Introduction

Glebe Island and White Bay form part of the area covered by State Regional Environmental Plan 26 (SREP 26). The State Government is committed to Sydney Harbour continuing to be a working harbour. Under the provisions of the SREP the site is zoned for “Port and Employment” uses. SREP 26 provides that development consent for development in the Glebe Island and White Bay Port Area is subject to a Master Plan adopted by the Minister for Urban Affairs and Planning.

The Glebe Island and White Bay Master Plan will control and direct the future development of the Port facilities. The consent authority must take the Master Plan into consideration when determining a development application.

The Master Plan requires a Ports Improvement Program to be established. The Ports Improvement Program includes guidelines that will enhance the appearance of the port through landscaping, signage and selected colour schemes and provide standards against which development will be assessed.

This document is divided into two parts:

- Part A Master Plan
- Part B Ports Improvement Program

Each part is an independent document. Future development needs to consider both parts.

In order to provide a comprehensive set of planning instruments relating to the Glebe Island and White Bay Master plan area, a copy of State Environmental Planning Policy 61 is attached. This provides a simpler approvals process for routine proposals and clarifies the extent of exempt and complying development on port land.

Letters from the Department of Urban Affairs and Planning indicating adoption of the Master Plan, approval of the Port Improvement Program and gazettal of SEPP 61 have also been inserted in front of each relevant part.
Dear Mr Martin

Re: GLEBE ISLAND & WHITE BAY MASTER PLAN

The Minister for Urban Affairs and Planning has asked me to advise you that on 23 May 2000, he adopted the Master Plan for Glebe Island and White Bay, subject to a number of variations. As you would be aware, a minor change has been made to what is now dot point 5 of Variation No.20. This has been done under Variation No.20 which allows minor changes and editing. The Instrument of Adoption and final edited Schedule of Variations is attached.

Assessment and review of the draft Master Plan following exhibition and consideration of submissions has provided the basis for the variations. The variations introduce additional measures for noise, advertising, ESD practices, container stacking and public consultation procedures. Further studies are also required in relation to preparation of detailed guidelines for advertising, landscaping and the Ports Improvement Program, to be submitted for the Director General’s approval within six months of adoption of the Master Plan.

I would appreciate if you could arrange for the exhibited Master Plan to be edited to reflect the variations and the Master Plan made ready for publishing in its final format.

I also wish to take the opportunity of congratulating Sydney Ports Corporation for its efforts in preparing the Master Plan for Glebe Island and White Bay. This office looks forward to working with Sydney Ports Corporation in its implementation.

Should you have any queries, please do not hesitate to contact me on 9338 9320, or Una Williamson on 9338 9329.

Yours sincerely,

Robert Black
Acting Director
Sydney Region Central

Department of Urban Affairs and Planning

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PYRMONT NSW 2009

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Planning for a better environment, jobs and thriving communities
Contents

1.0 Introduction

1.1 BACKGROUND
1.2 HISTORY
1.3 STRATEGIC IMPORTANCE OF THE PORT
1.4 THE SITE
1.5 CONSULTATION
1.6 THE ROLE OF THE MASTER PLAN
1.7 PLANNING CONTEXT

2.0 Master Plan

2.1 VISION
2.2 LAND USE
2.3 ROAD AND RAIL INFRASTRUCTURE
   2.3.1 Roads
   2.3.2 Rail
2.4 VIEWS, BUILDING HEIGHTS AND BUILDING ZONES
2.5 BUILT QUALITY
2.6 ADVERTISING
   2.6.1 Leaseholder Signage
   2.6.2 Third Party Advertising
2.7 LANDSCAPING
2.8 PEDESTRIAN AND CYCLE LINKS
2.9 HERITAGE CONSERVATION
2.10 ENVIRONMENT
   2.10.1 Marine Environment and Stormwater
   2.10.2 Noise
   2.10.3 Light Spill
   2.10.4 Risk
   2.10.5 ESD Principles

2.11 PUBLIC CONSULTATION PROCEDURES
   2.11.1 When Development Application required
   2.11.2 When Development Application is not required but an EIS is required
   2.11.3 When Development Application and an EIS are not required
List of Figures

Figure 1: Vision for the Port in 1913
Figure 2: Plan Area
Figure 3: White Bay/Glebe Island and surrounding areas
Figure 4: Secure Zone (Customs Act)
Figure 5: Land Use Zoning: “Port and Employment Zone”
Figure 6: Proposed Road/Rail Corridor
Figure 7: View Corridors/Street Vistas
Figure 8: Landmarks
Figure 9: View Panoramas
Figure 10: Maximum Building Heights
Figure 11: Maximum Cargo Stack Heights
Figure 12: Building Zones, Floor Plates
Figure 13: Port/Public Interface Areas
Figure 14: Proposed Main Entry
Figure 15: Example of building design quality;
Figure 16: Example of building interior;
Figure 17: Location of Cross Sections
Figure 18: Cross Sections & Proposed Building Envelopes
Figure 19: Cross Sections & Proposed Building Envelopes
Figure 20: Glebe Island and White Bay Ports
Figure 21: View of Glebe Island
Figure 22: View of White Bay
Figure 23: View of Glebe Island and Anzac Bridge
Figure 24: View of White Bay
Figure 25: Landscape Precincts
Figure 26: Public Transport
Figure 27: Public Access adjacent to Plan Area
Figure 28: Cycleway
Figure 29: Heritage Items

List of Tables

Table A: Heritage Items in or adjacent to the Plan Area
Table B  Background (L90) Noise Levels, dBA
Table C  (Table 6.1) “Worst – Case” Assessment of Noise Impact dBA

Appendix

Appendix 1  Summary of Renzo Tonin Acoustic Report
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADGC</td>
<td>Australian Dangerous Goods Code</td>
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<tr>
<td>AQIS</td>
<td>Australian Quarantine and Inspection Service</td>
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<tr>
<td>SHFA</td>
<td>Sydney Harbour Foreshore Authority</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>DA</td>
<td>Development Application</td>
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<tr>
<td>dBA</td>
<td>Decibels</td>
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<tr>
<td>Director</td>
<td>General Director of the Department of Urban Affairs and Planning</td>
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<td>DUAP</td>
<td>Department of Urban Affairs and Planning</td>
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<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
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<tr>
<td>EPA</td>
<td>Environment Protection Authority</td>
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<td>EMS</td>
<td>Environmental Management System</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<td>EPAA</td>
<td>Environmental Planning and Assessment Act 1979</td>
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<tr>
<td>ESD</td>
<td>Ecologically Sustainable Development</td>
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<tr>
<td>IMO</td>
<td>International Maritime Organisation</td>
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<td>LEP</td>
<td>Local Environmental Plan</td>
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<tr>
<td>m</td>
<td>metre</td>
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<tr>
<td>sqm</td>
<td>square metres</td>
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<tr>
<td>mtpa</td>
<td>million tonnes per annum</td>
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<tr>
<td>NMP</td>
<td>Noise Management Plan</td>
</tr>
<tr>
<td>RORO</td>
<td>Roll On Roll Off Ship</td>
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<tr>
<td>SEPP</td>
<td>State Environmental Planning Policy</td>
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<tr>
<td>Sydney Ports</td>
<td>Sydney Ports Corporation</td>
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<tr>
<td>SRA</td>
<td>State Rail Authority</td>
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<tr>
<td>SREP26</td>
<td>Sydney Regional Environmental Plan No. 26 – City West</td>
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<tr>
<td>t</td>
<td>tonnes</td>
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<tr>
<td>RAC</td>
<td>Rail Access Corporation</td>
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<td>RTA</td>
<td>Roads and Traffic Authority</td>
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1.0 Introduction

1.1 Background

The White Bay and Glebe Island Master Plan is a requirement of the Sydney Regional Environmental Plan No. 26 – City West, gazetted by the Minister for Urban Affairs and Planning, and as amended (SREP26). This Master Plan should be read in conjunction with SREP26. The reference material used in the preparation of this plan is noted in the Reference section at the end of this document.

