

# development code

June 2020  
PORT BOTANY

NSW Ports

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# 1 Introduction

## 1.1 Purpose of the Code

NSW Ports is committed to ensuring that the Port Botany precinct is developed and managed in line with NSW Ports' strategic vision to "manage and develop its port land and port-related infrastructure in a safe, secure, efficient and environmentally responsible manner to cater for the import and export demands of the NSW economy". To assist in achieving this vision, the Port Botany Development Code has been prepared to:

- articulate NSW Ports' design and operational requirements for all new development in a consolidated document;
- set minimum standards for design and operation of new development at Port Botany; and
- provide a guide for consent authorities to assess and determine new development at Port Botany.

## 1.2 Objectives of the Code

The overall objective of this Code is to promote sustainable development at Port Botany. This is to be achieved by:

- facilitating the future development of Port Botany in an efficient manner;
- minimising the impacts of activities at Port Botany on the surrounding environment and community;
- ensuring the ongoing security of Port Botany;
- minimising risks associated with both construction and operations at Port Botany; and
- enhancing the visual amenity of Port Botany through a consistent and coordinated approach to development.

## 1.3 How to use the Code

This Code covers a number of key assessment areas. For each area, a series of objectives and criteria are nominated. The objectives state the outcomes that are to be achieved for future development. The criteria are intended to ensure that the stated objectives are met.

All new developments are to comply with this Code. Variation from the Code is permitted at the discretion of NSW Ports, however, justification for any variation is required to be provided.

## 1.4 Relationship with Other Documents

This Code is to be considered together with other NSW Ports' guidelines and requirements as well as the requirements of other relevant statutory authorities and relevant legislation and standards.

In addition, the management of all impacts associated with construction of new development at Port Botany is to be assessed as part of any application in accordance with relevant guidelines and best practice techniques.

## 2 Visual Amenity

### 2.1 Objectives

- A. To ensure that the height of new development takes into consideration the visual qualities of Botany Bay, in particular the views towards the Port from the Botany Bay foreshore.
- B. To enhance the visual amenity of the Port through the quality design of buildings and structures, and the use of materials and colour which reinforce the industrial maritime nature of Port Botany.

### 2.2 Criteria

1. The maximum height of all building structures and tanks is not to exceed the maximum building heights illustrated at **Figure 1**. The maximum height is measured to the highest point of a building from Zero Fort Denison Tide Gauge (ZFDTG). Height of the building structures and tanks includes plant and lift overruns, but excludes communication devices, antennae, satellite dishes, flagpoles and the like.
2. The maximum heights at **Figure 1** do not apply to port terminal operating equipment such as cranes. These elements may be any height to achieve efficient operational capability, subject to obtaining relevant approvals including approvals under the Commonwealth *Airports Act 1996* and *Civil Aviation Act 1988*.
3. Container stacks are not to exceed a height of 6 containers.
4. Air-conditioning units, telecommunications equipment or mechanical plant are to be concealed within screened enclosures or positioned behind the roofline to minimise their visibility from main port road frontages.
5. Buildings shall be oriented towards the primary street frontage. The office component of a building is to address the street so as to provide an attractive frontage, easily identifiable building entry and the potential for surveillance of the street.

#### 2.2.1 Specific Criteria – Built form

6. Buildings should be designed so as to mitigate the perception of bulk and scale from main port road frontages by:
  - the articulation of building facades where buildings front a main port road frontage;
  - varying façade alignments and height;
  - breaking up of facades with windows and the use of decorative features, cantilevered elements and the like; and
  - varying materials and colours used (see **Specific Criteria 2.2.2**).



**Figure 1** – Maximum heights for building structures and tanks (Zero Fort Denison Tide Gauge (ZFDTG))

**Note:** ZFDTG = AHD + 0.925m

## 2.2.2 Specific Criteria – Materials, finishes and colour

7. An indicative palette of colours for building structures is shown at **Figure 2**.
8. Buildings, in particular large buildings, are to comprise external materials incorporating muted recessive colours with material and / or tonal colour variation used to break the mass of buildings and walls. Lighter shades should be used for larger wall areas and structures, with darker shades used as highlights. Highlight colours (i.e. red, yellow and orange tones) should be used to articulate architectural features and the like.
9. Materials and colours for buildings and roofs are to minimise reflectivity. All glazing is to have a reflectivity coefficient of less than 20%.
10. Lighter colours on light poles greater than 15 metres in height should be avoided in favour of darker, less reflective colours.
11. All tanks are to be painted white or light grey.
12. The visibility of mobile elements such as cranes and rail mounted gantries is to be reinforced through colour. The colour selected by the terminal operator is to be submitted as part of the application for development.



**Figure 2** – Indicative colour palette for building structures (refer to *Australian Standard AS 2700 Colour Standards for General Purposes* for colour code details)



**Figure 3** – Examples of the use of colour highlights on mobile elements (left) and building structures (right)

## 3 Sustainable Development

### 3.1 Objectives

- A. To encourage new development to incorporate sustainability measures into design and operational phases of the development.
- B. To improve the energy efficiency of new buildings and minimise energy consumption in Port operations.
- C. To encourage the reduction of potable water usage and reuse of water.
- D. To encourage the utilisation of materials and equipment with low energy inputs.
- E. To minimise waste generation and to facilitate reuse and recycling and the safe handling of hazardous waste.
- F. To minimise the risk of climate change impacts on new and existing port facilities, and to minimise greenhouse gas contributions from new port facilities.

### 3.2 Criteria

- 1. All development should incorporate as many of the suggested measures contained in NSW Ports' *Green Port Checklist* as practicable. As a minimum, all development proposals are to be accompanied by a completed *Green Port Checklist*.
- 2. All buildings are to achieve a minimum 4 Star Green Star rating (or the equivalent) for the latest applicable version. This applies to buildings where Green Star rating tools are applicable.
- 3. Buildings (including sheds and workshops) are to be designed and constructed to maximise the use of natural ventilation and natural lighting, and to minimise energy consumption associated with heating, cooling and lighting.
- 4. Development is to collect sufficient rainwater for reuse on site, such as for use in container wash down facilities and the like, grey water flushing of sanitary fixtures and irrigation of landscaping.
- 5. Low maintenance and robust materials are to be used.
- 6. All sites are to provide a dedicated storage area for the separation, collection and recycling of waste with adequate access for waste collection.
- 7. A climate change risk assessment is to be provided as part of an application for all new developments.
- 8. All development is to incorporate measures to minimise greenhouse gas emissions.

## 4 Access, Parking and Loading

### 4.1 Objectives

- A. To ensure that all access, parking and loading facilities and the traffic generated by development do not impact upon the operation of the Port or the surrounding road network.
- B. To ensure that all leased areas have adequate and appropriately located driveway access, on-site parking and queuing areas, vehicle manoeuvring space and loading areas.
- C. To prevent queuing of vehicles outside leased areas.
- D. To provide appropriate landscaping within car parking areas to improve visual amenity and provide shade for car parking spaces.
- E. To ensure that the design of driveway access, parking and loading areas and waste management facilities are efficient, safe, convenient and do not detract from the visual amenity of the Port.
- F. To provide convenient and safe pedestrian and bicycle access and bicycle parking facilities within leased areas.

