5.0 Concept Description

This section provides an overview and detailed description of the proposed concept.

5.1 Overview

NPC is seeking to ensure the site is developed in accordance with the *NSW Ports Growth Plan*. One of the core directions of the *NSW Ports Growth Plan* is for the entire former BHP Steelworks site, including the site of the proposed concept, to be secured for port use. NPC is also seeking to develop the site in accordance with other relevant State and regional plans and policies, and in accordance with NPC's own strategic planning for the site (refer to **Section 1.3**). The proposed concept would enable NPC to retain appropriate flexibility in the long-term development of the site and to ensure that development of the site occurs in a coordinated and efficient manner that promotes highest and best use of the site for port uses, whilst minimising potential environmental impacts and cumulative impacts on interface activities, particularly neighbouring industrial and residential areas.

It is anticipated that the site would be dedicated predominately to handling containers and break bulk including Ro/Ro cargo. There would also need to be provisions for bulk storage and handling, including solid and liquids. Berths would be required along the waterfront, and covered and open hardstand storage areas would be required to support ship loading and unloading activities. Road and rail freight infrastructure would also be required to service the site.

NPC is seeking Concept Approval for the development and operation of port-related activities on the portion of the Closure Area adjacent to the South Arm of the Hunter River. The site occupies an area of approximately 90 hectares (refer to **Figure 1-2**).

The site would have five key land-based operational precincts which are described below:

- **NPC Operations Precinct.** The NPC Operations Precinct would be used by NPC for managing all operations within the Port of Newcastle. The precinct would be located at the south eastern end of the site, fronting Berth 1. Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, would be located in the precinct. The precinct would also likely be the berthing location for the NPC dredge vessel 'David Allan'.
- **Bulk and General Precinct**. The Bulk and General Precinct would be used for handling and storing bulk goods such as grain and other dry bulk goods, including cement, fertilizer, and coke cargoes, and for other general purposes. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems and office buildings.
- **General Purpose Precinct.** The General Purpose Precinct would be used for handling and storing cargo containers, heavy machinery, and break bulk including Ro/Ro cargo. The precinct would be located in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. Various buildings and infrastructure would be located in the precinct, including covered storage areas and areas of hardstand.
- **Container Terminal Precinct.** The Container Terminal Precinct would be used for container storage and transfer. The precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. Buildings and infrastructure including quayside and mobile cranes, rail mounted gantries, hardstand areas and an administration building would be provided.
- **Bulk Liquid Precinct.** The Bulk Liquid Precinct would be used for receival, storage, blending and distribution of fuels. The Bulk Liquid Precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines and administration buildings would be provided.

The proposed concept also includes a Berth Precinct which would contain up to seven berths to support operations within the five land-based operational precincts described above. Access corridors accommodating the necessary infrastructure (e.g. road infrastructure, potable water, electricity, communications, gas and sewage) to service the facilities would also be provided.

Figure 5-1 provides a concept layout plan identifying the arrangement of port-related land uses on the site, including the location of the five key operational precincts. The boundaries between the five land-based operational precincts are approximate and may shift slightly in the future to provide flexibility in accommodating future trade needs. However, the boundary of the whole site would not change.

As detailed in **Section 4.4**, the location of each operational precinct was selected with consideration of strategic objectives (State and regional), market analysis, known and predicted infrastructure provision, interactions with surrounding land uses, and other known constraints to development. Environmental interactions, known and predicted, for the site were also taken into account in developing the precincts and determining trade types/uses within each precinct.

It is anticipated that development at the site would commence in 2011 and that peak operations would be reached by approximately 2034. At peak operations, approximately 300 people would be employed at the site.

5.2 Proposed Precincts

This section of the EA provides a description of the anticipated development scenarios for each of the proposed operational precincts and a description of infrastructure requirements for the site. In addition to precinct specific buildings and infrastructure, the site would be supported by security entrance and exit points, designated quarantine and customs inspection and cleaning area, appropriate lighting, staff amenities and parking areas and office facilities for operations as required.

It is important to note that NPC and the owner/operator of the IIP are planning to subdivide the Closure Area in order to separate the site from the remainder of the Closure Area lands, including the IIP. NPC would ultimately seek to subdivide the site and land when leasing out various parcels of land to developers. However, the details of such future subdivision (number, size and layout of lots) are not known at this stage.

5.2.1 NPC Operations Precinct

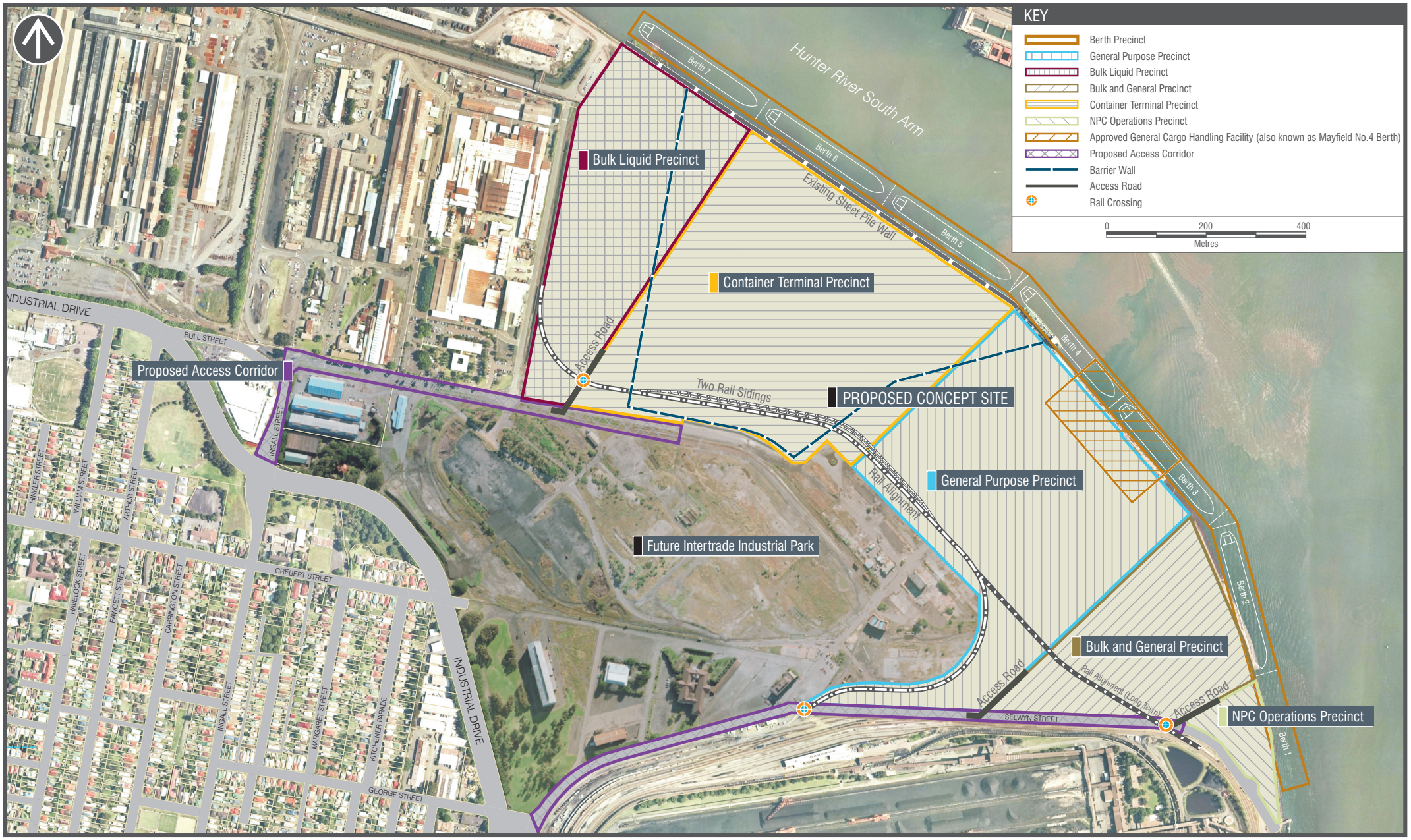
The NPC Operations Precinct would be used by NPC for managing Port of Newcastle operations. The precinct would be located on an irregular parcel of land at the south eastern end of the site, fronting Berth 1. The precinct would have an area of approximately 3 hectares.

Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, NPC offices, and storage sheds would be located within the precinct. The precinct would also likely be the berthing location for the NPC dredge vessel ‘David Allan’, pilot cutters and a helipad. Underground storage tanks with capacity for storing approximately 10,000 litres of diesel and 5,000 litres unleaded petrol would be provided at the site. An access road to the precinct would be provided off Selwyn Street and would connect to an internal road network and small parking area to accommodate 20 to 30 employees (refer to **Table 5-1**).

The precinct would be served by Berth 1 which would consist of a jetty and/or dolphins within a berth box approximately 48 metres wide and 240 metres long (refer to **Section 5.2.6**).

Prior to development of the precinct, remediation and capping would be required in order to minimise potential contact with contaminated material and interaction with groundwater. The necessary remediation would be completed in 2012 as part of the remediation activities approved under the 2001 consent. Development of the precinct would be carried out in accordance with the existing CSMP (refer to **Section 9.9.2**). The CSMP provides a common framework for the design, implementation, completion, use and maintenance of works across the whole Closure Area. The CSMP is applicable to both remediation and redevelopment works, and includes restrictions relating to surface development in certain areas.

Development of the precinct is anticipated to commence in 2011. As shown in **Table 5-1**, peak operations within the precinct is forecast to build up over a period of approximately five years, with the peak anticipated to be reached between 2014 and 2019.



AECOM

CONCEPT PLAN

Environmental Assessment

Mayfield Site Port-Related Activities Concept Plan

Figure 5-1

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Table 5-1: NPC Operations Precinct Development Scenarios

Trade Type / Use	Approx. Volume	Ship Type	Likely Landside Transport Requirements	Key Facility / Building Requirements	Indicative Staging of Operations (from 2009)
NPC Offices (accommodating 20-30 people at any given time)	N/A	N/A	Road (staff and services)	Small office Facility/staff car park	5-10 years
Storage Sheds			Road (staff and services)	Limited height and scale.	
Vehicles and marine equipment		Pilot Cutter	N/A	Jetty / Parking / compound	
Dredging and other maintenance equipment		Dredge and tug		Berth / maintenance sheds	
Slipway for small vessel maintenance		N/A			
Helipad		N/A			
No specific trade types		N/A		Helipad and utilities	
Total	**N/A**	**Dredge, Tug and Pilot Cutter**	**Road**	**Various**	**5-10 years**

5.2.2 Bulk and General Precinct

The Bulk and General Precinct would be used for importing, exporting and storing bulk goods. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. The precinct would cover an area of approximately 12 hectares.

