

Executive Summary

E1 Introduction

North Queensland Bulk Ports Corporation Limited (NQBPC) (formerly Ports Corporation of Queensland Limited) is the proponent for the Abbot Point Coal Terminal X110 Expansion: Infrastructure Development Project (the Project), which forms part of the greater X110 Expansion Project. NQBPC is the responsible party for obtaining the relevant approvals to facilitate the development of the Project.

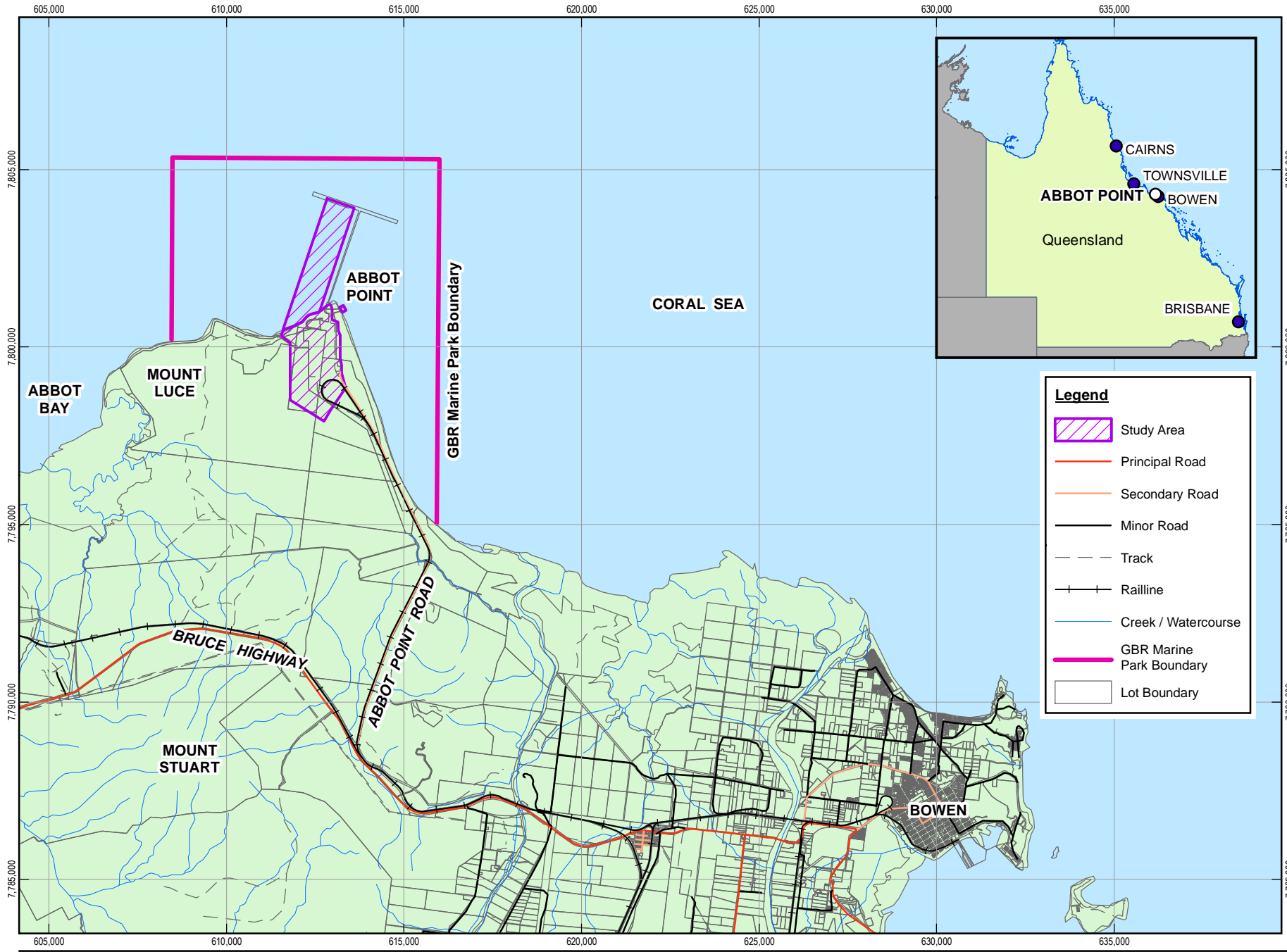
Abbot Point is located approximately 25 kilometres (km) north of Bowen on the Central Queensland Coast (see Figure E1). It is a strategic asset to Queensland, due to the large tracts of land available for industrial development, its remote location and access to a deep water port. The current Port is purpose-designed for the export of coal with the Abbot Point Coal Terminal (APCT) and the tug berths in Bowen being the only facilities at the Port. The Port is wholly contained within the Great Barrier Reef World Heritage Area. The existing berth facilities are located approximately 2.8 km off-shore. Port limits overlap with the Great Barrier Reef Marine Park (GBRMP), but the area surrounding the offshore jetty and berth is excluded from the Marine Park.

The Abbot Point Coal Terminal X110 Expansion Project comprises two separate components, that is, the Apron and Berth Capital Dredging Project and the Infrastructure Development Project. The X110 Apron and Berth Capital Dredging Project involves the dredging of two new berth pockets and an associated apron area. This project is subject to a separate assessment which is currently being progressed.










This draft Voluntary Environmental Assessment (VEA) is for the X110 Infrastructure Development Project and has been prepared for NQBPC. Terms of Reference (ToR) for this environmental assessment were developed based on the outcomes of the Initial Advice Statement (IAS), the requirements of relevant government agencies and submissions from stakeholders and the community.

Coal is considered to be Queensland's most valuable export earner, representing about 30 % of Queensland's export of goods by value (DNRM 2005). There has been a very strong growth in demand for coal exports from Australia due to the industrial growth of China and India. Coal mines in Queensland's Bowen Basin are increasing their production levels to meet this customer need and require port infrastructure to export their product. New mines are being considered for the Galilee Basin, which is further west. Coal terminal expansions have recently occurred or are being studied in the ports of Hay Point, Gladstone and Abbot Point. All of these expansions are required to meet the predicted future export needs of the Queensland coal mines.

Based on current customer demand information, it is expected that by mid-2013, the coal terminal will have a capacity of 80 Mtpa (i.e. expansion to X80) and that by mid-2015, expansion works to accommodate 110 Mtpa will be complete.