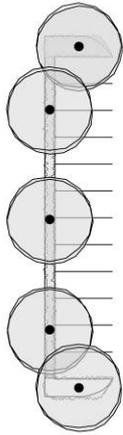
### 4.2 Criteria

1. All development proposals are to assess both on and off-site traffic impacts and are to be accompanied by a Traffic Management Plan.
2. All site vehicular access points and paths are to be located and designed to avoid conflicts between pedestrians, light vehicles and truck movements.
3. Container facilities are to provide separate access points to an adjoining roadway for light vehicles and trucks.
4. Designated pedestrian paths should be clearly delineated from the site's internal vehicular roads and parking areas, by means of a perceivable change in material and/or colour.
5. All employee and visitor parking is to be accommodated within the leased area. Car parking areas (i.e., parking bays and loading areas) are to:
  - be designed in accordance with *Australian Standard AS 1428:1-4 Design for Access and Mobility*, *Australian Standard AS 2890.1 Car Parking Facilities* and *Australian Standard AS 2890.2 Commercial Vehicle Facilities*;
  - provide a minimum rate of one (1) parking space per staff member and contractor plus 10% (calculation to be based on the maximum number of staff members and / or contractors on site at any one time);
  - provide for at least two (2) visitor parking spaces however for those sites with less than 10 staff members and contractors provide at least one(1) visitor parking space;

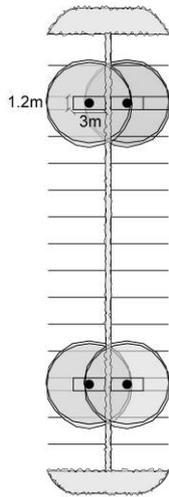
- provide for at least one (1) mobility impaired parking space, to be located adjacent to building entries and clearly delineated;
  - be paved with concrete or bituminous surfacing designed and drained to the approved stormwater drainage system; and
  - incorporate landscaping to provide visual screening to reduce the visual impact particularly from external roadways (**Figure 4**).
6. For sites with less than 20 car spaces, screen planting to the perimeter of the car park is to be provided. For sites with more than 20 car spaces, additional tree bays (1.2 x 3m minimum) are to be incorporated at a rate of one (1) bay for every 10 spaces, except where bays abut rear or side walls of buildings (**Figure 5**). The suggested planting palette is set out at **Appendix A**.
  7. The site layout shall ensure that all vehicles being loaded and/or unloaded (or awaiting loading and / or unloading) are able to stand entirely within the leased area to avoid queuing of vehicles outside of leased areas.
  8. Garbage bins and waste recycling areas shall be accommodated on site, appropriately screened and accessible to the users of the building and service vehicles.
  9. Bicycle parking must be provided at a rate of at least two (2) bicycle parking spaces plus 5% of the total number of required car parking spaces. Bicycle parking facilities should be located in highly visible, illuminated areas and securely anchored to the site surface to prevent removal and shall be of sufficient strength to resist vandalism and theft.



**Figure 4** –Examples of landscaping within car parking areas



Perimeter screen planting



Tree bays within car park  
(for over 20 spaces)

**Figure 5** – Required perimeter screen planting (left) and tree bays within car parking areas (right)

## 5 Security

### 5.1 Objectives

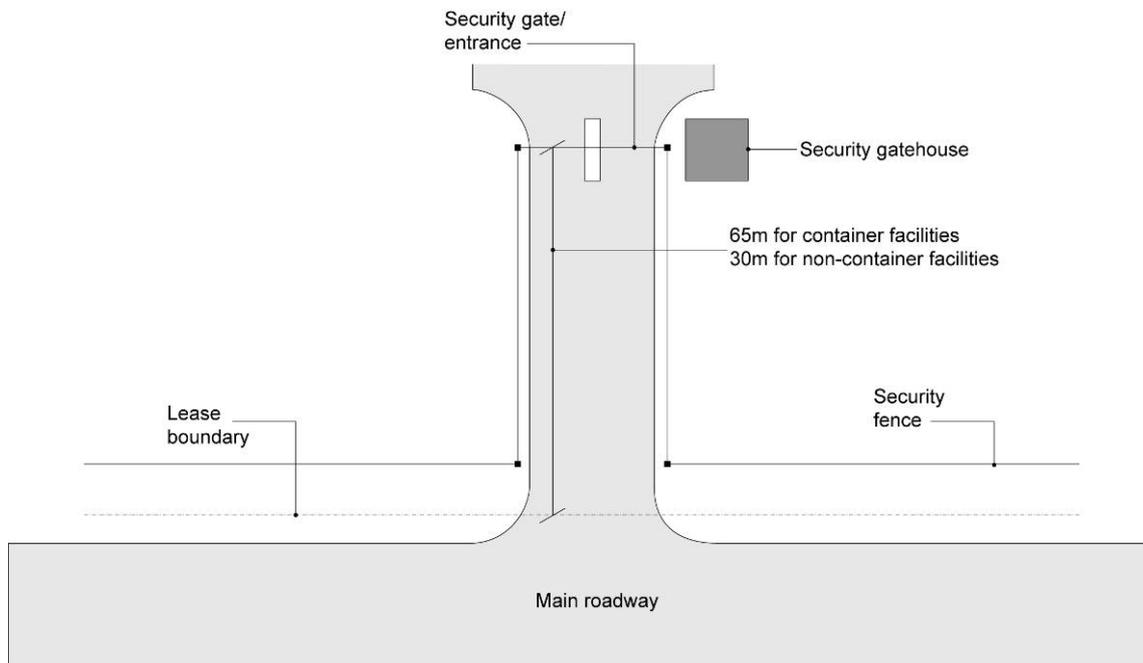
- A. To ensure that maritime security requirements of the Port are maintained in compliance with the Commonwealth *Maritime Transport and Offshore Facilities Security Act 2003*.
- B. To encourage opportunities for passive surveillance so as to discourage vandalism and criminal activity.
- C. To provide security infrastructure that enhances the visual quality of the Port through the use of consistent materials and finishes.

### 5.2 Criteria

1. All leased areas are to be appropriately fenced for security purposes. All fencing is to be chain wire fencing with optional 3-strand barbed wire along the top portion of the fence (**Figure 6**). The maximum fence height permitted is 3.5m (inclusive of the barbed wire portion).
2. All chain wire fencing, posts and rails and gates that are visible from the water and main port roads (excluding roads within leased areas) are required to be black in colour (i.e., black PVC, powder coated or the like). Fencing in other locations may comprise a metallic finish.
3. All access points to leased areas are to be secured with durable gates, and checkpoint facilities, where appropriate. Gates are to comprise either chain wire fencing set within a framed rim (with optional 3-strand barbed wire on top), or palisade gates (with optional spikes or barbed wire on top) - (**Figure 6**).
4. Truck entry to a site must be set back as a minimum 65m from the lease boundary for container facilities and 30m for non-container facilities (**Figure 7**).



