SECTION 4: DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1 BIOPHYSICAL ENVIRONMENT

4.1.1 Climate

The Saldanha Bay area is characterised by a semi-arid Mediterranean climate with maximum temperatures ranging from 20 – 30 ºC depending on the season. The climate is strongly influenced by the cold Benguela Current and coastal berg wind conditions. Although Awad *et al*. (2004) report lower figures, rainfall is approximately 300 mm per annum with the majority of precipitation occurring during the winter months (see Table 4).

The prevailing winds are predominantly from the south-west during summer and from the north and south west during winter. Summer winds can exceed 30 km/hr for more than 20% of the time but winter winds are not as strong. Berg wind conditions can exceed 30 km/hr for more than 15% of the time during winter (CSIR, 1995).

Due to the orientation of the entrance channel in a more northerly direction, the predominant wind direction will be quartering (about 45 degrees) relative to the entrance channel. The predominant south-easterly wind in summer will blow towards Saldanha, into Small Bay. The north-westerly wind in winter will blow towards Langebaan, into Big Bay.

Table 4: Weather characteristics for the study area

Summer Air Temp (ºC)		Winter Air Temp (ºC)		Total Rainfall (mm)	
Av day	Max day	Av night	Min day	Driest 6 Months	Wettest 6 Months
26.0	35.0	10.0	4.0	69	274

4.1.2 Air Quality

Air quality conditions in the region are the sum total of the operations of a number of activities (emitters) and are dependent on the meteorological conditions in the area. The main air pollutant of concern in the region is dust (total dust and PM10). In a study to determine the potential impacts of expanding the general cargo quay, Boegman and Wells (1995) estimated the emissions from Black Mountain Concentrates, Namakwa Sands, Mittal Steel, the General Cargo Quay and the Iron Ore Terminal. It was noted that a typical factor resulting in variable levels of dust generation at the iron ore terminal was the proximity of the ship loading boom to the hold of large tonnage ships, during iron ore loading. It was also evident at the time that dust control was a major concern.

The air quality assessment that was undertaken for Phase 1A (increase in throughput from 24 MTPA to 38 MTPA) concluded that in the absence of refurbishment, further mitigation and an increase in the direct transfer of ore to the ship loaders, unacceptable impacts will result on the air quality in the vicinity of the terminal. One of the potential issues was identified as a health hazard. Since then, a number of dust suppression measures have been implemented at the terminal: Installation of telescopic chutes on the ship loaders, replacement of the existing Stacker Reclaimers with systems comprising an efficient liquid spray system and fixed spray cannons which are triggered by exceedances in threshold wind speeds. Other control measures are currently being planned, investigated or currently implemented.

Implementation of an air quality management plan comprising ambient air quality monitoring, information dissemination and periodic progress reviews is one of the main measures that have been taken.

The Boegman and Wells study (1995) showed that total dust fallout was highest during the dry summer period. With the exception of the November 1993 to February 1994 period, the total dust values did not correspond to high iron values. It was therefore concluded that particularly during the dry period there was a high level of general wind-blown dust.

The only air pollutant of concern at the BTS is iron ore dust (total dust and PM10). Dust is currently generated during the ore handling at Tipplers, Stackers Reclaimers, Conveyors and ship loading.

Existing dust monitoring indicates that areas to the north east of the facility are impacted by the dust from the terminal. Dust control measures have been implemented and these include spraying of stockpiles and transfer points with water, a dust extraction system at the tippler, and dust control additives for the ship loader. These measures have significantly reduced the dust generated from on-site operations. There is also an ambient dust monitoring system at the site which includes meteorological monitoring. An independent consultant currently compiles quarterly and annual dust monitoring reports.

Dust emissions from the conveyors are an important source that requires some form of emission control. An Air Quality Impact as well as a Health Impact assessment will be undertaken in order to determine the exact impact that the proposed expansion of the facility will have on air quality and to provide management and mitigation measures where necessary. The results thereof will be integrated into the EIA Report.

4.1.3 Topography

The Port is situated on the northern shore of Saldanha Bay. The surrounding area is characterised by a gently undulating coastal plain with low hills. The highest points in the area include Malgaskop (173 m above mean sea level) to the west, Karringberg (175 m above mean sea level) to the east, and Postberg on the Langebaan Peninsula (192.8 m above mean sea level) to the south. Several smaller hills and outcrops of granite boulders are also evident in the surrounding area.

4.1.4 Marine and Benthic environment

This section provides a brief description of the environment to be affected by the proposed expansion. The study area is located in Saldanha Bay, a coastal bay located in the southern Benguela Upwelling System (33°S, 18°E), approximately 100km north of Cape Town.

Saldanha Bay is linked to the Benguela System to the west and the large shallow Langebaan Lagoon, which is a RAMSAR listed site since 25 April 1988. The Saldanha Bay/Langebaan Lagoon complex represents a significant regional source of shelter from wave action along the highly exposed South African west coast (Beckley 1984, Field & Griffiths 1991). As such, it represents an important nursery or calm water area for many marine fish and invertebrate species (Day 1959, Clark 1997). Saldanha Bay is the largest enclosed Bay on the west coast of southern Africa with an area of ca. 57 km^2 (Siegfried 1977). The construction of a 4km long jetty built in 1975 divided the Inner bay into a Small Bay (1 516m^2) and a Big Bay (4 473 m^2) (Awad *et al*. 2004).

A man-made seawater dam east of the jetty came into being as a result of the construction of an oil pipeline from the ore loading jetty, which cut off a small portion of Saldanha Bay immediately adjacent to the jetty. The dam covers 32ha and has an average depth of 4m, with a maximum depth of 8m. It is closed off from the sea except for one inlet that allows a tidal fluctuation of less than 10cm (Brown *et al*., 1982). The intention of Transnet has been to reclaim the entire area of the dam over time for expansion. The dam was used for oyster cultivation prior to 2006, which was an opportunistic process, and it was a popular fishing spot for local anglers. The oyster farming ceased when the lease ended at the start of 2006 and the workers have been employed elsewhere. Use of the reclamation dam must be reviewed and is subject to new legal requirements in terms of the International Shipping and Port Security Code (ISPS), which has been accepted as legislation by National Government.

A benthic impact assessment is to be undertaken as part of the EIA. The benthic impact assessment will focus on the impacts deriving from activities within the marine environment.

No rare or threatened species have been recorded previously in the area proposed for dredging. Therefore the risk of species loss is negligible. The introduction of alien species via ballast water discharge in Saldanha Bay is a high risk for the indigenous species and may increase as a result of the proposed expansion. Therefore it is strongly recommended to discharge the ballast water in the open sea prior to entering the bay and to comply with the Ballast Water Convention (International Convention for the Control and Management of Ships Ballast water and sediments).

It is important that the Marine and Benthic Ecology studies determine the potential impacts the proposed expansion could have on the fish life at the bay, macro benthos and general habitat of Saldanha Bay.

4.1.5 Shipping Traffic

An entrance channel has been dredged from a position just south of Marcus Island up to the tanker terminal and the ore berths. The length of the dredged entrance channel up to the southern tip of the jetty is about 1.8 km. This channel has been dredged in the calcareous bed material to a depth of about -23.5 m CD and has a bed width of about 400 m. A turning circle has been dredged just in front of the tip of the jetty (caisson 25), with a diameter of 600 m and a depth of -23.1 m CD.