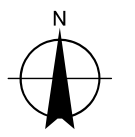


Legend

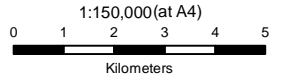
-  Study Area
-  Principal Road
-  Secondary Road
-  Minor Road
-  Track
-  Railline
-  Creek / Watercourse
-  GBR Marine Park Boundary
-  Lot Boundary



ABBOT POINT X110 EXPANSION



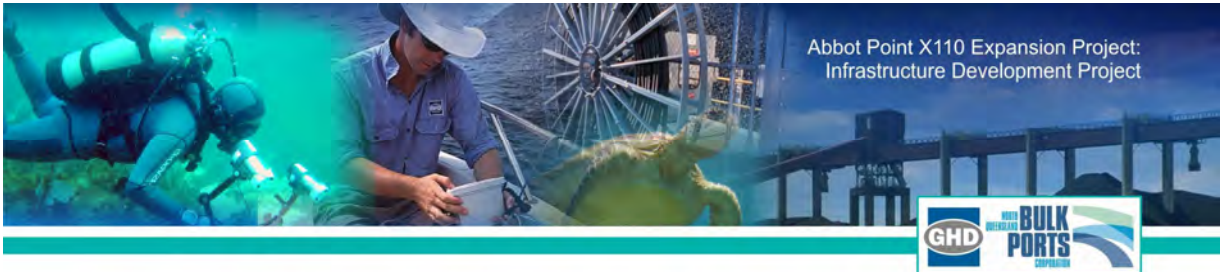
Job Number | 41-20175
 Revision | A
 Date | 06 OCT 2009



Map Projection: Universal Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia (GDA)
 Grid: Map Grid of Australia 1994, Zone 55

LOCALITY MAP

FIGURE E1



E2 Environmental Assessment Process

The proposed Project does not trigger the requirement for an Environmental Impact Statement (EIS) under relevant Commonwealth and State legislation (see Section 2). However, NQBP has elected to prepare a Voluntary Environmental Assessment (VEA) to accompany any approvals for the Project as detailed in Section 2.

On 18 November 2008, the Abbot Point Coal Terminal X110 Expansion: Infrastructure Development Project was declared to be a 'significant project for which an Environmental Impact Statement (EIS) is not required' under section 26(1)(b) of the *Queensland State Development and Public Works Organisation Act 1971* (SDPWO Act) by the Coordinator-General (CG).

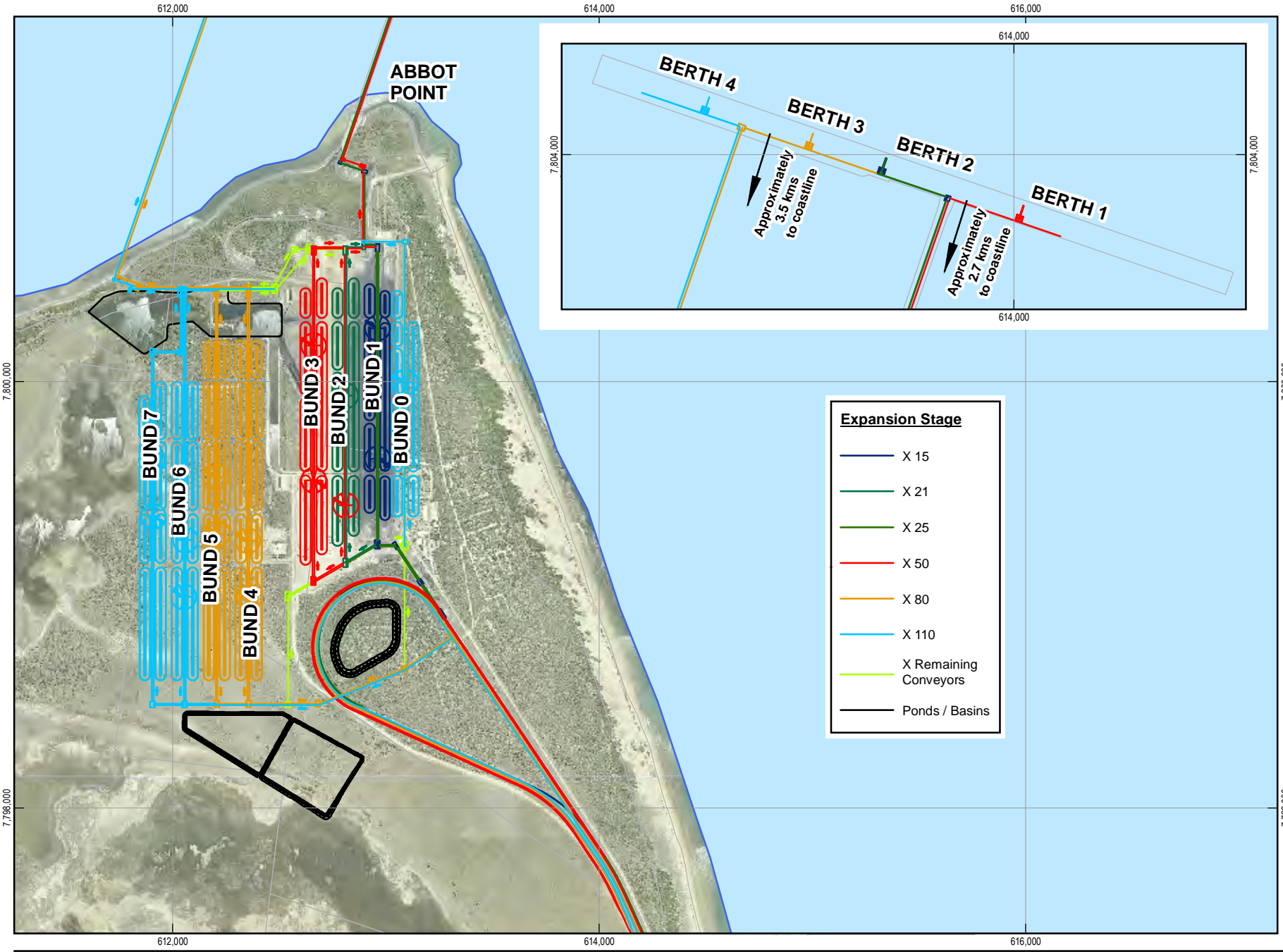
On 20 October 2008, the Australian Government Minister for the Environment, Water, Heritage and the Arts determined the Project a 'controlled action', which requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). It was also determined that the Project should be assessed by Preliminary Documentation. A separate report has been prepared to address those issues identified by the Department of Environment, Water, Heritage and the Arts (DEWHA) and is attached as Appendix J. The controlling provisions are:

- » World Heritage area (sections 12 and 15A);
- » National Heritage places (section 15B and 15C);
- » Listed threatened species and communities (sections 18 and 18A);
- » Listed migratory species (sections 20 and 20A); and
- » Commonwealth marine (section 23 and 24A).