**Figure 6** - Security chain wire gates with 3-strand barbed wire (left) and security palisade gates and spiked caps



**Figure 7 – Truck access point / security gates to leased areas**

## 6 Landscaping

### 6.1 Objectives

- A. To enhance the visual quality of the Port.
- B. To ensure that all landscaping maintains opportunities for visual surveillance and does not compromise the safety and security of the Port.
- C. To ensure that all landscape planting uses appropriate native plant species of a high quality, to achieve low maintenance, durability and drought tolerance.

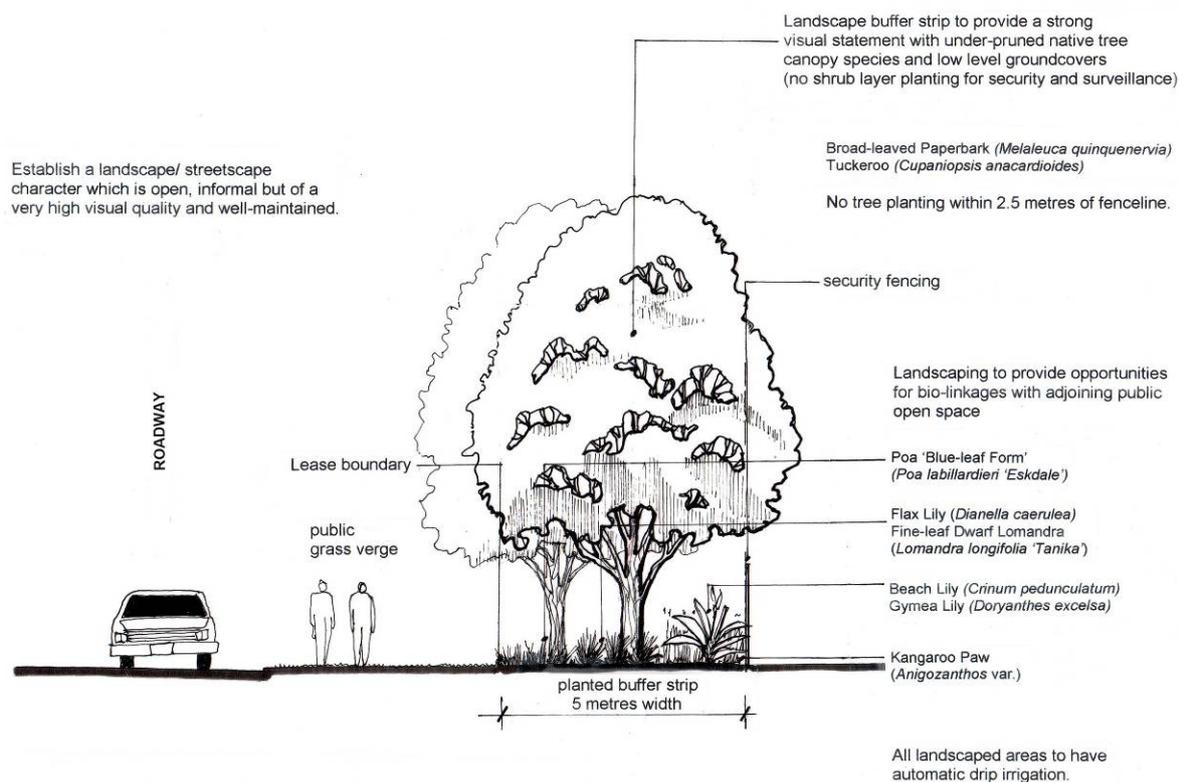
### 6.2 General Criteria

1. Landscaping is to be provided in front of fences that face roads external to the lease area and to non-active waterfronts.
2. Landscaped areas are to be planted to achieve a minimum of 75% planting density once fully matured.
3. Only suitable native plant species are to be used and, where possible and practical, locally sourced provenance stock should be used. The minimum plant container sizes are to be as follows:
  - Trees – 25 litres;
  - Accents – 5 litres; and
  - Groundcovers – 100mm.
4. All landscaping, in particular within car parks and along pedestrian paths, is to take into account the need to maintain passive surveillance.
5. Where landscaping is provided within internal boundaries, the trunks of trees on internal boundaries must not be closer than 2.5m to the perimeter fence and no part of the tree is to overhang the adjoining premises.
6. All development proposals are to be accompanied by a Landscape Management Plan which outlines the species and planting densities, methods for vegetation establishment and an ongoing maintenance program.
7. Mown grassed verges, adjoining landscaping strips or otherwise, are to comply with the requirements at **Appendix A**.

### 6.2.1 Specific Criteria – Road reserve landscaped areas

The following criteria apply to landscaped areas that face roads external to leased areas and that are not affected by potential fire risk.

8. Establish a 5m landscaped buffer strip within the lease area, facing the external roadway. The buffer strip is to have flush timber edging with the security fencing located behind the landscaping (**Figure 8**).
9. Develop and maintain a consistent pattern of selected native planting including:
  - layered and banded ground stratum planting (up to 0.5 – 0.7m high),
  - accent planting with large perennials (up to 1.4m high),
  - clustered and individual small to medium tree planting up to 8 – 12m in height, and
  - clusters to have a maximum spacing of 15m between groups.
10. Ensure a high level of security and passive surveillance:
  - no dense, mid-stratum shrub planting (i.e., up to 3m in height),
  - no tree planting within 2.5m of fence line, and
  - underprune trees to minimum 2.5m above ground level and maintain adequate branch clearance from the security fencing.
11. Existing landscape areas that do not comply with the above controls should be removed and replaced with landscaping that complies with the above controls.
12. The suggested planting palette is at **Appendix A**.



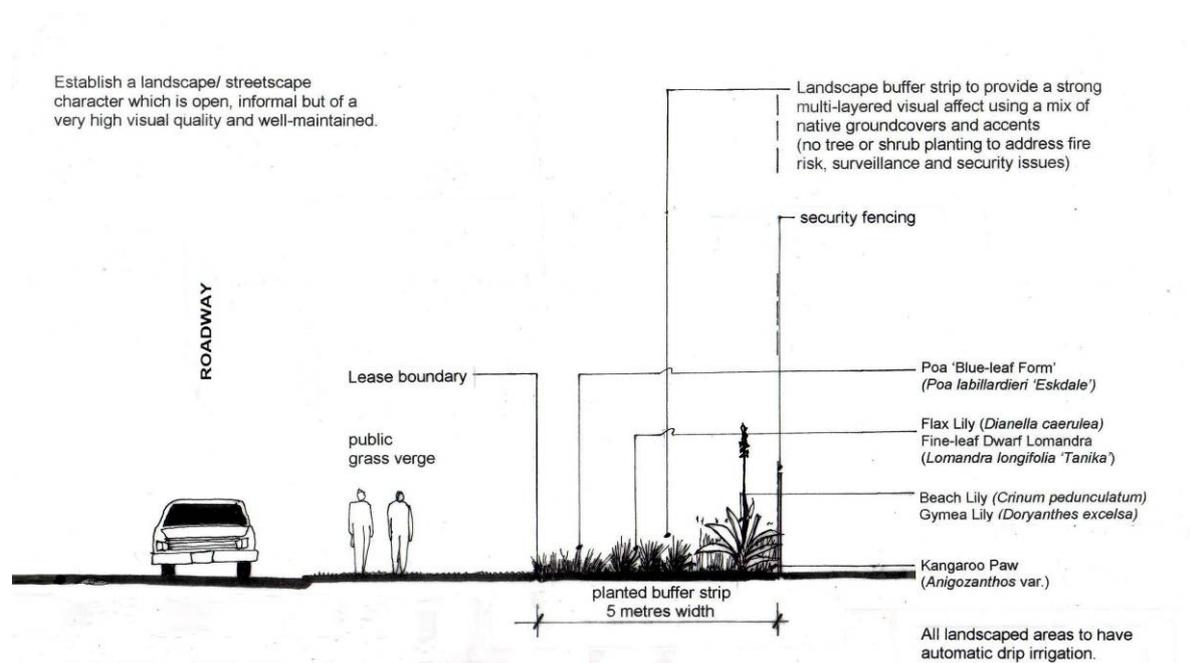
**Figure 8** – Typical cross section through road reserve landscaped areas