Other relevant legislation and planning instruments for the White Bay and Glebe Island Master Plan Area include the Sydney Harbour Foreshore Authority Act 1998, Environmental Planning and Assessment Act 1979 and the State Environmental Planning Policy No 56 - Sydney Harbour Foreshores.

1.2 History

Early 19th Century
The 1830’s saw noxious industries forced out of Sydney Town and relocated in the Leichhardt area. The most significant was the Glebe Island Abattoirs in the 1850’s, which further attracted industries such as soap factories and candle makers. The Government Abattoirs were a heavy source of pollution within the Bay area and during the 1870’s local protests led to its closure and relocation to Homebush.

Late 19th Century
Major land reclamation occurred in the late nineteenth century for industrial sites and to create deeper water berths replacing earlier jetties. This dramatically changed the topography of the area.

Early 20th Century
Major Industrial uses including the White Bay Power Station and grain storage facilities were established between 1912 and 1920, reinforcing the important links to water transport and access. Housing at White Bay and the abattoirs were demolished and more land was reclaimed for berths and stores.

The construction of the Glebe Island Bridge in 1901 and the rail tracks through Rozelle linking Pyrmont and Darling Harbour in 1919 further supported industrial development of the area. In 1926, extensive wharfage for timber shipment with rail connections was built by the Sydney Harbour Trust.
Figure 1: Vision for the Port in 1913
Planned extensive Port facilities for White Bay/Glebe Island were only partially realised.

World War II
During World War II, Glebe Island became the main US army depot in Sydney. After the war, the timber industry gradually relocated to Homebush and sites became vacant. The White Bay Power Station was transferred to the Electricity Commission of NSW and coal handling wharves were established along White Bay.

Post World War II
In the 1960’s when containerisation was introduced, Sydney faced a port capacity problem. Pressure arose to develop Botany Bay for the container trade. The increasing move to containerisation of cargoes, which are now predominantly handled at Port Botany, enabled a series of wharf closures in Sydney Harbour. In the 1980’s the development of new terminals at Port Kembla also led to the transfer of coal and grain exports away from Sydney Harbour.

A major rationalisation of the Sydney Port area was accompanied by a strong increase in the efficiency of those Sydney Harbour sites which remained in active port use. This improved efficiency now allows Sydney Harbour to accommodate approximately the same amount of cargo each year as in the mid 1960’s, when there was almost three times the present berth length in the port.

Significant changes have taken place recently with older industrial sites surrounding the wharves becoming obsolete or under-utilised. Many are currently undergoing redevelopment for residential purposes.
Importance of a Working Harbour

The long term continued operation of Port facilities in Sydney Harbour particularly at White Bay and Glebe Island is important not only in terms of the economic well being of Sydney but also in terms of the identity of the harbour in the minds of Sydney people and Australians generally:

- Sydney Harbour has been a working port since the beginning of European settlement.
- The port has grown in parallel with the growth of Sydney and has responded to substantial changes in demand. For example previous grain importing and coal exporting have been replaced by general cargo handling. The port needs to grow as a general cargo facility to meet the forecast increase in trade.

1.3 Strategic Importance of the Port

Shipping accounts for a large section of international trade and contributes directly to the economy and employment of the Sydney region. The ports of Sydney Harbour and Botany Bay are the main gateways for containerised cargo, break bulk and bulk liquid cargo in NSW and are essential for the economic growth and development of the State. Sydney Harbour and Port Botany are planned and operated as complementary facilities.

The diversity of activities around Sydney Harbour has been part of the established character of Sydney. Over the years, efforts have been made to accommodate the changing residential character of land adjacent to White Bay. Minimising land use conflicts between residents and Port operations remains an ongoing issue that requires continued management.

With trade flows forecast to approximately double from 1996/97 to 2019/20 Sydney’s Ports are increasingly under pressure to accommodate further development. Sydney has a genuine scarcity of deep water port sites for Port development to meet trade demand. Both Sydney Harbour and Port Botany are required to meet the existing need and both have been identified as Sydney’s Ports in various planning instruments. The location of White Bay and Glebe Island make it the most accessible location in the Harbour in terms of rail connections and direct links with main highways.

For NSW to continue growing as a major trading region, with its concentration of infrastructure, manufacturing capacity and labour, Sydney must provide for trade growth by improving the capacity of its ports. To provide sufficient capacity to accommodate this growth it is essential that the existing facilities at White Bay and Glebe Island continue to be upgraded.
1.4 The Site

Site Location and Master Plan Area
The White Bay and Glebe Island Master Plan Area (the Plan Area) is located on the south eastern side of the Balmain Peninsula (see Figure 2 – Plan Area). The Plan Area, which has a total land area of about 40ha, forms a crescent around White Bay and incorporates an active port waterfrontage of 2,100m in length. Following the upgrade to the wharves, the plan area will have a capacity for up to 9 ships at one time.

![Figure 2: Plan Area](image)

Port Uses
The White Bay/Glebe Island area has operated since the nineteenth century for water-based transport and industrial uses. It has been a multi-purpose Port, owned and controlled by the State Government since 1901. It caters for container handling, break bulk cargo (timber, paper, motor vehicles and steel), and dry bulk cargoes (cement, sugar, gypsum, aggregates etc).

Surrounding Area
The Plan Area is surrounded by residential development to the north and east, rail land to the west, Victoria Road and marine uses to the south. To the east opposite Glebe Island, is a new residential development at Pyrmont. The site adjoins the White Bay Power Station and Rozelle Bay. White Bay and Glebe Island are highly visible from the surrounding residential areas of Balmain, Rozelle and Pyrmont, as well as the western side of Central Sydney and from the harbour waters.
Ownership

Most of the Plan Area was transferred from the Maritime Services Board to the ownership of the newly formed Sydney Ports Corporation (Sydney Ports) on 1 July 1995 by Ministerial Order of the NSW Government. Sydney Ports has recently negotiated the purchase of State Rail Authority (SRA) land which will complete the Plan Area in the single ownership of Sydney Ports (Figure 2 – Plan Area). Parts of the Plan Area are leased to commercial operators (Figure 3).

Figure 3: White Bay/Glebe Island and surrounding areas (showing existing Lessees of Port Land)
1.5 Consultation

This Master Plan has been prepared in consultation with the following organisations and stakeholders. The consultation was based upon a detailed Discussion Paper prepared by Travis McEwen Group for Sydney Ports that formed the focus for briefing sessions and subsequent workshops.

**Government:**
- DUAP
- Premier’s Department
- Department of State and Regional Development
- Ministry of Forests and Marine Administration (now Marine Administration Division)
- Attorney General’s Department
- Member for Port Jackson – Honourable Sandra Nori
- Sydney Harbour Foreshore Authority
- Waterways Authority
- RTA
- EPA
- Energy Australia
- Ambulance Service of NSW
- Leichhardt Council

**Leaseholders:**
- P & O Ports
- Australian Cement Holdings
- Sugar Australia
- Boyd Outdoor
- Penrice/ Bulk Maritime Terminals
- Northside Storage Tunnel Project
- CSR

**Community:**
- Local Residents
- White Bay/Glebe Island Noise Reference Committee
- Northside Storage Tunnel Community Liaison Committee
- Local Precinct Committee Members
- Glebe Chamber of Commerce
- Balmain Association
1.6 The Role of the Master Plan

A master plan is a step in the planning process between the Sydney Regional Environmental Plan No. 26 – City West (SREP 26) and a development application. SREP 26 provides that development consent for development in the White Bay/Glebe Island Port area is subject to a Master Plan adopted by the Minister for Urban Affairs and Planning.