E3 Project Description

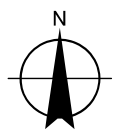
The X110 Abbot Point Coal Terminal comprises both onshore and offshore works as shown in Figure E2. The proposed X110 Expansion includes the following offshore work:

- » Installation of a second off-shore jetty structure to the west of the existing off-shore structure, with two out-loading conveyors to take the product to the offshore berths;
- » Installation of two new offshore wharf/berth structures with two new ship-loaders on the new berths. The marine structures are expected to be piled structures, similar to the existing structures, however, the type of structure will be reviewed to ensure the most economic design;
- » Extension of the service jetty structure (to the east of the terminal); and
- » Upgrade of the existing construction wharf or new temporary wharf for construction.

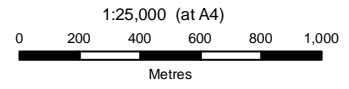


**ABBOT POINT
X110
EXPANSION**

Expansion Stage	
—	X 15
—	X 21
—	X 25
—	X 50
—	X 80
—	X 110
—	X Remaining Conveyors
—	Ponds / Basins



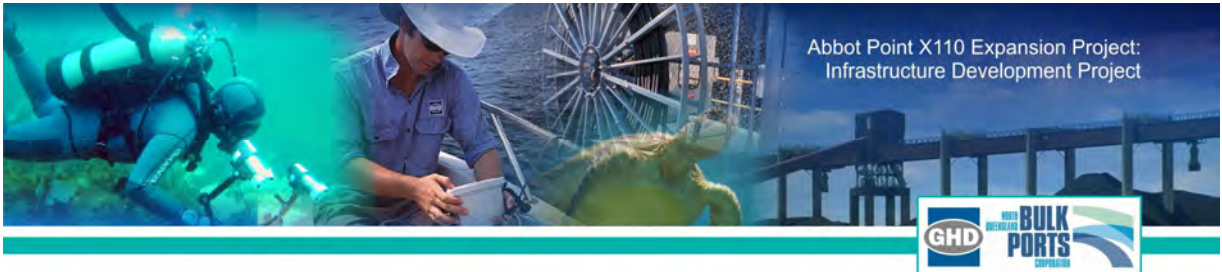
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**GENERAL LOCATION
OF
INFRASTRUCTURE
DEVELOPMENT**

FIGURE E2



Key onshore loading, unloading and storage facilities for the X110 project include:

- » The development of two rail dump stations and in-loading conveyors from each to the stockyard;
- » Installation of new stockyard capacity involving up to 10 new bunds (10 stockpile rows);
- » Installation of up to 15 new stockyard machines, which will be stackers, reclaimers or combined stacker/reclaimers, chosen to optimise efficiency of the stockyard operations;
- » Installation of transfer towers, surge bins and sampling plant for the new stockyard;
- » Potential installation of additional fuel facilities for refuelling terminal vehicles and machinery;

Two additional rail loops will be developed within the Port as part of expansion. This work will be subject to a separate assessment and approvals process by the proponent of the rail infrastructure, Queensland Rail.

The proposed X110 Expansion will include the following associated infrastructure:

- » Potential installation of additional fuel facilities for refuelling terminal vehicles and machinery;
- » Provision of cleared and level area for the lay down, storage and preparation of equipment for the construction phases;
- » Possible provision of a helipad for marine pilot transfers; and
- » Operation of a number of Environmentally Relevant Activities during the construction stages.

New power supply will be required, but this work will be subject to a separate assessment and approvals process by the energy network supplier.

The Project is expected to be developed in two phases,

- » X80: development of bunds 4 and 5, construction of off-shore jetty and wharf for berth 3, construction of third rail loop within existing loop.
- » X110: development of bunds 6 and 7, construction of wharf for berth 4, construction of fourth rail loop within existing loop.

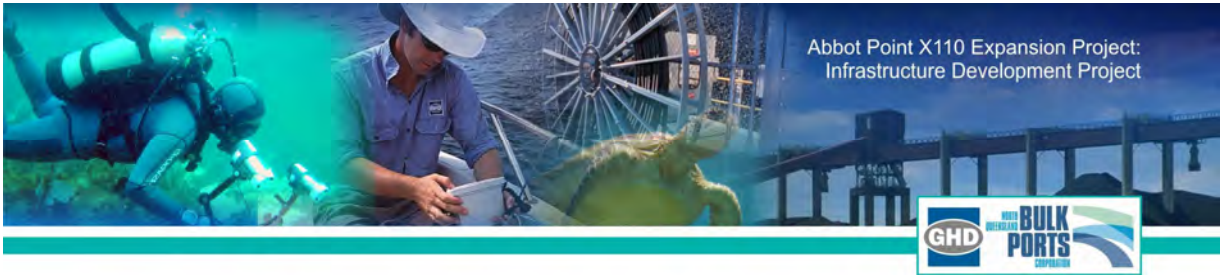
E4 Environment Values and Management of Impacts

Land and Tenure

Most of the land required for on-shore development is freehold land owned by NQBP. However, part of the neighbouring land holdings to the west, will be required for the expanded stockpile area. This land is owned by Colinta Holdings, a subsidiary of Xstrata Coal. NQBP is investigating options for ownership of the land. The new off-shore jetty structure will be built above unallocated State land. NQBP is currently seeking a perpetual lease over this land from the Queensland Government and have included the area in the Abbot Point Land Use Plan review.

The proposed development area is located within both the Abbot Point State Development Area and Strategic Port Land associated with the Port of Abbot Point.

No Native Title claims are current over the project area.



Acid Sulfate Soils

The primary areas that acid sulfate soils were identified generally correspond with the geology Quaternary coastal mud flat and hydrosol soils. This only occurs on a relatively small portion of the X110 Expansion area along the western and south western boundaries where low lying wetlands are infringed. The secondary area of acid sulfate soils is within the existing rail loop, however this occurrence appears intermittent occurring in only four (4) of the thirty-three (33) test locations.

Earthworks associated with construction of the X110 Expansion area and construction of the new Sedimentation Ponds will need to be done in accordance with an ASS Management Plan that includes provision for filling over *in situ* ASS. An outline of the ASS Management Plan is provided in Section 5, however, a detailed plan will need to be developed and approved by DERM prior to works commencing. Acid sulfate soils will need to be managed appropriately to ensure that environmental harm does not occur. The level of treatment to neutralise the types of soils present on the site in the majority of circumstances is rated as *very high* level (5-25 kg/t), with some areas requiring soils an *extra high* level of treatment (>25 kg/ha).

