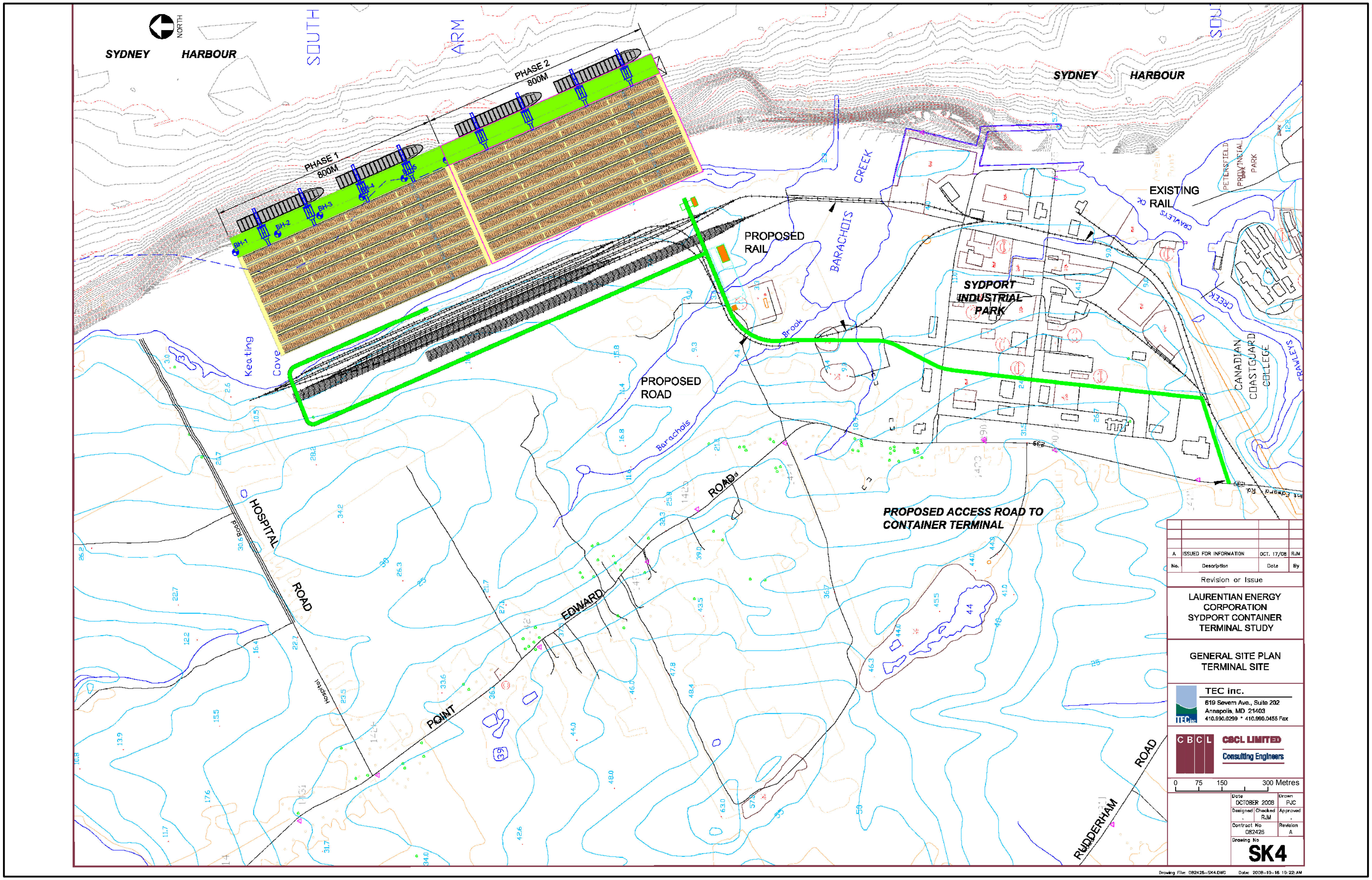
This EA covers both Phases of the Project.

The Project is currently in the preliminary design phase. Additional design, including detailed engineering, will likely provide refinements to the Project components described herein. However, the design elements contained in this EA are considered sufficient or the purposes of assessing potential environmental effects and mitigation measures.



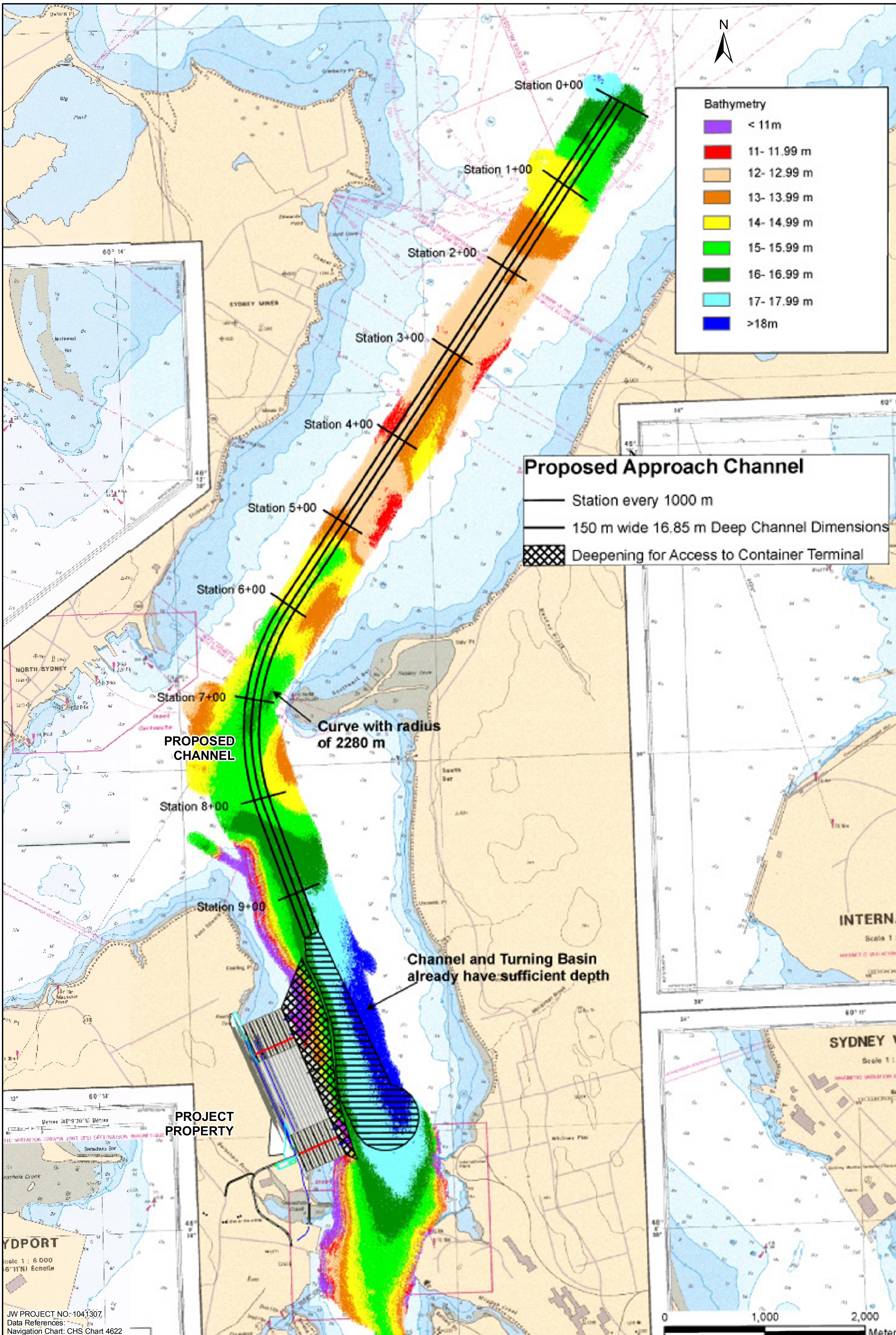
DATE: 31/10/2008	Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal	FIGURE NO: Figure 2.1
PREPARED BY: L. Kendell		
LAURENTIAN ENERGY	**Site Plan**	Jacques Whitford