Bulk goods including grains, coke, cement, soda ash, fertiliser and meals would be imported through the Bulk and General Precinct. Bulk goods including grains, coal and sand would be exported. It is anticipated that approximately 2.4 million tonnes per annum of bulk goods would be handled at the precinct. It is anticipated that the handling of bulk goods through the precinct would generate up to approximately 161 trucks per day and would also require the movement of some bulk goods via rail.

Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems, office buildings, road and rail infrastructure and receival facilities (refer to **Table 5-2**). An access road to the precinct would be provided off Selwyn Street and would connect to an internal road network, parking area, and road receival facilities.

The precinct would be served by Berth 2 which would consist of a concrete deck supported by concrete piles, and would be capable of supporting heavy infrastructure. The berth box would be approximately 48 metres wide and 310 metres long (refer to **Section 5.2.6**).

Prior to development of the precinct, remediation and capping would be required in order to minimise potential contact with contaminated material and interaction with groundwater. The necessary remediation would be completed in 2012 as part of the remediation activities approved under the 2001 consent. Development of the precinct would be carried out in accordance with the CSMP.

As shown in **Table 5-2**, development of the precinct is forecast to be carried out over a period of approximately eight years, with development anticipated to commence in 2011 and peak operations to be reached prior to 2019. Development of facilities for importing and exporting dry bulk goods such as feed grain, rice and canola is anticipated to take place following development of the facilities for handing the other bulk commodities.

Table 5-2: Bulk and General Precinct Development Scenarios

Trade Type / Use	Approx. Volume (MTPA)	Ship Type[1]	Likely Landside Transport Requirements	Key Facility/Building Requirements	Indicative Staging of Operations (from 2009)
Dry Bulk storage (feed grain, rice, canola etc) – Export & Import	0.4	Handymax to Panamax	Road/Rail (70/30)	Storage silos/ covered storage areas/conveyors/ road and rail receival facilities/ ship loader/ unloader/offices	5-10 years
Coke - Import	0.25	Handymax to Panamax	Road/Rail (70/30)	Storage/stockpile areas	2-5 years
Cement - Import	0.7	Handymax to Panamax	Road (100)	Ship unloader (such as a flexible screw conveyor from the ship)/ cone storage silos/ storage areas (at least two hoppers)/ road receival facility	2-5 years
Boutique coal – Export	0.5	Handymax to Panamax	Road/Rail (70/30)	Conveyor (mobile)/ storage/stockpile areas/road and rail receival facilities	2-5 years
Soda Ash – Import	0.1	Handymax to Panamax	Road (100)	Conveyor (mobile)/ storage/stockpile areas/road receival facility	2-5 years
Fertiliser – Import	0.25	Handymax to Panamax	Road (100)	Storage areas/road receival facility	2-5 years
Meals – Import	0.1	Handymax to Panamax	Road (100)	Storage areas/road receival facility	2-5 years
Sand - Export	0.1	Handymax to Panamax	Road (100)	Storage areas/road receival facility	2-5 years
Total	**2.4**		**Primarily Road**	**Mainly storage areas**	**2-10 years**

[1] Ship types are defined as:

Panamax – Based on the maximum vessel dimensions that would fit through the locks of the Panama Canal. Maximum length 294.1 metres, width 32.3 metres, draft 12 metres.

Handymax – Usually referred to a dry bulk vessel with deadweight of between 35,000 to 58,000 tonnes. Usually 150 to 200 metres in length, usually have up to five cargo holds and up to four cranes.

5.2.3 General Purpose Precinct

The General Purpose Precinct would be used for handling and storing cargo containers, heavy machinery, break bulk and Ro/Ro cargo. The diverse uses in this precinct would form a niche facility for NSW in close proximity to rail and other intermodal facilities, and has adequate land available for provision of covered storage areas as required.

The precinct would be located on an irregular parcel of land in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. The precinct would have an area of approximately 25 hectares.

Heavy machinery and Ro/Ro cargo including cars, farm machinery, excavators, and road construction machinery would be imported through the General Purpose Precinct. Project cargo including large industrial components, luxury boats, transformers, and machinery, and steel and timber products would be imported and exported. Ammonia nitrate, scrap metal, and pine logs would be exported. It is anticipated that approximately 1.35 million tonnes per annum of machinery, break bulk, and Ro/Ro cargo would be imported and exported at the precinct (refer to **Table 5-3**). It is anticipated that the handling of goods through the precinct would generate up to 112 trucks per day and would also require the movement of some bulk goods via rail.

Within this proposed precinct, a general cargo handling facility, also known as Mayfield No.4 Berth, was approved by the Minister for Planning on 21 November 2009 as a modification to the 2001 consent (DA-293-08-00 MOD-56-7-2008). Construction of the facility (including refurbishment of the existing Mayfield No.4 Berth) has been completed, and operation of the facility commenced in 2010 (refer to **Section 2.5.2**). The facility handles a range of cargo types, including AN, which were included in the total 1.35 million tonnes per annum throughput estimated for the precinct.

Various buildings and infrastructure would be located in the precinct consisting primarily of covered storage areas, areas of hardstand, cranes, and road and rail infrastructure (refer to **Table 5-3**). The majority of container and cargo handling equipment would be powered by compressed natural gas (CNG) or electricity. An access road to the precinct would be provided off Selwyn Street and would connect to an internal road network, parking area, and road receival facilities.

The precinct would be served by Berth 3 which would consist of a concrete deck supported by concrete piles, and would be capable of supporting heavy infrastructure including mobile cranes. The berth box would be approximately 55 metres wide and 310 metres long (refer to **Section 5.2.6**). As described in **Section 5.2.4**, this precinct may share Berth 4 with the Container Terminal Precinct.

Prior to development of the precinct, remediation and capping would be required in order to minimise potential contact with contaminated material and interaction with groundwater. The necessary remediation would be completed in 2012 as part of the remediation activities approved under the 2001 consent.

Development of the precinct would be carried out in accordance with the CSMP. A portion of the subterranean barrier wall, installed as part of the remediation activities approved as part of the 2001 consent, is located in the northern corner of the General Purpose Precinct. The wall is approximately 1.4 kilometres in length, extends from the surface to 30 or 49 metres underground and is designed to block the horizontal flow of groundwater moving through the main area of contamination at the site. This wall would require an easement for access in this location that would have the potential to restrict development. **Sections 9.6** and **9.9** provide further details regarding the subterranean barrier wall, easements and associated building restrictions.

As shown in **Table 5-3**, development of the precinct is forecast to be carried out over a period of approximately 23 years, with development anticipated to commence in 2011 and peak operations to be reached prior to 2034. Development of facilities for handling project cargo such as large industrial components and luxury boats is anticipated to occur following development of facilities for handing the other cargo types.

Table 5-3: General Purpose Precinct Development Scenarios

Trade Type / Use	Approx. Volume (MTPA)	Ship Type[1]	Likely Landside Transport Requirements	Key Facility/Building Requirements	Indicative Staging of Operations (from 2009)
Heavy machinery – Import	0.1	Up to Handymax	Road	Mobile Crane / Storage areas / hardstand/offices	5-10 years
Ro/Ro (cars, farm machinery, excavators, road construction machinery etc) – Import	0.1	Up to Handymax	Road	Storage areas and hardstand	5-10 years
Project Cargo (on an as needs basis, including large industrial components, luxury boats, transformers, machinery etc) – Import & minor Export	0.05	Up to Handymax	Road	Mobile Crane / Storage areas / hardstand	15-25 years
Steel products (wire, coil, mesh, ingots, various) – Import & Minor Export	0.4	Up to Handymax	Road/Rail (70/30)	Covered storage	5-10 years
Timber products – Import & some Export	0.1	Up to Handymax	Road/Rail (70/30)	Covered storage (for example at least 7,000 m^2 storage shed).	5-10 years
Ammonia Nitrate – Export	0.1	Up to Handymax	Road (100)	Existing facility, no additional facilities required	Operational in 2010 (Mayfield No. 4 Berth)
Scrap metal - Export	0.2	Up to Handymax	Road/Rail (70/30)	Storage areas / hardstand	2-5 years
Pine logs - Export	0.3	Up to Handymax	Road/Rail (70/30)	Covered Storage areas	2-5 years
Total	**1.35**	Up to Handymax	**Primarily road, some rail**	**Storage areas and hardstand**	**2-25 years**

[1] Ship types are defined as:

Panamax – Based on the maximum vessel dimensions that would fit through the locks of the Panama Canal. Maximum length 294.1 metres, width 32.3 metres, draft 12 metres.

Handymax – Usually referred to a dry bulk vessel with deadweight of between 35,000 to 58,000 tonnes. Usually 150 to 200 metres in length, usually have up to five cargo holds and up to four cranes.

5.2.4 Container Terminal Precinct

The Container Terminal Precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. The precinct would have an area of approximately 35 hectares.

Containers would be imported, exported, and stored at the precinct, including reefer containers used for transporting goods which require refrigeration. At peak operation, it is anticipated that approximately 1 million TEU of containers would be handled at the precinct each year (refer to **Table 5-4**). It is therefore anticipated that the container terminal would generate up to approximately 1,096 trucks per day and four trains per day. At initial operations of approximately 600,000 TEU, the container terminal would generate approximately 658 trucks per day and three trains per day.

Buildings and infrastructure including quayside and mobile cranes, hardstand areas, an administration building, workshop, customs Australian Quarantine Inspection Service (AQIS) facilities, storage area with power outlets for reefer containers, and road and rail infrastructure would be provided (refer to **Table 5-4**)**.** An access road to the precinct would be provided off Ingall Street and Selwyn Street and would connect to an internal road network, parking area, and road and rail receival facility.