Traffic and Transport

Road access to the Port of Abbot Point is via the Abbot Point Road, a private access road owned and maintained by NQBP. The road comprises a two lane sealed pavement. The increase in light vehicles during the operation phase is not expected to have any significant or adverse traffic, road pavement or road safety impacts on the Bruce Highway. Traffic management measures will need to be implemented during construction to ensure ongoing safe operation. Previous discussions between NQBP and QR have identified a potential safety risk associated with the existing road / rail intersection on Abbot Point Road and near the Bruce Highway. To address this, NQBP propose to undertake a joint study with QR to assess the safety risks and identify suitable management measures for implementation. This study will be undertaken prior to the operation of the X110 Expansion.

Rail access to the APCT is via a dedicated coal rail freight line owned and operated by Queensland Rail. As part of the X110 expansion, two additional rail loops will be developed within the port. This work will be subject to a separate assessment and approvals process by the proponent of the rail infrastructure, Queensland Rail.

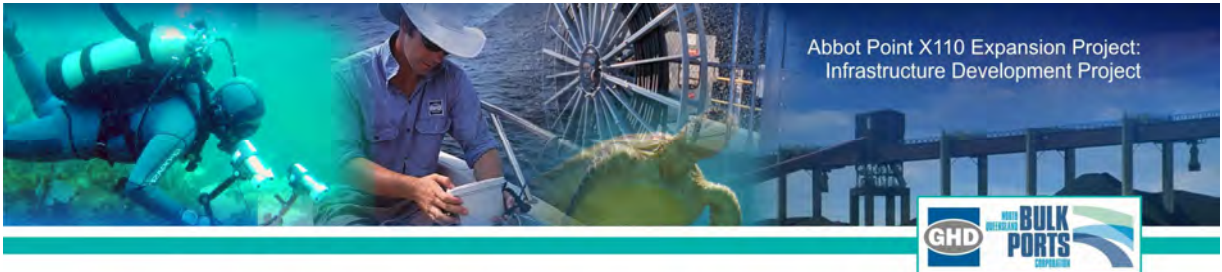
Existing waste water treatment comprises a 100 equivalent person (EP) waste water treatment plant (WWTP) on the western side of the site and 300 EP WWTP on the eastern side of the site. A septic waste water treatment plan exists offshore and is maintained by Xstrata. During operation of the X110 berths, it is proposed a package waste water treatment plant with adequate storage is installed off-shore and pumped out and maintained by a licensed contractor. The combination of the two existing waste water treatment plants (WWTP) has more than sufficient capacity for the operating X110 terminal.

Climate / Natural Disaster

Design of the X110 expansion has been undertaken having regard to potential storm surge and sea level rise impacts.

Surface Waterways

The Abbot Point Coal Terminal is located adjacent to the Abbot Point – Caley Valley Wetland. The Abbot Point – Caley Valley Aggregation is a 5,154 ha site that extends approximately 18 km long and 6 km wide, bounded by Mt Curlewis in the west, Euri Creek in the east, Bald Hill in the north and Caley



Valley homestead in the south. Water quality within the Caley-Valley wetland is fresh to saline and seasonally variable, with a maximum water depth of 10 m in Lake Caley proper (Blackman *et al.* 1999). The construction of earth retaining walls built in 1956 and upgraded in 1981/82 essentially isolated the lake from most tidal influence. With the lack of tidal flushing, the lake has become progressively more saline, with a reduction in the extent of sedgelands and saltmarsh and replacement by mud flats with salt fields (Ecoserve 2005). Available water quality data indicate that over the 7-year period of measurement to March 2004, waters within the wetland also experienced large variations in electrical conductivity of between 900 and 15,000 $\mu\text{S}/\text{cm}$. The equivalent range of salinity was less than 1,000 mg/L (freshwater) to approximately 10,000 mg/L (approximately 28% seawater). There did not appear to be any particular trend of increasing or decreasing conductivity or salinity over the period. Over the measurement period, the pH of wetland waters varied from either mildly acidic or mildly alkaline conditions occurring. Dissolved oxygen concentrations showed wide variation but data was too limited for any inference on water quality.

The proposed development will result in the loss of 12.21 ha of seasonal fringing wetland will occur due to development works to establish Bund 7. The area of wetland to be developed has been minimised as far as possible during the engineering design. In the context of the overall wetland, it is considered to be a small portion at the fringe of the wet season extent of the wetland and is expected to have minimal impact on the overall integrity of the habitat.

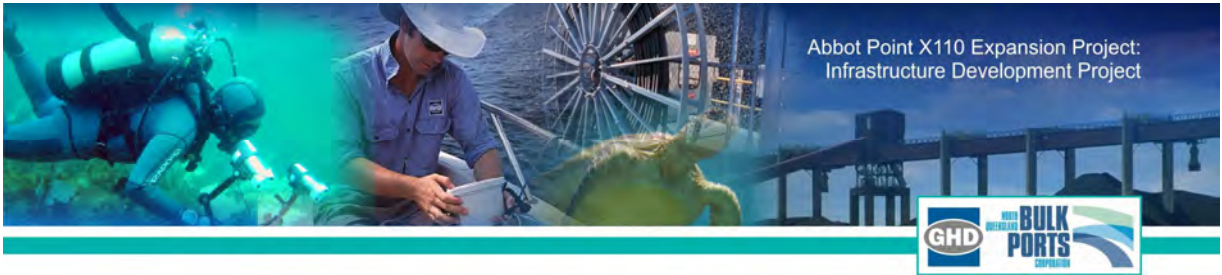
NQBP has an established method for managing stormwater within the existing ABPT site which is demonstrated to achieve water quality guidelines relevant to the receiving waters. All operations are undertaken in accordance with NQBP environmental licences. All potentially impacted water from the X110 expansion will be diverted to one of the two primary settlement ponds at the southern and northern ends of the site.

The final discharge point for the new secondary pond will be determined during detailed design and in consultation with regulatory authorities. The discharge for the existing secondary sedimentation pond will remain unchanged (o.e into the wetland). It is anticipated that the discharge from the secondary ponds to the wetland will be less than the current arrangement as water will be continually pumped into the stormwater return dam within the rain loop for reuse in the terminal. Discharge from this dam will be only during severe rain events.

Current measures to manage acidity of discharge water include water quality monitoring and dosing of waters with soda ash when the pH levels are below the licence thresholds of between 6 and 8. As a result of the non-compliance which occurred in early 2009, NQBP and the terminal operator Xstrata have been working together to develop an action to prevent a recurrence of the non-compliance. Management measures focus on the installation of a permanent dosing facility, to correct the pH of water prior to discharge at the existing Secondary Settlement Pond. This or a similar system will also be installed in the proposed new Secondary Settlement Pond at the southern end of the site.