## 6.2.2 Specific Criteria – Potential fire risk landscaped areas / non-active water front landscaped areas

The following criteria apply to sites that are considered to be potential fire risk (e.g., bulk liquids berth, LPG storage areas and along pipeline corridors) and non-active water fronts.

13. Establish a 5m landscaped buffer strip within the lease area, facing the roadway external to the lease area / non-active water front. The buffer strip is to have flush timber edging with the security fencing located behind the landscaping (**Figure 9**).
14. Continue repetition of form, texture and colour to create a strong multi-layered, rhythmic pattern in the landscape as follows:
  - layered and banded ground stratum planting (0.4 – 0.7m high), and
  - introduce highlights within the landscape buffer strip using grouped accent planting with large perennials (up to 1.4m high).
15. Develop layered bedding pattern with a progression from smaller species at the front edge to larger species at the back (near the fence line).
16. Existing landscape areas that do not comply with the above controls should be removed and replaced with landscaping that complies with the above controls.

17. Use hardy native or indigenous plant species suited to site-specific environmental conditions with a low fire risk (ie. low combustion or fire retardant properties). The suggested planting palette is at **Appendix A**.



**Figure 9** – Typical cross section through potential fire risk and non-active water front landscaped areas

## 7 Signage

### 7.1 Objectives

- A. To provide clear information and / or directions for port users, operators and visitors.
- B. To provide easily identifiable site entrances and exit points for port users and visitors.
- C. To provide Port related businesses the opportunity of identifying their location and activity.
- D. To manage signage in a manner that does not detract from the visual quality of the Port.
- E. To ensure that all public notice and directional signage is effective and consistent in design and character.

### 7.2 Criteria

1. All directional signage outside or on the lease area fence (**Figure 10**) excluding the relevant road authority's street signage:
  - is to be located in a prominent position and clearly visible;
  - is not to be located above a roadway;
  - is to be of a size and location so as to not obscure vehicle sightlines;
  - is to be positioned where it does not obstruct walkways and pathways;
  - is to consist of similar colours to that of the NSW Ports colour scheme comprising dark blue, orange, red, white, black and grey, or is to be consistent with colours of typical safety / warning signage (i.e., to comply with applicable Australian Standards);
  - may incorporate the lessee logo where it is located for directional purposes at the entrance to a leased area. The colours of the logo are to be lessee corporate colours, and
  - for car parking areas, loading and delivery areas and the like, is to be located close to the main access of a site.
2. No advertising signs shall be erected within the port estate upon the buildings, structures or tanks other than business identification signage.
3. Business identification signage (**Figure 11**):
  - is to be located outside the lease area fence and located on NSW Ports' standard Blade Sign;
  - should not obscure vehicle sightlines or control signs;
  - is permitted on one elevation of the primary building, except where a site has two main road frontages or where there are multiple occupants within a building;
  - may comprise text, illustrations, and/or both, to ensure clear identification of the sign and its intent;

- is not to be illuminated or comprise any form of flashing signage;
  - is not to occupy more than 10% of any facade or elevation of a building;
  - is to identify visitor entrance points to lease areas.
4. Business identification signage on the side of tanks is limited to one sign per leased area or site (in the case of multiple lease areas being operated as a single site). The sign should be subordinate to the elevation of the tank.

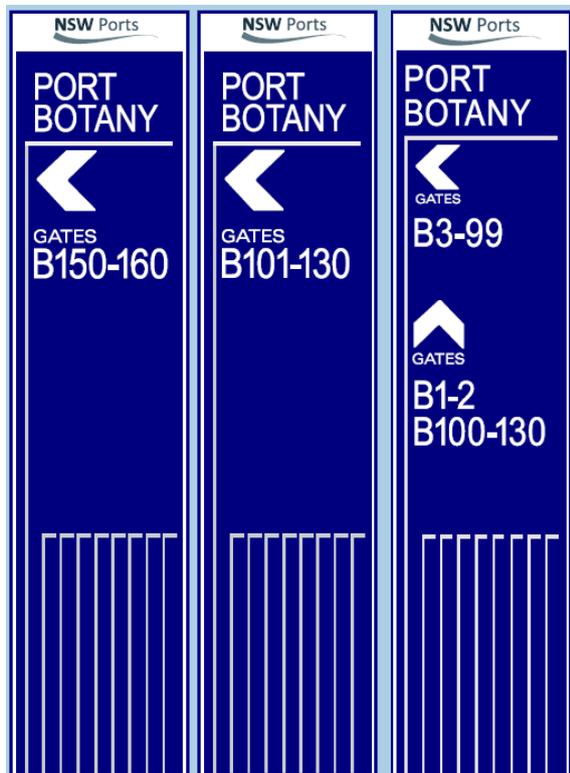


Figure 10 – Appropriate examples of directional signage



Figure 11 - Appropriate examples of business identification signage

## 8 Lighting

### 8.1 Objectives

- A. To ensure that all external lighting provides a safe and attractive environment that meets the operational requirements of the Port.
- B. To ensure all lighting does not adversely impact on the operations of Sydney Airport (Kingsford Smith Airport).
- C. To minimise the impact of light spill on the surrounding environment and community.

### 8.2 Criteria

1. Lighting levels are to be provided in a manner just sufficient to meet operational requirements and to the relevant Australian Standards.
2. All lighting is to meet Civil Aviation Safety Authority (CASA) / Air Services Australia (ASA) requirements. Note: Refer to the *CASA Manual of Standards Part 139 - Aerodromes*.
3. Appropriate lighting should be provided at key locations such as pedestrian paths, driveways, parking areas and building entries, so as to identify and provide safe access routes for both employees and visitors.
4. Lighting is to be positioned so as to not cause distraction to vehicle drivers on internal or external roads or the occupants of adjoining sites.
5. Light spill outside the site boundary and sky lighting is to be avoided through the adoption of measures such as:
  - Focussing lights downwards;
  - Installing cut-offs or shields on lights;
  - Minimising the light mast height; and
  - Using low mounting height poles to light non terminal operational areas, including access / egress routes.

#### 8.2.1 Specific Criteria – Lighting for areas adjacent to Penrhyn Estuary

6. No fixed light is to result in light spill into Penrhyn Estuary or the Estuary flushing channel (**Figure 16**).
7. Low mounting height poles are to be used adjacent to the Estuary.
8. Moving lights, such as vehicle headlights are to be screened, so they do not shine into Penrhyn Estuary.
9. High level lighting on operational equipment is not to shine into Penrhyn Estuary.