Containers would be loaded and unloaded from ships using rail-mounted quayside cranes, and shuttle carriers would transfer containers between the unloading point and the container stacks. Rail mounted gantries would be positioned above the container stacks to reposition containers as required and load/unload trains. Forklifts or straddle carriers would move between the container stacks and a road and rail receival facility. The majority of container handling equipment would be powered by CNG or electricity.

The precinct would be served by Berths 4, 5, and 6. These berths would consist of a concrete deck supported by concrete piles, and would be capable of supporting heavy infrastructure including rail-mounted quayside cranes. Each berth box would be approximately 55 metres wide and 310 metres long (refer to **Section 5.2.6**). Berth 4 may be shared with the General Purpose Precinct.

Development of the precinct would be carried out in accordance with the CSMP. The Container Terminal Precinct is located in the area where the subterranean barrier wall was installed as part of the remediation activities approved as part of the 2001 consent. The wall is approximately 1.4 kilometres in length, extends from the surface to 30 or 49 metres underground and is designed to block the horizontal flow of groundwater moving through the main area of contamination at the site. This wall would require an easement for access in this location that would have the potential to restrict development. **Sections 9.6** and **9.9** provide further details regarding the subterranean barrier wall, easements and associated building restrictions.

Development of the precinct is anticipated to commence in 2011. As shown in **Table 5-4**, operations within the precinct would build up to an initial volume of approximately 600,000 TEU of containers by 2024, and a final volume of approximately 1 million TEU of containers by 2034.

Table 5-4: Container Terminal Precinct Development Scenarios

Trade Type / Use	Approx. Volume (annual TEU)	Ship Type	Likely Landside Transport Requirements	Key Facility/Building Requirements	Indicative Staging of Operations (from 2009)
Containers Export 60%, Import 40%	600,000 (initial operations) 1,000,000 (final operations)	Up to 4,000 TEU Container Vessels, up to 300 metre length	Road/Rail (80/20)	4 STS Cranes/ fork lift/ straddle carriers/ offices/workshops/ security offices/ AQIS facilities/ road and rail receival facility.	13-25 yrs
Total	**1,000,000**	**Up to 4,000 TEU Container Vessels, up to 300 m length**	**Road/Rail (80/20)**	**4 STS Cranes/ fork lift/ straddle carriers/ offices/workshops/ security offices/ AQIS facilities/ road and rail receival facility.**	**13-25 yrs**

5.2.5 Bulk Liquid Precinct

The Bulk Liquid Precinct would be used for receival, storage, blending and distribution of fuels and biofuels for customers in the local region. The precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. The precinct would have an area of approximately 15 hectares.

Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines, truck loading/unloading facilities, bunded areas, workshops, and administration buildings would be provided within the Bulk Liquid Precinct (refer to **Table 5-4).** An access road to the precinct would be provided off Ingall Street and would connect to an internal road network, parking area and truck loading/unloading facilities.

The precinct would be occupied by two independent operators. Each operator would have an annual throughput of approximately 505 mega litres (ML) of fuel, for a total throughput of approximately 1,010 mega litres per year. Fuel types received, stored, blended and distributed would include unleaded petrol, diesel, biodiesel, fuel oil and ethanol. It is anticipated that delivery of unleaded petrol, diesel and fuel oil would be by ship and that biodiesel and ethanol would be delivered by road. It is estimated that there would be approximately 56 trucks per day travelling to and from the precinct. Key elements of the operations within the precinct are described below:

- **Fuel Receival by Ship.** The precinct would be served by Berth 7 which would consist of concrete piled dolphins with a small central wharf for ship access. The berths would be approximately 55 metres wide and 310 metres long (refer to **Section 5.2.6)**. Ships would discharge unleaded petrol, diesel and fuel oil through multi-product flexible hoses connected to a dedicated manifold on the berth. The hoses would be handled using ship's cranes or shore-based mobile cranes. Fuels would be delivered from the ships to the facilities via an aboveground pipeline.
- **Fuel Deliveries by Road.** Ethanol and biodiesel would be unloaded from road tankers at the loading/unloading facilities. The control room would contain a computer control system that would monitor the storage tank levels to ensure that they are not overfilled.

- **Bulk Fuel Storage.** Diesel and biodiesel fuel would be stored in atmospheric steel storage tanks. Each tank would be fitted with standard pressure/vacuum protection, venting to the atmosphere. Fuel oil would be stored in a storage tank and would be kept at a constant temperature, through a gas fired steam or hot water system, to ensure that the fuel oil is kept in a state of viscosity suitable for pumping. Unleaded petrol and ethanol would be stored in steel tanks with internal floating roofs that would minimise vapour emissions and retain petrol quality. All tanks would be designed to meet the requirements of the *Protection of the Environment Operations (Clean Air) Regulation 2002* in relation to the control of volatile organic liquids and in accordance with *Australian Standard (AS) 1692: Tanks for flammable and combustible liquids*. Each tank would have auto level gauging, high/high high/low level alarms, multi-level temperature measurement, multi-level sampling equipment, water draining and low-level product drains for maintenance purposes. Each tank would be placed on a reinforced concrete foundation and a tell-tale drain would be installed under each of the tanks for leak detection. All tanks would be located within sealed bunds piped to stormwater collection systems and a bund would be located around the entire tank farm area.
- **Fuel Blending.** Fuel blending would be undertaken in the precinct and delivered directly to the trucks at the loading/unloading facilities for dispatch to customers.

Development of the precinct would be carried out in accordance with the CSMP. The eastern portion of the Bulk Liquid Precinct is located in the area where the subterranean barrier wall was installed as part of the remediation activities approved as part of the 2001 consent. The wall is approximately 1.4 kilometres in length, extends from the surface to 30 or 49 metres underground and is designed to block the horizontal flow of groundwater moving through the main area of contamination at the site. This wall would require an easement for access in this location that would have the potential to restrict development. **Sections 9.6** and **9.9** provide further details regarding the subterranean barrier wall, easements and associated building restrictions.

As shown in **Table 5-5**, development of the precinct would be carried out over a period of approximately five years, with development anticipated to commence in 2011 and peak operations reached by 2014.

It is anticipated that Koppers would ultimately move their existing operations at the site (ship unloading and pipeline) to the Bulk Liquid Precinct.

Table 5-5: Bulk Liquids Precinct Development Scenarios

Trade Type/ Use	Approx. Volume (ML)	Ship Type	Likely Landside Transport Requirements	Key Facility/Building Requirements	Indicative Staging of Operations (from 2009)
Fuels & other bulk liquids (2 operators) 100% Import	1,010 (comprising 330 ML of unleaded petrol, 300 ML of diesel, 40 ML of biodiesel, 300 ML of fuel oil, and 40 ML ethanol)	Up to Panamax size	Road	Steel fuel storage tanks, cranes, office and amenities, truck loading/unloading facilities, bunding, workshop, fuel pipeline.	2-5 yrs
Total	**1,010**	**Up to Panamax size**	**Road**	**Steel fuel storage tanks, cranes, office and amenities, truck loading/unloading facilities, bunding, workshop, fuel pipeline.**	**2-5 yrs**

5.2.6 Berth Precinct

The Berth Precinct would contain up to seven berths to support the land-based operational precincts described above. The Container Terminal Precinct would require the use of three berths and the General Purpose Precinct, the Bulk and General Precinct, the Bulk Liquids Precinct and the NPC Operations Precinct would each require use of one berth. The seven berth boxes would notionally be between 48 and 55 metres wide, between 240 and 310 metres long and between 11.6 and 16.5 metres deep.

All berths would require dredging to reach the required depth, however, future developers would obtain approval for dredging through individual Project Approvals. It is important to note that NSW Maritime, on behalf of the NSW Government, has obtained consent to dredge the South Arm of the Hunter River to extend the shipping channel. The extended shipping channel will provide deep water access to future berth sites and facilitate the expansion of port-related facilities along the South Arm of the Hunter River. The deeper shipping channel will enable Panamax and Cape class vessels to travel 3 kilometres further upstream along the South Arm of the Hunter River to a point immediately east of the Tourle Street Bridge. A new swing basin will also be created adjacent to the OneSteel site (immediately to the west of the site) which will allow partially loaded Panamax and Cape class vessels to turn, or swing, around before berthing or continuing downstream. Dredging activities are due for completion in 2011.

Berths for all precincts except for the Bulk Liquids Precinct and NPC Operations Precinct would consist of a concrete deck with solid concrete piles capable of supporting heavy infrastructure. The Bulk Liquids Berth would have concrete-piled dolphins with a small central wharf for ship access. The NPC Operations Berth would have a jetty and/or dolphins. All quaylines would protrude approximately 15 to 20 metres out over the natural shoreline. A sheetpile wall may be installed along the shoreline between the land and water-based areas at Berths 2 and 3. There is an existing sheetpile wall along the foreshore in the area of Berths 5, 6 and 7 which was installed by BHP as part of the HRRP. A sheetpile wall would not be needed at Berth 1 and Berth 4 does not have a sheetpile wall.

All berths would have power, fire fighting water and potable water at the quayline. Approved Port of Newcastle waste handlers would service the ships while at berth.

Based on the maximum trade volumes for each precinct outlined in the previous sections, the following maximum ship movements are anticipated:

- 100 ships per annum for the General Purpose Precinct and the Bulk and General Precinct combined;
- 40 ships per annum for the Bulk Liquids Precinct; and
- 420 ships per annum for the Container Terminal Precinct.

The turn around time for ships to load and unload while at berth is normally between one to two days.

NPC advises that the Port of Newcastle has capacity to cater for up to 4,000 ships per annum and currently caters for approximately 1,500 ships per annum. Ship movements through the Port are expected to grow significantly to around 3,250 ships per annum over the next 15 to 20 years primarily to cater for significant increases in coal exports. This still leaves adequate capacity in the Port to cater for the extra 560 ships per annum associated with serving the proposed concept.

NPC manages shipping in the Port through the Vessel Traffic Information Centre, the Marine Pilots service and the Port Services Group. NPC also undertakes regular modelling and simulations of shipping through the Port.