A Master Plan is intended to:

- Provide guidance to operators and authorities on the type, scale and form of development which will be acceptable in a particular location, within a publicly accountable process;
- Enable development to proceed efficiently by clarifying issues and identifying requirements for coordination and consultation;
- Assist the public in understanding the future character of the area and to assist them to comment on port intentions; and,
- Guide consent authorities when they are considering developments.

The consent authority must take the Master Plan into consideration when determining a particular development application.

1.7 Planning Context

The White Bay and Glebe Island site forms part of the area covered by SREP 26. Under the provisions of the SREP the site is zoned for “Port and Employment”.

The Master Plan generally complies with the planning principles of the SREP.

The elements of the Master Plan in Section 2 have Principles, Provisions and Actions. These are defined as follows:

- Principles - Guiding intentions that indicate the desired outcomes;
- Provisions - Controls and standards to achieve the principles;
- Actions - Tasks to be undertaken or organised by Sydney Ports Corporation to meet the provisions.
2.0 Master Plan

2.1 Vision

The Master Plan for White Bay and Glebe Island is to provide for the future development of port facilities in this part of Sydney Harbour. The site is of particular importance to Sydney both for its valuable economic role and the environmental character of the Harbour.

The Master Plan provides for the necessary forecast increased utilisation of the port over the next 20 years. This requires a major upgrade of the existing infrastructure including road and rail. A new road link will reduce existing traffic congestion and provide for the predicted growth. Increased use of rail freight is an important priority for all levels of Government and the Master Plan provides for increased rail use.

Whilst achieving the stated goals of improved capacity and performance of the port, another goal of the Master Plan is to operate as a good neighbour. A number of initiatives are identified to ensure that this is achieved.

The existing views from the areas around the port have been analysed. The height controls allow for views through and over the Port without overly restricting port usage. The proposed built forms have been placed where they will add interest to existing views and not obstruct significant views or vista.

The Master Plan provides for an improvement in the port appearance through design standards, landscaping and building improvements. These improvements reflect the existing scale and diversity of the port environment with a focus on the port interface with residential areas.

The Master Plan contains a commitment to minimise the impacts of port growth. Systems are in place to allow for improved practices that are within the control of Sydney Ports. There is also an increased focus on ESD (Ecologically Sustainable Development). Existing practices are reinforced and new systems proposed.

In summary, the planning and urban design vision for Glebe Island and White Bay follows the objectives in SREP 26 and is to:

- Upgrade existing infrastructure to allow for growth and to improve efficiency;
- Provide guidelines for all port development;
- Improve the public presentation of the port;
- Ensure new development is of a high standard of urban design;
- Improve management of noise, light spill and traffic;
- Provide a framework to resolve potential conflicts between Port operations and adjoining land uses; and,
- Improve ESD (Ecologically Sustainable Development) practices to minimise the impacts of current and proposed development and activities.
2.2 Land Use

Existing Conditions
The following uses currently occur at Glebe Island and White Bay:
- Multipurpose berths and storage (containers, break bulk, cars);
- Dry Bulk berths and storage; and,
- Bulk liquid not determined as dangerous goods under the ADG code.

The Master Plan Area is currently zoned “Port and Employment” by SREP 26.

Darling Harbour
Sydney Ports facilities in Sydney Harbour include Darling Harbour. Darling Harbour is not part of the Master Plan Area as it is under the control of Central Sydney Local Environmental Plan 1996. Darling Harbour comprises Multi Purpose Berths and storage (containers and break bulk) at Wharves 3-7 and a new international passenger terminal at Wharf 8. It is a required Port facility for the long term.

Secure Zone
Under Section 15 of the Customs Act 1901, all the wharves at Glebe Island and White Bay, are “Customs Areas”, i.e. a secure zone with authorised access only (Figure 4). This area applies to Sydney Port’s original land holdings and may need to be extended to cover recently acquired SRA lands. The area shown in Figure 4 is subject to further negotiations with the Sydney Harbour Foreshore Authority with regard to their plans for the Rozelle Marshalling Yards.

Figure 4: Secure Zone (Customs Act)
Customs Area for authorised access only.
Figure 5: Land Use Zoning: "Port and Employment Zone"
Principles

- Recognise the continued role of White Bay/Glebe Island as the significant commercial port facility in Sydney Harbour and facilitate continued use.
- Provide for improved port efficiency and competitiveness.
- Provide for enhanced environmental performance.
- Define a set of development standards for future development activities within the Port to improve the appearance of the port.
- Accommodate forecast trade growth.

Provisions

- General cargo and containers as well as RORO (Roll On Roll Off for direct access to shipping vessels by trucks and forklifts) to be accommodated at the multipurpose berths at White Bay Berths 3-6.
- Allow for up to 3 cranes at White Bay Berths 3-6.
- Allow for a maximum of 4 ships at any one time at White Bay Berths 3-6.
- Build additional berths at Glebe Island at Berth 5 and Berth 6 to enable expansion of dry bulk facilities and car terminal.
- Allow for a car terminal on White Bay Wharves 1 and 2.
- Allow for bulk goods unloading by a conveyor mechanism on White Bay Wharves 1 and 2. Allow for storage in new buildings on the back-up land or direct loading to rail.
- Permit a maximum of 9 ships serving White Bay and Glebe Island at any one time.
- Permit container vessels/multi purpose vessels requiring container cranes (ship to shore) and large straddle/gantry cranes (for truck or train loading) to operate at Glebe Island Wharves.
- Prohibit dangerous goods in bulk liquid storage terminals as defined under the ADG code.
- Incorporate the existing infrastructure of the former grain terminal into general Port operations for use by dry bulk cargoes/car terminal.
- Permit a diverse ship type including motor vehicle carriers, container and container/break bulk ships, dry bulk carriers and self discharging vessels.
2.3 Road and Rail Infrastructure

Background
The existing entries to the site are not clearly identifiable and the existing vehicle and train movement patterns in the Plan Area require improvement.

Principles
- Establish an efficient movement pattern on the site for all forms of transport.
- Provide a new rail/road transport corridor in the Plan Area to provide for the future needs of the Port and to relieve pressure on existing roads.
- Provide direct access from the berth areas to City West Link Road via a new Port Road to accommodate existing and predicted demand to the year 2020.
- Segregate port-related traffic from residential traffic and provide an efficient access to the Port.
- Maximise opportunities for increased use of rail freight.
- Increase rail usage to above 25% of total trade in accordance with State Government strategies (NSW State Government Action for Transport 2010 document).

2.3.1 Roads

Actions
- Build an internal Port link road to improve the efficiency of goods movement to and from the port.
- Finalise the details of the configuration and arrangement of the proposed port road entry intersection with the RTA.
- Provide for emergency access only to the port area from Robert Street.
- Resolve drainage and stormwater issues in the design of the new Port road.

