

NSW Ports Port Botany Development Code October 2013 Checklist

This checklist is a summarised version of the Development Code and is to be completed as part of any environmental assessment for development proposed in Port Botany. Please refer to Development Code for further information and detail.

Section 2	Visual Amenity	Compliance / Comment
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.	A new elevated flare is to be installed. This flare is within the prescribed height limit of 32.5m above ZFDTG and the same height as the existing Ethylene Tank (26m above ZFDTG). No new structures under the proposed development will be higher than the existing structures on site.
Criteria 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 <i>Airports Act 1996</i> and <i>Civil Aviation Act 1988</i> .	During construction, cranes with boom operating up to 30m above ZFDTG are expected. Any requirement to operate above the heights requiring approval will be identified during the Construction Hazard (HAZCON) study to be undertaken and then approval sought as required.
Criteria 3	Container stacks are not to exceed a height of 6 containers.	Not applicable.
Criteria 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.	The positioning of the new plant on the eastern side of the existing control room buildings will minimise its visibility from the roadway.
Criteria 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.	Not applicable.
Criteria 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	Not applicable.

	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).	
Criteria 7	An indicative palette of colours for building structures is shown at Figure 2 .	The new plant will be painted in a light grey colour.
Criteria 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.	The new flare will be painted in a matte light grey colour.
Criteria 9	Materials and colours for buildings and roofs are to minimise reflectivity. All glazing is to have a reflectivity coefficient of less than 20%.	Not applicable.
Criteria 10	Lighter colours on light poles greater than 15 metres in height should be avoided in favour of darker, less reflective colours.	Not applicable.
Criteria 11	All tanks are to be painted white or light grey.	Not applicable.
Criteria 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.	There are no permanent cranes or mobile elements as part of this development. Mobile cranes during construction will only be in operation during the day and otherwise stowed.
Section 3	Sustainable Development	Compliance / Comments
Criteria 1	All development should incorporate as many of the suggested measures contained in NSW Ports' <i>Green Port Checklist</i> as practicable. As a minimum, all development proposals are to be accompanied by a completed <i>Green Port Checklist</i> .	Completed Green Port Checklist attached.

Criteria 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.	Not applicable.
Criteria 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.	Not applicable.
Criteria 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.	Following the development, the site will use the existing water supplies. Water usage on the site will be reduced as a result of the smaller land area & removal of approximately 50% of the existing assets.
Criteria 5	Low maintenance and robust materials are to be used.	Selected materials are the best fit for service and to minimise the long term operating and maintenance costs.
Criteria 6	All sites are to provide a dedicated storage area for the separation, collection and recycling of waste with adequate access for waste collection.	During construction, a dedicated storage area for wastes and all recyclable materials will be established on site for collection and recycling.
Criteria 7	A climate change risk assessment is to be provided as part of an application for all new developments.	The climate change impact has been assessed as low (refer to SEE Section 5.6). With removal of operational plant and reduced flaring, the climate impact following development is expected to be lower.
Criteria 8	All development is to incorporate measures to minimise greenhouse gas emissions.	Measures during construction to minimise greenhouse gas emissions will be incorporated (refer SEE Section 5.6.3). These include efficient operation, fitting of emission control devices and regular servicing of construction equipment per manufacturer's recommendations. The new flare is designed for operation without emission of visible smoke under all

		normal/abnormal operations, oxides of nitrogen released as NO ₂ will not exceed the DECC 2005 standard of 350 mg/m ³ and volatile organic compounds will not exceed 40 mg/m ³ . The proposed new flare pilots are industry best practice and selected due to low gas consumption.
Section 4	Access, Parking and Loading	Compliance / Comments
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.	Off-site traffic impacts are assessed as minimal (refer to SEE Section 5.9). Traffic movements during construction are estimated at 15 vehicle movements/day.
Criteria 2	All site vehicular access points and paths are to be located and designed to avoid conflicts between pedestrians, light vehicles and truck movements.	Site has designated access roads and a new perimeter access road will be built for the reduced site as part of this development.
Criteria 3	Container facilities are to provide separate access points to an adjoining roadway for light vehicles and trucks.	Not applicable.
Criteria 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.	Roads are clearly indicated by change of material. The perimeter access road to be built will also be clearly delineated by change of material.
Criteria 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 <i>Australian Standard AS 1428:1-4 Design for Access and Mobility</i>, <i>Australian Standard AS 2890.1 Car Parking Facilities</i> and <i>Australian Standard AS 2890.2 Commercial Vehicle Facilities</i>; - 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	Parking during construction and following development will be wholly within the lease area and located off the internal roads. No changes to parking are planned for the retained site area.