5.2.7 Infrastructure

The proposed concept would require servicing by various forms of infrastructure such as potable water, electricity, communications, gas and sewage. An access corridor has been designated near Bull Street for provision of necessary infrastructure. Three options exist for providing services as follows:

- **Connection to the IIP.** The IIP development would deliver trunk infrastructure in stages from which the site may connect. Indicative times for the delivery of infrastructure to the IIP, following the commencement of construction (anticipated to occur in 2010), are as follows:
  - Stage 1 – 27 months. Some trunk roads, water, telecommunications, sewer and gas and an electrical substation capable of upgrade for port-side users.
  - Stage 2 – 36 months. Additional trunk roads (including Steelworks Road), water, telecommunications, sewer and gas (NPC, 2009).

  Whilst it is known that trunk infrastructure would be designed and installed within the IIP, these works do not fall under the proposed concept. As such, potential for connection and augmentation of trunk services through the IIP is likely but not certain.
- **Connection through OneSteel.** There are options to provide services to the site via connections to existing services provided to OneSteel.
- **Connection through existing service providers.** Infrastructure provision for all future Project applications falling under the proposed concept would need to consider the option of sourcing infrastructure from existing service providers where coordination cannot be achieved through the future IIP or OneSteel.

Energy Australia are conducting major zone substation developments at Mayfield, Broadmeadow and Carrington, and according to Energy Australia they would likely be capable of supporting development within the site. On-site backup capability (batteries and engine-driven generator) are likely to be installed to feed key safety-related systems to ensure the safe operation of facilities and equipment during power outages.

Potable water is likely to be obtained from Hunter Water through connection to mains in Ingall Street. The NSW Government has made provisions for funding a new sewerage system on the IIP site. The new system will include a sewage pumping station and a rising main connection to Hunter Water assets in Mayfield. The new sewage pumping station will likely be located on the south eastern side of the IIP, in the vicinity of the Selwyn Street and David Baker Drive intersection. It is anticipated that individual facilities within the site would connect to the new sewage system in the IIP site. Hunter Water have advised that they are currently upgrading the Burwood Beach Wastewater Treatment Work (WWTW) which services the area, and that the upgrade includes an allowance for the proposed concept.

Gas would also be required for some activities proposed on the port facilities area which would connect to a gas connection point located along Industrial Drive or from OneSteel. There is sufficient capacity in the local gas network, owned by Jemena, to accommodate gas requirements of the proposed concept.

The former BHP Steelworks utilised fibre optic services and had significant telephone capacity, however, this system was removed during demolition of the BHP Steelworks. An existing fibre optic cable links the Roll Shop with OneSteel and runs along Steelworks Road and Ingall Street. It would be the responsibility of future operators to inquire with local telecommunications companies as to the availability of services to the site.

Project applications should consult with local service providers regarding demand for, and provision of, services when more detailed information is available at the Project Approval stage.

5.3 Concept Staging

Indicative staging for development of the proposed concept would be to a major extent reliant on the trade demand and associated development investment within each precinct. As shown in **Figure 5-2**, development of the site would be carried out over a period of 23 years, with development commencing in 2011 and peak operations being reached by 2034.

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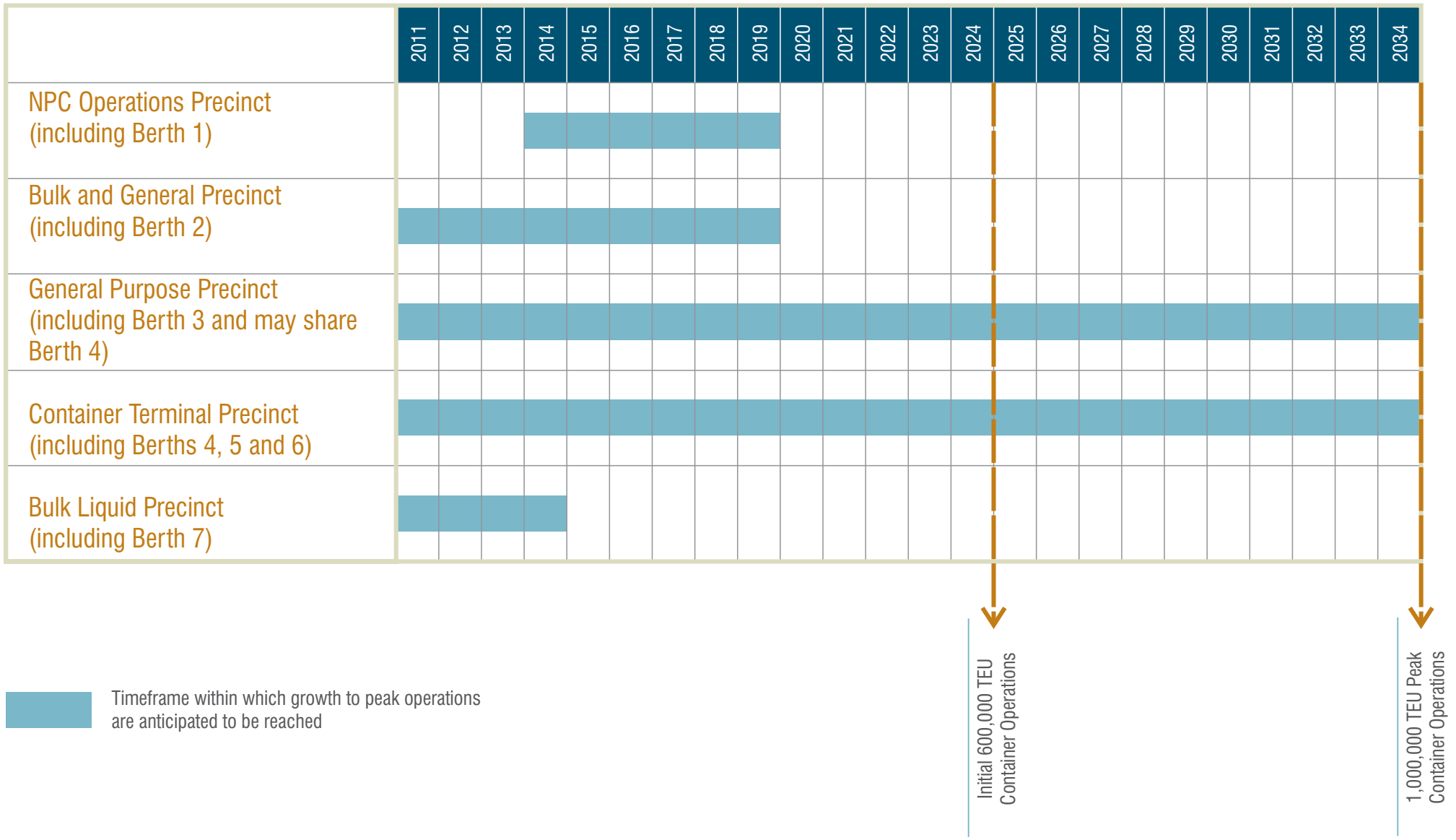

AECOM

INDICATIVE STAGING OF OPERATIONS BY PRECINCT

Environmental Assessment

Mayfield Site Port-Related Activities Concept Plan

Figure 5-2

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6.0 Statutory Planning

This section identifies the applicable planning controls and legislative requirements, at Commonwealth, State, and Local government levels, as they relate to the proposed concept. Key strategic and statutory considerations that must be addressed within the EA to facilitate approval of the proposed concept are also outlined.

6.1 Commonwealth Matters

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires the approval of the Commonwealth Minister for the Environment, Water, Heritage and the Arts for actions that may have a significant impact on matters of National Environmental Significance (NES). Should a significant impact on matters of NES be identified, approval from the Commonwealth is in addition to approvals under NSW legislation.

The EPBC Act also provides for the identification, conservation and protection of places of National Heritage significance and provides for the management of Commonwealth Heritage places.

The EPBC Act lists seven matters of NES which must be addressed when assessing the impacts of a proposal. These are:

- World Heritage properties;
- National Heritage places;
- Wetlands of International Importance;
- Listed threatened species and Threatened Ecological Communities (TECs);
- Listed migratory species;
- Commonwealth Marine Areas; and
- Nuclear action.

An EPBC Protected Matters search was undertaken in respect of the proposed concept on 6 May 2009 and the results are summarised in **Table 6-1**.

Table 6-1: Matters of NES considered in the EPBC Act

Matter of NES	Commentary
World Heritage properties	There are no World Heritage properties in the vicinity of the site.
National Heritage places	There are no National Heritage places in the vicinity of the site.
Ramsar wetlands of international significance	There is one Ramsar wetland, the Hunter Estuary Wetland, within a 10 kilometre radius of the site. However, the proposed concept is not anticipated to have a significant impact on this wetland.
Threatened ecological communities	There is one TEC, the White Box-Yellow Box- Blakely's Gum Grassy Woodland and Derived Native Grassland, located within a 10 kilometre radius of the site. However, it has been determined that this TEC is not present at the site due to the lack of vegetation and the highly disturbed nature of the site (refer to **Section 9.12**).
Threatened species	42 threatened species are located within a 10 kilometre radius of the site, however, no threatened species have been identified at the site, as the site has been highly modified and has very little habitat value.

Matter of NES	Commentary
Migratory species	There are 55 migratory species which potentially occur, or have habitat within 10 kilometres of the site. However, the proposed concept is not anticipated to have an impact on these species. The site itself does not provide habitat for migratory species.
Commonwealth marine area	There is one Commonwealth marine area, the Exclusive Economic Zone (EEZ) and Territorial Sea, some 3 nautical miles seaward (to the east) of the site. However, the proposed concept is not expected to have an impact on this EEZ.
Nuclear actions (including uranium mining)	This matter is not applicable to the proposed concept.

While a number of matters of NES are located within 10 kilometres of the site, given the highly disturbed nature of the site and the history of land use, the proposed concept is not anticipated to impact matters of NES. Nevertheless, the ecological impacts of the proposed concept are considered in **Section 9.12** of this EA, including potential impacts of the development on some matters of NES.

The EPBC Act also requires Commonwealth approval for activities that would, or are likely to have, a significant impact on Commonwealth land (Part 3, Division 2, Section 26). The land on which the proposed concept would be constructed is not Commonwealth land. Nor is there Commonwealth land within close proximity of the proposed concept which could be secondarily impacted. As such, this section of the EPBC Act is not applicable.