2.3.2 Rail

Actions
- Determine the rail design and location of the rail line within the Road/Rail corridor by operational efficiency, environmental issues and lessee requirements.
- Provide rail access provision for Glebe Island Berths 7 and 8, and to the rear of Glebe Island Berths 1 and 2.
- Coordinate with Sydney Harbour Foreshore Authority to maintain a main line connection through Rozelle Yard to service the Port.
- Remove existing sidings in excess of P&O Ports requirements.
- Allow an increase of train movements from an average of one train (two movements) a day to up to 5-10 trains (10-20 movements) per day by the year 2020.
- Discourage shunting and ensure trains are generally not to be broken into more than 2 or 3 lengths on site.
Figure 6: Proposed Road/Rail Corridor
Note: The detailed design of the road and rail improvements is to be finalised.
2.4 Views, Building Heights and Building Zones

Background

The nature of the topography means that the site is overlooked by existing and future residential areas of Balmain and Rozelle as well as the future residential developments at the northern end of Pyrmont. It is also clearly visible from the harbour waters, the Harbour Bridge and Anzac Bridge.

The built form of the Plan Area is dominated by large man made structures mostly of a horizontal nature with the occasional building having considerable height and bulk - the Glebe Island Silos and the White Bay Power Station and the Anzac bridge adjacent to the site.

Principles

- Maintain the general view of the Pyrmont skyline and Anzac Bridge as seen from the Balmain residential area (Figure 9).
- Maintain the general view of the Pyrmont skyline and Anzac Bridge as seen from White Bay Park (View 1, Figure 9).
- Maintain existing views to landmarks (Figure 8) to reinforce the diverse visual quality of the area.
- Ensure that the approach to the Old Glebe Island Bridge is upgraded to contribute to the quality of the public domain.
- Maintain and protect vistas where practicable along streets which terminate at the water (Figure 7).
- Provide flexibility for locating port facilities including buildings and silos.

Provisions

- Maximum building heights are shown in Figure 10. Heights of buildings are measured from ground level to the uppermost point of the building, excluding:
  - Silos (Note: Silos are excluded because of their unique built form, historical association with the port. Silos may be located anywhere in the Port subject to assessment of views to and from the Port);
  - Mobile equipment: cranes, gantries etc;
  - Masts;
  - Container stacks/cargo (Note: container stacks are excluded because they are not a permanent structure. Maximum container stack heights are noted in Figure 11);
  - Incidental roof top vents, plant and equipment; and,
  - Skeletal structures.
- Ground level on the wharfs is defined as existing wharf level. Glebe Island 6 and 7 wharfs are 4.2m high and all other wharfs are 3m high. (Note: The height of the wharf is measured from zero at the Fort Denison Tide Gauge. An AHD of 0 is 0.925m above this point.)
- Limit container stacks to a maximum of 5 high ie. between 12-13.5m high (note that container stacks generally average 2-3 containers high). Maximum container stack heights are shown in Figure 11.
- Limit container stacks to 2 high (between 4.8-5.4m high) at White Bay Berth 2.
• No buildings are to occur at White Bay Berth 2 due to the low level of the adjoining land immediately north of Robert Street.

• Limit the height of container stacks to protect views from the public realm and to ensure city skyline view is retained.

• Setback buildings a minimum of 20m off the waters edge as shown in Figure 10, Figure 12 and Section A-A and Section B-B.

• Provide two building zones (Figure 12) for a modern warehouse of up to 10,000sqm in floor area and 12m maximum height.

• Provide a zone for a large building for a 6-7 level parking structure of 15,000sqm building up to 25m maximum height generally within the current building envelope of the existing silos (Figure 12).

Figure 7: View Corridors/Street Vistas
1. View eastwards along Roberts Street at low level.
2. View along Mansfield Street of Port with water beyond. Distant view of City and Pyrmont.
3. View down Buchanan Street terminating at the Silo. Distant skyline of Pyrmont and Anzac Bridge.
4. View down Booth Street towards Glebe Island Bridge and full view of Anzac Bridge.
5. View from White Bay Park at high level towards Anzac Bridge and Pyrmont.
6. View down Stephen Street at high level toward Anzac Bridge with water glimpses.
7. View down Ewenton Street at high level towards the Anzac Bridge.
8. View east along Grafton Street towards the harbour with distant city views.
Figure 8: Landmarks

1. Views over White Bay to Pyrmont, city skyline and Anzac Bridge.
2. Views from Victoria Road to the Heritage Silos and White Bay Power Station.
3. Views from Anzac Bridge across Glebe Island to Balmain skyline.
4. Views from Pyrmont across the water and the Port to the Balmain skyline.
5. Views from the water to landmarks including the Anzac Bridge, the White Bay Power Station and the Heritage Silos

Figure 9: View Panoramas

1. Views over White Bay to Pyrmont, city skyline and Anzac Bridge.
2. Views from Victoria Road to the Heritage Silos and White Bay Power Station.
3. Views from Anzac Bridge across Glebe Island to Balmain skyline.
4. Views from Pyrmont across the water and the Port to the Balmain skyline.
5. Views from the water to landmarks including the Anzac Bridge, the White Bay Power Station and the Heritage Silos
View 1: View Panorama from Balmain

View 2: View Panorama from Victoria Road

View 3: View Panorama from Anzac Bridge

View 4: View Panorama from Pyrmont
Figure 10: Maximum Building Heights

Figure 11: Maximum Cargo Stack Heights
Figure 12: Building Zones, Floor Plates
Proposed building zones and approximate building footprints. The dotted area is the general area in which the building can be sited.
2.5 Built Quality

Background
The port is a dynamic part of the Harbour. The visual quality of the built environment of the port should be improved as part of the future investment in port facilities.

Principles
- Improve the overall appearance of the port.
- Improve the level of information, signage and graphics for visitors to the Port and the public passing by the port.
- Provide a framework to ensure that development within the Port achieves a high standard of urban design.
- Allow for flexibility in operating the Port to the best international standards.
- Provide urban design principles which recognise the location of the Port adjacent to residential areas with particular attention to the physical provision of noise control measures.

Figure 13: Port/Public Interface Areas

Provisions
- Establish a port Improvements Program for all facilities through coordination of landscaping, building design and refurbishment, colour schemes for buildings and mobile equipment, road improvements, signage and lighting. As part of this program a set of design guidelines will be prepared. These guidelines will provide standards against which development, including development by port lessees, will be assessed.
- Improve the urban amenity by providing opportunities for public viewing of the Port and harbour areas (Figure 13).
Actions

Port Improvements Program

1. Establish a Main Port Entry.
   - Establish a main entry (Figure 14) highly visible to the public at the north side of the James Craig Road intersection, incorporating special signage and a designed entry area.

   ![Figure 14: Proposed Main Entry](image)

2. Develop coordinated signage
   - Establish a strong port identity by coordinated signage.
   - Develop guidelines for all road signage.
   - Develop guidelines for all building identification signage including the opportunity for leaseholders signage.
   - Use new signage to define areas and establish pedestrian/vehicle zones.
   - Use new signage to establish preferred vehicular movement around the site.
   - Develop guidelines for all safety signage. Ensure all safety signs comply with AS1319.
   - Ensure signage style and colour coordinates with building colour schemes.
   - Implement new directional and information signage to a coordinated graphic design.

3. Develop coordinated port identity colour scheme for buildings and mobile equipment.
   - Establish a limited palette of colours for all buildings, structures (including mobile equipment) and signage.
   - Selection of colours to be based on building type, location, function and context.
   - Consider opportunities for individual leaseholder colour schemes (including guidelines for lessee corporate colours).
• Obtain heritage advice for the colour scheme for the Heritage Silos.

4. **Implement Building Rationalisation and Refurbishment.**

• Prepare a program for refurbishment of all structures and buildings in accordance with the Design Standards.

• Prepare a program of demolition for redundant structures and buildings.