## 9 Heritage

### 9.1 Objectives

- A. To minimise any adverse impacts of development on identified items of heritage significance within and immediately adjacent to the Port.

### 9.2 Criteria

1. The Revetment Wall along Prince of Wales Drive, the Bunnerong Canal and the Bunnerong Canal Rail Bridge are listed as heritage items on Port Lessor Pty Ltd's Section 170 Heritage and Conservation Register and the Old Government Wharf Remains are listed as heritage items on the Sydney Ports Section 170 Heritage and Conservation Register (see **Figure 12**). Any development proposal which has the potential to impact on these items or their heritage significance is to be accompanied by a heritage impact statement.
2. Development in the vicinity of a heritage item is to be designed to respect and complement the heritage item.



Figure 12 – Location of Port Botany Section 170 heritage items

## 10 Safety and Hazard Management

### 10.1 Objectives

- A. To provide a safe working environment for all users and visitors associated with the operation of facilities at Port Botany.
- B. To ensure non hazardous facilities developed within the Port Botany precinct are located such that impacts from existing hazardous facilities are considered.
- C. To ensure that port infrastructure such as bulk hazardous storage facilities and pipelines are designed and located so as to minimise risk to surrounding land uses and the environment both within the Port Botany precinct and adjacent land uses to the Port.

### 10.2 Criteria – General Criteria (including non-hazardous facilities)

1. All new development in Port Botany is required to undergo a risk assessment to demonstrate the development:
  - will not contribute to any increase in cumulative risk as shown in Figure 2 of the *Port Botany Land Use Safety Study Overview Report 1996 (Overview Report)*;
  - will not result in any propagation of risks to neighbouring facilities;
  - will not result in a significant increase in the number of people (including both construction and operational staff) exposed to risk inside the residential contour as shown in Figure 2 of the *Overview Report*; and
  - will identify and implement risk reduction and safety management measures as required.

This risk assessment is to be submitted as part of the application for development.

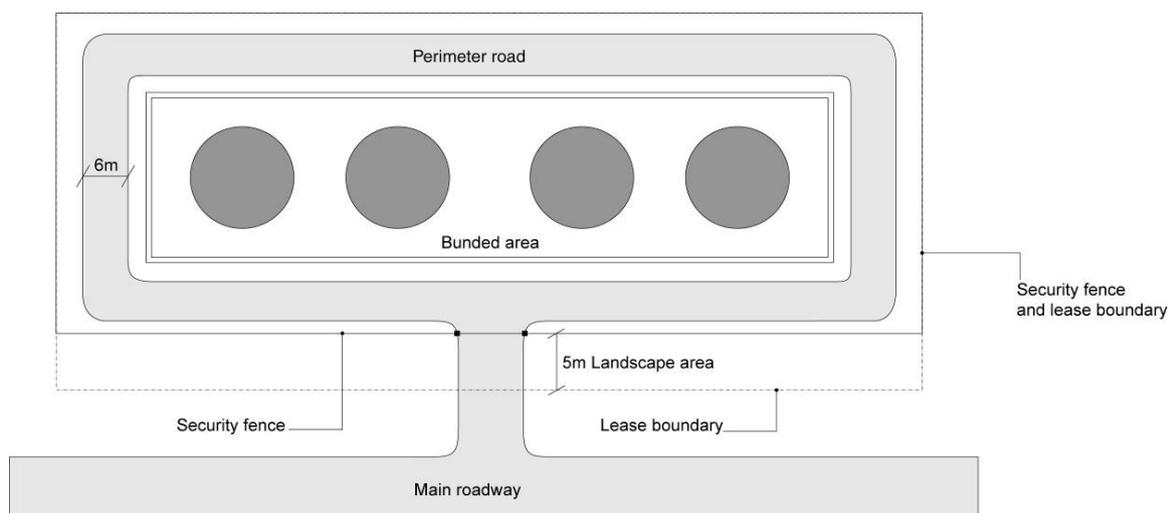
### 10.3 Criteria – Hazardous facilities

2. All proposals for new or expanded potentially hazardous developments are required to undergo a Risk Assessment. The Risk Assessment is to be submitted as part of the application for development and is to include the implementation, operation and maintenance phases. The assessment is to demonstrate:
  - that all foreseeable hazards that may arise from a development, that have a potential to harm the health and safety of any person, the environment, or impact the safety of buildings, equipment, plant and facilities have been clearly identified;
  - that potential for propagation of hazardous incidents to the neighbouring facilities is identified and is, in accordance with the “As Low As Reasonably Practicable” (ALARP) principle;
  - that the risks associated with the identified hazards at the development have been appropriately analysed and assessed;
  - that the proposed development will not contribute to any increase in the cumulative risk (individual and societal risk) beyond the levels shown in Figures 2 and 9 of the *Port Botany Land Use Safety Study Overview Report 1996*;

- that the assessed risks comply with the relevant risk criteria published by the regulatory authorities;
  - that all identified risks will be controlled and minimised by protection and mitigation; and
  - that incidents at hazardous facilities will not impact on the use or operation of adjacent land, including NSW Ports' common areas (e.g. roadways and pipeline corridors). The Risk Assessment for the proposed development is to include the quantitative analysis of incident impacts relating to consequence severity and risk and include risk contours. The impacts are not to exceed acceptable published risk criteria.
3. Minimum separation distances required to 'protected places' under the relevant Australian Standard must be complied with.
  4. The industrial premises risk contour for the development (including existing site development) must remain within the lease boundary.

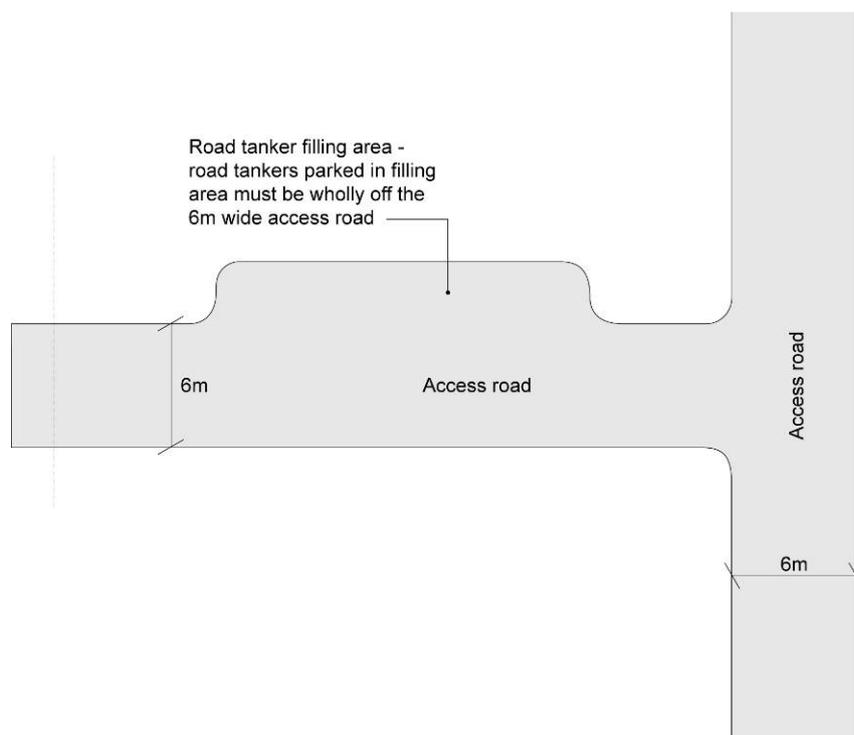
### 10.3.1 Specific Criteria – Bulk liquid storage facilities