Groundwater Resources

Geological mapping suggests that Quaternary-aged Coastal Sand Dune deposits which underlie the majority of the site area. The western edge of the site however is mapped as Quaternary-aged coastal Mudflats which also underlie the Caley Valley Wetlands. The back dune sediments which characterise the X110 Expansion area appear to comprise mostly sands overlying clayey sands and sandy clays. The predicted groundwater flow direction within the western side of the existing coal stockpile is likely to



be in a westerly direction towards the Caley Valley Wetlands and north towards Dingo Beach. The Hollingsworth and Associates (1979) (WBM 2006, p 5-13) report suggested that the dense saline marine clays underlying the wetland were likely to restrict groundwater discharge into the wetlands except for minor seepages on the eastern wetlands perimeter. Groundwater flow velocities are likely to be low, resulting from a very low groundwater gradient of approximately 3×10^{-4} (EHA, November 2005). The fore dunes on the eastern side of the site run north-south parallel with the coastline. Groundwater within this deposit is likely to move in an easterly direction and towards the South Pacific Ocean.

Groundwater quality data reported for two sampling rounds conducted on the 14 July 2005 and 8 June 2006 (WBM October 2006) generally characterise the groundwater as neutral to slightly acidic (pH 6.03-7.31) and brackish to saline (Electrical conductivity 1,190 $\mu\text{S}/\text{cm}$ – 39,300 $\mu\text{S}/\text{cm}$). Electrical conductivity (EC) data provided by NQBP for selected bores monitored in March 2009 indicates brackish groundwater (1,100 to 2,100 $\mu\text{S}/\text{cm}$).

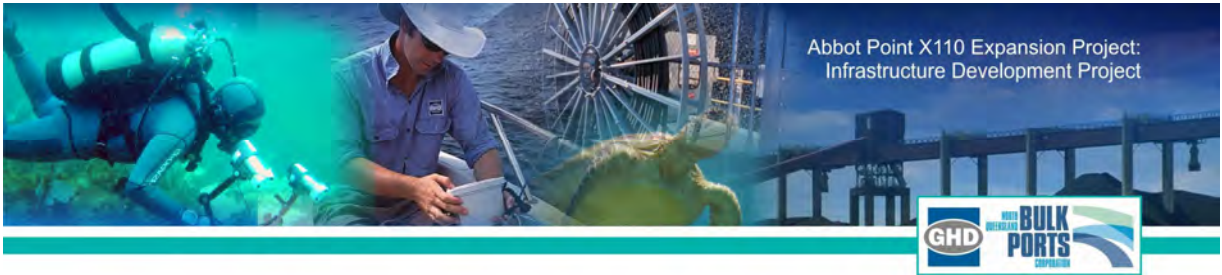
Splitters Creek bore field is located approximately 14 km west of the site area and was previously used to provide water for the Abbot Point Coal Terminal. Section 5.4.3 of the *Abbot Point Coal Terminal Stage 3 Expansion Environmental Impact Statement* (WBM Oceanics Australia, 2006) discusses the environmental values of the Splitters Creek borefield. The current bore is licensed for an allocation 250L/pa. There is no intent to increase this allocation into the future.

Water will be harvested on site for reuse and if required, additional water will be trucked to the site. External water will be sourced from either the Water for Bowen Project or a desalination plant. Should a desalination plant be the preferred option, then this would be assessed separately to the current project. Hence the construction and operation of the proposed expansion will have no impact on the Splitters Creek bore field. NQBP understand the cultural sensitivities of the Saltwater Creek system through previous consultation with Traditional Owners. There is no intent to take water from this system.

Marine Water Quality

Water quality monitored at Abbot Point to date represents a system within which turbidity is related to suspended particles that do not readily deposit, inferring a moderate energy environment that is not nutrient limiting. The water quality of the area, although variable and occasionally turbid, provides an appropriate environment for healthy benthic habitat communities, seagrasses and marine megafauna to occupy the area.

Predicted impacts resulting from the construction of facilities at Abbot Point relate to pile driving and the mobilisation of equipment to facilitate construction, such as jack-up barges. Pile driving results in a very localised, small increase in turbidity around the base of the pile that is being driven resulting from disturbance of the seabed. Similarly, placement of jack-up barges and movement of other construction equipment on-site may result in small localised increases in turbidity from disturbing the seabed. No impacts from these activities on other water quality variables are expected. There is the potential for degradation of the coastal water quality as a result of the introduction of land based contaminants to the marine system from stormwater run-off across the construction site. Adopting stormwater and waste management strategies identified in the EMP will mitigate the potential for land sourced impacts to degrade the coastal water quality of this site during construction activities.



Hydrodynamics

The maximum spring tidal range at Abbot Point is 2.4 m and tides are mixed semidiurnal. Maximum spring tidal currents adjacent to the wharf are reported by Hilliard *et al.* (1997) to be in the order of 0.5 m/s. Wind-driven currents of up to 0.1 m/s flow parallel to the coast, towards the west. Observed tidal currents reach a maximum in excess of 0.35 m/s, but less than 0.40 m/s during peak spring tides. Typical currents are in general less than 0.3 m/s. During the monitoring period, significant wave heights (H_s) of up to 1.8 m were recorded twice (during the last week of July and during the first week of August 2008).

To ensure that the identification of potential impacts from the proposed construction of the new jetty and berths is carried out in an effective manner whilst protecting sensitive habitats, a sound understanding of the dominant physical forces and processes in the coastal area of interest is essential. The acquired knowledge is then synthesised in a numerical model capable of providing a quantitative description of water circulation patterns, flushing characteristics and transport trends as well as answers to “what-if” scenarios which are fundamental to the impact assessment process. All simulations and resulting predictions for the X110 Expansion Project have been carried out using two modelling systems in parallel; Delft-3D developed by Delft Hydraulics; and Mike 21 Flexible Mesh developed by the Danish Hydraulic Institute.