Wave conditions in the entrance channel are moderate compared to deep sea. At the channel, a significant wave height of 4 m is statistically exceeded once a year, as compared to a significant wave height of 7.8 m offshore in deep water. Due to wave refraction into the bay, the wave heights gradually decrease towards the jetty. The channel orientation has been designed in such a way that the direction of propagation of the (refracted) swell is in line with the channel. This will result in minimum vertical ship motions, consisting mainly of heave and pitch. Only during the turning manoeuvre will the ship be exposed to beam waves, resulting in roll motion of the ship. However, in this case pitch motions will be very small.

Currents in Saldanha Bay are again mainly generated by the wind and the tide. The tidal current velocities between Marcus Island and Elands Point are amplified due to the constricted flow area. But the current velocities mostly remain well below 0.3 m/s in the entrance channel. The current direction of tide-driven currents is mostly in line with the channel. The direction of the currents in the channel due to the direct wind shear and the wind-driven bay circulation will usually have a component across the channel.

The ore loading jetty and the entrance channel have been designed to accommodate ore carriers of up to 250 000 DWT, with a maximum draught of about 20.5 m. In practice, ore carriers of up to 300 000 DWT, with a maximum draught of up to 21.5 m and a length of up to 350 m, are being accommodated. The open concrete jetty has a total length of about 1 km, with two ore berths on either side of the jetty and a tanker terminal at the end of the jetty, at the Saldanha side. The jetty has been built in line with the entrance channel, in a more or less north-south direction. The tanker terminal and the ore berths have been constructed on figure-eight shaped concrete caissons. A channel with a bed width of 300 m has been dredged along its west (Saldanha) side and a channel with a bed width of 250 m has been dredged along its east (Langebaan) side.

A closed causeway of about 3.3 km has been built into the bay, leading straight to and in line with the jetty. A single conveyor belt system is constructed on the causeway and the jetty to feed the ship loaders. There are two ship loaders at the jetty, but only one can be used at a time. Their maximum loading capacity is about 10 000 tonnes per hour. An oil pipeline runs along the Saldanha side of the jetty up to the tanker terminal at the end of the jetty.

The existing ore berths are on the Saldanha (west) side of the jetty for the smaller vessels and on the Langebaan (east) side of the jetty for the larger vessels. This arrangement is related to the reach of the loading cranes and the difference in distance from the crane rails to the quay edge and fender line, which is smallest on the Langebaan side.

The wave conditions along the jetty are very moderate, with wave heights exceeding 0.5 m only during about 5% of the time. This results in general safe mooring conditions of the ore carriers along the jetty. However, the nature of the incident swell generates long waves in the bay. These waves have periods in the range of about 2 min to 3 min. This corresponds with the natural period of horizontal oscillation of the larger moored ore carriers (over 200 000 DWT). Consequently, these ships have experienced large surge, sway and yaw motions, while mooring lines have been breaking during such conditions.

These mooring problems have been studied in the past (CSIR, 1987). It has been found that a proper mooring system would mitigate the mooring problems for these large ships. With more local experience of safe mooring, these mooring problems have diminished. However, it can be expected that the earlier mooring problems will still occur during extreme long-wave conditions.

A wind speed of about 25 knots (about 13 m/s) is the limit for departure, if this wind in blowing the vessel onto the jetty. Under such conditions the two tugs (with about 40 tf bollard pull) are not able to lift the vessel off the fenders.

Based on information supplied by NPA Saldanha, an estimate has been made of the expected increase in average ship size and the expected increase in the number of ships, to realize the export target.

A number of sources of environmental risks, associated with the increase in shipping traffic, have been identified. Such risks are related to individual ships, to ship size and to the iron ore transfer operations. The main risks are related to the accidental release of bunker oil, the grounding of a ship and an accident involving a moored tanker. In the latter case, the oil spill could be much larger than the bunker oil carried by the bulk carrier.

4.1.5.1 Ballast Water

In order to maintain stability during transit along coasts and on the open ocean, ships fill their ballast tanks with water. Large ships often carry millions of gallons of ballast water, which is taken from coastal port areas and transported with the ship to the next port of call where the water may be discharged or exchanged

Coastal port areas are home to a wide variety of organisms that live in the water and bottom sediments. As a ship loads ballast it also loads many of the organisms living in that port. These organisms range in size and phyla, from microscopic plants and animals to mussels, crabs, and even schools of fish.

The ballast water of shipping vessels has been a primary method of alien species introduction throughout the world. Scientists estimate that as many as 3,000 alien species per day are transported in ships around the world. Some of the species that survive the trip are able to thrive in their new environment. These bio-invaders can cause disruptions in the natural ecosystem (source: http://massbay.mit.edu/exoticspecies/ballast/fact.html, accessed 17 January 2007).

Most of the current strategies to deal with the problems posed by ballast water focus on minimizing transport and recommend exchanges where ships discharge and refill their ballast tanks in the open ocean.

The environment which will be directly affected by the increased shipping traffic, and potential ballast water issues, comprises the approach route into Saldanha Bay, the entrance channel and the area around the jetty. Indirectly, the Bay and the Langebaan Lagoon may also be affected. This lagoon is also vulnerable especially to oil spills.

A Shipping Traffic Risk Impact Assessment will be conducted and will form part of the EIA Report.

4.1.6 Vegetation

A specialist vegetation study was undertaken by Coastec Coastal Environmental Consultants for SRK in 2000/2001. This study set out to identify whether plant communities and species in the BTS operations area were being negatively impacted by iron ore dust. Although species composition varied between dust-impacted and un-impacted areas, this was attributed as much to habitat variation as dust impacts. It was however noted that the resident perennial plant population appears to have a number of in-built mechanisms which enable species to survive dust (including growth outside the dust season – in winter – and drought-deciduousness). A detailed vegetation assessment will form part of the EIA and will indicate the sensitive areas, species of conservation importance and significant corridors with respect to plant ecology.

4.1.7 Avian and Terrestrial habitat

The terrestrial habitat types surrounding the reclamation dam comprised of low faunal diversities. The species compositions consist mainly of widespread and abundant species with the majority of these classified as being opportunistic species. Although a number of species are endemic to the region and have their core distributions centred in the Western Cape, these species are considered widespread and are commonly encountered.

Temporary displacement of faunal species can be anticipated during the construction phase, possibly through an overspill of activities which could occur on the adjacent dunes. These dune systems are regarded as sensitive and unstable systems, and should be protected from external disturbance regimes.

A number of important bird areas are located in close proximity of the BTS expansion area, and these include areas such as the West Coast National Park and Langebaan Lagoon. The latter area is a wetland of international importance (a RAMSAR site), and the extensive saltmarshes and mudflats provide foraging habitat for vast numbers of non-passerine water bird species, many of which are migrant wader species. In addition, the five islands (Jutten, Malgas, Marcus, Schaapen and Meeuw) are important breeding platforms for a number of marine species of which Malgas Island supports 25 % of the global population of Cape Gannets (*Morus capensis*).

A detailed Avian and Terrestrial Faunal Ecology assessment will form part of the EIA and will indicate the sensitive areas, species of conservation importance and significant corridors with respect to the associated faunal and avian ecology.