6.2 State Matters

6.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act and the EP&A Regulation provide the framework for environmental planning in NSW and include provisions to ensure that proposals which have the potential to impact the environment are subject to detailed assessment, and also provide opportunity for public involvement.

Components of the proposed concept are consistent with the objectives of Section 5 of the EP&A Act as outlined below:

(a) to encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,

The proposed concept would redevelop the site for port-related activities, resulting in economic benefit and employment opportunities in the Hunter Region. As part of the proposed concept, environmental performance criteria have been established to ensure the site is developed in an environmentally responsible manner (refer to **Section 11.0**).

(ii) the promotion and co-ordination of the orderly and economic use and development of land,

Concept Approval would provide a framework to coordinate future development of the entire site and each of the five precincts. As detailed in **Section 9.10**, the proposed concept would have significant economic benefits.

(iii) the protection, provision and co-ordination of communication and utility services,

The proposed concept would require provision of water, sewer, natural gas, electrical, and telecommunications services, and installation of pipelines. Local service providers, namely Energy Australia, Hunter Water, and Jemena have advised that there is likely to be capacity available to service the proposed concept. Project applicants should consult with local service providers regarding demand for, and provision of, services when more detailed information is available.

As the site develops, it is likely that the design and construction phases of individual projects would run in parallel. To ensure a coordinated approach to infrastructure provision across the site NPC would prepare an Infrastructure Plan for the site, work with Project applicants regarding the provision of services to the site via a services corridor, and would negotiate with Project applicants on cost sharing mechanisms for provision of services. New service corridors would be delineated under each subsequent Project application to connect to the existing or planned services in the local area.

(iv) the provision of land for public purposes,

The proposed concept would be a secure development with no direct public access to the site, similar to much of the surrounding land in this part of the Port.

(v) the provision and co-ordination of community services and facilities, and
The proposed concept would not provide community services or facilities.

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

The site has been subject to extensive disturbance, through past industrial use over a period of 100 years and subsequent remediation. As a result it contains no areas of remnant native vegetation and does not provide habitat for threatened species or populations of native fauna (refer to **Section 9.12**).

(vii) ecologically sustainable development, and

The proposed concept has been assessed and deemed to be consistent with the five principles of ESD (refer to **Section 10.2**). Subsequent Project applications under the proposed concept would be required to assess each Project application against the five ESD principles and implement sustainability strategies.

(viii) the provision and maintenance of affordable housing, and

The proposed concept does not include the provision of affordable housing.

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

Statutory Planning in relation to the proposed concept is addressed in this section. The site is a SSS therefore falls within the control of the Minister.

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

Community and stakeholder consultation has been undertaken during the preparation of the EA for this Concept Plan (refer to **Section 7.0**). All subsequent Project applications would be required to continue consultation and communication with the community and key stakeholders. The Concept Plan EA will be placed on public exhibition.

The proposed concept is classified as a Major Project under the Major Developments SEPP. Part 3A of the EP&A Act applies to development classified as 'Major Project'.

Under Part 3A, Section 75M of the EP&A Act, the Minister for Planning may authorise or require a proponent to apply for approval of a Concept Plan for a project. On 16 April 2009 the Minister for Planning authorised the lodgement of a Concept Plan under Section 75M (refer to **Appendix B** for a copy of the Ministers' authorisation). The Concept Plan allows the project to be assessed by focusing on the broader strategic issues, with detailed issues to be assessed as part of future Project applications.

6.2.2 Ports and Maritime Administration Act 1995

The PMA Act established the three state-owned Port Corporations, including NPC, and NSW Maritime. The PMA Act sets out the objectives and functions of Sydney, Newcastle and Port Kembla Port Corporations.

The primary objectives of Port Corporations under the PMA Act are:

(a) to be a successful business and, to this end:

(i) to operate at least as efficiently as comparable businesses, and

(ii) to maximise the net worth of the State's investment in the Port Corporation, and

(iii) to exhibit a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate these when able to do so, and

(b) to promote and facilitate trade through its port facilities, and

(c) to ensure that its port safety functions are carried out properly, and

(d) to promote and facilitate a competitive commercial environment in port operations, and

(e) to improve productivity and efficiency in its ports and the port-related supply chain.

Section 10(2) of the PMA Act states the following principal functions of Port Corporations:

(a) to establish, manage and operate port facilities and services in its ports, and

(b) to exercise the port safety functions for which it is licensed in accordance with its operating license, and

(c) to facilitate and co-ordinate improvements in the efficiency of the port-related supply chain.

Section 10(3) of the PMA Act states that a Port Corporation may:

(a) provide facilities or services that are ancillary or incidental to its principal functions, and

(b) conduct business (whether or not related to its principal functions) that it considers would further its objectives.

The proposed concept would provide for development of the site for port-related facilities and is consistent with the objectives and functions of Port Corporations as set out under the PMA Act.

6.2.3 Heritage Act 1977, as amended in 2009

The purpose of the *Heritage Act 1977* (Heritage Act) is to protect and conserve non-Aboriginal cultural heritage, including scheduled heritage items, sites and relics. The Heritage Act is administered by the NSW Heritage Branch, DoP.

The Heritage Act makes provision for a place, building, work, relic, moveable object, precinct, or land to be listed on the State Heritage Register. As the proposed concept falls under Part 3A of the EP&A Act, approvals under Part 4 of the Heritage Act are no longer required. However an assessment of Aboriginal and European heritage has been undertaken as part of the EA to provide an assessment of the potential impact of the proposed concept on items or places of heritage significance in accordance with the DGRs.

The heritage assessment undertaken for the proposed concept has identified that the process established under the 2001 consent required the mitigation of the heritage impacts to include archaeological monitoring and possible excavation within the Closure Area Heritage Precinct. HDC holds a permit from the Heritage Council to carry out these works (refer to **Section 9.7**).

6.2.4 State Environmental Planning Policy (Major Development) 2005

The Major Development SEPP identifies 'Major Projects', being those eligible for assessment under Part 3A of the EP&A Act.

Under the current planning regime applying to the site, port-related facilities declared as 'Major Projects' under Schedule 1 include the following:

- Shipping berths or terminals or portside facilities (and related infrastructure) that have a CIV of more than $30 million;
- Chemical/petroleum plants/storage that have a CIV of more than $20 million;
- Other industry that has a CIV of more than $30 million; and
- Freight terminals that have a CIV of more than $30 million.

The estimated CIV for the proposed concept is $200 million.

The proposed concept includes development that fits within all of the above port-related development types. As such, the proposed concept has been declared a Major Project under Part 3A of the Major Development SEPP. The Minister's authorisation for the preparation of a Concept Plan is provided in **Appendix B**.

The three major NSW ports, including the Port of Newcastle, Port Botany and Port of Port Kembla, have been nominated as SSS in the *Three Ports State Significant Site Proposal* prepared by the DoP in 2008. This designation recognises the State economic importance of the three ports and the directions outlined in the *NSW Ports Growth Plan*. The Minister for Planning and Minister for Ports and Waterways have determined that the ports and related industrial land should be SSS, and have listed them as such in Schedule 3 of the Major Developments SEPP. The SSS status aims to protect the ports and associated nearby transport corridors from encroachment by residential and commercial land uses and spot rezonings.

As part of the SSS status, the NSW government has developed a planning regime for the three NSW ports that would provide for their expansion and preserve these areas for port-related activities and industry. The planning regime has been implemented under Schedule 3 of the Major Developments SEPP, which has been developed in consultation with relevant councils, port corporations and NSW Maritime. It is intended that the new planning regime would introduce greater certainty and consistency in planning provisions, which would equip industry and the community with the confidence to invest in the infrastructure required to maintain and expand port activities.

Under the new planning regime the site is zoned SP1 Special Activities (Port Industry).

6.2.5 State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) consolidates and updates a range of previous State planning instruments which included infrastructure provisions. It also includes specific planning provisions and development controls for particular infrastructure works or facilities.

The Infrastructure SEPP has specific planning provisions and development controls for port, wharf and boating facilities, rail infrastructure facilities, road and traffic facilities as detailed in Division 13. This division details development for port-related facilities which are permitted with and without consent and also identifies exempt and complying development. Under the Infrastructure SEPP, port facilities are defined as:

> *"Facilities at, or on land in the vicinity of, a designated port (within the meaning of section 47 of the Ports and Maritime Administration Act 1995) used in connection with the carrying of freight and persons by water from one port to another for business or commercial purposes."*

Proposed activities associated with all five land-based operational precincts of the proposed concept are likely to incorporate development defined as port facilities. This includes the NPC Operations Precinct, Bulk and General Precinct, General Purpose Precinct, Container Terminal Precinct, and Bulk Liquids Precinct. Section 68 of the Infrastructure SEPP defines development permitted without consent, and states:

> *(1) Development for the purpose of port facilities may be carried out:*
>
> *(a) by or on behalf of a Port Corporation or the Maritime Authority of NSW without consent on land in a prescribed zone or on other land, providing the development is directly related to an existing port facility, and*
>
> *(b) by or on behalf of other public authority without consent on land in a prescribed zone.*

(2) Development for any of the following purposes may be carried out by or on behalf of a public authority without consent on any land or on unzoned land:

(a) navigation and emergency response facilities,

(b) environmental management works associated with a port, wharf or boating facility.

As NPC is a Port Corporation, development for the purposes of port facilities may be carried out without consent. However, as the proposed concept meets the port-related facilities 'Major Project' definition, the proposed concept still requires approval from the Minister for Planning in accordance with Part 3A of the EP&A Act.

However, subsequent proposals within the site boundary that do not trigger the 'Major Project' criteria may be considered permissible without consent under the Infrastructure SEPP and would therefore be determined under Part 5 of the EP&A Act. NPC would be the likely determining authority in this case.

Clause 104 of the Infrastructure SEPP relates to traffic generating development and requires that certain development with the potential to generate a substantial level of traffic be referred to the NSW Roads and Traffic Authority (RTA) for comment. Development to which the clause applies is set out in Schedule 3 of the Infrastructure SEPP and includes development for any other purpose not specifically identified in the schedule with the potential to generate traffic of more than 200 vehicles.