5. Separation distances within and between bulk liquid storage hazardous facilities (i.e. separation distances between facilities on the subject site or adjoining sites) is to be provided in accordance with the relevant Australian Standard(s) or the criteria listed in this section of the Code, whichever is the greater.
6. A perimeter roadway is to be provided around all bulk liquid storage areas. A bulk liquid storage area consists of bulk liquid tanks contained within a bunded area. **Figure 13** shows the minimum acceptable roadway layout around a bulk liquids storage area. The perimeter roadway is to be provided with the following:
  - 6m clear road width;
  - Corners designed to accommodate the turning of emergency vehicles / trucks;
  - Connected to the main roadway at the front of the site, either directly or by an internal site road no less than 6m wide; and
  - Unobstructed access along the full length of the road.



**Figure 13** – Perimeter road around bunded liquid storage areas

7. Where a bulk liquid storage facility operates a road tanker filling area, the road tanker filling area shall be located wholly off any access road that passes the filling area. **Figure 14** provides an example of a bulk liquids tanker filling area located adjacent to an access road. The filling area shall be located so that no part of a truck in the filling bay extends into the access road.



**Figure 14** – Tanker filling area adjacent to an access road at a bulk liquid storage facility

### 10.3.2 Specific Criteria – Pipelines

8. All pipelines proposed within the Port Botany Port precinct are to be located in the following manner:
  - Pipelines required to be installed external to the leased area are to be located within a Port Botany pipeline corridor (**Figure 15**);
  - Exposed above ground level or in an open culvert lined with impermeable material so as to prevent the percolation of any spilled materials through the paving into the underlying sand. The paving and any jointing materials to be used shall be resistant both to heat and the corrosive effects of the range of the products to be transported in the pipeline;
  - Underground pipelines are to be avoided unless absolutely necessary;
  - Where underground pipelines are used they are to be installed with a leak detection system (e.g. differential flow device, inventory measurement, etc.);

- Underground pipelines are to be suitably protected against corrosion, considering (but not limited to) the following:
  - expected lifetime of the pipeline;
  - soil conditions;
  - potential acid sulfate soils; and
  - water table level.

Details of the leak detection system and corrosion protection are to be provided in the risk assessment documentation.

9. Any new valves at the Bulk Liquids Berth must include remote operated emergency shutdown valves with such valves to be located at the shore manifold. The locations of activation points for the remote operated valves must, as a minimum, be able to be activated from the operator's emergency shutdown system during ship discharges as well as from the Bulk Liquids Berth office.
10. All above ground bolted flanged joints, associated with the pipeline outside the main storage bund area, are to be provided with the following:
  - A bunded pit to retain any product leaks;
  - Protection to prevent leaks from flanges and joints spraying beyond the confines of the pit; and
  - Leak detection within the pit and an alarm system to notify of potential flange/joint leaks.

It is noted that the pit may require a cover to prevent the ingress of rain water causing false leak detection alarms.

#### **10.4 Criteria – Areas where petroleum, petroleum products, petro-chemicals and other liquid chemicals are handled or stored**

11. Areas where petroleum, petroleum products, petro-chemicals and other liquid chemicals are handled or stored are required to be bunded in accordance with the relevant standards. Where pipeline or hose connections are made or broken for operational activities, these areas are also required to be bunded.
12. The area within all bunded enclosures is to be impervious so as to prevent the percolation of any spilled materials through the paving into the underlying soil. The paving and any jointing materials to be used shall be resistant both to heat and the corrosive effects of the range of the products to be handled or stored.
13. The surface of the paving in bunded areas shall be graded so as to permit the flow of surface water to a suitable drainage system. This surface shall be maintained to prevent ponding.
14. All stormwater from bunded areas shall be directed through a separator system located outside the bunded area.

15. Areas used for loading of road tankers, refuelling or other handling operations are to have 'roll-over' bunding and impervious paving so as to prevent the release of any spilled materials into the stormwater and/or through the paving into the underlying soil. The paving and any jointing materials to be used shall be resistant both to heat and the corrosive effects of the range of the products to be handled. All drainage from these areas is to be directed to a drainage system via a treatment system.