4.1.8 Noise

The three existing Stacker Reclaimers are the predominant sources of noise as a result of the port's operations. Two of these operate for most of the time simultaneously. However, the worst-case noise scenario is all three operating at the same time.

Train shunting is another significance noise source. The SA Port Operations have performed a series of noise attenuation tests for this noise source. From these tests, it was found that a ballast brake wagon is the most feasible and effective in reducing the noise levels in the near and far field. The tippler operation is well enclosed and does not present any significant noise source.

A Noise Impact assessment will be undertaken in order to predict the noise levels and recommend suitable mitigation measures additional to some of the measures currently being investigated. The results thereof will be integrated into the EIA Report.

4.1.9 Shoreline Evolution

In the mid-1970s a sand breakwater was constructed to protect the Port of Saldanha against wave action. In addition, a 4km pier was built, from the north-eastern shore of Saldanha Bay in a south-south-westerly direction into the bay. This pier divides Saldanha Bay into two parts:

- Big Bay south-east of the pier, and
- Small Bay north-west of the pier.

4.1.9.1 Big Bay and Small Bay

The northern sector of Saldanha Bay, which is called Small Bay, is separated from the southern sector, which is called Big Bay, by the 3.3 km long causeway to the jetty. This means that the water circulation patterns in these two sectors have changed compared to the conditions before the construction of the causeway.

The northern area of Big Bay, east of the causeway and jetty, as well as the southern area of Small Bay, just behind the sand breakwater, is frequently used by oyster and mussel farmers. The young oysters and mussels are attached to wires, suspended from floating anchored rafts in the bay. The success of this type of sea farming depends to a large extent on the quality of the sea water.

The shores of Small Bay and Big Bay are very popular for recreation and tourism. Well known beaches are located at Bluewater Bay, in the northern area of Small Bay, and at Langebaan, in the south of Big Bay. Due east of Marcus Island is a holiday resort, Mykonos, with its own small craft harbour (CSIR, 2006).

The port expansion will affect wave and current patterns. As a result, the sediment transport rates will be altered and therefore also the location (accretion and/ or erosion) of the shoreline along Saldanha Bay. This development may impact on the beaches in Small Bay, Big Bay and Langebaan. It is expected that the planned development should not impact significantly on the Langebaan Lagoon. Erosion and beach rehabilitation is currently taking place at Langebaan beach and the potential impacts of dredging in the bay will need to assess the erosion of the shoreline within this context.

A Shoreline Evolution impact assessment will be undertaken in order to determine the exact source of sediment transport impacting on the shoreline. The results thereof will be integrated into the EIA Report.

4.1.10 Geohydrology

The geology of the study area is dominated by three different geological units, namely the Malmesbury Group, the Cape Granite Suite and the unconsolidated Cenozoic coastal deposits. The Cenozoic coastal deposits are recognised as a major aquifer system when in excess of 10m thick. Two types of aquifers occur below the site, namely a natural aquifer in the rock formations on land and a man-made aquifer in the fill material of the reclaimed land. The upper Langebaan Limestone Member Aquifer is considered to have a better potential than the deeper Uyekraal Aquifer. Groundwater in these aquifers is of a very poor quality and is unfit for domestic, irrigation, certain agricultural and most industrial uses.

Borehole yields in the area are generally low to moderate. Yields in the order of 2 to 5 l/s were reported by du Toit and Weaver (1995) and Krantz (1995). Yields as much as 23 l/s have been reported from the Langebaan Road Aquifer. The potential for use of groundwater for iron ore dust suppression is being investigated and will be reported on in the EIA phase.

There is a potential for leaching into the groundwater which in turn could discharge into Saldanha Bay and the Langebaan Lagoon. However, the chances of this happening is deemed low due to the low rainfall and rainfall intensity, low permeability of the fill material and natural rock formations and its alkaline nature.

The impact of the proposed expansion on the groundwater quality will be determined and the results thereof will be integrated into the EIA Report.

4.2 SOCIAL ENVIRONMENT

4.2.1 Visual

The existing iron ore handling facility is a highly visible element owing to the 4 km pier protruding into the bay, the industrial infrastructure and the large carrier ships docked in the harbour. The facility is highly visible from Saldanha across the bay and from the road network. These elements have become familiar within the seascape setting and contribute to the current character of Saldanha Bay.

The flat coastal plains and scrub provide the area with wide panoramic views over the sea and inland areas. Isolated granite hills are prominent protrusions and have become popular places for residential developments overlooking Saldanha Bay. The land physically encloses the bay, creating calm waters that cause a sense of calmness in the entire bay and in the towns along the bay.

A Visual Impact Assessment (VIA) will be conducted and will form part of the EIA Report.

4.2.2 Socio-Economic Environment

Saldanha Bay is the largest natural bay in South Africa. Its sheltered harbour plays an important part in the Sishen-Saldanha iron ore project. The town is not only important for export but also hosts many other industries, for example, crayfish, fish, mussels, oysters, seaweed, tourism and many more (http://www.saldanhabay.co.za/tourism/saldanha.htm).

The majority of the residents of Saldanha (67%) are Afrikaans - speaking coloured people. English and Xhosa are also spoken in the region. The industrial development in the area led to an influx of new people in the area looking for jobs and new opportunities. The population of the Municipal area increased from a total of 57 031 in 1996 to 84 474 in 2001. This is a 48% increase, which will continue to rise with development along the West Coast, such as increased imports and exports from Saldanha harbour, further industrial development and the possible construction of a gas plant in the vicinity of Saldanha Bay. Continued migration will increase the need for the delivery of basic services, and will be accompanied by secondary servicedelivery such as health, social and educational services (Saldanha Bay Interim IDP, 2004/5).

The growth rate for the next couple of years is expected to be at least 5%. If this expected growth rate actualises, a population of 250 000 is predicted by 2015. Approximately 33.4% of this population will be employed in the industrial and commercial sectors. This projection assumes that for each primary job opportunity created in the industrial sector, seven people will migrate to the area (Saldanha Bay Interim IDP, 2004/5).

Unemployment is a big problem in the area, especially for people who do not have suitable qualifications. Alcohol and drug abuse are the predominant social problems in the area, leading to an entire spectrum of other problems. According to the Socio-economic Impact Assessment conducted in 2000 (Van Zyl & Malan) the social environment affected by SAPO and NPA has experienced radical changes since the establishment of Mittal Steel. The report stated that Saldanha had the socio-cultural characteristics of a small fishing community with a fair degree of coherence and stability.

The competition for work opportunities at Mittal Steel changed relationships between residents of the established community, and this has left its impact on the social fabric and morale. The influx of newcomers lead to the establishment of shack settlements, a drastic rise in unemployment and an increase in crime and violence.

In January 2006 the fishing operations were closed at the Bay of Saldanha. It is unlikely that the closure of the oyster farm, fishing operations and the construction of the related new infrastructure will create new social concerns. The people who could be impacted on directly are those people that previously made use of the fishing infrastructure at Saldanha Bay.

Social and Economic Impact Assessments will be conducted and will form part of the EIA Report. A map indicating the immediate residential areas and other sensitive receptors (villages, informal settlements schools, hospitals, etc.) will form part of these specialist studies.