Schedule 3 of the Infrastructure SEPP provides the RTA with the opportunity to provide feedback on certain traffic-generating developments before a consent authority makes a determination about a development application. Schedule 3 lists types of development to which this policy applies, including:

- Development for the purpose of transport terminals, bulk stores, container depots or liquid fuel depots with a capacity of 8,000 square metres or more; and
- Development for the purpose of industry which has access to any road and is 20,000 square metres or larger; or development for the purpose of industry with access to a classified road or to a road that connects to a classified road and is 5,000 square metres or larger.

The proposed concept would generate traffic of greater than 200 vehicles and is therefore subject to this clause. In addition, based on the above, the proposed concept would also be referred by the DoP to the RTA for comment.

In relation to such traffic generating development, Clause 104(3)(b) requires the consent authority to take into consideration:

(i) any submission that the RTA provides in response to that notice within 21 days after the notice was given (unless, before the 21 days have passed, the RTA advises that it would not be making a submission), and

(ii) the accessibility of the site concerned, including:

(A) the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips, and

(B) the potential to minimise the need for travel by car and to maximise movement of freight in containers or bulk freight by rail, and

(iii) any potential traffic safety, road congestion or parking implications of the development.

The RTA was invited to the PFM for the proposed concept; however a representative was not able to attend. The RTA has been consulted with respect to the proposed concept separately (refer to **Section 7.2**). Comments provided so far have been taken into consideration in the preparation of the EA and further comments would be considered by the DoP as appropriate through the approvals process. The proposed traffic and access arrangements and potential impacts of the proposed concept are considered in detail in **Section 9.1** of this EA.

6.2.6 State Environmental Planning Policy 33 - Hazardous and Offensive Development

State Environmental Planning Policy 33 – Hazardous and Offensive Development (SEPP 33) was designed to ensure that sufficient information is provided to consent authorities to determine whether a development is hazardous or offensive. The document *Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines* (DUAP, 1994) provides guidelines to assist in the implementation of SEPP 33. The aims of SEPP 33 are:

(a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments, and

(b) to render ineffective a provision of environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy, and

(c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division, and

(d) to ensure that in determining whether a development is a hazardous or offensive industry, measures proposed to be employed to reduce the impact of the development are taken into account, and

(e) to ensure that in considering application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise adverse impact, and

(f) to require the advertising of applications to carry out such development.

Development considered potentially hazardous or offensive requires a PHA to be undertaken to identify and assess potential effects to both people and the environment.

The proposed concept has been considered in the context of SEPP 33, and a Preliminary Hazard Analysis (PHA) has been prepared as described in **Section 9.5**. The PHA concluded that potentially hazardous areas within the site could be located such that they do not impact adjacent surrounding land uses (e.g. Onesteel, the future lip, Carrington Coal Terminal, residential areas, etc.) and that Dangerous Goods storage areas within each precinct can be located such that there is no accumulation of risk. Hence, the proposed concept can be classified as only potentially hazardous and not actually hazardous and therefore would be permitted at the site under the provisions of SEPP 33.

6.2.7 State Environmental Planning Policy 55 – Remediation of Land

State Environment Planning Policy 55 – Remediation of Land (SEPP 55) promotes the remediation of contaminated land to reduce the risk of harm to human health or other environmental systems. Clause 7 of SEPP 55 requires a consent authority to consider whether the land is contaminated and whether it is suitable (or can be made suitable) for the proposed development. It states:

(1) A consent authority must not consent to the carrying out of development on land unless:

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or would be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land would be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

The Closure Area is currently being remediated in stages in accordance with the 2001 consent in accordance with a VRA under the *Contaminated Land Management Act 1997* (CLM Act). Remediation activities are due for completion in 2012. As part of the proposed concept, synergistic development of the site may occur in conjunction with the remediation activities.

The potential impact of contamination has been assessed in **Section 9.9** of this EA. The site in its remediated form would be suitable for the intended port-related uses.

6.2.8 State Environmental Planning Policy 71 – Coastal Protection

State Environmental Planning Policy 71 – Coastal Protection (SEPP 71) aims to ensure that development in the NSW coastal zone is appropriate and suitably located, so that there is a consistent and strategic approach to coastal planning and management, and to ensure a clear development assessment framework for the coastal zone.

Clause 4 stipulates land to which SEPP 71 applies, being land which is within the coastal zone. The proposed concept site is situated in the coastal zone, as defined under the *NSW Coastal Protection Act 1979,* therefore the provisions of SEPP 71 apply.

Clause 8 of SEPP 71 states matters that are to be taken into consideration by a consent authority when determining a development application to carry out development on land to which SEPP 71 applies. These are addressed in relation to the proposed concept in **Table 6-2**.

Table 6-2: SEPP 71 Matters for Consideration

Clause 8 Matters for Consideration	Comment or Reference in EA
(a) aims of this Policy set out in clause 2:	
(a) to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast, and	The proposed concept forms part of development which enhances the economic value of the Closure Area and the Port of Newcastle.
(b) to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore, and	No detrimental impact on the amenity of the coastal foreshore is envisaged. This stretch of coastal foreshore has limited public access, overshadowing created by the changes to the existing landform would be minimal and the impact on public views to the coastal foreshore would not be significant. Public access would not be appropriate within the customs-controlled port area.
(c) to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore, and	The proposed concept would not affect public access to the foreshore as public access is not compatible with the identified use of this area as a major working port.
(d) to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge, and	As discussed in **Section 9.7** of this EA, there are no items of Aboriginal cultural heritage at the site.
(e) to ensure that the visual amenity of the coast is protected, and	The potential impacts of the proposed concept upon visual amenity are minimal and are discussed in **Section 9.11** of this EA.
(f) to protect and preserve beach environments and beach amenity, and	The proposed concept does not impact upon beach environments.
(g) to protect and preserve native coastal vegetation, and	The potential ecological impacts of the proposed concept are discussed in detail in **Section 9.12** of this EA.

Clause 8 Matters for Consideration	Comment or Reference in EA
(h) to protect and preserve the marine environment of New South Wales, and	The proposed concept is consistent with the existing land-based remediation activities being undertaken in the Closure Area and the removal of contaminated sediments from the South Arm of the Hunter River which is occurring nearby. These land and river-based remediation activities would have significant benefits for the estuarine environment.
(i) to protect and preserve rock platforms, and	The proposed concept would not impact upon rock platforms.
(j) to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the Protection of the Environment Administration Act 1991), and	The proposed concept has been considered against the principles of ESD (refer to **Section 10.2.1**) and has been found to be generally consistent with these principles.
(k) to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and	The proposed concept would have minimal impact on the scenic qualities of this section of the coast which is dominated visually by the surrounding port and industrial activities. The potential visual impacts of the proposed concept are minimal in the context of surrounding activities as discussed in **Section 9.11**.
(l) to encourage a strategic approach to coastal management	The strategic context of the proposed concept is considered in **Section 3.0** of this EA.
(b) existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved	The proposed concept would not affect public access to the foreshore as public access is not compatible with the identified use of this area as a major working port with associated industrial activities.
(c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability	Not applicable to the proposed concept.
(d) the suitability of development given its type, location and design and its relationship with the surrounding area	**Sections 2.0** and **9.14** of this EA address the relationship of the proposed concept with surrounding land uses. The proposed concept would be compatible and consistent with the existing Port.
(e) detrimental impact that development may have on the amenity of the coastal foreshore, including significant overshadowing of the coastal foreshore and significant loss of views from a public place to the coastal foreshore	No detrimental impact on the amenity of the coastal foreshore is envisaged. This stretch of coastal foreshore has limited public access and is part of an active, working port. Changes to the existing landform would be minimal and the impact on public views to the coastal foreshore would be minimal.
(f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities	The potential impacts of the proposed concept upon the scenic quality of the landscape are discussed in **Section 9.11** of this EA.
(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats	An assessment of the potential impacts of the proposed concept upon native flora and fauna was undertaken as part of the EA and is detailed in **Section 9.12**.

Clause 8 Matters for Consideration	Comment or Reference in EA
(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats	An assessment of the potential impacts of the proposed concept on flora and fauna are minimal as discussed in **Section 9.12** of this EA.
(i) existing wildlife corridors and the impact of development on these corridors	**Section 9.12** of this EA addresses the potential ecological impacts of the proposed concept. No existing wildlife corridors would be affected.
(j) the likely impact of coastal processes and coastal hazards on development and likely impacts of development on coastal processes and coastal hazards	The proposed concept would have minimal impact on coastal processes and coastal hazards in the context of the approved Extension of Shipping Channels project which is changing the river function through channel widening.
(k) measures to reduce the potential for conflict between land-based and water-based coastal activities	The proposed concept would be undertaken in accordance with management plans and mitigation measures identified in **Sections 9.0** and **11.0** to minimise conflicts between concurrent activities. In particular, management measures regarding contamination management and surface water and groundwater would be implemented.
(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals	As discussed in **Section 9.7** of this EA, there are no items of Aboriginal cultural heritage at the site.
(m) likely impacts of development on the water quality of coastal waterbodies	The potential impacts of the proposed concept upon water quality are discussed in **Section 9.6** of this EA.
(n) the conservation and preservation of items of heritage, archaeological or historic significance	The potential impacts of the proposed concept upon items of heritage, archaeological or historic significance are discussed in **Section 9.7** of this EA.
(o) only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities	As detailed in **Section 6.3**, the site is not subject to the provisions of a local environmental plan.
(p) only in cases in which a development application in relation to proposed development is determined: *(i) the cumulative impacts of the proposed development on the environment, and* *(ii) measures to ensure that water and energy usage by the proposed development is efficient.*	The cumulative impacts of the proposed concept are discussed in **Section 9.14** of this EA. Sustainability measures that conserve water and energy would be incorporated into the design and operation of individual facilities at the site. Refer to **Section 10.0** for details.

The proposed concept is considered to be generally consistent with the matters for consideration set out in Clause 8 of SEPP 71.

6.3 Local Matters

The site is located within the Newcastle Local Government Area (LGA), and was until recently subject to the provisions of the *Newcastle Local Environmental Plan* (LEP) *2003*. Under the Newcastle LEP, the site was located within the 4(b) Port and Industry Zone. As discussed in **Section 6.2.4**, the *Three Ports State Significant Site Proposal* introduces a planning regime under which the site would be zoned SP1 Special Activities (Port Industry).