2.1 Construction and Commissioning

For the purposes of this EA, construction and commissioning activities are described in the following sections including: dredging and dewatering, vessel transportation, construction of confined disposal facilities, site preparation and construction of land components.

2.1.1 Dredging and Dewatering

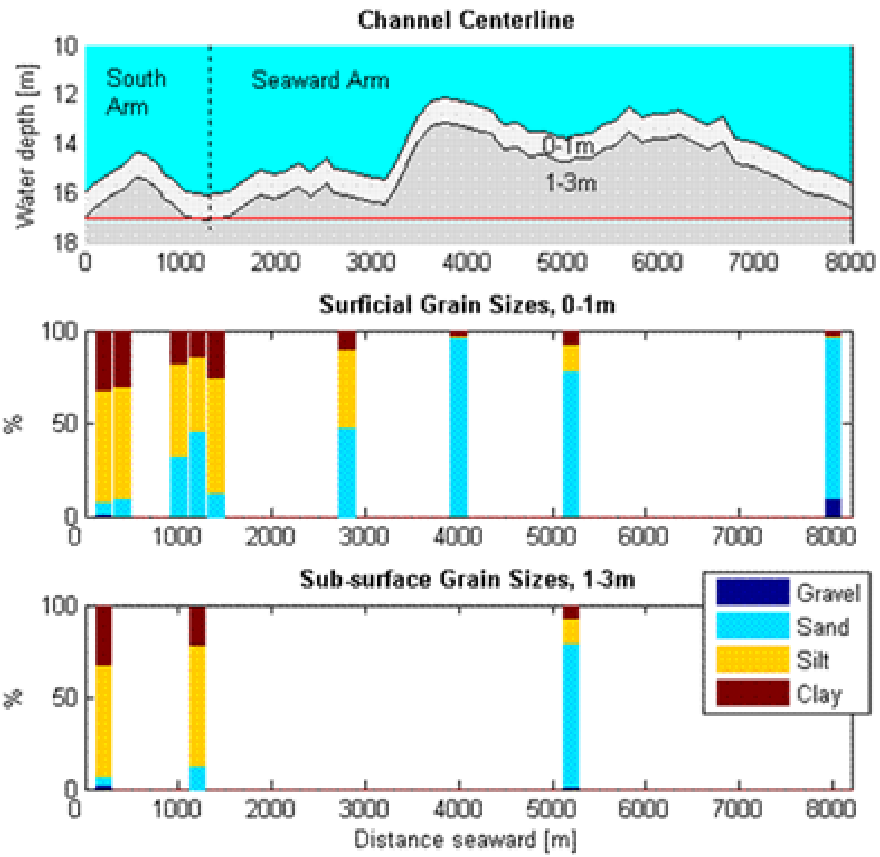
The access to the Port is currently restricted to vessels with 11.8 m draft due to a sand and gravel deposit located in the access channel adjacent to South Bar that extends in a northerly direction toward the harbour mouth. In order to facilitate access to the deeper water of South Arm, a 142 ha channel will be dredged to a nominal depth of 17 m BNLT (refer to Figure 2.2).



DATE: 31/10/2008	Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal	FIGURE NO: Figure 2.2
PREPARED BY: L. Kendell		
LAURENTIAN ENERGY	**Sydney Harbour Bathymetry**	Jacques Whitford

Based on preliminary geotechnical data it is estimated that 80% of the sediments are sandy and suitable for construction; the remaining 20% is comprised of silt and clay and not be suitable for construction without additional preparation (*e.g.,* surcharging). The available data for surficial (0-1 m) and sub-surface (1-3 m) grain size distribution is shown in Figure 2.3.

FIGURE 2.3 Channel Centerline and Surfical and Sub-Surface Grain Sizes

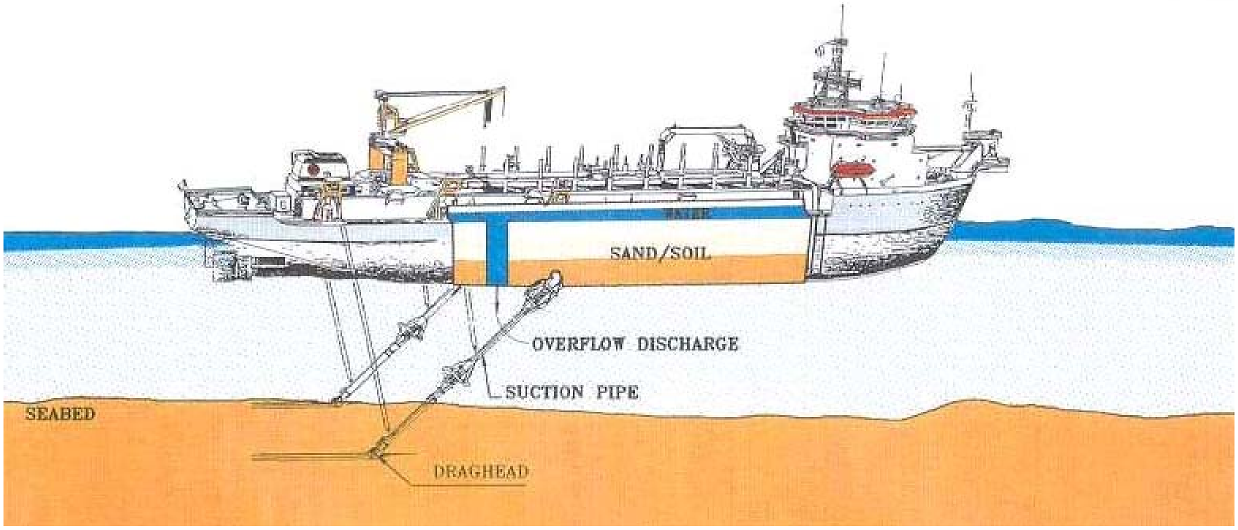


(CBCL 2008)

