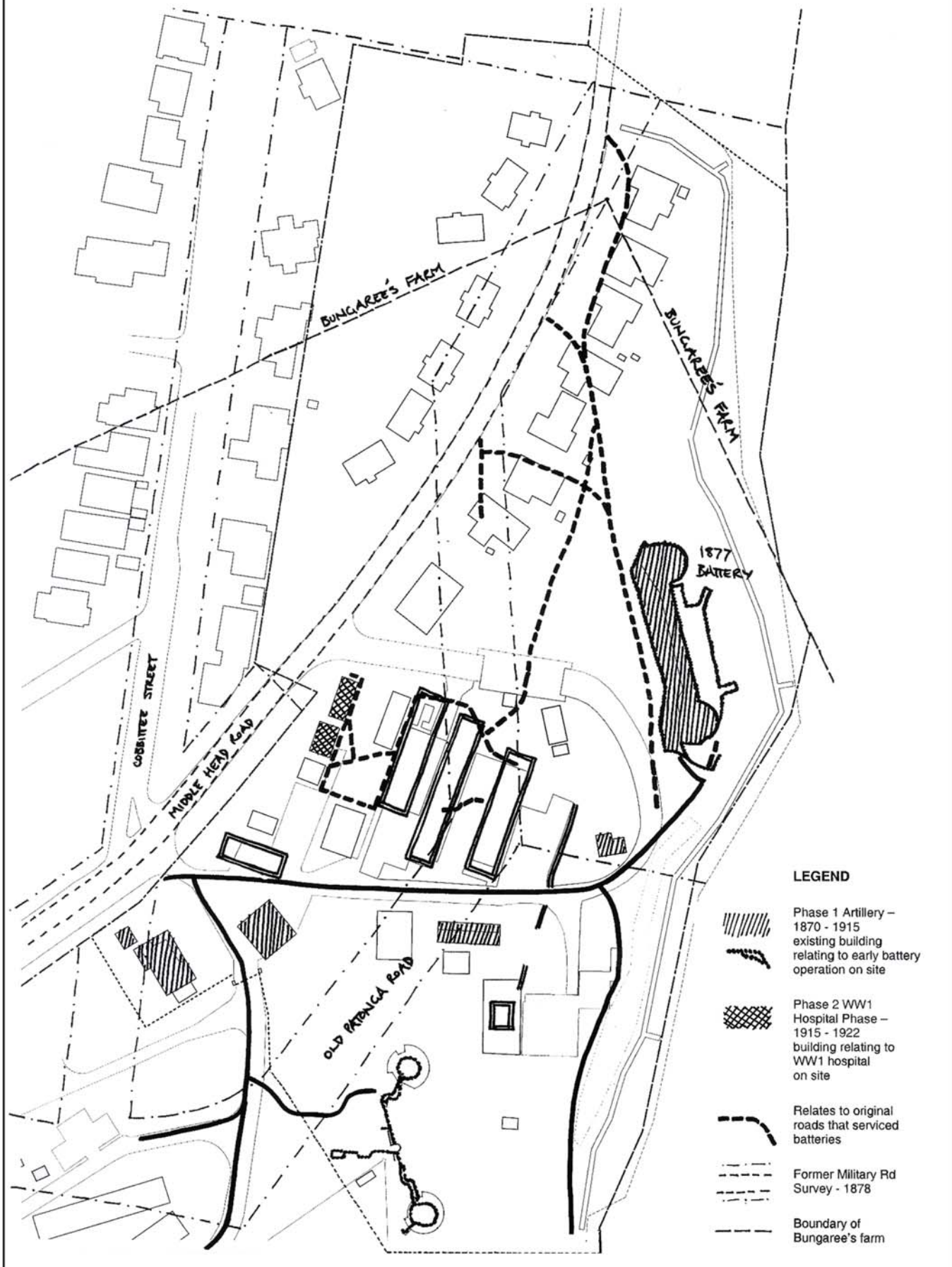
Robertson and Hindmarsh Architects, 2003, Heritage Assessment of the Åmåls Sågverks Atktiebolag prefabricated Naval Cottages.