6.4 Other Approvals Required

6.4.1 Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) prohibits any person from causing pollution of waters or air, and provides penalties for air, water and noise pollution offences.

Chapter 3 of the POEO Act contains provisions relating to requirements for Environment Protection Licences (EPLs) for activities licensed by the EPA (now part of DECCW). EPL 1708 currently applies to a portion of the site, and permits the treatment of contaminated soil.

The proposed concept does not in itself require an EPL, however, future individual operators are likely to require EPLs for specific operations at the site.

6.4.2 Roads Act 1993

The *Roads Act 1993* requires that works on or over a public road or connection to a public road require consent from the appropriate roads authority under Section 138 of the *Roads Act 1993.* It is likely that the two existing entry routes to the site would be utilised, Selwyn Street and Ingall Street, both of which connect to Industrial Drive. If intersection or road upgrades are ultimately required, then appropriate permits would be sought from the NSW RTA and/or Council.

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7.0 Consultation and Identification of Issues

This section presents the DGRs and describes the Government agency and community consultation processes undertaken during preparation of this EA.

7.1 Director-Generals Requirements

This EA has been prepared in accordance with Part 3A of the EP&A Act and its Regulation which ensures that the potential environmental effects of a proposal are properly assessed and considered in the decision-making process.

In preparing this EA, the DGRs have been addressed as required by Clause 75F of the EP&A Act. The key matters raised by the Director-General for consideration in the EA are outlined in **Table 7-1**, together with reference to the relevant section of the EA which addresses that matter. A full copy of the DGRs for the EA is provided in **Appendix C**.

Table 7-1: Director-General's Requirements

Director General's Requirements	Reference in EA
General Requirements	
The EA must include the following:	
An executive summary	**Executive Summary**
A detailed description of the project including (but not limited to): - Location, site description (previous, existing, and surrounding land uses, site infrastructure and subdivision) and relationship with adjoining development and receivers on both landward and watersides; - Planning and existing approvals regime (status and interaction with existing site approvals, including land contamination remediation); - Project precincts (in scaled maps), components, design parameters (including site layout) and staging; and - Identification of future assessment paths.	**Sections 1.0, 2.0, 5.0, and 6.0**
A strategic and project justification describing the strategic need, justification and objectives for the project, including: - The suitability of the site taking into consideration the objects of the *Environmental Planning and Assessment Act 1979*; - Alternatives considered to the preferred project (including precinct layouts); and - Its consistency with the aims and objectives of relevant State policies and plans including the *NSW State Plan, NSW Ports Growth Plan, State Infrastructure Strategy,* and *Lower Hunter Regional Strategy*.	**Sections 3.0, 4.0, 6.0 and 13.0**
Consideration of the land and water interface and any proposed waterfront structures and future use of berthing facilities.	**Sections 5.0 and 9.0**
An assessment of the key issues, with the following aspects addressed for each key issue (where relevant): - Describe the existing and future environment, including base performance levels and goals at a site, precinct and regional level, based on current and/or monitored information;	**Sections 9.0, 11.0 and 12.0**

Director General's Requirements	Reference in EA
- Develop environmental performance criteria and development standards at a site and precinct level, based on an assessment of: ▪ Relevant strategic and statutory land use planning controls and approvals, and legislative principles; ▪ Site and regional environmental goals and infrastructure capacity, ▪ Interaction with adjoining and future development (including berthing facilities), and ▪ Cumulative impacts; - Describe other measures (for example, physical infrastructure enhancements) and associated triggers, required at a precinct, site and regional level to avoid, minimise, manage, mitigate, offset and/or monitor the impacts of the project; - Demonstrate that future development can comply with the advocated environmental performance criteria and development standards; and - Document the types of activities that would require licensing and how licensing will be applied under relevant legislation.	
A strategic management framework for the coordinated staging of development and the provision of infrastructure within the precincts, site and region (if required) to ensure that the identified environmental performance criteria and project objectives are met.	**Sections 9.8 and 11.0**
A draft Statement of Commitments (SoC). The SoC must clearly articulate the desired future development at a site and precinct level, environmental performance criteria, development standards, infrastructure requirements and triggers, management framework and any other measures to avoid, minimise, manage, mitigate, offset identified impacts.	**Section 11.0**
Certification by the author of the EA that the information contained in the Assessment is neither false nor misleading.	**Prior to Executive Summary**
Key Issues	
Transport and Access Including but not limited to: - Access to, from and within the project and to surrounding lands and development (for all modes); and interaction and integration with existing and planned transport infrastructure and services, taking into account of the *Guide to Traffic Generating Developments (RTA)* and the *Draft Interim Guidelines on Transport Management and Accessibility Plans (DoT/RTA)*.	**Sections 9.1 and 9.2**
Noise and Vibration Including but not limited to: - Noise and vibration from all activities and sources, and impacts to on-site and adjoining receivers, taking into account of the *NSW Industrial Noise Policy (DEC), Environmental Criteria for Road Traffic Noise (DEC), and the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (DEC and DoP)*.	**Section 9.3**

Director General's Requirements	Reference in EA
Hazards and Risks Including but not limited to: - Potential hazards associated with each precincts and the site as a whole, taking into account processes or activities that have the potential to cause harm to people and/or the environment and the *Hazardous Industry Planning Advisory Paper No 10: Land Use Safety and Planning*; and - Land and water contamination and identification of the need for the management of contaminants, having regard to the ecological and human health risks posed by contamination in the context of past, existing and future land uses. This should be assessed in the context of the existing Voluntary Remediation Agreement between the HDC and DECCW, applicable to the whole of the remediation site (referred to as the Closure Area in this EA).	**Sections 9.5, 9.6 and 9.9**
Water Including but not limited to: - Water and groundwater interactions with on-site and adjoining receiving waters, including the consideration of waterfront structures, stormwater management and acid sulphate soils.	**Section 9.6**
Air Quality Including but not limited to: - Air pollutants, including an assessment of potential air pollution sources and atmospheric pollutants of concern for local and regional air quality, taking into account the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC).	**Section 9.4**
Heritage Including but not limited to: - Non-indigenous heritage items and values of the site and surrounding area; taking into account of the *NSW Heritage Manual (NSW Heritage Office)*; and *Assessing Heritage Significance Guidelines (NSW Heritage Office).*	**Section 9.7**
Infrastructure Including but not limited to: - Service demand, capacity and augmentation of existing and proposed infrastructure and utilities as a result of the project.	**Section 9.8**
Environmental Risk Analysis	
Notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, environmental performance criteria and development standards and other mitigation measures, and any significant residual environmental impacts. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed assessment of this key environmental impact must be included.	**Sections 8.0 and 12.0**

Director General's Requirements	Reference in EA
Consultation	
An appropriate level of consultation with relevant parties during the preparation of the EA should be undertaken, including (but not limited to): - Local, State or Commonwealth government authorities such as: ▪ Department of Environment and Climate Change; ▪ Department of Primary Industries (Fisheries); ▪ Department of Water and Energy; ▪ Roads and Traffic Authority; ▪ Ministry of Transport; ▪ NSW Maritime; ▪ Hunter Development Corporation; and ▪ Newcastle City Council; - Service and infrastructure providers such as: ▪ Australian Rail Track Corporation; and ▪ Integral Energy; - Specialist interest groups and the public, including adjoining and affected landowners. The EA must describe the consultation process, document consultation undertaken and identify the issues raised (including where these have been addressed in the EA).	**Section 7.0**

7.2 Consultation with Stakeholders and Other Relevant Authorities

7.2.1 Planning Focus Meeting

The proposed concept was declared a Major Project by the DoP on 16 April 2009, under delegation from the Minister for Planning under Part 3A of the EP&A Act, and as such environmental assessment requirements from relevant statutory authorities were requested by DoP as part of the formal procedures.

To assist this process, a PFM was held on 17 April 2009, to provide information about the proposed concept to relevant authorities and to discuss initial issues of concern. These discussions were used to inform the DGRs.

The following agencies and organisations were invited to attend the PFM:

- DoP;
- Department of Environment and Climate Change (DECC), now DECCW;
- RTA;
- Australian Rail Track Corporation (ARTC);
- Department of Water and Energy (DWE), now DECCW and Industry and Investments NSW (IINSW);
- Department of Primary Industries (DPI), now IINSW;
- NSW Maritime;
- HDC; and
- Newcastle City Council.

Representatives from each of these agencies attended the PFM, with the exception of the RTA who were unable to attend. However, the requirements of the RTA were sought separately.

7.2.2 Issues Raised

Environmental assessment requirements from relevant statutory authorities were requested by DoP as part of the formal procedure of issuing DGRs. In addition to this process, consultation was undertaken with relevant authorities during preparation of the EA to further discuss pertinent issues. **Table 7-2** provides a summary of the assessment requirements and expectations of each relevant authority, together with the relevant section of the EA which addresses the matter.