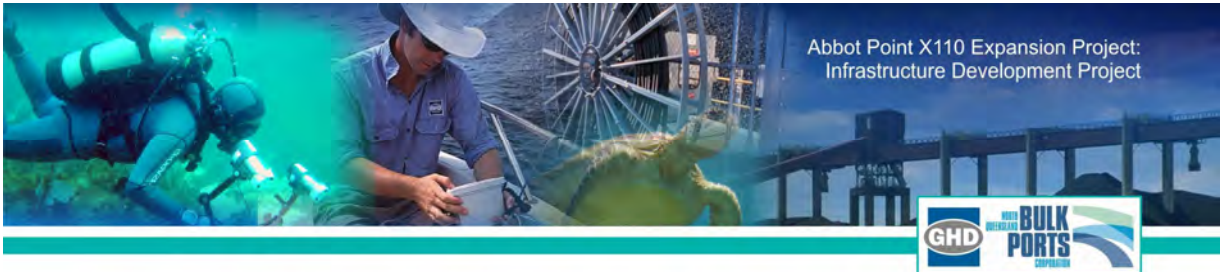
The influence of the trestle jetty piers on flow has been found to be negligible for the range of tidal conditions corresponding to the modelled three-month period (01 July to 01 October 2008). It is reasonable to expect that the findings of the numerical assessment will remain valid regardless of the modelled season. The differences or residuals between the two scenarios are perceptible but insignificant. Water level residuals for the modelled period were less than 0.001 m. Current magnitude residuals for the same period were less than 0.004 m/s. Current direction residuals were in general, less than 0.5-1.0 degree for the modelled period, however, isolated peak residual values of up to 23 degrees were also observed. It was found, however, that a residual of current direction of that magnitude is a rare occurrence associated exclusively with periods of current reversal from flood to ebb tide.

Terrestrial Ecology

Despite past vegetation clearing and on-going disturbances from weed invasion and cattle grazing, a diverse array of vegetation community types are represented in the X110 project site. These include *Corymbia* and *Melaleuca* woodlands (11.2.5), beach scrub (11.2.3), samphire forblands (11.1.2b), *Acacia* low woodlands (11.12.16x1) and palustrine wetlands (11.3.27c). None of the REs are identified as Essential Habitat by DERM. The beach scrub RE (11.2.3) also forms part of threatened ecological community: Semi-evergreen vine thickets of the Brigalow Belt, which is listed as endangered under the EPBC Act. No conservation significant plant species were identified during the surveys.

The study area contains a range of habitats which have varying levels of ecological significance to terrestrial fauna. Assessments identified seven fauna habitat types within the study area. These habitats include open forests, woodlands, seasonal wetlands and coastal vine thickets and closely correspond to the vegetation communities already described. The coastal beach scrub and eucalypt open forest support the greatest structural and floristic diversity and this is reflected in the richness and diversity of the fauna species recorded.

The existing secondary settlement pond provides a mosaic of aquatic flora species and open water. During the wet season survey, large flocks of birds were observed. This area contains deeper water that



persists into the dry season. This would be important to local fauna that gather to available resources during the dry season

Development will result in the direct loss of 58.15 ha of vegetation, comprising 48.19 ha of Not of Concern regional ecosystem and 9.96 ha of Of Concern regional ecosystem. The areas to be cleared are located adjacent to existing infrastructure and some have been extensively grazed and invaded by weeds. With the exception of the two Of Concern REs (11.2.3 and 11.12.16), the clearing occurs within Not of Concern REs that are well represented in the area. Clearing will result in the removal of 'common' plants.

Conservation significant fauna species identified as either occurring or potentially occurring within the project area preferentially utilise Caley Valley wetland. The area of impacted wetland is in a degraded state, and offers low habitat value when compared to other areas within Caley Valley. The existing secondary settlement pond was noted as important wildlife habitat. As part of the proposed works, the capacity of the settlement ponds will increase through the construction of additional settlement ponds in the south. This will provide an additional permanent water area during the dry periods and will likely provide valuable wildlife habitat.

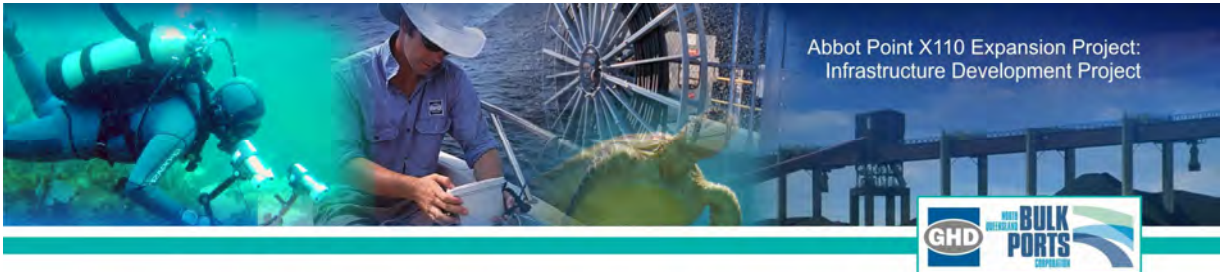
To meet the requirement of the State legislation, offsets will need to be established for clearing 'Of Concern' (11.2.3 and 11.12.16) and wetland REs (Caley Valley).

Marine Ecology

Fourteen different benthic macroinvertebrate regions were identified at the Port of Abbot Point, however no coral areas of high environmental value were observed within the Project Area. Further, the Project Area was found to support low density, sparsely distributed benthic fauna that are well represented in the Abbot Point area. The study area encompasses approximately 281 ha of the total area of benthic macroinvertebrate regions of which the majority, 107 ha, is very low density cover (<1% cover). Given the nature of the Project footprint (wharf pylons), only a small portion of this study area will be impacted. Previous studies of the marine ecosystems at Abbot Point (Ottaway *et al.* 1989) demonstrated that following construction of the existing port facilities and the provision of new habitats, the biodiversity of the Abbot Point area increased. However, Hoedt *et al.* (1999) did not find a biodiversity that was significantly different to that detected during the earlier surveys.

No net loss of marine flora is expected to occur from this Project. Any incidental loss resulting from the Project construction is expected to recover quickly in adjacent habitats. Some net loss (very minor) of benthic soft sediment fauna is expected. This is balanced by additional provision of hard substrates associated with the in-water structures of the Project, which provide new habitat for hard substrate taxa, including corals and can act as fish aggregation areas.

The waters in the immediate vicinity of the Project Area and those surrounding it provide a foraging habitat and migratory pathway for many marine species of conservation priority. The heterogeneity of habitat types and depths within the Port limits provide an ideal matrix for foraging and refuge and indirectly affords a protective environment for the habitats and species within. Marine fauna survey results to date suggest seasonality influences the presence of some species such as nesting turtles and whales, whilst others show a degree of site fidelity (foraging turtles, dugongs and coastal dolphins). No impacts on migratory patterns of megafauna are expected as a result of the X110 project as the development will be adjacent to existing infrastructure. Megafauna already use this area demonstrating their ability to co-habit.