5. **Establish Guidelines for New Buildings and Structures.**

• Selection of materials to be based on building type or structure, location, function and context.

• Prepare a Design Standards Schedule including:
  
  • Selection of materials for all new buildings, structures and signage based on function and context;
  
  • Guidelines for building forms based on location, function and context;
  
  • “Good practice” guidelines for design details;
  
  • Refer to Figure 15 and Figure 16.

• Comply with the NSW Government “Code of Practice for the Construction Industry” for ecologically sustainable development.

• Buildings to be oriented to maximise opportunities for cross ventilation and natural light.

• Provide for passive ventilation.

• Provide roof and wall insulation and maximise solar access to internal working areas during winter months. Minimise heat gain to internal working areas during summer months.

• Provide for collection and storage of stormwater from roofs of buildings for recycling for processing and irrigation of landscaped areas.

• Provide for natural light to all internal work areas.
Figure 15: Example of building design quality; High quality architectural design required for large Port buildings.

Figure 16: Example of building interior; View shows an example of the scale of the nominated potential buildings and the use of natural light.

Figure 17: Location of Cross Sections
Figure 18  Cross Sections & Proposed Building Envelopes
Figure 19: Cross Sections & Proposed Building Envelopes
Figure 20: Glebe Island and White Bay Ports from the Harbour showing the visual impact of proposed buildings.
Figure 21: View of Glebe Island
Looking south showing Silos and Anzac Bridge.

Figure 22: View of White Bay
Showing White Bay Power Station.
Figure 23: View of Glebe Island and Anzac Bridge
Looking south towards Pyrmont and Blackwattle Bay.

Figure 24: View of White Bay
Showing the White Bay Power Station and looking south towards Rozelle Bay.
2.6 Advertising

Background
There are two types of advertising in the port: leaseholder signage and commercial third party advertising. Currently advertising is located on the Glebe Island silos and on the Victoria Road Bridge (over the rail line). The heritage silos in particular are a dominant visual element in one of Central Sydney’s major gateways, which is reinforced by the form of Anzac Bridge. Advertising is a sensitive design issue in such a prominent location.

Principles

• Prepare signage and advertising guidelines with input from the following professional disciplines: architecture, advertising, landscape, graphics, heritage and traffic safety
• Signage and advertising is not to obstruct views to heritage items and to landmarks and is not to interfere with, or adversely impact on views to and from the harbour and its foreshores;
• Signage and advertising is not to adversely affect the public domain, particularly with regard to lighting levels, visual impact and overshadowing;
• Signage and advertising is to be integrated with the architecture of the host /building /structure and must be contained within the existing profile of the host building / structure;
• Free standing, third party advertising structures are to be avoided in the plan area;
• Advertising and signage should be compatible with the design of the building / structure and the context of the site;
• Each sign and advertisement should be as simple in image as possible with few words; and,
• The guidelines should ensure that third party advertising is clearly differentiated from port and leaseholder signage.

2.6.1 Leaseholder Signage

Provisions
• Limited to one logo sign for each elevation of the building and of a size that integrates with the form of the buildings as a minor element.
• The logo sign is to be visible from the water.
2.6.2 Third Party Advertising

Provisions

- DUAP or the Minister for Urban Affairs & Planning is the consent authority for advertising.
- Development consent for advertising is limited to a period of 3 years
- Encourage simple advertisements, reduced to a logo or simple image with one or three word phrase
- Placement of advertising should consider existing signs on a building/structure or site so as to avoid physical and visual clutter
2.7 Landscaping

Background
Existing vegetation within the port area is concentrated within three areas on the edges of the port:

- the northern boundary from Robert street to the Eastern Rail Overrun Promontory, including the cliff face;
- the north side of Victoria Road, especially opposite James Craig Road; and;
- the area between the Anzac Bridge and the old Glebe Island Bridge.

Although these areas are a minor proportion of the total site area, they play a major part in the public perception of the port because they are located at the boundaries. Their landscape treatment has the potential to significantly improve the visual appearance of the port.

Existing landscape elements include:

- Casuarinas and Banksias along Victoria Road;
- Italian Poplars and Photinias along Grafton Street; and
- Chain mesh fencing along much of the Port’s terrestrial boundary.

Principles

- Reinforce the distinctive identity for the port.
  - Use a limited palette of materials (plant species, fencing, paving and outdoor furniture).
  - Select plant species primarily by aesthetic and functional criteria such as desired height and form, by current or past association with the Port and by use of native species.
- Ensure all materials used convey an attractive, robust industrial image, have low maintenance and simple forms with a scale to match the scale of the port’s spaces.
- Foster a public awareness of and pride in the port by interpreting the Port’s current uses and history through information panels in adjacent public spaces.
- Soften the ‘hardscape’ of the port with plants wherever possible.
- Prepare procedures for tidiness and cleanliness in the port area.
- Ensure that the proposed landscape works are consistent with the other provisions of this Master Plan.

Provisions

- Detailed landscape provisions are subject to further investigation as set out in the actions below.

Actions

- Commission a landscape architect to:
  - prepare a standard palette of materials for use throughout the port area. These materials should include: tree, shrub, creeper and ground cover
species, perimeter fences and gates, paving, outdoor seats, retaining walls, interpretation signs.

- prepare detailed landscape improvement plans for each of the following precincts: the old Glebe Island Bridge curtilage, Balmain interface, main entry; and the Eastern Rail promontory (See Figure 25).
- In the short term, clean publicly visible areas of the perimeter fences’ low concrete base wall to remove all stains. Use acid etching, high-pressure water blasting or similar cleaning technique.
- In the medium term, replace all perimeter fencing with a new security fence that is attractive, at least 80% transparent and fulfills all functional requirements including security.
- In the medium term, implement the prepared landscape plans.
- Implement a long term maintenance programme.
- Mark the water “gateway” into the port at the end of the rail promontory. This could be in the form of signage or a sculpture.
- Coordinate landscape proposals with proposals for the adjoining Rozelle Bay Master Plan area.
- Provide convenient and safe pedestrian access between the Old Glebe Island Bridge and James Craig Road west of Anzac Bridge.
- Subject to heritage advice, relocate the US Memorial to where it can be viewed by the public.

![Figure 25: Landscape Precincts](image)

Figure 25: Landscape Precincts
1 Old Glebe Island Bridge Curtilage
2 Balmain Interface
3 Port Entry
4 Eastern Rail Promontory
2.8 Pedestrian and Cycle links

Background

Pedestrian and cycle links within the port are restricted because of the Customs Area Secure Zone (Figure 4). Links may occur with the surroundings at the main and secondary access points to the Port.

Principles

- Encourage use of public transport by making access to nearby bus stops convenient to the port.
- Recognise that foreshore public access is being substantially improved in nearby areas but cannot be improved in the port area due to customs requirements.
- Encourage use of cycles by making access to the regional cycleway system convenient to the port access points.

Actions

- Investigate a pedestrian link between the proposed main gate on the New Port Road and the nearest bus stops to facilitate public transport and pedestrian access by employees (Figure 26).
- Consider linking cycleway between the proposed main gate and the proposed cycleway in Leichhardt Council's LEP (Figure 28).
- Additional bicycle links should be investigated with reference to the Bays Precinct Transport Study.
- Provide links where possible to enable continuous public access along the edge of the Port (Figure 27).

Figure 26: Public Transport
The Plan Area is serviced by a variety of bus routes.
Figure 27: Public Access adjacent to Plan Area

Figure 28: Cycleway
NSW Bicycle Network Strategic Map
### 2.9 Heritage Conservation

**Background**

The following table lists heritage items in the Plan Area identified by recognised organisations. The table indicates the opportunities and constraints regarding each item.