	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).	
Criteria 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 .	Following the development the site will retain the existing parking spaces which are screened from the road by the control and electrical switchroom buildings.
Criteria 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.	During construction, all truck loading and unloading will take place wholly within the site boundaries.
Criteria 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.	Existing waste & recycling storage on the site will remain following the development.
Criteria 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	Following the development, all parking including bicycle parking will be as existing. Parking area at site side of the control building is well lit.

	strength to resist vandalism and theft.	
Section 5	Security	Compliance / Comments
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).	Fencing to be installed on the new boundary, this will be a 1.8m high black powder coated chain link fence with 3-strand barbed wire at its top.
Criteria 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.	Fencing to be installed on the new boundary, this will be a 1.8m high black powder coated chain link fence with 3-strand barbed wire at its top.
Criteria 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).	During construction, the site will have daytime hours security with a guard station located at Gate 2 (refer SEE Fig 2.4). After hours the gates will be locked and the site will be monitored from the control room. The entry at Gate 2 will be 1.8m high chain gate in a framed rim with 3-strand barbed wire at its top.
Criteria 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).	Gate 2 will be set back 30m from the edge of the lease boundary at Friendship Rd.
Section 6	Landscaping	Compliance / Comments
General Criteria		
Criteria 1	Landscaping is to be provided in front of fences that face roads external to the lease area and to non-active waterfronts.	The revised site boundary will not face a road external to the lease. No changes are to be made to the existing boundary which faces Friendship Rd.
Criteria 2	Landscaped areas are to be planted to achieve a minimum of 75% planting density once fully matured.	Not applicable.
Criteria 3	Only suitable native plant species are to be used and, where possible and practical,	Not applicable.

	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.	
Criteria 4	All landscaping, in particular within car parks and along pedestrian paths, is to take into account the need to maintain passive surveillance.	Not applicable.
Criteria 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.	No internal landscaping at the new plant boundary.
Criteria 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.	Not applicable.
Criteria 7	Mown grassed verges, adjoining landscaping strips or otherwise, are to comply with the requirements at Appendix A .	Not applicable.
Specific Criteria	Road Reserve Landscape Areas	
Criteria 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).	No changes are planned to the existing plant frontage to Friendship Rd in the area to be retained. The vacated land area will be cleared and returned to NSW Ports.
Criteria 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	Not applicable.

	height, and - clusters to have a maximum spacing of 15m between groups.	
Criteria 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.	Not applicable.
Criteria 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.	The vacated land area will be returned to NSW Ports, no changes to the existing landscape areas are planned.
Criteria 12	The suggested planting palette for this area is set out at Appendix A .	Not applicable.
Specific Criteria	Potential fire risk landscaped areas / non-active water front landscaped areas	
Criteria 13	1. 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).	No changes are planned to the existing plant frontage to Friendship Rd in the area to be retained. The vacated land area will be cleared and returned to NSW Ports.
Criteria 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).	Not applicable.

Criteria 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).	Not applicable.
Criteria 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.	Not applicable.
Criteria 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 for this area is set out at Appendix A .	Not applicable.
Section 7	Signage	Compliance / Comment
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	No changes are planned to existing signage outside or on the lease area fence.

	site.	
Criteria 2	No advertising signs shall be erected within the port estate upon the buildings, structures or tanks other than business identification signage.	No advertising signage to be installed.
Criteria 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; and - is to identify visitor entrance points to lease areas.	No changes are planned to the existing business identification signage.
Criteria 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.	No changes are planned to the existing business identification signage.
Section 8	Lighting	Compliance / Comments
Criteria 1	Lighting levels are to be provided in a manner just sufficient to meet operational requirements and to the relevant Australian Standards.	Existing perimeter lighting will be relocated to the new perimeter.
Criteria 2	All lighting is to meet Civil Aviation Safety Authority (CASA) / Air Services Australia (ASA) requirements. Note: Refer to the <i>CASA Manual of Standards Part 139 - Aerodromes</i> .	Lights are directed downward with a shielded top cover (meets requirements of CASA Manual of Standards)