4.2.3 Cultural Heritage

Issues with regards to the cultural heritage could arise depending on the degree to which activities encroach on undeveloped land, in particular the dunes areas where pre-colonial sites may occur. New rail alignments will need to be checked as these are linear developments listed in the NHRA (National Heritage Resources Act, Act No. 25 of 1999).

A further issue will be dredging and breakwater development which could impact on historical shipwrecks (greater than 60 years of age). Thus, in order to identify the preferred risk, clarity with respect to breakwater construction and extent of dredging will be required. A Heritage Impact Assessment will be conducted including a map identifying historical, cultural or archaeological sites and will form part of the EIA Report.

4.3 MASTER PLAN FOR THE PORT OF SALDANHA

The master plan for the Port of Saldanha is a long term plan to indicate possible future development. It should be noted that such a plan only serves as an indication of current thinking, and that it can and will change over time, depending on the external circumstances and environment within which the port has to function.

The port was initially designed as an iron ore export harbour for the handling of bulk ore carriers of up to 150 000 DWT, with a length of 291 m and a laden draught of 17 m. Large ore carriers currently load on the east (Langebaan) side of the causeway jetty while smaller carriers load on the west side. The diameter of the turning basin, which is 580 m, was dredged to achieve a ratio of basin diameter over ship length of 2, to safely permit the turning of fully laden vessels (NPA, 2002).

At present, the facilities at the Port of Saldanha include: an artificial breakwater, the Marine (Port Control) Terminal, the Mossgas quay, bulk iron ore handling facility (BTS), a multi-purpose terminal, and the iron ore/oil jetty.

Figure 5: Current layout of the port.

4.3.1 Future Development Scenarios

On identifying options for port expansion in the long term, several potential conflicts and issues arise; these are not necessarily resolvable only in the long term, but actions can be initiated in the medium term (or even short term) in order to address them. Recommendations can then be made to resolve conflicts and to initiate research to address identified issues. This implies that long term planning should be linked to strategic issues relating to national and regional development needs and the relationship between the development of the port and its impact on the national economy.

Based on the Port Development Framework (2001 - 2002), a number of development scenarios were proposed at the port. Alternatives 1 to 6 (Figures 6 to 11), illustrate various scenarios for the future development of the port. The alternatives include proposed developments for iron ore, bulk liquids, break-bulk, and possible container berths. These were developed as part of the port’s first Port Development Framework Plan 2002.