<table>
<thead>
<tr>
<th>Heritage Item</th>
<th>Source</th>
<th>Opportunities and Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Located within the Plan Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balmain Coal Loader</td>
<td>Godden McKay McDonald McPhee</td>
<td>Recorded prior to demolition. No further action needed.</td>
</tr>
<tr>
<td>Glebe Island Grain Silos (Blocks A, B &amp; C only)</td>
<td>Godden McKay McDonald McPhee Inst. Engineers, National Trust Leichhardt LEP</td>
<td>State significance.</td>
</tr>
<tr>
<td>Monument – First landing of US Forces, Glebe Island</td>
<td>Godden McKay McDonald McPhee Leichhardt LEP</td>
<td>State significance. Possible relocation required to provide for efficiency in Port operation.</td>
</tr>
<tr>
<td>Geological Monument - The Great Sydney Dyke at Glebe</td>
<td>Geological Society of Australia</td>
<td>Development is to consider impact on the dyke. Consultation with Geotechnical consultant is recommended.</td>
</tr>
<tr>
<td><strong>Located adjacent to the Plan Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Glebe Island Bridge</td>
<td>Register of the National Estate Data Base</td>
<td>Retain access to Bridge.</td>
</tr>
<tr>
<td>White Bay Power Station</td>
<td>Godden McKay</td>
<td>Retain landmark views of Power Station from water.</td>
</tr>
<tr>
<td>Balmain Conservation Area</td>
<td>Godden McKay</td>
<td>Retain landmark views of area from water. Reduce Port traffic access to this area.</td>
</tr>
</tbody>
</table>

**Principles**

- To encourage the conservation of existing heritage items and structures of significance with compatible uses within the Port area.
- To ensure that Port activities do not detract from the heritage values of items of environmental heritage.
Figure 29: Heritage Items

**Actions:**
Obtain Heritage advice on:

- Appropriate relocation of the Memorial;
- Appropriate identification and interpretation of the Great Sydney Dyke;
- The landscape design for the approach to the Old Glebe Island Bridge;
- Appropriate advertising strategy for the silos taking into account the provisions and guidelines of section 2.6 of this Plan;
- Any buildings proposed in close proximity to the silos; and,
- The colour scheme for the Heritage Silos.
2.10 Environment

Background
Sydney Ports has commissioned a range of environmental studies including risk assessment, acoustic assessment, light survey and a vehicular access study. An Environmental Management System (EMS) and a Noise Management Plan have been implemented. The opportunity is to further refine the current procedures where relevant to the Master Plan.

In implementing the EMS, Sydney Ports works with port users, appropriate government agencies and the community in setting strategies and implementing actions with the objective of achieving continual improvement of the ports safety and environmental record.

Principles
• Minimise the impact of port activities on the marine environment.
• Minimise impacts of the port activity on the urban environments whilst recognising the operational requirements of the port. Impacts that are required to be addressed include noise, light spill, water quality, air quality and hazard risk.
• Ensure that new development and activities take place in accordance with ESD principles.

2.10.1 Marine Environment and Stormwater

Background
The stormwater catchment area is extensive and results in substantial stormwater runoff entering the bays. West of Victoria Road, there appears to be no record of existing drainage around the marshalling yards. It is likely that the proposed new access road will pass over the channel to the east which commences opposite Easton Park and runs parallel to Lilyfield Road. The new road would incorporate drainage provisions that deal with this issue.

Provisions
• Provide for improvements to water quality within the Harbour whenever possible.
• Investigate new drainage options required by the increased land use of the SRA/Pacific Power sites east of Victoria Road.
• Provide drainage work associated with new road and rail layouts and any changes to existing facilities.
Actions

• Prepare a Sediment and Erosion Control Plan in accordance with *Managing Stormwater, Soils and Construction Manual 1998* NSW, Department of Housing.

• Continue the control of ballast water discharge and ballast water exchange in accordance with AQIS requirements.

• Conduct Baseline Studies of Marine organisms in Sydney Harbour.

• Continue to audit processes for oil/fuel transfers, acid bilge water discharges.

• Continue to operate a 24 hour pollution telephone line.

• Maintain an oil-spill response unit.

• Implement measures to reduce the impact on waterways from stormwater.

• Consult with Leichhardt Council, Sydney Harbour Foreshore Authority and relevant agencies regarding their requirements for water quality control and stormwater control. This potentially includes provision of a water retention basin, with any redevelopment works, to intercept stormwater so that it can be discharged in a controlled way and the installation of gross pollutant traps.

• Continue implementation of silt capture techniques during construction projects.

• Continue controls on the discharge from vessels of oils, sludges and noxious liquid substances which are controlled by a Sydney Ports approval process. Ensure recycling and re-use of these materials is practised by the treatment plants.

2.10.2 Noise

Background

The Port facilities at Glebe Island and White Bay operate 24 hours per day 7 days a week and generate noise which is experienced in the surrounding areas of Balmain and Pyrmont. The noise levels in the residential areas around the port varies significantly from hour to hour and from day to day.

In 1994 and 1998 Wilkinson Murray carried out detailed studies of port noise surrounding White Bay and Glebe Island and quantified the amount of noise impact. The studies identified that noise levels in the area most affected by the port operations will increase by up to 2dBA. Areas at the western end of the site adjacent to White Bay Berths 1,2 and 3, are likely to have increases up to 5dBA due to anticipated increased use of these berths.

The studies demonstrated that noise levels at certain locations around the port are high when compared with Environmental Protection Authority guidelines for environmental noise for commercial and industrial developments adjoining residential areas. In 1999, Renzo Tonin and Associates carried out a further detailed study of Port noise which generally confirmed the findings of the Wilkinson Murray studies. The
Renzo Tonin study noted that residential locations in Balmain near main roads can be subject to higher noise levels than the residential area near the port. A summary of this report is attached as Appendix 1.

The proposed new port road will be subject to noise assessment and subject to the principles and provisions below.

Sydney Ports currently implements a Noise Management Plan (NMP) for the Glebe Island and White Bay Port facilities in close liaison with lessees of port lands. The NMP includes a Noise Reference Committee which meets quarterly and includes resident representatives. The Committee monitors the NMP complaints and the lessee responses.

Noise from vessels on navigated waters and land adjoining navigated waters is regulated by the Marine Authority in accordance with the Protection of Environment Operations Act.

**Principles**

- No marked increase in noise levels for residential areas surrounding the Port facilities.
- Continue to implement the Noise Management Plan including consideration of further noise control measures and analysis of, and response to, complaints.

**Provisions**

- Berth 6, White Bay, to be used for ship handling when other suitable berths are not available.
- Where practicable, future buildings are to be located and designed to maximise shielding of noise to the surrounding residential area.
- The acoustic wall in Robert Street may be renewed and extended. This is to be the subject of a separate investigation, particularly with regard to noise performance and design consultations current study.
- The residents located on the eastern side of Lilyfield Road overlooking the proposed rail access line and on the eastern side of Lilyfield Road extending south from Easton Park are to be approached to determine the suitability of erecting acoustic barriers near their rear boundaries.
- Future development is to consider the guidelines in the Environmental Protection Authority’s *NSW Industrial Noise Policy*.

**Actions**

- Ongoing liaison with Port lessees, local community and other interested parties to explore and implement appropriate noise minimisation measures.
2.10.3 Light Spill

Background
Illumination of port activities has associated visual impact in the form of light spill on neighbouring residential areas. This is an issue for some residents because of the 24 hour port operations. Light spill occurs when the light fittings designed to illuminate the port allow direct light into the residential area. There have been few complaints over the last five years and these have mainly concerned the White Bay operations.