		Part 139).
Criteria 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.	Existing lighting in the retained area will not be altered. Lights from the existing perimeter road on the vacated land will be relocated to the new perimeter road within the retained area.
Criteria 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.	Lighting will be located to direct inwards to the plant boundary & will be sited to avoid driver distraction on internal roads.
Criteria 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.	Lights will be focussed downwards and have shields.
Specific Criteria	Lighting for areas adjacent to Penrhyn Estuary	
Criteria 6	No fixed light is to result in light spill into Penrhyn Estuary or the Estuary flushing channel (Figure 16).	The lighting relocations will be directed inwards from the plant boundary and are not expected to spill light toward Penrhyn Estuary (approx. 500m to the north) or its flushing channel.
Criteria 7	Low mounting height poles are to be used adjacent to the Estuary.	Not applicable.
Criteria 8	Moving lights, such as vehicle headlights are to be screened, so they do not shine into Penrhyn Estuary.	Not applicable.
Criteria 9	High level lighting on operational equipment is not to shine into Penrhyn Estuary.	Road lighting is to be relocated and no high level lighting is to be installed.
Section 9	Heritage	Compliance / Comments
Criteria 1	The Revetment Wall along Prince of Wales Drive, the Bunnerong Canal and the	No impact on the listed items

	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.	from the development.
Criteria 2	Development in the vicinity of a heritage item is to be designed to respect and complement the heritage item.	No heritage items identified in the affected area (refer to SEE Section 5.8).
Section 10	Land Use Safety and Hazard Management	Compliance / Comments
General Criteria	Including non-hazardous facilities	
Criteria 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 <i>Port Botany Land Use Safety Study Overview Report 1996 (Overview Report)</i>; - 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 <i>Overview Report</i>; 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.	Risk Assessment conducted – refer to Appendix A of the SEE.
Specific Criteria	Hazardous Facilities	
Criteria 2	All proposals for new or expanded potentially hazardous developments are required to undergo a Risk Assessment. The Risk	The existing site is a Major Hazard Facility licenced with Workcover NSW (Licence No

	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 <i>Port Botany Land Use Safety Study Overview Report 1996</i>; - 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	10087). The removal of the LPG Terminal will alter the safety case of this licence. An amendment to this safety case will be submitted to Workcover NSW. A Hazard & Risk Assessment is included in Appendix A of the SEE.
--	--	--

	exceed acceptable published risk criteria.	
Criteria 3	1. Minimum separation distances required to 'protected places' under the relevant Australian Standard must be complied with.	The new elevated flare will be located at a distance of 60m from all boundaries and any storage of flammable materials so that the radiant heat does not exceed the allowable limits for continuous exposure per ISO 23251 - Pressure relieving and Depressurising Systems. An additional safety factor is applied per internal Exxon Mobil Equipment Separation Standards.
Criteria 4	The industrial premises risk contour for the development (including existing site development) must remain within the lease boundary.	Risk contour remains within the plant boundary.
Specific Criteria	Bulk Liquid Storage Facilities	
Criteria 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.	Proposal will remove two bulk liquid storages and separation distance from retained Ethylene tank to external boundaries will remain in accordance with Australian Standards.
Criteria 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	Perimeter roadway to be constructed as per drawing Q8724. The roadway will be of 6m width, with corners designed to accommodate trucks and emergency vehicles. The new perimeter road will be connected to the existing site roadways and will provide full length unobstructed access.

	- Unobstructed access along the full length of the road.	
Criteria 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.	Not applicable.
Specific Criteria	Pipelines	
Criteria 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;	New piping will be installed above ground and wholly within the leased area.