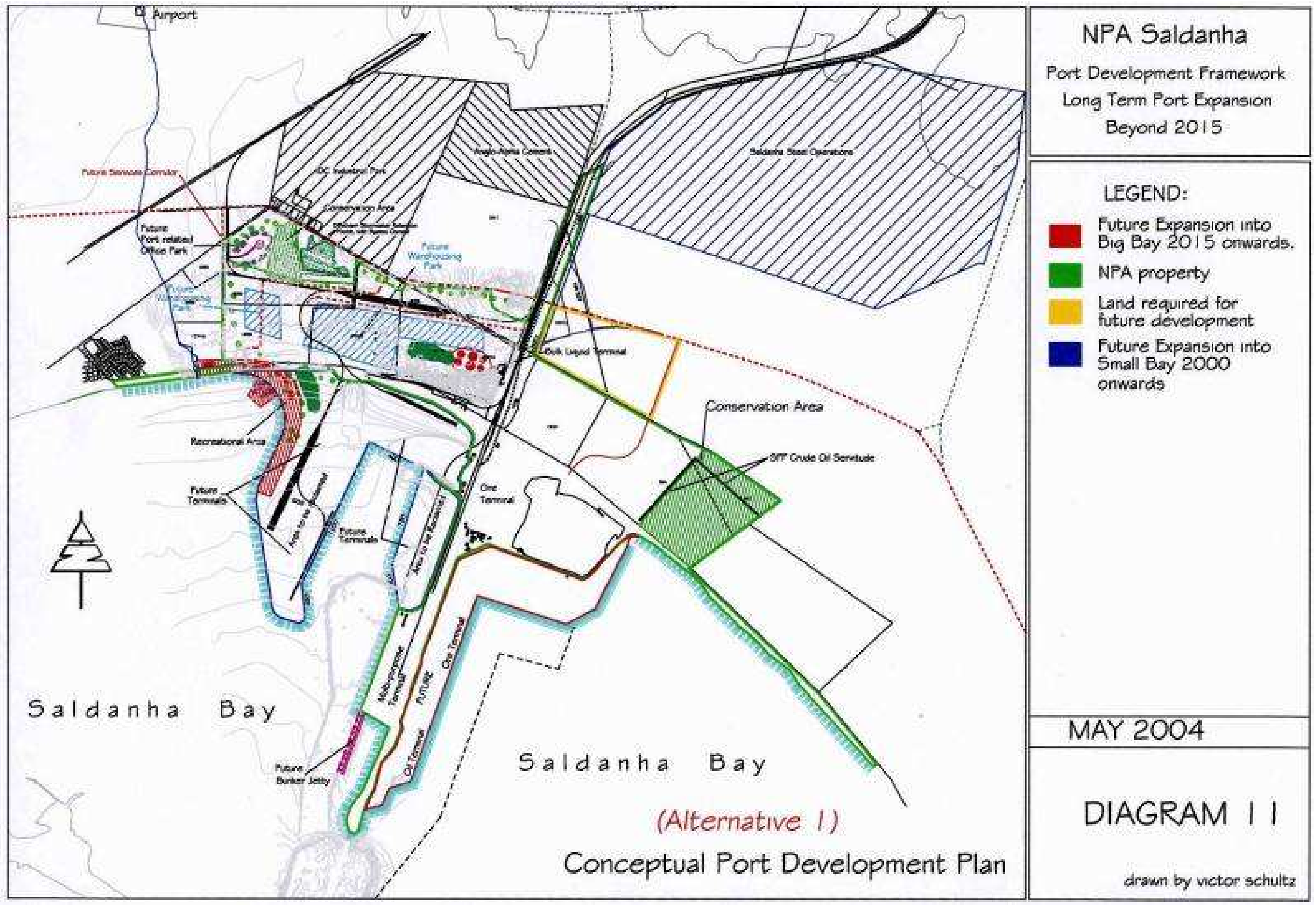

Figure 6: Port master plan - alternative layout No. 1

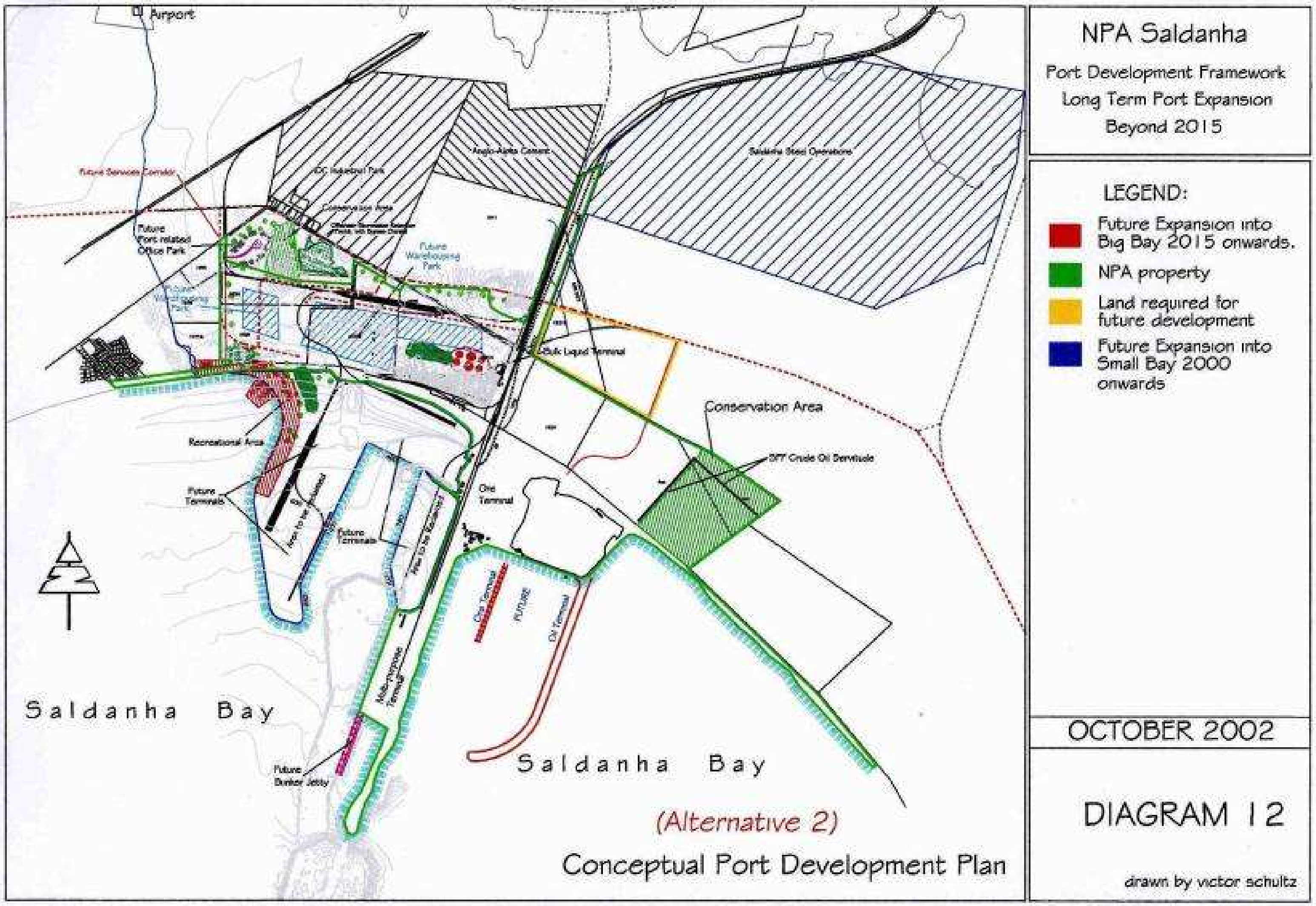

Figure 7: Port master plan - alternative layout No. 2

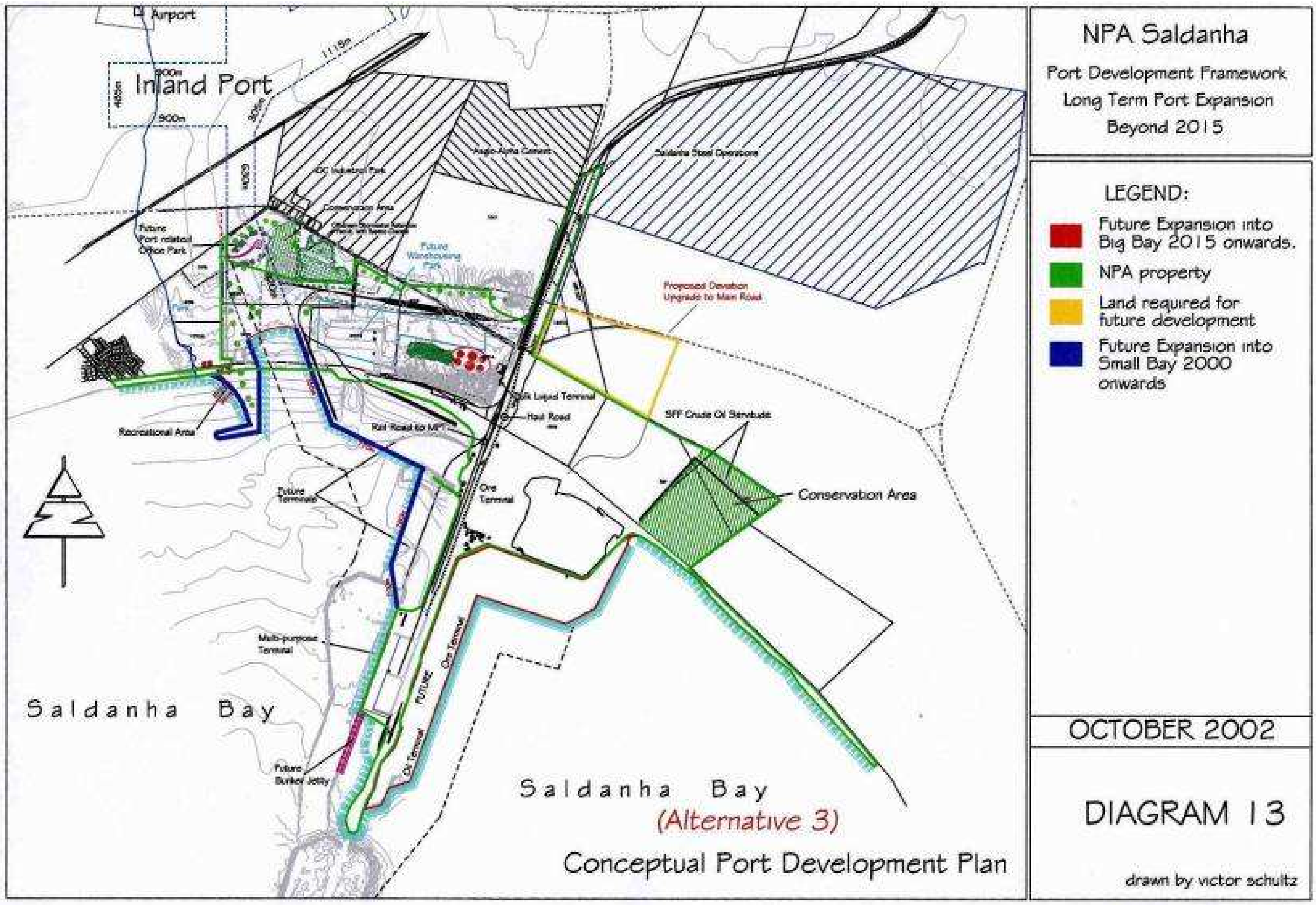

Figure 8: Port master plan - alternative layout No. 3

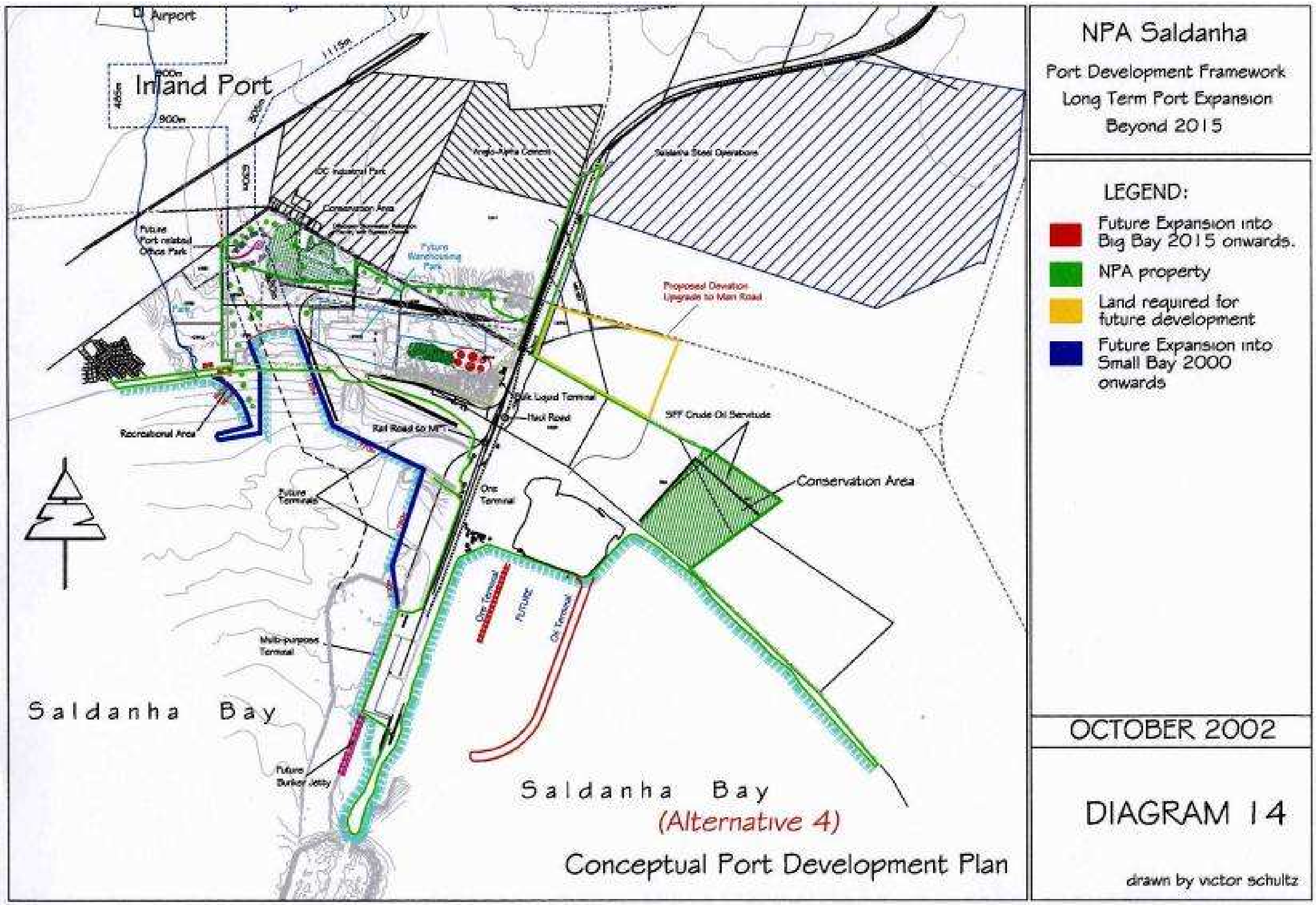

Figure 9: Port master plan – alternative layout No. 4

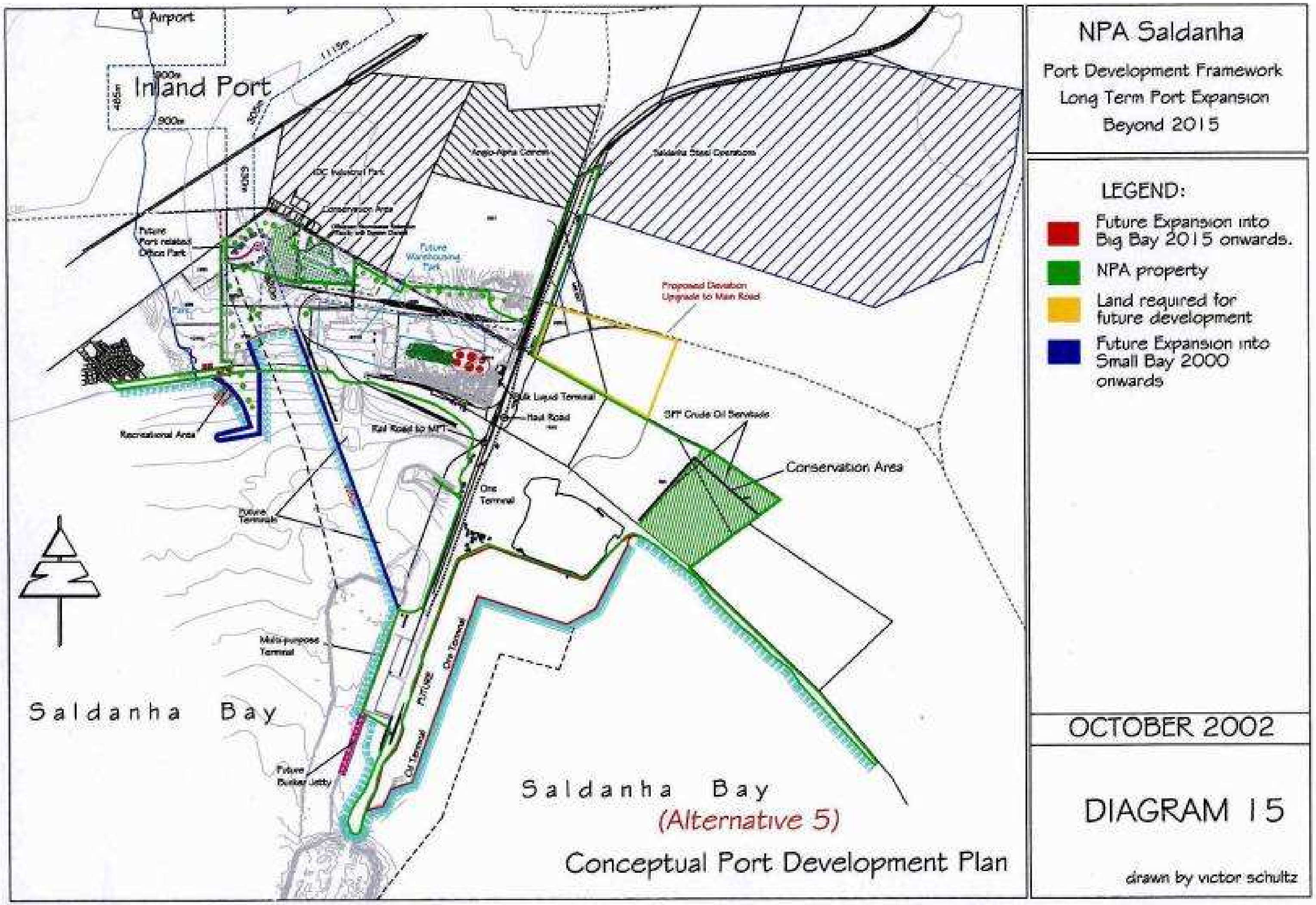

Figure 10: Port master plan - alternative layout No. 5

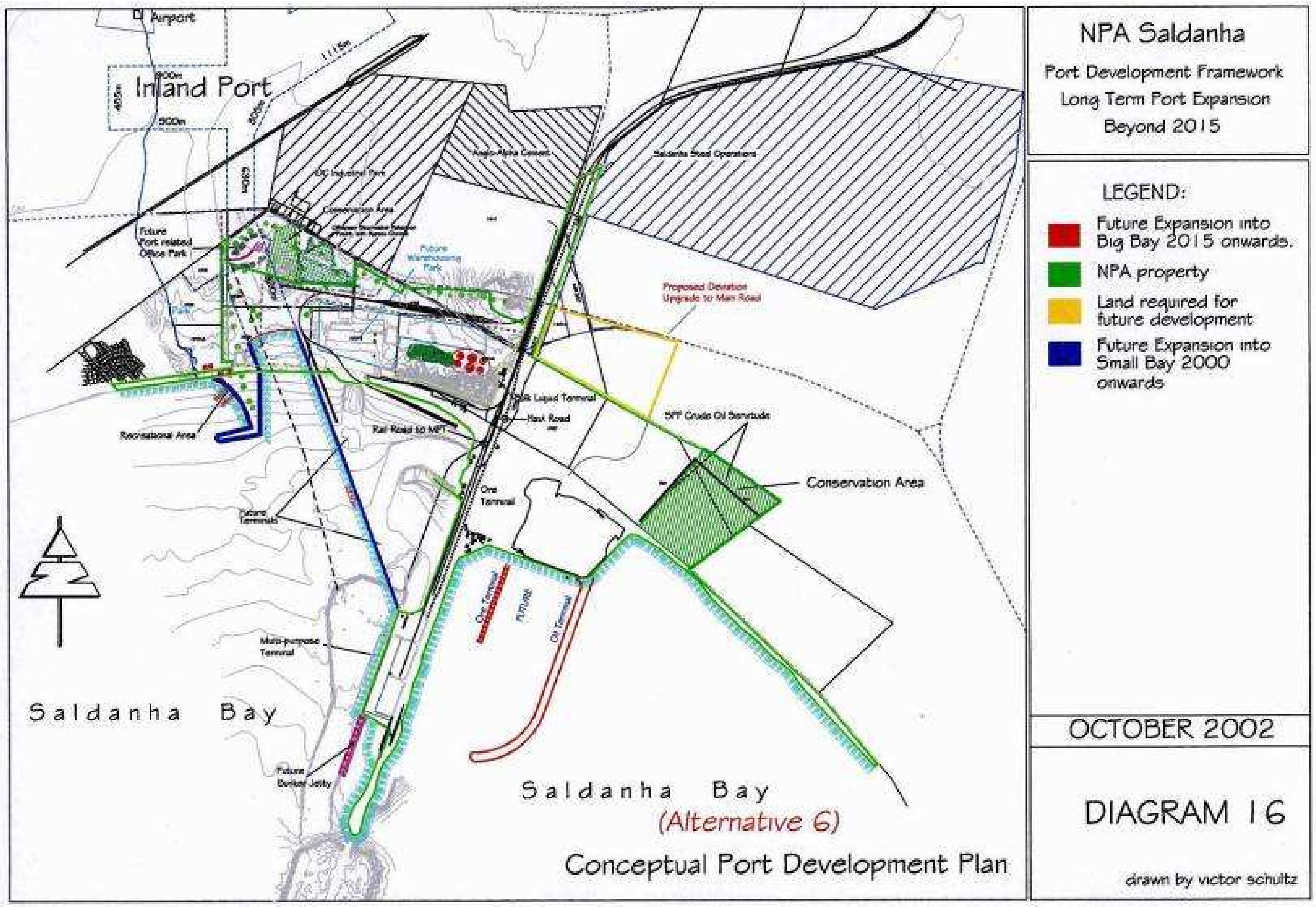

Figure 11: Port master plan – alternative layout No. 6

4.3.1.1 Port Master Plan (2005)

Figure 12 and Figure 13 show the proposed scenarios for port development beyond 2020 (long-term); and proposed development over the next 10 years (medium-term). These were developed during the port master planning exercise in 2005.

<u>5-10 Year Plan</u>

The Port of Saldanha has the following projects planned on its 5-10 year horizon (see Table 5):

Inner Bay (Small Bay)

- Construction of a New Access Road; New NPA Administration Building and an Employee Care & Recreation Facility. These projects have already commenced and their status is as follows:-
    - New Access Road – Completed;
    - New NPA Administration Building – planned for December 2006;
    - Employee Care & Recreation Facility – planned for September 2007;