In South Arm, fine surficial sediments (silt and clay) prevail. Dredging in South Arm will require a cut of 1 to 3 m at most locations. The subsurface data indicates similar grain size distributions therefore post dredge bottom conditions should remain relatively unchanged. At the inflection point the sub-surface fine content may be up to 25% higher than in surficial sediments which have somewhat higher sand content. However the cut required in this area will be minimal, as maximum water depths at the centerline are near or greater than 16 m. Therefore post-dredging seabed sediments will be similar to existing conditions. In the Seaward Arm, surficial sand prevails. The grain size distribution is similar between the surface and sub-surface sediments.

Dredging will be undertaken by a trailing suction hopper dredge (TSHD) similar to the Jan de Nul Cristobal Colon (Figure 2.4).

FIGURE 2.4 Typical Trailing Suction Hopper Dredge



(Jan de Nul 2008)

A TSHD is a self-propelled vessel equipped with one or two suction pipes with powerful centrifugal pumps, designed to trail along the side of the vessel; a draghead is fixed at the lower end of the suction pipe. As the TSHD approaches the dredge area, the vessel's sailing speed is reduced and the suction pipes are to be hoisted over board and lowered to the seabed (Jan de Nul 2008).

During dredging, the lower ends of the suction pipes trail along on the seabed, while the centrifugal pumps provide the suction power to lift the materials from the seabed into the hopper. Soil is loosened and removed from the seabed by suction provided not only by the centrifugal pumps but by the forward motion of the vessel and the cutting and jetting characteristics of the draghead teeth and jets. While the dragheads are on the seabed, the hopper dredge will maintain a low trailing speed; trailing speed is dependant on the nature of the materials being dredged. Soil and water is sucked up the suction pipe and discharged into the vessel's hopperwell. Refer to Figure 2.5 (Jan de Nul 2008).

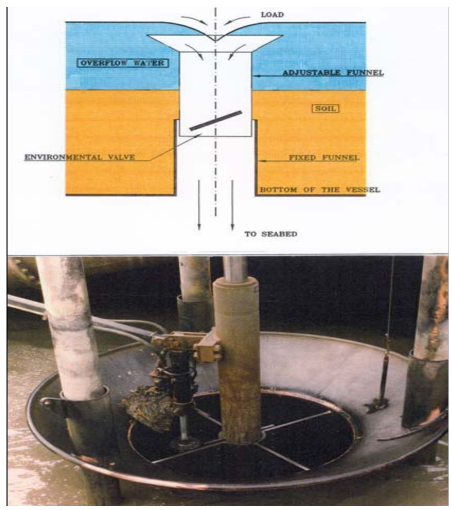
FIGURE 2.5 Typical Draghead and Hopperwell Containing Dredge Materials

(Jan de Nul 2008)

In addition to removing sediments, the TSHD collects significant amounts of water. Depending on the particle characteristics of the sediments, it may be possible to decant water from the hopper during dredging. Decanting is possible with coarse grained materials such as sand and gravels. The appropriate level of care will be taken to minimize the water content in the mixture. There will be no overflow permitted during the dredging of soft sediments. Excess water will be discharged by an adjustable overflow system. The overflow, which is built inside the hopper, consists of a height adjustable funnel mounted on top of a vertical cylinder which ends under the keel of the dredge (refer to Figure 2.6). Water is discharged under the dredge which minimizes the dispersion of fines into the surrounding waters. In addition, limited air is trapped in the overflow water minimizing turbidity (Jan de Nul 2008).

When decanting is not possible (*e.g.,* when dredging fine silts and clays), water and dredged sediment will be unloaded at the CDF.

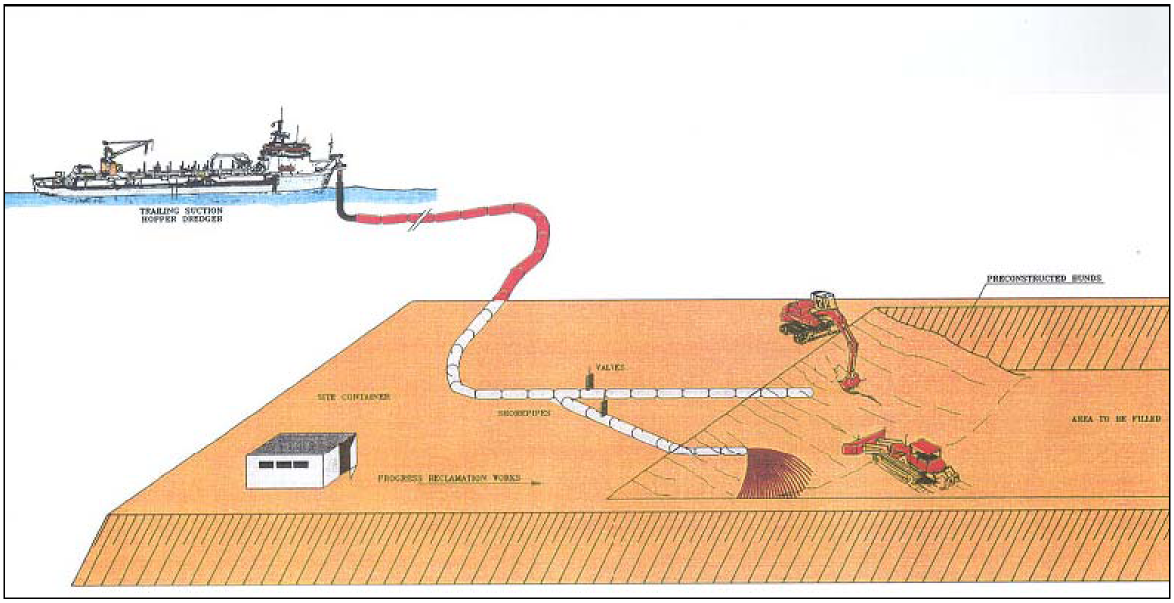
FIGURE 2.6 Typical Overflow Funnel



(Jan de Nul 2008)