Table 7-2: Stakeholder Consultation

Agency	Issues	Reference in EA
DoP	DoP requirements provided in detail in **Table 7-1**.	**Entire EA**
Newcastle City Council	At the time of writing Council had not raised specific issues.	N/A
DECC (now DECCW)	Air – impact on air quality including cumulative impacts.	**Sections 9.4 and 9.14**
	Noise – impact on noise amenity including cumulative impact.	**Sections 9.3 and 9.14**
	Contaminated land – consideration of contaminated land issues concerning the site.	**Sections 9.6 and 9.9**
	Water quality impacts.	**Section 9.6**
	The design and layout of facilities to minimise potential impacts and the actions that would be taken to avoid or mitigate environmental impacts or compensatory measures to minimise unavoidable impacts.	**Sections 5.0, 9.0 and 11.0**
RTA	Undertake a traffic impact study in accordance with RTA's Guide to Traffic Generating Developments.	**Section 9.1**
ARTC	Interface points with level crossings.	**Sections 9.1 and 9.2**
	Pathing in and out (road, rail and berth capacities).	
	Interaction between precincts.	
DWE (now DECCW and IINSW)	Assessment should consider, and approvals may be required under, State water and pipeline legislation.	**Section 9.6**
	Take into account water management principles of the *Water Management Act 2000*.	**Section 9.6**
	Ensure potential hydraulic connection between the proposed development and surface and groundwater sources is identified and mitigated.	**Section 9.6**
	Ensuring there is no adverse impacts on surface and groundwater systems.	**Section 9.6**
	Protecting watercourses and taking into account DWE's *Guidelines for Controlled Activities* (February 2008).	**Section 9.6**
	Land/Water interface - need to assess berthing requirements.	**Sections 5.0 and 9.6**
	Concept plan would need to set limits or controls for land use at the site (for example, to ensure the remediation cap is not breached).	**Sections 5.0, 9.6, 9.9 and 11.0**

Agency	Issues	Reference in EA
DPI, now IINSW	Potential impacts on river system (though it is recognised that river system ecosystems have been affected by historical activity). Impacts of dredging operations required to allow berth activities. Stormwater retention systems.	**Section 9.6** **Section 5.0** **Section 9.6**
NSW Maritime	Land/Water interface - need to assess berthing requirements.	**Sections 5.0 and 9.6**
HDC	Need to address the impact of the project on the original approval and Masterplan for the site and also clearly explain that the proposed concept only applies to 90 hectares of the 150 hectare Closure Area. HDC are currently undertaking remediation of the site under the original 2001 consent and VRA and requires that this process is not compromised by the proposed concept. Land/water interface issues need to be addressed. Interface issues with other land-based uses also need to be addressed.	**Sections 1.0, 2.0 and 5.0** **Sections 2.0, 5.0, 9.6 and 9.9** **Sections 5.0, 9.5, 9.6 and 9.14**
Energy Australia	Recent Energy Australia capital works programs in the region included the development of major zone substations which would help support future development within the precincts. Where load requirements are considered to be in excess of regular industrial usage, Energy Australia would need to be consulted for consideration of sub-transmission connections.	**Section 9.8**
Jemena	Consultation with Jemena indicates that there is sufficient capacity in the local network to accommodate the proposal and that a connection could be made to the existing natural gas connection point located along Industrial Drive. Subsequent Project applications would be required to consult with Jemena to confirm load capacity and potential for extension of gas supply pipelines.	**Section 9.8**
NSW Transport and Infrastructure	Access to the site by public transport and cycling and pedestrian movement should be considered. Consideration should also be given to the preparation of a Workplace Travel Plan in order to reduce the reliance on car-based trips to and from the site.	**Sections 9.1 and 10.2**

Agency	Issues	Reference in EA
Hunter Water Corporation	In a letter to Hunter Water Corporation dated 16 March 2010, AECOM provided an outline of the proposed concept and a copy of the PEA. AECOM invited comments from Hunter Water, particularly in regards to the capacity of utilities and services. Hunter Water advised there is currently no existing infrastructure to the site. However, there appears to be capacity in the water and wastewater system to accommodate the proposed concept. Hunter Water plans to conduct wastewater upgrades in the local area.	**Section 9.8**

7.3 Community Consultation

7.3.1 Objectives

Community consultation was undertaken to identify and address issues of concern raised by local residents, neighbouring industry and other key stakeholders. The primary purpose of this consultation was:

- To provide an overview of the proposed concept to relevant stakeholders and the community;
- To seek local knowledge to assist with the assessment process; and
- To seek input into matters stakeholders would like to see addressed in the EA.

7.3.2 Community Consultative Committee

The Closure Area has an established community consultation mechanism via the Mayfield Community Consultative Committee (CCC). The Mayfield CCC was established as requirement of conditions 9.6 to 9.8 of the 2001 consent. NPC discussed the proposed concept at a meeting of the Mayfield CCC in August, 2009. Issues raised by the Mayfield CCC at the meeting included the following:

- Noise from road and rail traffic particularly during the night time period;
- Capacity of the rail system to handle an increase in rail movements from the site;
- Whether the HRRP would be completed in a timely manner to enable that part of the Mayfield site to be vacated for the proposed concept;
- Management of land-based contamination and stormwater runoff during the construction process;
- How subsequent Project applications would be assessed in the context of the Concept Approval; and
- The nature of the site infrastructure that would be developed in each precinct.

These issues are discussed in detail in this EA.

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8.0 Issues Prioritisation

This section provides a summary of the prioritisation process undertaken to identify the key environmental issues associated with the site and proposed concept.

8.1 Issue Identification

8.1.1 Methodology

Preparation of a PEA and consultation with the DoP and relevant agencies (including during the PFM held on 17 April 2009) and receipt of subsequent DGRs issued on 29 May 2009 assisted in the identification of issues relating to the proposed concept.

The PEA involved a desktop analysis and preliminary investigations to provide an outline of existing information on the site and the proposed concept, sufficient to establish the key environmental issues. This information and the DGRs were used to identify the level of assessment required for this EA.

8.1.2 The Issues

The key environmental issues identified by AECOM through the PEA process, identified in the DGRs and through agency and community consultations are as follows:

- Traffic, transport and access
- Noise and vibration
- Air quality
- Hazard and risk
- Water quality
- Heritage and cultural
- Infrastructure
- Geology and soils
- Socioeconomic
- Visual
- Ecology
- Waste
- Energy

8.2 Prioritisation of Issues

8.2.1 Approach

The prioritisation of issues was based on the need to recognise that a higher degree of assessment would be required for the issues with the highest severity and greatest possible consequences. **Table 8-1** shows the issues prioritisation matrix used to identify priorities. Each issue was given a ranking between one and three for the severity of effects and the perceived consequence of those effects if left unmanaged. These two numbers were added together to provide a numerical ranking for the issue that was used to categorise each issue into high, medium and low priorities.

Table 8-1: Issues Prioritisation Matrix

Severity of Effects	Perceived Consequence of Unmanaged Effects		
	3. High	**2. Medium**	**1. Low**
1 Low	4 (Medium)	3 (Low)	2 (Low)
2 Medium	5 (High)	4 (Medium)	3 (Low)
3 High	6 (High)	5 (High)	4 (Medium)

8.2.2 Prioritisation Assessment

The ranking of issues aims to prioritise the issues for assessment and does not consider the application of mitigation measures to manage the environmental effects. In all cases, appropriate and proven mitigation measures would be used to minimise potential impacts. These mitigation measures are discussed in **Sections 9.0** and **11.0** of this EA.

The allocation of risk is based upon the following considerations:

Severity of Risk

1. *Low:* *Localised implications; imperceptible or short-term cumulative impacts.*
2. *Medium:* *Regional implications; modest or medium term cumulative impacts.*
3. *High:* *Inter-regional implications; serious or long-term cumulative impacts.*

Consequences of Unmanaged Effects

1. *Low:* *Minor environmental change; offsets readily available.*
2. *Medium:* *Moderate adverse environmental change; offsets available.*
3. *High:* *Important adverse environmental change, offsets not readily available.*

The prioritisation of environmental issues related to the proposed concept is shown in **Table 8-2**.

Table 8-2: Prioritisation of Environmental Issues

Issue	Severity	Consequence	Priority
Traffic, Transport and Access			
Temporary increases in road traffic during construction	1	2	**3 (Low)**
Increases in road traffic during operation	3	2	**5 (High)**
Increases in rail transport during operation	2	2	**4 (Medium)**
Increases in ship transport during operation	1	1	**2 (Low)**
Noise and Vibration			
Temporary noise emissions during construction	2	2	**4 (Medium)**
Noise emissions during operation	2	2	**4 (Medium)**
Vibration impacts during construction	1	2	**3 (Low)**
Air Quality			
Emissions of air pollutants during construction	2	2	**4 (Medium)**
Emissions of air pollutants during operation	2	2	**4 (Medium)**
Odour emissions during operation	1	1	**2 (Low)**
Greenhouse gas emissions	2	2	**4 (Medium)**
Hazard and Risk			
Exposure of existing and future surrounding land uses and sensitive receivers to hazards and risks associated with operation	2	2	**4 (Medium)**
Exposure of on-site employees to hazards and risks associated with operation	2	2	**4 (Medium)**

Issue	Severity	Consequence	Priority
Water Quality			
Surface water quality impacts during construction	2	2	**4 (Medium)**
Surface water quality impacts during operation	2	2	**4 (Medium)**
Impacts to groundwater during construction	1	1	**2 (Low)**
Impacts to groundwater during operation	1	1	**2 (Low)**
Heritage and Cultural			
Impacts on existing non-Indigenous heritage items on the site	2	2	**4 (Medium)**
Infrastructure			
Impacts on existing infrastructure and utilities	1	1	**2 (Low)**
Impacts on future service demand, capacity and augmentation of proposed infrastructure and utilities	2	2	**4 (Medium)**
Geology and Soils			
Erosion and sedimentation during construction	2	2	**4 (Medium)**
Erosion and sedimentation during operation	1	2	**3 (Low)**
Migration of existing on-site contaminants during construction	2	2	**4 (Medium)**
Migration of existing on-site contaminants during operation	1	2	**3 (Low)**
Socio-Economic			
Impact upon amenity of nearby residential land uses (i.e. noise, air quality, hazard and risk)	1	2	**3 (Low)**
Demand for community resources, and impact on the community	1	1	**2 (Low)**
Generation of employment opportunities	2	2	**4 (Medium)**
Benefits to the regional economy	2	2	**4 (Medium)**
Visual			
Intrusive visual impacts on surrounding landscape	1	2	**3 (Low)**
Ecology			
Impact on flora and fauna at the site	1	1	**2 (Low)**
Impact on flora and fauna off-site	1	1	**2 (Low)**
Waste			
Generation and management of waste during construction	1	1	**2 (Low)**
Generation and management of waste during operation	2	1	**3 (Low)**

Issue	Severity	Consequence	Priority
Energy			
Resource availability and demand (i.e. water, gas, electricity)	2	1	**3 (Low)**

In summary, the final prioritisation of environmental issues is as follows:

High priority:

- Traffic, transport and access (road)

Medium priority:

- Traffic, transport and access (rail and ship)
- Noise and vibration
- Air quality
- Hazard and risk
- Water quality
- Heritage and cultural
- Infrastructure
- Geology and soils

Low Priority:

- Socioeconomic
- Visual
- Ecology
- Waste
- Energy

The level of information on each issue provided in this EA corresponds to the priority of the issue. The above issues have all been addressed in **Section 9.0**.