	- 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.	
Criteria 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.	Not applicable.
Criteria 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.	All pipeline joints are to be welded as per Qenos piping specifications. Products being piped as part of this new development are in gaseous state. The only liquid to be piped is clean potable water at low pressure. It is therefore not proposed to install any bunds/pits.
Criteria	Areas where petroleum, petroleum products, petro-chemical and other liquid chemicals are handled or stored	
Criteria 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.	During construction, all petro-chemical products will be stored in a bunded area. New installation does not incorporate any new petro-chemical storages.
Criteria 12	The area within all bunded enclosures is to be	Temporary bunding during construction will be made of

	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.	an impervious material and materials of construction for handling equipment will be resistant to any effects of the material being handled.
Criteria 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.	Bunds will be located under cover so as to minimise any rain or surface water ingress.
Criteria 14	All stormwater from bunded areas shall be directed through a separator system located outside the bunded area.	Existing stormwater retention systems will remain in place until land levelling at end of demolition works. Stormwater systems for the retained site area will be maintained.
Criteria 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.	Any vehicle refuelling during the demolition / construction period to be carried out within a bunded area and any waste material disposed of using Qenos existing procedures.
Section 11	Water Quality and Stormwater	Compliance / Comments
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.	The existing stormwater systems are to be retained and following the reduction of the site area, the potential catchment of stormwater will be reduced.
Criteria 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.	No change to the existing stormwater system for the retained site is proposed.

Criteria 3	The first flush ¹ 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.	A groundwater management plan during construction & demolition will be in place (refer to Statement of Commitments in Table 6.1 of the SEE). The existing stormwater management systems will remain for the retained site.
Criteria 4	Stormwater leaving the site is not to create erosion within Penrhyn Estuary (Figure 16).	Systems will be identified in the Construction Environmental Management Plan (CEMP) for surface water management using guidelines identified in the SEE Table 6.1. The land to be vacated is at the furthest end of the site from Penrhyn Estuary and surface water is expected to be intercepted by the existing stormwater retention system.
Criteria 5	Measures to contain spills and prevent them from discharging through the stormwater system are to be identified and spill response procedures documented.	Spill contingency plans will be instituted as part of the construction & demolition (refer to Statement of Commitments in Table 6.1 of the SEE).
Criteria 6	Emergency spill kits are to be available on-site and staff are to be trained in how to use them.	Emergency spill kits are kept on site and kits will be retained in the demolition/construction area (refer to Statement of Commitments in Table 6.1 of the SEE).
Section 12	Air Quality	Compliance / Comments
Criteria 1	Site areas which are trafficked by vehicles and trucks are, as a minimum, to be sealed to minimise dust generation.	Dust suppression methods will be used during the construction & demolition phase, trucks will access the site via sealed roads and the internal roads are gravel.
Criteria 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	Information regarding the products stored on site is available at the site Control Room in line with Qenos Safety Health Environment

¹ '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.

	handled in a closed circuit or sealed system.	Operating System (SHEOS). No additional chemicals are required for the works.
Criteria 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.	Vehicles operating on site during construction & demolition will be operated and maintained to minimise emissions to air. (refer SEE Section 5.6.3). This includes efficient operation, fitting of emission control devices and regular servicing of construction equipment per manufacturer's recommendations.
Criteria 4	Building materials that may potentially contribute to poor internal air quality are to be avoided.	Not applicable.
Criteria 5	Air filters are to be installed in all ventilation systems to remove particulate contamination.	Not applicable.
Criteria 6	All development is to incorporate measures to minimise emissions that adversely impact on local air quality.	Vehicles operating on site during construction & demolition will be operated and maintained to minimise emissions to air. (refer SEE Section 5.6.3). This includes efficient operation, fitting of emission control devices and regular servicing of construction equipment per manufacturer's recommendations. The new flare is designed for operation without emission of visible smoke under all normal/abnormal operations, oxides of nitrogen released as NO ₂ will not exceed the DECC 2005 standard of 350 mg/m ³ and volatile organic compounds will not exceed 40 mg/m ³ .
Criteria 7	Any emissions of smoke, dust, particulate matter, steam or gas must meet Civil Aviation Safety Authority (CASA) / Air Services Australia (ASA) requirements.	The flare design is for operation without emission of visible smoke and meets the requirements of CASA and Air Services Australia.
Section 13	Bird Management	Compliance / Comments
Criteria 1	An assessment of aspects of the proposed development which could attract bird species that may pose a hazard to airport operations	The potential for injury to avian fauna from the new flare has been assessed as low, the presence of the