Sensors installed above the hopper keep track of the height of fluids inside the hopper; the loading process will be stopped when the fluids reach the funnel level. Dredging will be stopped and the suction pipe hoisted on deck (Jan de Nul 2008). The TSHD will then proceed to one of the CDFs where it will be connected to a floating or submerged pipeline no more than 300 m offshore. Jets in the hopper will fluidize the sand in the hopper and the centrifugal pumps transport the mixture of dredged solids and water through the pipeline to the reclamation area (CDF). Approximately 30-35% of the pumped/discharged mixture will be water (Jan de Nul 2008). At the CDF, care will be taken to deposit the hopper load accurately within the set levels and horizontal boundaries (refer to Figure 2.7).

FIGURE 2.7 Unloading Dredge Materials - Typical Operation



(Jan de Nul 2008)

When the hopper has been emptied, a new dredging cycle will start. Each dredge cycle consists of the following: sailing to dredging area, dredging, sailing to the discharge area, coupling to floating pipeline, pumping ashore to a CDF and uncoupling from floating pipeline.

Dredging is expected to operate 24-hours a day, 7-days a week until completed. It is anticipated that the crew will remain on the vessel during this time. Dredging is currently scheduled for Q4 2009/Q1 2010 to coincide with the estimated availability of the TSHD in the region. It is estimated approximately three months will be required to complete dredging. Table 2.1 describes the estimated time for one dredge cycle. The dredge cycle is based on TSHD with a carrying capacity of 46,000 m³.

TABLE 2.1 Estimated Time for One Dredge Cycle

Silt - Silty Sand - Sandy Silt		
Dumping	Loading:	40 - 60 min
	Sailing:	60-75 min
	Dumping:	10 min
Sand - Sandy Gravel – Gravel		
Reclaiming	Loading:	3 hr (sand) - 6 hr (gravel)
	Sailing:	50 - 70 min
	Connecting:	20 min
	Reclaiming:	2,5 hr (sand) - 4,5 hr (gravel)
	Total:	6hr40min (sand) - 12hr (gravel)

2.1.2 Vessel Transportation

Fishing vessels, cruise ships, a commercial ferry, and cargo and container vessels all operate in the marine waters of Sydney Harbour; their effective and safe operation is essential to the economic success of the individuals and industries in Cape Breton and Nova Scotia. The construction of the Terminal and CDF will result in some restriction to the extent of navigable waters and will employ approximately eight vessels and working platforms. In developing the CDF, the operation will include work barges and crane barges along with any necessary tugs and work boats. Movement of large commercial vessels using berths in Sydney may be affected during the development of the CDFs; however, it is expected that this will only require a reduction in speed while passing the work. The width of the South Arm channel in the vicinity of the new terminal and after the development will be in excess of 1000 m and should not curtail any movement beyond a speed reduction. These works will be monitored and the information regarding the movements of vessels and the works in progress will be promulgated through Notices to Mariners or Notices to Shipping as appropriate, through the MCTS (see Section 4.11).

Dredging of the new navigational channel will result in positive effects for Sydney Harbour. The objective of dredging this new channel is to enable vessels with deeper drafts to transit the harbour and dock at ports in the harbour. The dredging of the channel will not only allow Project-related post-panamax container vessels to use the port but will benefit many other users of North Sydney and Sydney Ports, as it will enable vessels with deeper drafts to enter the harbour and use the facilities. The Project is therefore expected to result in important, long- term, benefits for harbour related industries in the Ports of Sydney. The socioeconomic benefits that will stem from the increased capacity of Sydney Harbour are discussed in Section 1.1.

2.1.3 Construction of Confined Disposal Facilities

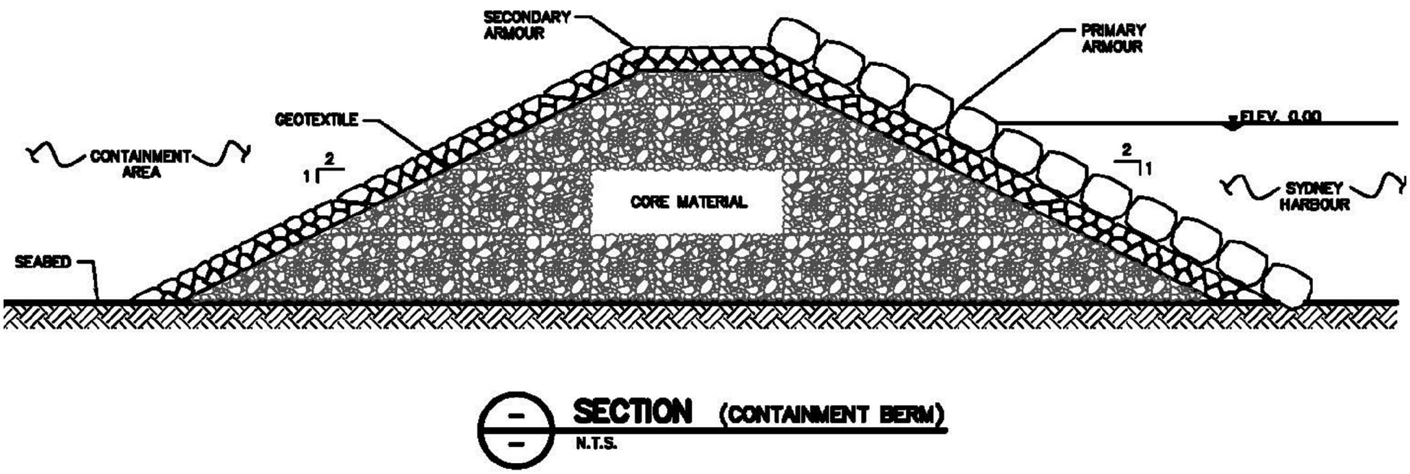
Approximately 3.5 to 4 million cubic meters of dredged materials will be removed from the seabed and two waterlots will be infilled using confined disposal facilities (CDF). A CDF is a structure planned and designed to receive dredged sediments and safely contain the materials, preventing their reentry into the waterway. The CDFs which will be constructed prior to any dredging activities will consist of a series of impermeable dykes, low permeable containment berms and settling ponds which will act to decant and dewater the fluidized dredged materials. The containment berm will consist of primary armour, secondary armour; a geotextile and a core material (refer to Figure 2.8). Dewatering of the fill areas will be controlled using methods described in Section 2.1.3.2 as well as engineered silt curtain(s) positioned and maintained to capture the suspended solids near the fill areas.