Principles
- Ensure light spill mitigation measures are adopted.

Provisions
- Redirect light fittings and fit glare shields to avoid light spill where needed.
- Use fittings that enable the light to be thrown forward, while keeping the glass of the fitting horizontal to the ground, for the sections of the terminal furthest from the water.
- Install new poles on the residential side of the terminal with lights facing away from the residences and remove the lights facing the residences from the existing poles.

2.10.4 Risk

Background
Vessels at White Bay and Glebe Island include some cargo that consists of dangerous goods in containers. A very small proportion of the cargo handled at White Bay (Berths 3-6), comprises hazardous materials which are operated in accordance with Part II of the NSW Dangerous Goods Regulations. Current cargo volumes satisfy the applicable risk criteria. The site has been identified as containing acid sulphate soil on the Acid Sulphate Soil Risk Maps. These maps have been prepared by the Department of Lands and Water Conservation and can be viewed at Leichhardt Council or at the Natural Resources Department of DUAP.

Principles
- Operations at the Port are to continue to satisfy applicable risk criteria.

Provisions
- Ensure any new uses involving dangerous goods satisfy DUAP’s risk criteria.
- Determine potential mitigation measures to ensure operations are to continue to satisfy applicable risk criteria for increased cargo movements.
- Ensure soil testing of the site prior to any development which will require excavation greater than 650mm below the wharf level.
2.10.5 ESD Principles

Background
Sydney Ports operates the Sydney Ports Environmental Management System (EMS) which is under constant review.

Principles
Continue the Sydney Ports EMS:
• Control of scheduled attributes (ie air, water, noise etc).
• Reduction of waste deposition to landfill.
• Quarantine waste collection and ensure that treatment and disposal which is regulated and licensed by both the Australian Quarantine Inspection Service and EPA.
• Environmental assessments are conducted at the beginning and the end of each lease period and during the lease term according to the nature of the activity.
• Geotechnical investigation of soil prior to development design.
• Encourage development of quarantine waste treatment processes to recycle useable components.
• Encourage increased use of existing freight rail systems.
• Increase options for public transport, cyclists and pedestrians.
• Adopt energy efficient design methods e.g. building orientation, design to minimise the need for artificial light.
• Minimise the use of water on Port land.
• Recycle/reuse construction waste.

Actions
• Complete an Air Quality Study.
• Incorporate ESD measures in building design guidelines including investigating mechanisms to:
  • Ensure building materials used are made with renewable resources;
  • Ensure building materials used require least energy to process, manufacture and transport;
  • Ensure building materials used require less energy to maintain, are durable and can be recycled;
  • Ensure building materials used have minimal effect on human health; and,
  • Ensure building materials used create little waste.
2.11 Public Consultation Procedures

2.11.1 When Development Application required

Principles
Where a proposal requires a development application the consultation procedures under SREP 26 and the EPA Act will be followed.

Actions
- When a development application must be advertised the consent authority will:
  - Advertise the development application for not less that 21 days.
  - Ensure that the advertised development application may be inspected at both the office of the consent authority and at Leichhardt Council.
  - Refer all advertised development applications to Leichhardt Council for formal comment.
  - Refer all advertised development applications to any other authority that it considers relevant.
- Before granting consent to a development application the consent authority may seek the views of other bodies as defined in SREP 26.

2.11.2 When Development Application is not required but an EIS is required

Principles
Where a proposal does not require a development application but does require an EIS under part 5 of the EPA Act the consultation procedures under the Act will be followed.

Actions
- The determining authority will give notice in a daily newspaper that a copy of the EIS may be inspected and provide times and location(s) where this can occur.
- The EIS will be available for inspection for at least 30 days (the minimum statutory period).
- Representations in writing may be made to the determining authority during the time that the EIS is available for inspection.
2.11.3 When Development Application and an EIS are not required

Background
Where a proposal does not require a development application under part 4 or an EIS under part 5 of the EPA Act the following consultation procedures will be followed.

Actions
• Where the cost of the development is valued at $100,000 or over the determining authority will;
  • Consult with Leichhardt Council and all relevant agencies.
  • Notify Leichhardt Council and all relevant agencies by letter and publish a notice in a local newspaper providing details of the proposal.
  • Allow a minimum period of 14 days for consultation with Leichhardt Council and community input through the Council’s Precinct system.
  • Inform Leichhardt Council and all relevant agencies of the determining authority’s response to submissions.
References


Sydney Ports Corporation (1997) *Sydney Ports Handbook*


Sydney Ports Corporation Report, 1.7.97, Unpublished Data

CMPS & F Infrastructure (1996) *Glebe Island & White Bay Port Access Study*

Gutteridge Haskins & Davey Pty Ltd (1998) *Glebe Island/White Bay Road Infrastructure*


Environmental Guidelines for Australian Ports, AAPHA, 1995

The National Strategy for Ecologically Sustainable Development 1995

Sydney Ports Publication – Environmental Management Plan

Wilkinson Murray Reports for Sydney Ports

Granherne Pty Ltd, *Quantitative Risk Assessment Study, 1994*

Glebe Island White Bay Background Paper June 1999

Renzo Tonin *Acoustic Study 1999*
Appendix 1 Summary of Renzo Tonin Acoustic Report

Background

Renzo Tonin & Associates Pty Ltd were engaged to carry out a noise survey and assessment of typical environmental noise effects from port activities occurring at the White Bay and Glebe Island facilities. The purpose of the work was to provide an environmental noise assessment of port noise affecting both existing and proposed residential premises.

A noise survey was conducted between 5 February and 2 March 1999. During this period, noise emission levels from port activities were measured at six residential receiver locations surrounding the dock area. Both long-term unattended monitoring and short-term attended monitoring was conducted at each of these locations. Further, dockside measurements close to ships were also conducted.

A summary of the key findings of the report follows. A copy of the report is available at the Sydney Ports Corporation.

Principles

The report summarised the results of noise measurements and compared them to the relevant noise assessment criteria set out in the Environment Protection Authority's (EPA) "Environmental Noise Control Manual" (ENCM), and to the "Draft Stationary Noise Source Policy" (now released as the NSW Industrial Noise Policy 1999)

Provisions

The residential receiver locations selected for assessment were:

- Location 1 - 16 Batty Street, on front balcony overlooking dock area, approximately 200m from the nearest dock.
- Location 2 - Bezzina Development Site, corner of Buchanan & Robert Streets, near the sales office, approximately 80m from the nearest dock.
- Location 3 - 27 Donnelly Street, on front balcony overlooking White Bay Park and dock area, approximately 140m from the nearest dock.
- Location 4 - 17 Vincent Street, on front balcony overlooking White Bay Park and dock area, approximately 210m from the nearest dock.
- Location 5 - Units 4 & 5, 1-13 Grafton Street, on rear balcony overlooking east end of dock area, approximately 140m from the nearest dock.
- Location 6 - 16 Datchett Street, on front balcony overlooking dock area, approximately 290m from the nearest dock.
Noise Sources

There are essentially two types of noise that emanates from the dock area:

- Constant noise from ship engines and other auxiliary equipment such as fans and generators that are located on the ships and;
- Intermittent noise from container cranes (portainers), forklifts, trucks and metal to metal impacts from the general unloading, loading and movement of shipping containers and cargo.