Trevor R Howse & Associates Pty Ltd, 2003, BCA Audit Report regarding Lower (30 Terminal) and Upper (HQ Training Command) Georges Heights, Mosman.

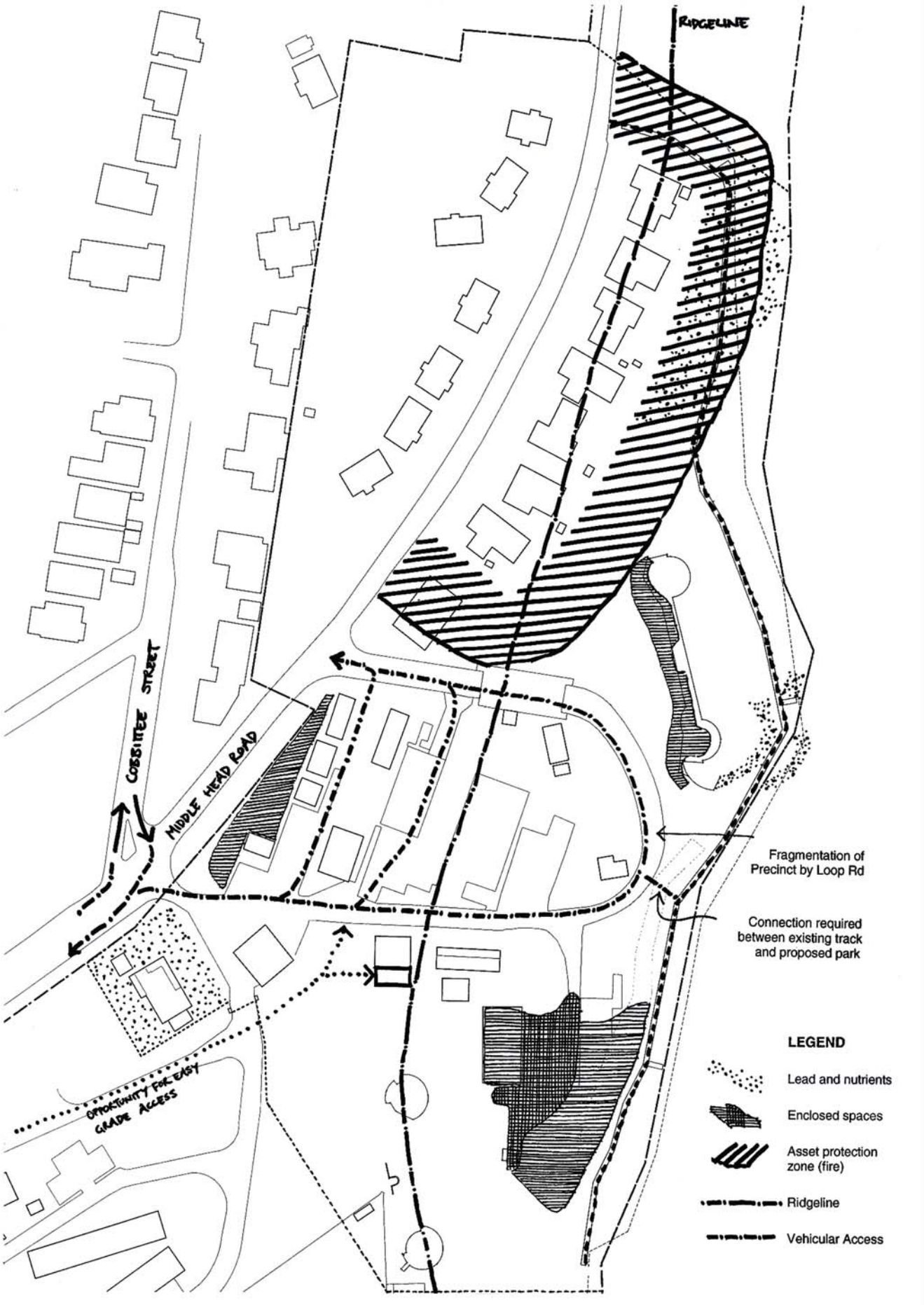
APPENDICES