Sand and gravel sediments (structural fill) will be transferred to the marine terminal footprint CDF through a submerged or floating pipeline no more than 300 m offshore. A secondary containment area may be used for the disposal of fine sediments via floating pipeline to a potential second CDF in an area between the existing Provincial Energy Venture and Logistec site on the east side of the South Arm (refer to Figure 2.9). Nova Scotia Lands has expressed interest in reclaiming and developing land in this area as referenced in the Ports of Sydney Master Port Plan. The Master Port Plan has identified the second CDF as a potential laydown area for coal or other commodities. Any dredged materials placed in the second CDF would need to be placed in a manner consistent with this or other designated end use. NS Lands will be consulted prior to land reclamation. The CDFs will take approximately six months to construct prior to dredging and will be constructed from slag materials.

It is currently unknown if the second CDF will be required. The need for the second CDF will depend on a number of factors including the final configuration of the terminal infrastructure, and the requirements of NS Lands. Efforts are underway to identify specific material handling and placement methods that improve the dewatering and consolidation of this material. Sufficient time (*e.g.,* number of years) could allow for proper consolidation of these soft materials making them suitable for construction.

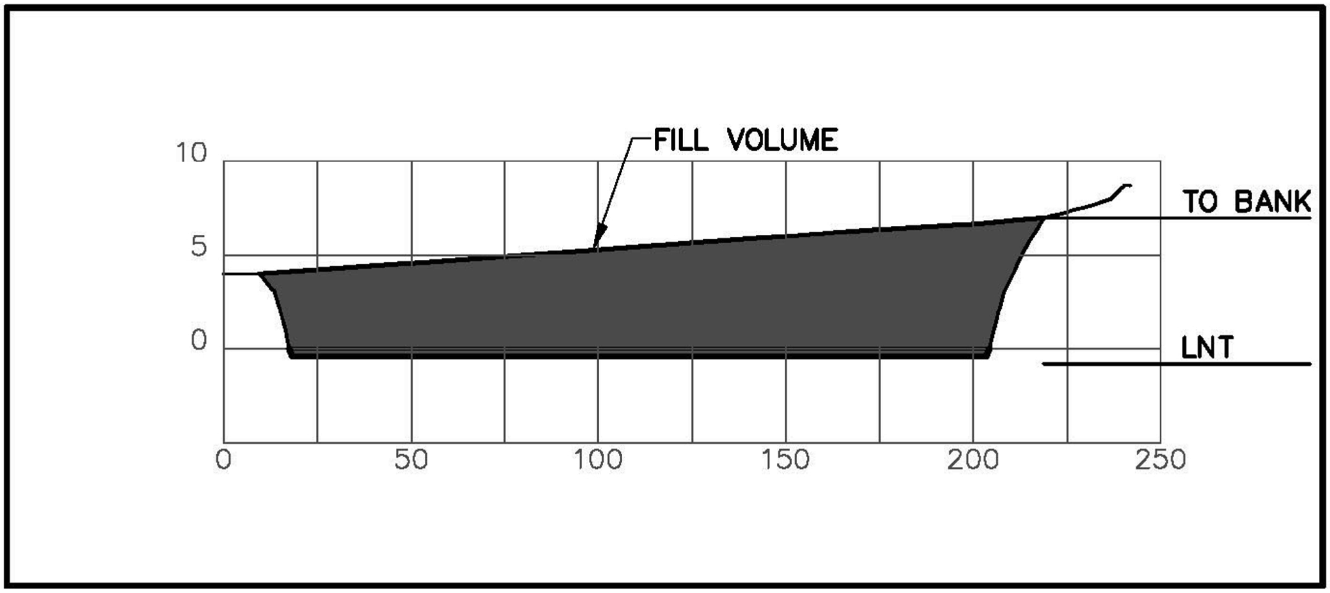
2.1.3.1 Land Reclamation

Once the CDF(s) are constructed, land reclamation can start. As noted in Section 2.1.1., the fluidized hopper load is discharged through a submerged or floating pipeline to the CDF. Dredged materials gather in a cone like shape at the discharge point; the material will be continuously distributed evenly over the reclaimed area (Jan de Nul 2008). When the section around the discharge pipe is reclaimed to the desired level, the pipeline is extended with a 12 m pipe. Measures will be taken to avoid producing pockets of fines in the reclamation. By tracking back and forth over the discharged material the enclosed water in the voids will be brought to the surface and a primary compaction of the hydraulic fill will be achieved (Jan de Nul 2008).



JW PROJECT NO. 1041307
DATA REFERENCE: CBCL Limited, Drawing File 082426-SK2.DWG, October 2008.

DATE: 31/10/2008 PREPARED BY: L. Kendell LAURENTIAN ENERGY	Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal **Cross Section of Containment Berm**	FIGURE NO: **Figure 2.8** Jacques Whitford