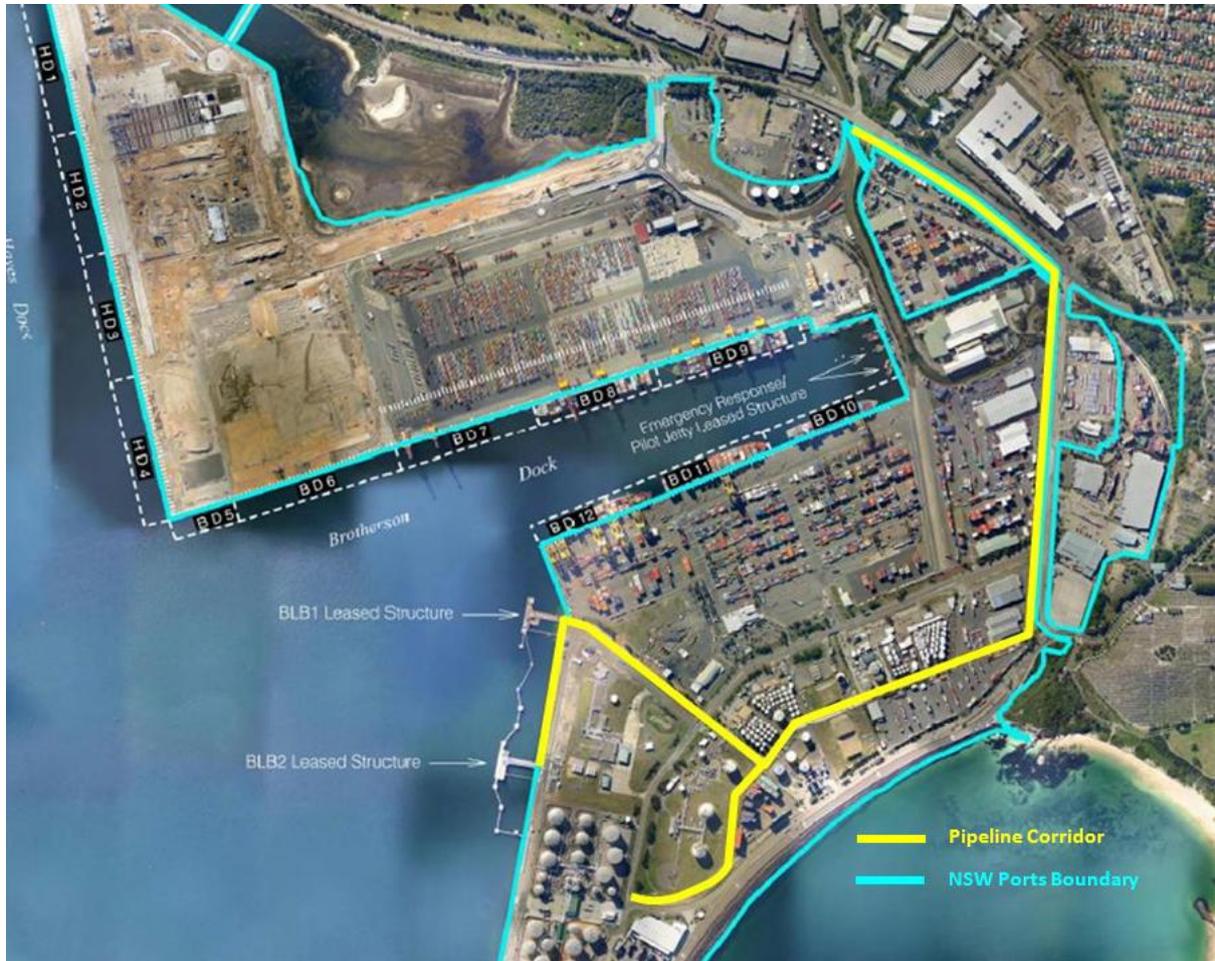


Figure 15 – Port Botany pipeline corridor

## 11 Water Quality and Stormwater

### 11.1 Objectives

- A. To protect the water quality of Botany Bay and Penrhyn Estuary by managing the quality of stormwater runoff into these waters.
- B. To provide specific protection for chemical and petroleum storage areas so as to minimise the risk of spills entering Botany Bay.

### 11.2 Criteria

1. The one in 20 year storm event (i.e. 5% Annual Exceedance Probability (AEP)) is to be accommodated within a piped stormwater system. Where the site does not drain directly to an adjacent waterway, the one in 100 year storm event is to be retained on site.
2. The design and layout of leased areas, including the siting of buildings and the positioning of bunded areas and container stacks, is to take into consideration the need to provide unobstructed stormwater overland flow paths.
3. The first flush<sup>1</sup> from impervious areas is to be captured and treated to prevent pollutants from entering Botany Bay. Pollutants to be removed must include but are not limited to sediments, litter, rubbish, oils, greases and other chemicals used/stored onsite.
4. Stormwater leaving the site is not to create erosion within Penrhyn Estuary (**Figure 16**).
5. Measures to contain spills and prevent them from discharging through the stormwater system are to be identified and spill response procedures documented.
6. Emergency spill kits are to be available on-site and staff are to be trained in how to use them.

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<sup>1</sup> 'First flush' refers to the initial stormwater runoff during rainfall that contains the highest initial pollutant load. This generally involves the first 10mm of rainfall.



**Figure 16** – The extent of Penrhyn Estuary and the Estuary flushing channel

## 12 Air Quality

### 12.1 Objectives

- A. To minimise emissions of air pollutants and odours from port operations and development.
- B. To ensure emissions of smoke, dust, particulate matter, steam or gas, do not adversely impact on the operations of Sydney Airport (Kingsford Smith Airport).

### 12.2 Criteria

1. Site areas which are trafficked by vehicles and trucks are, as a minimum, to be sealed to minimise dust generation.
2. Information regarding the products to be stored and/or handled on the premises is to be provided as well as the proposed storage area for such products. Products handled on site which have an offensive odour are to be handled in a closed circuit or sealed system.
3. Vehicles, plant and equipment are to be maintained and operated in good working condition and are to be turned off when not in use to minimise emissions to air.
4. Building materials that may potentially contribute to poor internal air quality are to be avoided.
5. Air filters are to be installed in all ventilation systems to remove particulate contamination.
6. All development is to incorporate measures to minimise emissions that adversely impact on local air quality.
7. Any emissions of smoke, dust, particulate matter, steam or gas must meet Civil Aviation Safety Authority (CASA) / Air Services Australia (ASA) requirements.

## 13 Bird Management

### 13.1 Objectives

- A. To minimise the attraction of bird species that pose potential risks and hazards to airport operations.
- B. To minimise impacts on shorebirds using Penrhyn Estuary from port operations.
- C. To minimise barriers to shorebird access into Penrhyn Estuary.

### 13.2 Criteria

1. An assessment of aspects of the proposed development which could attract bird species that may pose a hazard to airport operations is to be provided as part of the application for development. The assessment is to include any mitigation measures to be implemented. Aspects to be considered include potential for roosting on roofs, lights poles, site areas having low levels of activity, areas where water may pond, potential feeding areas for birds such as sediments, or rubbish collection areas, etc.
2. Height restrictions in **Figure 1** are required to be complied with unless a shorebird impact assessment is undertaken which confirms that there is no adverse impact on shorebird access or use of Penrhyn Estuary.
3. No port operations (except for road access / egress) are permitted within 20m of the western edge of Penrhyn Estuary. Refer to **Figure 1**
4. Container stacks, buildings and tanks are to be set back at least 100m from the western edge of Penrhyn Estuary and 64m from the southern edge of Penrhyn Estuary.

## 14 Noise and Vibration

### 14.1 Objectives

- A. To minimise the noise and vibration impacts of development and operations in the Port, including road and rail uses, on the surrounding environment, in particular residential areas and other sensitive land uses.
- B. To ensure acceptable levels of noise and vibration for workers and visitors at Port Botany.

### 14.2 Criteria

1. For all new developments, proponents are to identify:
  - relevant noise criteria based on the Environment Protection Authority guidelines;
  - all sources of noise;
  - noise emission levels; and
  - proposed mitigation measures.
2. All buildings, equipment and operational processes are to be selected or designed to minimise the emission of noise.
3. Noise reduction measures for mobile equipment, trucks, other vehicles and machinery are to be implemented, such as through insulation and 'engine off' policies. Audible movement alarms must not be used unless a safety risk assessment has been undertaken to recommend their use.
4. Noisy plant and equipment should be located as far as possible from noise sensitive areas, optimising attenuation effects from topography, natural and purpose built barriers.
5. Vibration transmitted outside the site during operations must be within acceptable limits based on Environment Protection Authority guidelines.

## 15 Contamination and Acid Sulfate Soils

### 15.1 Objectives

- A. To minimise the risks to human health and the environment from the development of contaminated land or disturbance of contaminated groundwater or potential acid sulfate soils.
- B. To ensure that an adequate soil/groundwater contamination assessment, and an appropriate level of remediation, if required, is undertaken.

### 15.2 Criteria

- 1. For all development an assessment of potential and likelihood of soil and groundwater contamination is to be undertaken as part of the application for development. Where a contamination hazard is deemed possible, approved mitigation / remediation measures are to be undertaken. This is to be generally in accordance with the Environment Protection Authority guidelines made or approval under the *Contaminated Land Management Act 1997*.
- 2. For all development an assessment of potential acid sulfate soils present on site is to be undertaken as part of the application for development. Where acid sulfate soils could be encountered, mitigation measures are to be undertaken.