Physiological impacts on marine mammals arising from underwater noise were assumed to be insignificant, as the noise would be detected well before the animals would reach the distance from the source established as the 'impact zone'. To minimise the impact of Port lighting on marine turtles utilising surrounding beaches as nesting sites, it is recommended that low pressure sodium (LPS) lights be used.

The proposed development is not expected to change the current level of threat for introduction of marine pests to the Port if the standard National measures for prevention are implemented. To maintain the status of 'no marine pest species' at Abbot Point, management of international ballast water should continue in accordance with legislated requirements in Australia.

Air Quality

In conducting an analysis of air quality impact, sensitive receptors (such as residential properties) are usually identified for monitoring and observation of impacts. In the case of Abbot Point, no sensitive receptors are proximate to the study area, therefore observation stations have been identified representing areas which may be impacted due to air quality impacts.

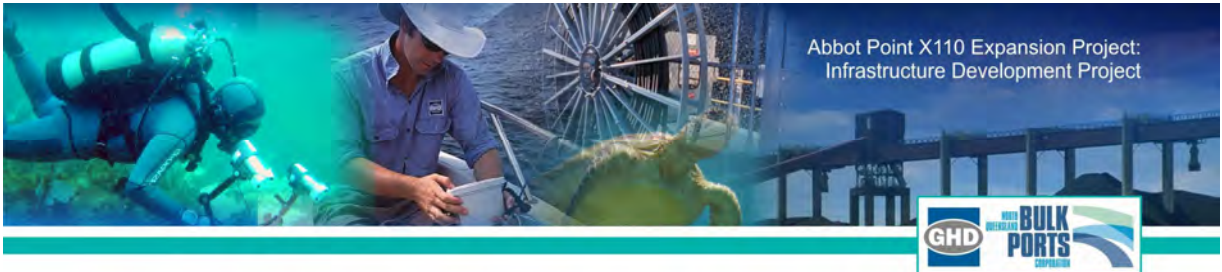
Coal dust is the primary air pollutant emitted at coal terminals. It has the potential to cause nuisance from settling on material surfaces and can reduce visibility as a result of dust particles in the atmosphere. Air quality modelling has been conducted to assess the potential for impact of the project.

The modelling indicated that wind erosion of exposed areas such as stockpiles and bare ground are a source of dust. For the 24-hour average ground-level concentration of dust, impacts are highest at Dingo Beach, however, this is not a residential or publicly accessible location. Impacts are due to the proximity to the proposed X110 expansion and the winds predominantly being from the east to east-southeast, transporting dust towards this location. The annual average concentrations are low, indicating that the potential for dust impacts at these receptors only occurs for a short period of time.

Overall, the modelling demonstrates that the coal terminal, with the proposed dust control measures described in Section 3.7 and Section 4.12.3.4, is unlikely to cause adverse impacts at the nearest sensitive receptors. A key element of the dust suppression approach is the installation of automated dust sprayers within the X110 stockyards. Compliance with the relevant air quality objectives is achieved at all sensitive receptors. Considering the conservative nature of the emission rates and ability to manage dust generating activities, the impact on local air quality due to the coal terminal expansion is likely to be low.

Noise Assessment

The results of the assessment indicate that the proposed X110 Infrastructure Development Project operational noise impact will comply with the project specific operational noise criteria during the day, evening and night-time periods. Indicatively estimated low frequency noise within the dwelling of the nearest noise sensitive receiver is predicted to be below the DERM guideline level of 20dB(A). Predicted noise levels within the Caley Valley Wetland range from 60 dB(A) near the port facility, to approximately 40 dB(A) near the southern extents. This represents an approximate 5 dB(A) increase when compared to noise level predictions for the X50 expansion. Noise from the port facility is constant in nature and wildlife in the area will likely adjust to the gradual increases in noise expected at the APCT from the X110 expansion.



Noise modelling predictions suggest noise levels within the GBRMP boundary from port activities will be approximately 45 – 50 dB(A). There are however, no noise sensitive receivers within close proximity to the port and noise impacts from port operations are not expected to be an issue. The nature and levels of vibration emitted by the site will vary with the activities being carried out on site, however, due to the distances between the source and receivers, vibration impacts are not likely to be a significant impact.

Waste Management

Ship's quarantine waste is not currently accepted at the Port of Abbot Point as no facilities for management of these wastes are available at the site. There is no intent to develop a quarantine waste facility at the port until such time as volumes of ship's quarantine waste are such that further facilities are demanded.

Cultural Heritage

The results of the cultural surveys for the proposed X110 project parallel the results of previous archaeological investigations at Abbot Point (Barker 1999; NAE 2005), and also provide further confirmation that the Abbot Point coastline is an area rich in Aboriginal cultural sites and prehistory/history. As noted, the archaeological record now clearly shows that the wider Abbot Point area contains a complex of cultural heritage sites representing a range of subsistence and occupation activities – resource management and food procurement (fish traps), fishing, shell fishing, stone artefact manufacture, preparation of food (hearthstones, grinding stones and cooking stones) and camping.

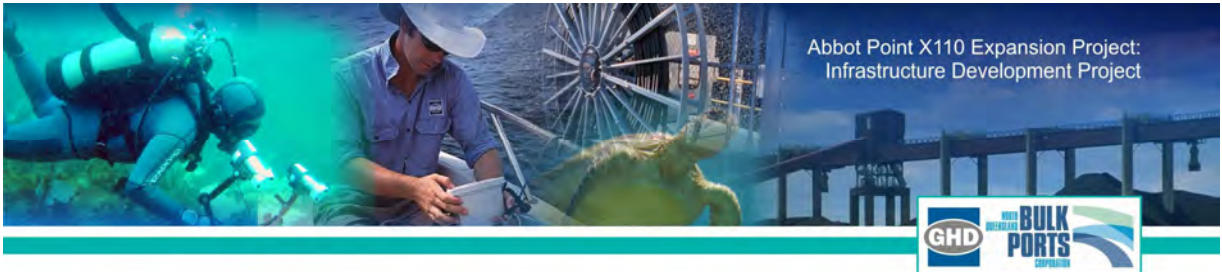
The environmental harm to cultural heritage values in the vicinity of the Project should be identified and managed measures proposed. Management measures should be developed as part of the Environmental Management Plan (EM Plan) and should include the following:

- » a process for including Traditional Owners in the protection and management of indigenous cultural heritage;
- » a processes for mitigation, management and protection of identified cultural heritage places and material in the Project areas, including associated infrastructure developments, both during the construction and operational phases of the Project;
- » provisions for the management of the accidental discovery of cultural material, including burials;
- » cultural awareness training or programs for Project staff; and
- » a conflict resolution process agreed upon by the Traditional Owners and the proponent.