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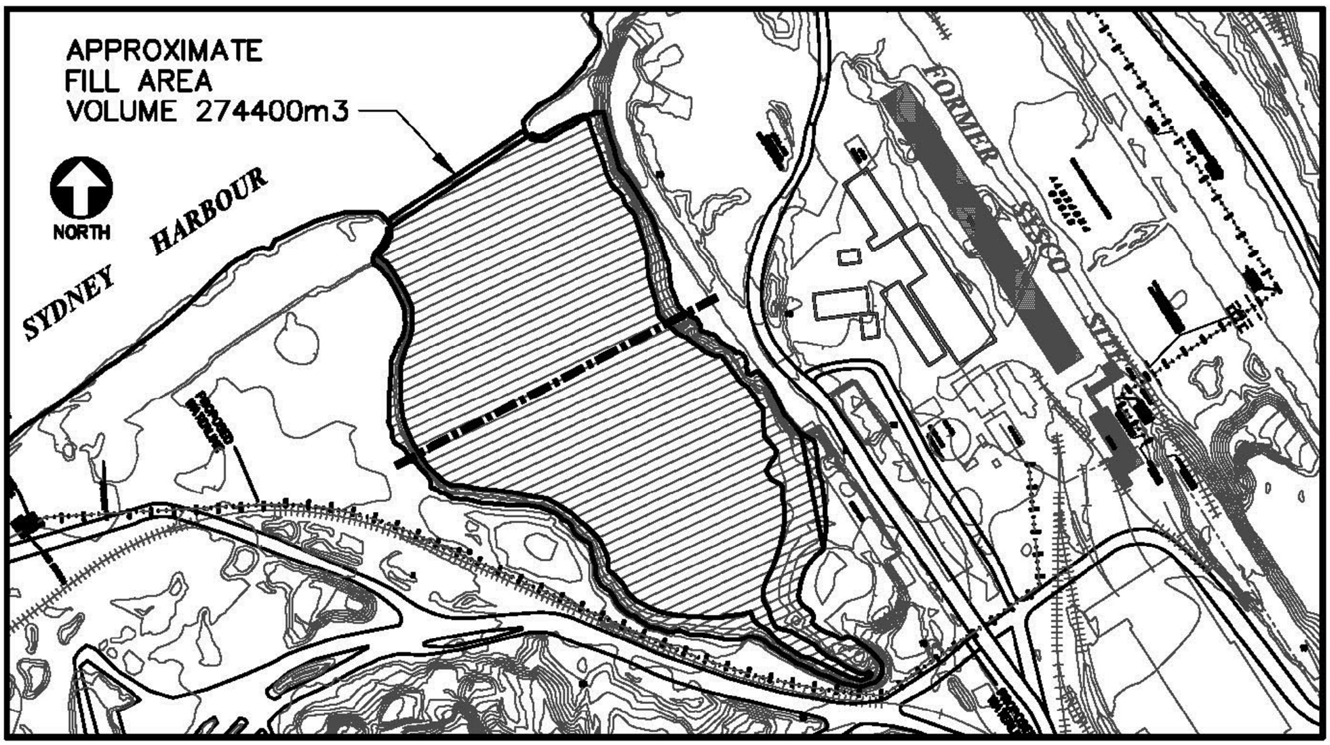

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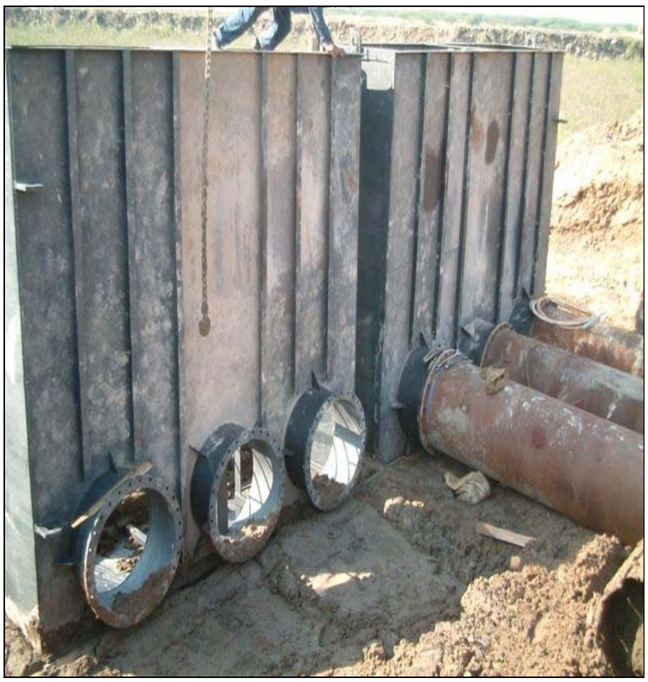
JW PROJECT NO. 1041307
DATA REFERENCE: CBCL Limited, Drawing File DIGITAL MAPPING.DWG (REF DWG: SKETCH No. 09/30-01), September 2008.

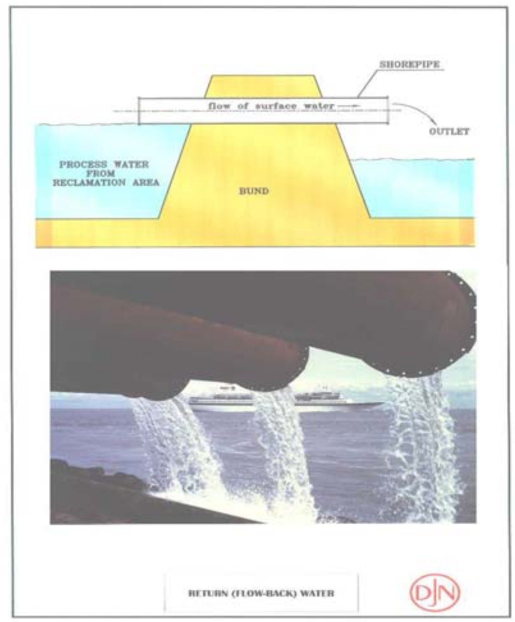
DATE: 31/10/2008	Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal	FIGURE NO: Figure 2.9
PREPARED BY: L. Kendell		
LAURENTIAN ENERGY	**Secondary Confined Disposal Facility**	Jacques Whitford

2.1.3.2 Dewatering

Water in the reclamation area will leave through a water-box or other similar means placed in the bund between the reclamation area and South Arm (refer to Figure 2.10). The CDF serves as a setting pond. It potentially may be divided into two with an internal dyke of silt curtains. To increase the settlement of the soil particles and to reduce the amount of suspended solids flowing to South Harbour the distance between the reclamation pipeline and the water-box will be maximized. A water-box with an adequate width will maintain the water level in the reclamation area which lowers the velocity of the soil particles and improves their settlement. Water will leave the settling area in a controlled way through the water-box. In general, resuspension of suspended solids will be limited based on the small percentage of fines in the material to be reclaimed (Jan de Nul 2008).

FIGURE 2.10 Typical Water Boxes used for Dewatering the Reclamation Area.





(Jan de Nul 2008)