- Oil & Gas Module Fabrication Activities – the Port is in the process of negotiating a lease for the existing Mossgas site. Activities planned for this site is the fabrication of offshore oil and gas exploration modules, similar to activities that occurred in the Port in the 1990s. This is scheduled to start within the next 2 years.
- Dredging at Mossgas quay to reduce level to -8m. Completion 2007.
- Extension to existing Mossgas quay to 300m - this project is planned over the next 5 years and is currently in its pre-feasibility stages.
- Construction of one additional multipurpose quay – this project is envisioned over the next 5 years. The port is planning to add an additional berth and quay, in a southerly direction, to the existing berths currently

being utilized by the multi-purpose terminal. This project is still in its pre-feasibility stages (i.e. internal investigations regarding the feasibility of embarking on the project)

- Port Industrial Park – this project will have a similar use as the industrial park in the Port of Cape Town. The project is currently in its pre-feasibility stages (internal investigations) and is planned for implementation within the next 5 years.

Outer Bay (Big Bay): The current Phase 2 expansion

- Construction of additional infrastructure to increased throughputs of iron ore as detailed in this. This project is expected to be completed within the next 5 years and is currently in its execution phases with Transnet Projects.

- Construction of quay space and 2 berths for import of liquefied natural gas. This project has already completed its pre-feasibility studies in 2004/2005 and these included ship motion studies, fatal flaw assessments, and an assessment of strategic impacts. This project is envisioned to be revitalized within the next 10 years. The LNG project for Saldanha is currently on hold pending the outcome of the initiative in Coega.

General

- Central Services Corridor - this project is planned with the Saldanha Municipality to facilitate adequate access to the port for all services (road, rail, pipelines, bulk water, electricity). This will be an expansion on the existing Haul Road and rail corridor entering the port, in conjunction with the municipality plans for industrial zoning of the areas at the back of the port. This project is in its pre-feasibility stages to be commenced within the next 5 years.

Please refer to attached diagrams showing all new activities over the next 10 years (Figure 12 and Figure 13).

Table 5: Summary of planned activities over the next 5 - 10 years

Activity	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Employee Care Facility										
Oil & Gas module fabrication										
Dredging Mossgas quay										
Extension Mossgas quay										
Additional MPQ										
Industrial Park										
Iron Ore berths										
LNG terminal										
Central Services Corridor										

As most of these projects are still in their pre-feasibility stages, the exact timeframes for their implementation cannot be determined.