Other sources of noise identified on the dock such as refrigeration units on refrigerated containers, building mechanical services and air conditioning plant were not considered to have significant noise impact upon the nominated assessment locations.
Summary of Noise Monitoring Results

Background Noise Levels

The representative noise level (or rating background level [RBL]) of daytime, evening and night-time assessment periods are usually based on the median of individual lowest repeatable background noise levels (or assessment background levels [ABL]) acquired over the entire monitoring period. However, in this case, the minimum level of all the lowest-repeatable $L_{90}$ background noise levels (or ABLs) was determined for each assessment period and was set as the representative background noise level for each location. In general, the background noise levels presented in Table B below, are conservatively low in comparison with available data and therefore considered suitable for use in this noise assessment. Such background noise levels are however, expected during periods absent of port activities and periods without ships berthed at the docks.

Noise data acquired during days that experienced adverse weather conditions (e.g. rain, strong winds) were compared to the data acquired on finer days. Where data was found to be affected by adverse weather conditions it was discarded from further analysis. Table B below presents the $L_{90}$ background noise levels set for each assessment location.

Table B Background ($L_{90}$) Noise Levels, dB(A)

<table>
<thead>
<tr>
<th>Location</th>
<th>Day</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location 1</td>
<td>47</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>Location 2</td>
<td>48</td>
<td>43</td>
<td>41</td>
</tr>
<tr>
<td>Location 3</td>
<td>46</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>Location 4</td>
<td>48</td>
<td>45</td>
<td>41</td>
</tr>
<tr>
<td>Location 5</td>
<td>43</td>
<td>43</td>
<td>39</td>
</tr>
<tr>
<td>Location 6</td>
<td>40</td>
<td>36</td>
<td>33</td>
</tr>
</tbody>
</table>

Notes:

1. Day is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00 am to 6:00pm Sundays & Public Holidays.
2. Evening is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.
3. Night is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays.
4. At the locations where the noise logger was positioned close to a building façade, a -2.5dB correction factor has been applied to establish the equivalent free field background noise level, as recommended in Chapter 157 of the EPA’s ENCM.
Additional Noise Monitoring

Long-term noise monitoring was conducted at two additional locations on the Balmain Peninsula, from 11 May to 17 May 1999, in areas absent of dock activities. This was done to allow noise level comparisons to the six selected assessment locations near the docks. The comparison of ambient noise level environments between different locations on the same peninsula is intended to be informative only. The additional noise monitoring was conducted at the following sites:

- Location A: 198 Victoria Road, ROZELLE, and
- Location B: 15 Wharf Road, BALMAIN

A comparison of ambient noise levels measured at Location B with those levels measured at Location 5 and Location 6, show that the noise levels at these locations are generally quite similar. Location 5 results are slightly higher than Location B's results, but Location 6 results are slightly lower than Location B's results. In general, this indicates that noise from ships and related dock activities may not greatly contribute to the overall ambient noise levels at locations near a dock when compared to the noise environment to foreshore locations without a dock. This comparison, however, does not take into account differences, which may exist in the character of the noise amenity of foreshore locations with and without an adjacent dock.

On the other hand, very high noise levels are experienced on other parts of the Balmain Peninsula that are not exposed to noise from large vessels or dock activities. That is, the noise levels measured at the six assessment locations are significantly lower than those measured on one part of the same peninsula that is exposed to high traffic volumes.

Noise Assessment Criteria

At level of 53.2 dB(A) measured indoors corresponds to a conservative level of 65 dB(A) measured outside the bedroom window assuming windows are open for ventilation. The report adopted a criterion which would ensure that 90% of the population (including the aged) are protected in their sleep an emergence level ($L_{avmax}$ or $L_1$) of 65 dB(A). This criteria applies to short-duration noises which may occur at night from the operation of the port. For continuous, steady or quasi-steady noise, recent evidence suggests an $L_{eq}$ of 40 dB(A) be used as an upper limit for assessment of sleep arousal inside bedrooms.

This criteria can also be expressed in terms of noise levels outside. Research conducted by Carteret al(1992) found the attenuation through a slightly open window when measured at the centre (bed position) of a bedroom is in the order of 13 to 20dB(A) when measured in $L_{eq}$. Using a typical noise reduction of 15 dB(A), then the maximum allowable $L_{eq}$ noise levels outside is 55 dB(A) to avoid sleep awakenings during the night for 90% of the population including the aged.

In summary, the sleep arousal criteria used for assessment purposes were:

- $L_{eq} = 55$ dB(A)
- $L_1 = 65$ dB(A)

when measured outside a bedroom window.
Table C (Table 6.1) – “Worst – Case” Assessment of Noise Impact dB(A)

<table>
<thead>
<tr>
<th>Location</th>
<th>Noise Descriptor</th>
<th>Measured Operational Noise Level</th>
<th>Noise Criteria</th>
<th>Exceedance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Day</td>
<td>Evening</td>
<td>Night</td>
</tr>
<tr>
<td>1</td>
<td>L$_{10}$</td>
<td>52</td>
<td>52 (47)</td>
<td>49 (44)</td>
</tr>
<tr>
<td></td>
<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>66</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>53</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>L$_{10}$</td>
<td>57</td>
<td>53 (48)</td>
<td>48 (43)</td>
</tr>
<tr>
<td></td>
<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>75</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>57</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>L$_{10}$</td>
<td>55</td>
<td>51 (46)</td>
<td>49 (44)</td>
</tr>
<tr>
<td></td>
<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>66</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>56</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>L$_{10}$</td>
<td>62</td>
<td>53 (48)</td>
<td>50 (45)</td>
</tr>
<tr>
<td></td>
<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>72</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>63</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>L$_{10}$</td>
<td>57</td>
<td>48 (43)</td>
<td>48 (43)</td>
</tr>
<tr>
<td></td>
<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>56</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>L$_{10}$</td>
<td>49</td>
<td>45 (40)</td>
<td>41 (36)</td>
</tr>
<tr>
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<td>L$<em>1$ or L$</em>{ave,\text{max}}$</td>
<td>57</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>L$_{eq}$</td>
<td>49</td>
<td>-</td>
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</tr>
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</table>

Note: Numbers in brackets refer to the more stringent two frequency/tonal noise criteria.
Noise Assessment

Table 6.1 summarises the highest \( L_{10} \), \( L_1 \) (or \( L_{\text{ave, max}} \)) and \( L_{\text{eq}} \) noise levels measured at each location during short-term attended noise surveys. These noise levels were acquired from evening and night noise surveys as opposed to day surveys, in order to avoid extraneous noise from construction and other surrounding noise sources where such were found to be significant. The highest recorded noise levels were then compared to each assessment period's noise criteria, regardless of what period they were measured in.

To assess sleep arousal, the greater of the \( L_1 \) or \( L_{\text{ave, max}} \) noise levels were used for each location. The \( L_{\text{ave, max}} \) levels were determined by averaging the loudest instantaneous noise levels recorded during each survey and for each assessment location, as presented in Appendix A.

In short, the results shown in Table 6.1 present the ‘worst case’ impact scenario from all of the available noise survey data.

Conclusion

Renzo Tonin & Associates completed an assessment of environmental noise impact from port activities to a number of nominated residential premises in Balmain. Noise impact from port activities was quantified and compared to the noise guidelines set by the EPA.

The greatest noise exceedance above the EPA’s noise criteria generally occurs when assessing the \( L_{10} \) intrusive noise emissions. The measured \( L_{\text{eq}} \) levels generally comply or only marginally exceed the set noise assessment criteria. The measured \( L_1 \) (or \( L_{\text{ave, max}} \)) levels exceed by up to 10dB(A) at Location 2 where the residences under construction are exposed to noise from dock vehicles travelling on Robert Street.