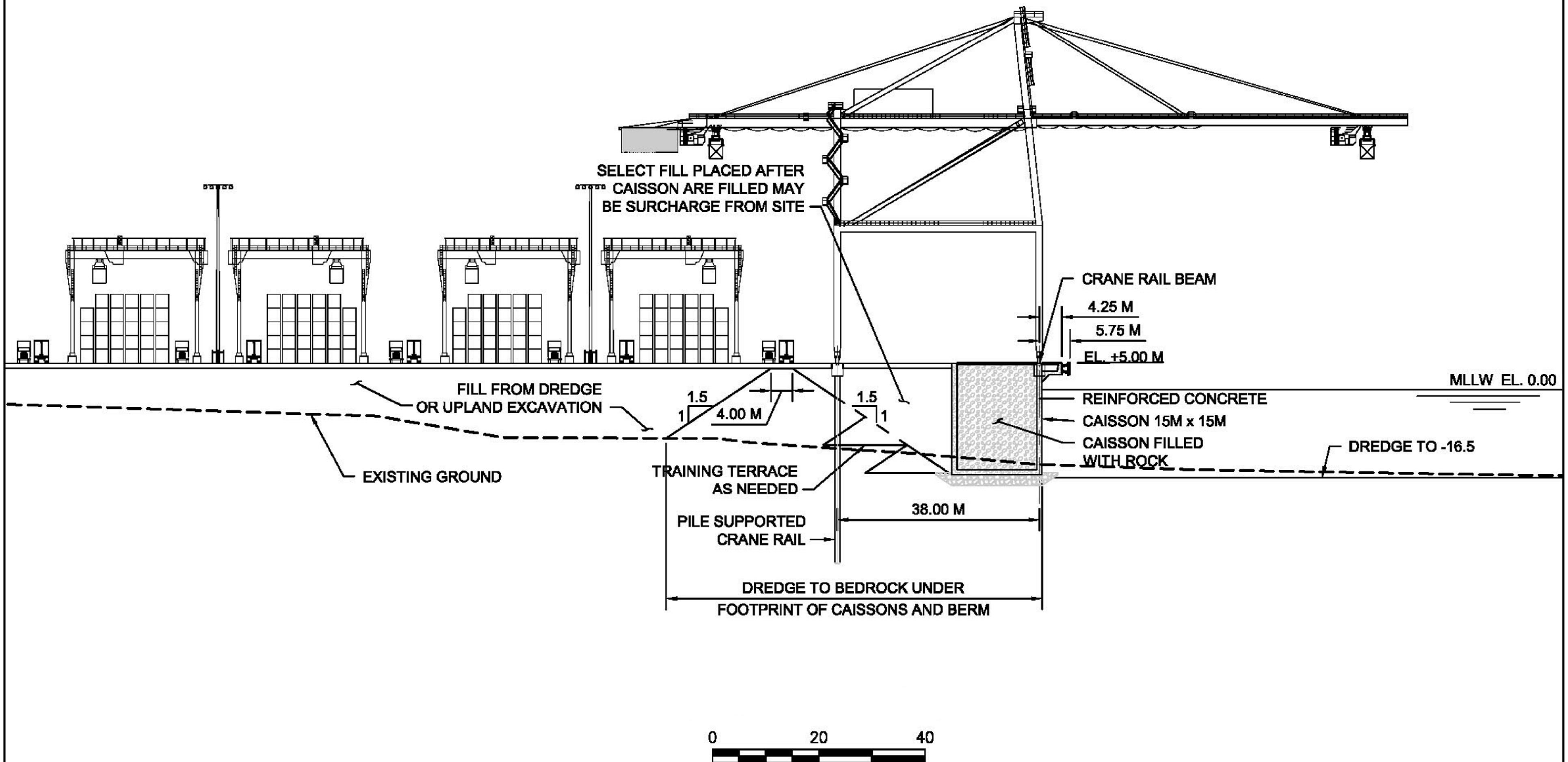
2.1.4 Site Preparation

Initial preparation of the upland site adjacent to the terminal CDF will consist of: site clearing and grubbing and grading; establishing road bases, including surface drainage; and the installation of temporary facilities (*e.g.,* fencing, parking, offices, staging, and lay down areas necessary for construction). No blasting is anticipated. Local construction supplies will be used where feasible including crushed rock and sand, and wood products. Erosion and sediment controls will be in place prior to ground disturbance.

2.1.5 Construction of Land Components

The marine terminal which will be built on the CDF, will consist of two berths (a total length of 800 m) with expansion capabilities of at least two additional berths (Phase II) resulting in wharf length of 1,600 m; approximately 42 ha of land will be required to accommodate container storage and an on dock Intermodal Container Transfer Facility to efficiently transfer the containers from the vessels to a rail car.

The marine terminal container storage facility will consist of four or more cranes, gantries, container storage capacity, connection to the existing rail line, access roads and internal circulation roads, maintenance and repair facilities, administration and operations buildings, working and storage tracks, utilities and associated systems and fencing (refer to Figure 2.11). Intermodal infrastructure will include a railcar loading and distribution center where containers will be transferred between the container yard and the unit trains. Minimal local transport via trucks is anticipated. Vehicle access will be through the Sydport industrial Park; as well as an emergency access road connected to Hospital Road.



JW PROJECT NO. 1041307

DATA REFERENCE: TEC Inc., Drawing No. 5983 "Port Development Plan Typical Wharf Section", August 2008.

DATE: 31/10/2008	Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal	FIGURE NO: **Figure 2.11**
PREPARED BY: L. Kendell	**Terminal Section**	

LAURENTIAN ENERGY

Jacques Whitford

The rail line will be extended from the waterside end of the Sydport Industrial Park to the Project site by infilling a portion of Barachois Creek and constructing a short bridge over the inlet. A working and storage track will be constructed on the dock behind the container yard. Additional rail line upgrades will be made to the existing Sydport spur (*e.g.,* heavier gauge line) that runs from the Sydport Industrial Park to the Sydney to North Sydney rail line. There may be some design changes required at the CBNS end of the spur to ensure the transition for long trains turning to North Sydney is smooth and efficient. Any potential modifications to the rail lines beyond the connection to the Sydport spur are likely to be localized to existing rail beds and are not considered within the scope of this assessment; they will be developed as required according to all applicable regulatory requirements.

Marine and land based blasting is not anticipated; however should land based blasting be necessary, bedrock will be removed by mechanical means. Minor marine pile driving is anticipated along the terminal face using a diesel hammer.

Based on experience with similar sized projects no more than 30-large diesel powered units (including all construction equipment and vessels) will be operating on or near the construction site.

Construction will be accomplished on a single day shift schedule 5-days per week; subject to weather and other delays additional shifts may be required. Pumps and other equipment may be operating continuously.

2.2 Project Operation

Once commissioned, the Sydport Container Terminal facility has a throughput capacity design of approximately 750,000 TEUs per year in each of two phases for a combined total capacity of 1.5 million TEU's. Containers will be transferred to or from vessels via rubber tire gantry or rail mounted gantry cranes. Inbound cargo will be transferred to rail cars destined for the U.S. Midwest or transshipped on smaller vessels to other ports.

2.2.1 Marine Vessel Traffic

It is expected that once dredging is complete and the terminal is operational, there will be approximately 52 post-panamax vessels and 104 feeder vessels transiting the channel and docking at the Terminal each year (approximately one post-panamax and two feeder vessels per week). During Phase II, these numbers are expected to double to 104 post- panamax and 208 feeder vessels transiting Sydney Harbour (approximately two post-panamax vessels and four feeder vessels per week). There will be transshipments by sea and smaller vessels will likely call on the terminal. Vessels will be loaded and unloaded 24 hours a day.