FOR FURTHER INFORMATION ON THE MASTER PLAN FOR THE DEVELOPMENT OF THE PORT OF SALDANHA PLEASE CONTACT:

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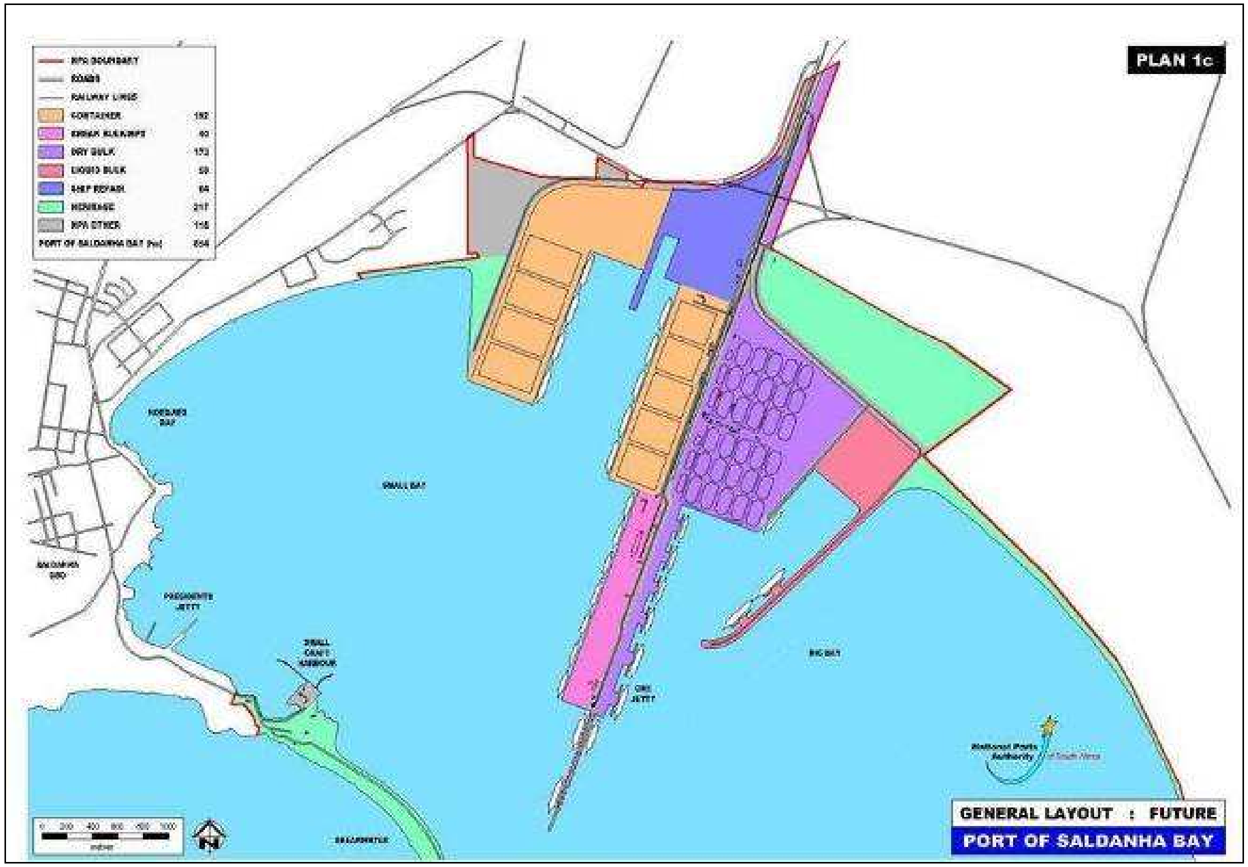

Figure 12: Proposed Port Development Scenario – Long Term (beyond 2020)

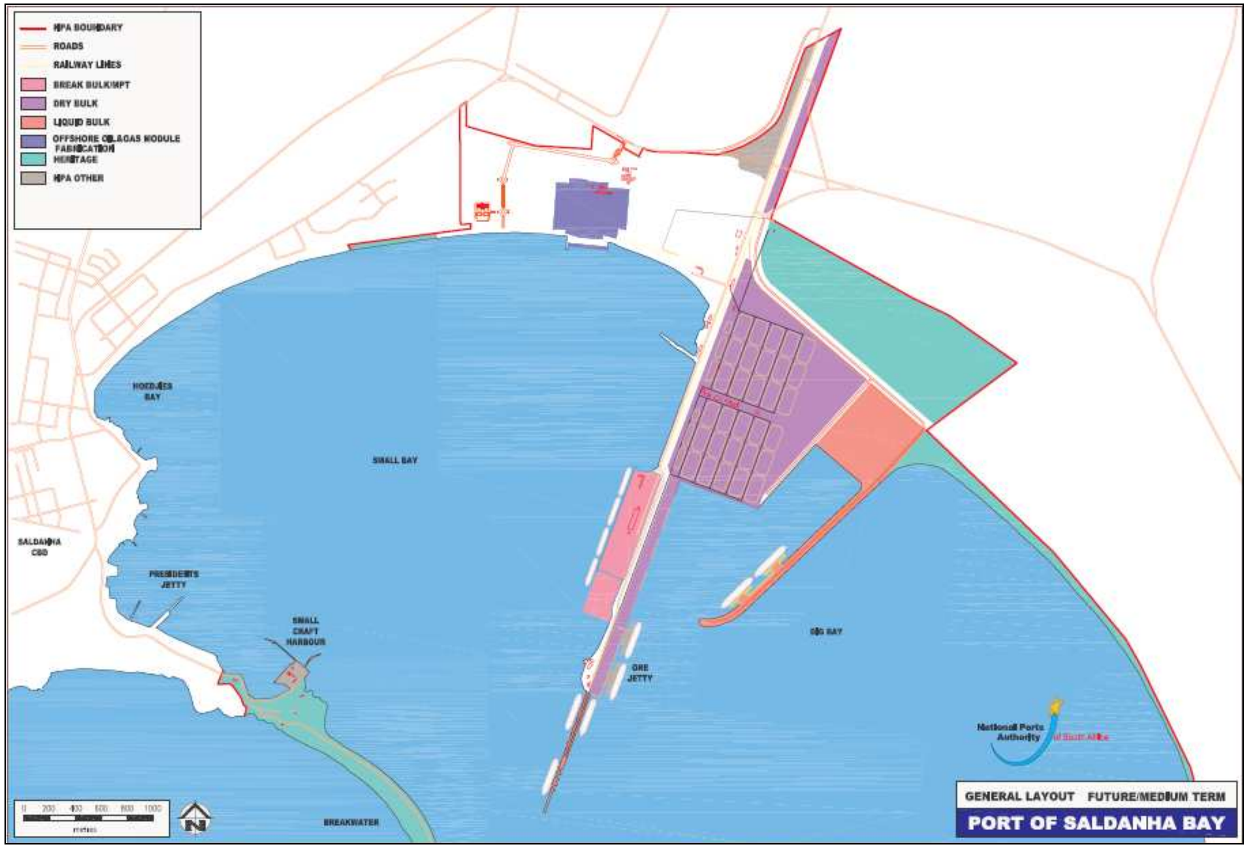

Figure 13: Proposed Port Development Scenario – Medium Term (10 years)