	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.	existing flare and the industrial nature of the site are likely to preclude the use of the area for foraging or nesting (refer to SEE Section 5.7.2).
Criteria 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.	The new flare complies with the indicated height restriction (26m above ZFDTG).
Criteria 3	No port operations (except for road access / egress) are permitted within 20m of the western edge of Penrhyn Estuary. Refer to Figure 1	No operations within 20m of western edge of Penrhyn Estuary.
Criteria 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.	Not applicable.
Section 14	Noise and Vibration	Compliance / Comments
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.	The construction and demolition phase of the project may generate additional noise, assessment of impact and mitigation measures are outlined in the SEE (Section 5.5 & Table 6.1). The flare is designed to operate within the community noise criteria for the site and will not exceed the conditions of EPA Licence 464 (refer to SEE Section 5.5 & Table 6.1).
Criteria 2	All buildings, equipment and operational processes are to be selected or designed to minimise the emission of noise.	The flare is designed to operate within the community noise criteria for the site and will not exceed the conditions of EPA Licence 464 (refer to SEE Section 5.5 & Table 6.1).
Criteria 3	Noise reduction measures for mobile equipment, trucks, other vehicles and machinery are to be implemented, such as	Demolition and construction work to be carried out during normal working hours 7am-

	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.	6pm weekdays and 8am-1pm Saturdays. Vehicles will be fitted with appropriate noise abatement devices. Site inductions will inform personnel about noise management measures and sensitive receivers.
Criteria 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.	No significant change to existing noise is expected from the relocated flare. The flare has been designed to operate within the community noise criteria for the site and will not exceed the conditions of EPA Licence 464. Its new location is approximately the same distance from sensitive receivers as its present location.
Criteria 5	Vibration transmitted outside the site during operations must be within acceptable limits based on Environment Protection Authority guidelines.	Minimal work generating significant vibration is planned, work such as jackhammering will be of short duration, carried out during work hours and offsite impacts are expected to be minimal.
Section 15	Soil Contamination	Compliance / Comments
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 <i>Contaminated Land Management Act 1997</i> .	An environmental site audit of soil and groundwater was conducted at the site during September 1999 (prepared for Sydney Ports Corporation by IT Environmental Australia Pty Ltd). This audit analysed soil samples from around the site including in the area to be vacated down to a depth of 6m below ground level. The samples were tested for TPH, BTEX, Metals, Organochlorine Pesticides and Polychlorinated Biphenyls. None of these factors were detected above the laboratory detection limits or the site assessment criteria. The Qenos operations on site

		in the period after the audit have remained the same. The materials stored on site are in a gaseous phase at atmospheric pressure and ambient temperature so would flash to atmosphere in the event of any leakage. Additionally there has been no major maintenance on site in the area of the development and hence the potential of any other source of soil contamination is considered very low.
Criteria 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.	The Randwick Local Environmental Plan (2012) Acid Sulphate Soils (ASS) map indicates the Terminal is located in an area that is not classed as having ASS. During an upgrade to the Ethylene liquefaction system in 2000, a small patch of acid sulphate soils was found and removed. The risk of encountering further acid sulphate soils is deemed to be low given soils along the proposed route are disturbed, laid down as part of the land reclamation works in the 1970's. In addition, there are no EPA records of declared contaminated soil sites near the project area. However, contingency measures will be incorporated into the CEMP in the event that acid sulphate soils are encountered (refer to ESS Table 6.1).
Section 16	Groundwater Management Zone (Elgas Deed)	Compliance / Comments
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 '<i>Groundwater Management Zone Deed</i>' between the Water Administration Ministerial Corporation, Sydney Port Corporation (vested to Port Botany	The proposed development is within the GMZ(B) area. Impacts on groundwater are unlikely during construction and demolition due to the shallow (1m to 1.5m) depth to which wider excavations are required and the recorded depth of local groundwater, over 4 m below

	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.	the top of the groundwater borehole casings. Although pilings to be installed for the relocated flare are approximately 6 m deep, impacts to water table and the Elgas LPG Storage Development are unlikely due to the relatively small size of the piles.
--	--	---