In addition to the above general mitigation measures, the proponent will develop a Cultural Heritage Management Plan in conjunction with the Traditional Owners to manage specific matters associated with the X110 Expansion.

Socio-economic Assessment

The forecast number of employees during the construction phase of the X110 Expansion is expected to peak at 600 persons. The majority of construction workers are likely to be sourced from outside of Bowen and will temporarily relocate during the phase of work. The majority of these employees will be accommodated at the NQBP construction accommodation facility located at Merinda. NQBP as the proponent will, however, work with contractors to maximise local employment opportunities.



It is expected that a further 100 permanent operating and maintenance workforce will be required for the expansion from X50 to X110. The current terminal workforce is 91 and at completion the X50 expansion (which is currently in construction) will have an operational workforce of 180. The X110 project will take the operational workforce to 280. Housing need is expected to be met through the current and expected future growth in the housing market.

Previous housing studies undertaken in the Bowen Basin have identified a number of recommendations to address the housing issues in the region. NQBP is not responsible for addressing the broader housing issues in the Bowen Region, however they are responsible for contributing their part to the population growth in the region. From this perspective, NQBP would be able to participate in the relevant recommendations that have been previously identified.

The Project will provide employment opportunities both directly and in flow-on employment both locally and regionally. It is expected that approximately 2,800 flow-on jobs will be generated. Accommodation for these employees will be addressed by the individual proponents of the X110 users through their approval processes.

Regional, State and National Economy

The estimated economic impacts for the construction of the proposed APCT expansion at Abbot Point have been assessed. The key finding during the construction phase include:

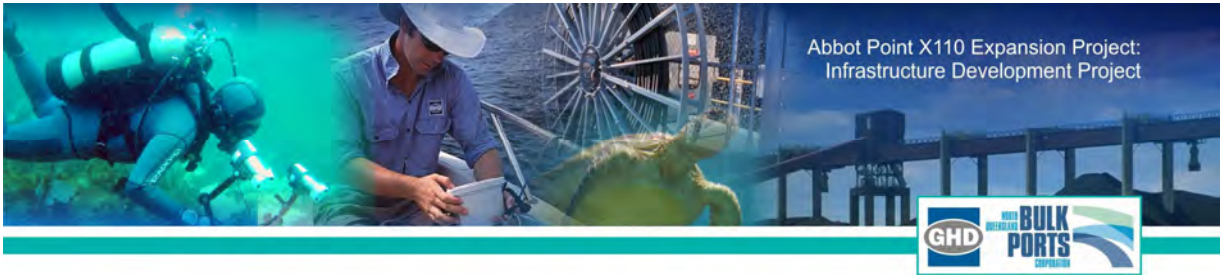
- » Approximately \$500 million in direct expenditure in 2008/09 and \$365 million in 2009/10 in Queensland associated with the first stage of the APCT expansion.
- » Peak expenditure years will generate around \$110 million in GSP (direct and indirect) in the Bowen region, approximately \$70 million in the Northern region and \$170 million in the Mackay region.
- » Almost 580 direct full-time equivalent (fte) jobs and over 1,480 flow-on jobs are anticipated in Queensland in the first year of the construction period.
- » Around 8 per cent of the total jobs will occur in both the Northern and Mackay regions and approximately one-third of jobs will be generated elsewhere in Queensland.

The key finding during the operation include:

- » For growth to 110 Mtpa, steady state operation will contribute a projected \$414 million to Queensland GSP, \$135 million in the Bowen region, \$79 million in the Northern region, \$75 million in the Mackay region and \$125 million in the rest of Queensland.
- » When capacity reaches 110 Mtpa, total employment is expected to be around 2,900 fte, almost 1,600 in the Bowen region, more than 250 in the Northern region and over 230 in the Mackay region.

Health and Safety

Safe operation is maintained at the APCT and the Port through the implementation of a number of strategies developed by NQBP, terminal operators and MSQ. NQBP has statutory responsibility and powers under the *Transport Infrastructure Act 1994* to maintain the safety and security of the Port. MSQ has statutory responsibility for the safety of shipping across the State and is responsible for the safe pilotage of vessels entering the port and berthing facilities. Commercial and recreational fishing vessels have restricted access to parts of the port where they could affect the safety of shipping or present a security risk. Public access to the APCT is restricted due to security requirements.



Hazard and Risk

The existing terminal has been operating for 25 years which allows an accurate identification of potential risks. The principal risk concerns relate to well defined environmental risks which can be effectively managed through the proposed mitigation strategies outlined within Section 4 and further developed in Section 5. It is expected that short-term impacts will result from the project in relation to vegetation clearing, particularly proximate to the Caley Valley Wetland, the loss of habitat, and possible impacts from water quality degradation. The impact on Caley Valley Wetland is considered an acceptable risk, considering the small area of direct impact and the established practices to be implemented to minimise indirect impacts such as water quality.

Management of potential environmental impacts is reliant on the works being undertaken in accordance with the draft EMP.

E5 Environmental Management Plan

An Environmental Management Plan (EMP) has been developed detailing the measures to be adopted to address identified impacts during the dredging phase of the Project. The EMP will be further refined during the detailed design phase of the project and will require approval by DERM prior to construction commencing.

E6 Matters of National Environmental Significance

On 20 October 2008, the Australian Government Minister for the Environment, Water, Heritage and the Arts determined the Project a 'controlled action', which requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Following determination of the Project as a controlled action, DEWHA issued ToR to be addressed as part of the development of Preliminary Documentation.

A separate report has been prepared to address those issues identified by the DEWHA and is attached as Appendix J. The findings of this report indicate that the key area of impacts is the direct loss of 12.1 ha of wetland located at the western extent of the project. The loss of this area is not considered to represent a significant impact to the Caley Valley Wetland as it is existing degraded fringe area not representing key habitat for migratory avifauna. No significant impacts upon migratory marine fauna are expected as a result of the project.

E7 Conclusion and Recommendations

This VEA has investigated potential environmental impacts, including social, economic and cultural impacts, resulting from the construction and operation of the Project. Consideration has been given to the need and alternatives of the project. Desktop literature reviews, database searches and baseline field studies have been undertaken to provide context to the assessment of impacts and identification of mitigation and management measures.

No impacts considered to be significant were identified that could not be ameliorated or mitigated. Under the mitigation strategies identified for each of the environmental values assessed, the X110 Infrastructure Development Project is not expected to have any significant long term negative effects on the regional or local environmental values of the Abbot Point region.