## 16 Groundwater Management Zone (Elgas Deed)

### 16.1 Objectives

- A. To ensure that new development within the Groundwater Management Zone does not adversely impact upon the existing Elgas LPG Storage Cavern (located in sandstone rock approximately 140m below ground).

### 16.2 Criteria

1. The Groundwater Management Zone (GMZ) associated with the Elgas LPG Storage Cavern(GMZ(A)) is illustrated at **Figure 17**. Any development within the area marked '(GMZ(A)' or 'GMZ(B)' is required to comply with the '*Groundwater Management Zone Deed*' between the Water Administration Ministerial Corporation, Sydney Port Corporation (vested to Port Botany Operations Pty Limited), Elgas Limited and the Marine Ministerial Holding Corporation (NSW Roads and Maritime Services). A copy of the Deed is available on request from NSW Ports. Specifically, any development proposed in the 'GMZ' is required to specify the proposed construction methods; assess the likely impact on the water table; and assess the likely impact on the Elgas LPG Storage Development.



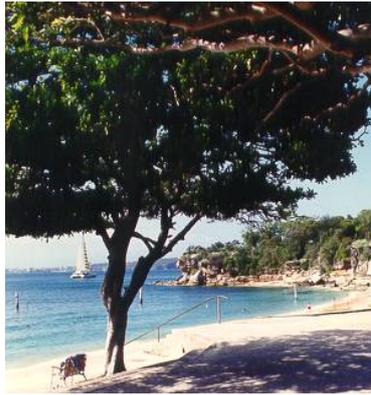
## Appendix A – Preferred Landscape Planting Species

| Type   | Scientific Name                                   | Common Name               |
|--|---|---------------------------|
| Trees  | <i>Acmena smithii</i>                             | Lilly Pilly               |
|  | <i>Angophora costata</i>                          | Sydney Red Gum            |
|  | <i>Banksia integrifolia</i>                       | Coast Banksia             |
|  | <i>Corymbia gummifera</i>                         | Red Bloodwood             |
|  | <i>Cupaniopsis anarcardiodes</i>                  | Tuckeroo                  |
|  | <i>Elaeocarpus reticulatus</i>                    | Blueberry Ash             |
|  | <i>Eucalyptus botryoides</i>                      | Bangalay                  |
|  | <i>Eucalyptus piperita</i>                        | Sydney Peppermint         |
|  | <i>Eucalyptus haemastoma</i>                      | Broad-leaved Scribbly Gum |
|  | <i>Glochidion ferdinandi</i>                      | Cheese Tree               |
| Shrubs<br>1-4m   | <i>Acacia longifolia</i>                          | Coastal Wattle            |
|  | <i>Acacia suaveolens</i>                          | Sweet Wattle              |
|  | <i>Acacia ulicifolia</i>                          | Prickly Moses             |
|  | <i>Banksia aemula</i>                             | Wallum Banksia            |
|  | <i>Banksia ericifolia</i>                         | Heath-leaved Banksia      |
|  | <i>Banksia serrata</i>                            | Old-man Banksia           |
|  | <i>Bossiaea heterophylla</i>                      | Variable Bossiaea         |
|  | <i>Brachyloma daphnoides</i>                      | Daphne Heath              |
|  | <i>Breynia oblongifolia</i>                       | Coffee Bush               |
|  | <i>Correa alba</i>                                | White correa              |
|  | <i>Dodonaea triquetra</i>                         | Large-leaf hop bush       |
|  | <i>Eriostemon australasius</i>                    | Pink Wax Flower           |
|  | <i>Lambertia Formosa</i>                          | Mountain Devil            |
|  | <i>Leptospermum laevigatum</i>                    | Coast Teatree             |
|  | <i>Leptospermum trinervium</i>                    | Slender Tea-Tree          |
|  | <i>Leucopogon ericoides</i>                       | Pink Beard-Heath          |
|  | <i>Leucopogon parviflorus</i>                     | Coastal Beard-Heath       |
|  | <i>Monotoca elliptica</i>                         | Tree Broom-heath          |
|  | <i>Notelaea longifolia</i>                        | Large Mock-Olive          |
|  | <i>Persoonia lanceolata</i>                       | Lance Leaf Geebung        |
| <i>Pittosporum undulatum</i>                                 | Sweet Pittosporum                                 |                           |
| <i>Ricinocarpus pinifolius</i>                               | Wedding Bush                                      |                           |
| <i>Westringia fruticosa</i>                                  | Native rosemary                                   |                           |
| Understorey<br>– sedges,<br>ground<br>covers and<br>climbers | <i>Austrodanthonia</i> spp                        | Wallaby grass             |
|  | <i>Carpobrotus glaucescens</i>                    | Pigface                   |
|  | <i>Commelina cyanea</i>                           | Native Wandering Jew      |
|  | <i>Cymbopogon refractus</i>                       | Barbed wire grass         |
|  | <i>Dichelachne crinita</i>                        | Plume grass               |
|  | <i>Dichondra repens</i>                           | Kidney Weed               |
|  | <i>Entolasia stricta</i>                          | Wiry panic grass          |
|  | <i>Eragrostis brownii</i>                         | Brown's Lovegrass         |
|  | <i>Hibbertia scandens</i>                         | Climbing Guinea Flower    |
|  | <i>Imperata cylindrica</i> var. <i>major</i>      | Blady Grass               |
|  | <i>Lomandra longifolia</i>                        | Spiny-headed Mat-rush     |
|  | <i>Microlaena stipoides</i> var. <i>stipoides</i> | Weeping grass             |
|  | <i>Muehlenbeckia adpressa</i>                     | Climbing Lignum           |
|  | <i>Oplismenus imbecillis</i>                      | Creeping Beard Grass      |
|  | <i>Pelargonium australe</i>                       | Native storksbill         |
|  | <i>Poa affinis</i>                                | -                         |
|  | <i>Tetragonia tetragonoides</i>                   | Warrigal greens           |
|  | <i>Themeda australis</i>                          | Kangaroo Grass            |
| <i>Xanthorrhoea resinifera</i>                               | Grass Tree  |                           |
| <i>Xanthosia pilosa</i>                                      | Woolly Xanthosia                                  |                           |

16.2.1 Illustrative Planting Palette (sample selection)



Coast Banksia (*Banksia integrifolia*)



Tuckeroo (*Cupaniopsis anacardioides*)



Blueberry Ash (*Elaeocarpus reticulatus*)



Coastal Beard-Heath (*Leucopogon parviflorus*)



Coastal Wattle (*Acacia longifolia*)



Mountain Devil (*Lambertia Formosa*)



Pigface (*Carpobrotus glaucescens*)



Weeping Grass (*Microlaena stipoides* var. *stipoides*)



Spiny-headed Mat-rush (*Lomandra longifolia*)

**Disclaimer:** Whilst every effort has been made to ensure that information contained in this report is accurate, NSW Ports gives no guarantee regarding this information and accepts no responsibility for any inconvenience, or any direct or consequential loss, arising from information disclosed herewith. Readers should undertake their own enquiries in relation to any of the facts referred to before acting on them.

NSW Ports Port Botany Development Code – June 2020

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The logo for NSW Ports, featuring the text "NSW Ports" in a white, sans-serif font. Below the text is a white, curved swoosh that underlines the text and extends to the right.