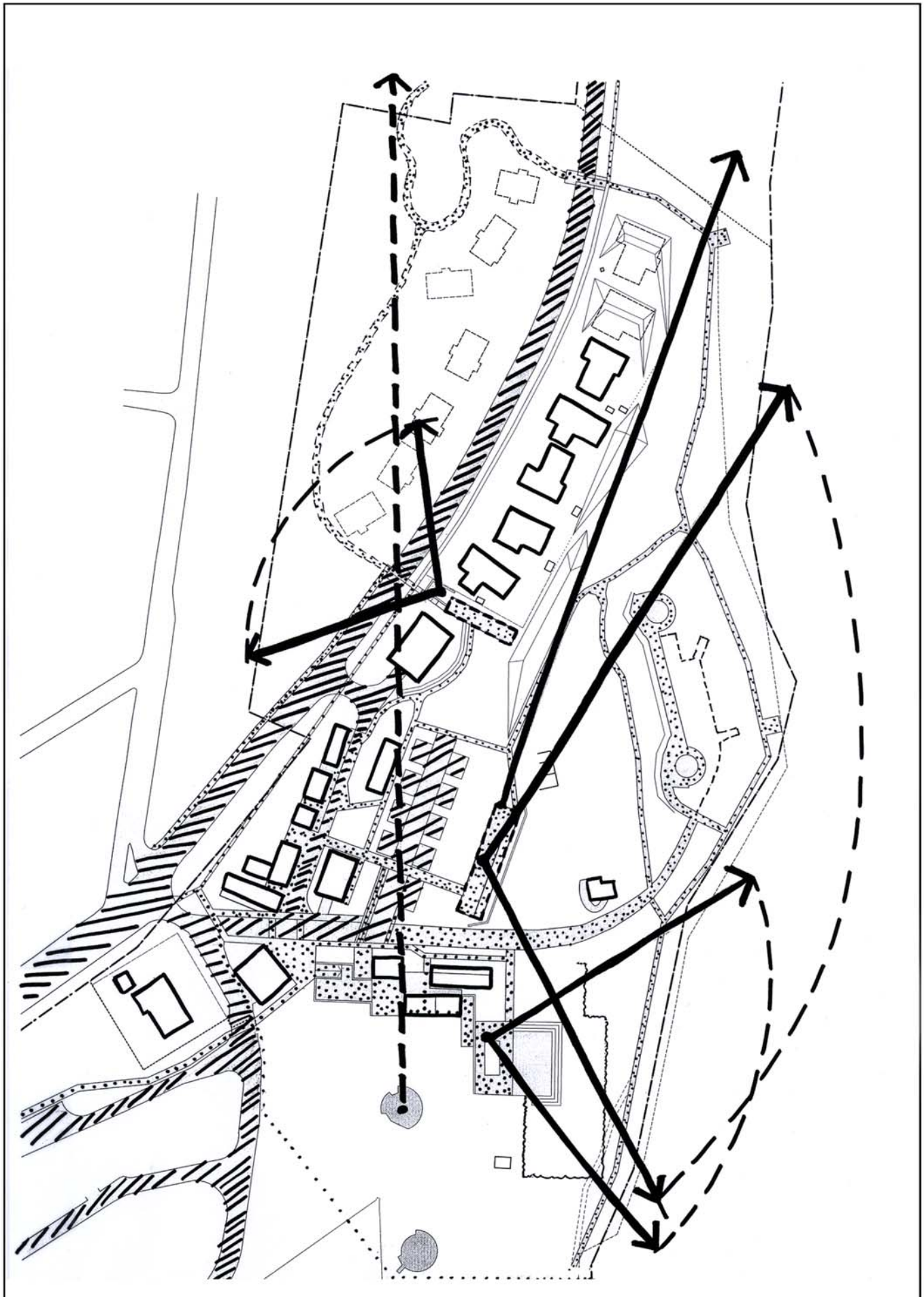
Appendix 1 EXISTING CONDITION AND LANDSCAPE MAPPING



Appendix 2 CULTURAL HERITAGE



Appendix 3 ENVIRONMENTAL CONSIDERATIONS



Appendix 4 ACCESS AND CIRCULATION