During Phase I, the new vessel traffic associated with the Project will essentially double the number of annual vessel calls to Sydney Harbour (excluding Marine Atlantic ferry arrivals and departures) relative to 2007 vessel traffic totals (refer to Section 4.11). During Phase II, the number of vessels transiting the harbour will be approximately three times higher than current traffic levels. These additional vessels will place additional demands on Sydney Harbour resources (*i.e.,* Harbour Pilots, tugs, *etc.*) and could also potentially lead to a change in navigation routes for existing traffic, such as commercial fishing boats.

It is estimated that each vessel entering a compulsory pilotage area will require a minimum of two Pilot-assisted movements per visit; one movement to berth, and one movement to deberth. In 2007 there were 277 Pilot-assisted vessel movements within Sydney Harbour and in 2006 there were 318 Pilot-assisted movements. At present there are two Harbour Pilots in Sydney Harbour. On average, each Pilot can complete approximately 260 to 270 vessel movements per year (R. Gates, pers. comm., 2008). The general capacity of the Sydney Harbour Pilots is therefore between 520 and 540 vessel movements per year. Assuming a minimum of two Pilot-assisted movements per vessel, during the Operation of the Project there will be a need for a minimum of 312 additional Pilot-assisted vessel movements in Phase I of the Project and a minimum of 624 additional Pilot-assisted movements per year during Phase II of the Project. These additional vessel movements will exceed the current capacity of the Harbour Pilots. Given these statistics, there will be a need for approximately two additional Harbour Pilots by Phase II of the Project, for a total of four in Sydney. The Atlantic Pilotage Authority has indicated that additional pilots can be supplemented with pilots from the Cape Breton Pilots based elsewhere in order to meet additional demands (R. Gates, pers. comm., 2008). There will therefore be enough Harbour Pilots to safely and effectively accommodate the increase in vessel traffic as a result of the Project.

At this time there are no tugs stationed in the Ports of Sydney or North Sydney, but if required can be obtained from Canso. Under conditions of strong winds, berthing and departure from the berths may be delayed unless a tug is present. During the winter and early spring tugs have been utilised to clear ice from the face of berths. (T. Pittman, pers. comm., 2008).

Sydney Harbour is the fourth largest port in Nova Scotia based on tonnage. There are ports elsewhere in Atlantic Canada and throughout North America that are considerably larger and handle much higher volumes of vessel traffic. For example, in 2005, the Port of Vancouver, British Columbia had 2,677 foreign vessel arrivals (Port of Vancouver undated), compared to Sydney, which had 153 total vessel arrivals in 2005 (excluding Marine Atlantic ferry arrivals and departures at North Sydney). The approaches and the harbour in Vancouver are considerably busier than those in Sydney Harbour; however, sound management of marine vessel traffic ensures that a safe separation of vessels is maintained. Sydney Harbour has a well-managed traffic monitoring system in place, and the responsible authorities will be able to safely manage the increase in vessel traffic by adding resources and adapting existing practices and procedures where required. Vessels that currently use Sydney Harbour (*e.g.,* fishing boats, *etc.*) will be provided with direction from the harbour authorities on the locations and movements of these new vessels, and as such, will not face any additional navigational risk as a result of the Project.

2.2.2 Loading and Unloading Vessels/Trains

At capacity, it is expected that 1 to 1.5 trains will move in and out of the facility each day, per phase.

Idling trains will occur as trains are being loaded but operation will be near-continuous. It is assumed that one switching car will be operating most of the time during Phase I and likely two during Phase II.

2.2.3 Equipment and Material Storage

There will be up to eight electric cranes in simultaneous operation during Phase I and up to fourteen electric cranes in Phase II. Cold dock/electric plug-ins will be available for vessels which will greatly reduce hotelling emissions from vessels while at dock. The rubber tire gantries (RTG's) will use diesel fuel and the refrigerated units will run on dockside electricity; there will be less than 50 refrigerated units on site.

There will be limited transport by trucks; however, maintenance and delivery vehicles will use the terminal during operation**.** Vehicle access will be through the Sydport industrial Park; there will be no Project-related through traffic connecting with Hospital Road.

2.2.4 Maintenance/Repairs to Terminal

Maintenance and repairs to the terminal will be done on an as needed basis in accordance with applicable regulations, in a timely fashion to prevent potential environmental effects. Such activities will include, but not be limited to: snow removal; painting; equipment servicing and replacement as required; terminal resurfacing, *etc.*

2.2.5 Maintenance Dredging

Sediment geochronology (Lee 2002) indicates sedimentation rates in Sydney Harbour ranging from 0.2 to 2 cm/year. The most recent hydrodynamic modeling completed (CBCL 2008) indicates that sedimentation sources and the hydraulic energy for dispersion are both weak in Sydney Harbour. The highest measured sedimentation rates of 2.0 cm/year were not located within the area to be dredged, but rather in close proximity to sediment sources such as the entrance of Muggah Creek, Sydney River and other freshwater inflows. Within the dredge footprint, maximum sedimentation rates are predicted to be 0.2 cm/year or less.

Using a sedimentation rate of 0.2 cm/year, it is estimated that 2 cm of sediments will accumulate in 10 years time. Using the highest sedimentation rates measured in areas of the harbour most prone to sedimentation would result in the accumulation of 20 cm of sediments in 10 years. It is possible that accumulation of these soft sediments would be reworked by the propeller wash from the vessels using the channel. It is therefore expected that maintenance dredging of the channel will not be required.

2.3 Decommissioning

With proper operation and maintenance, the lifespan of the Sydport Terminal Facility is indefinite. Should decommissioning and abandonment be required, it will be undertaken in accordance with the regulatory requirements applicable at the time of such activities. In the event the facility is dismantled/decommissioned, an abandonment plan and, if required, a site restoration plan, would be developed.

At a minimum, an abandonment plan would include a schedule for equipment decommissioning and disassembly. The plan would indicate the approximate time required to remove and dispose of all abandoned installations, structures, and buildings for which onsite reuse is not possible, and to reinstate the site to a quality necessary for subsequent industrial land use.

Decommissioning planning will be developed in consideration of environmental goals for the area. Activities that support such planning may include a review of baseline and follow up monitoring data; facility record keeping; adherence to applicable standards and guidelines during Project operations; and development of a rehabilitation plan.

Disposal of waste will be conducted in accordance with NSE waste management regulations and guidelines. Removal of buildings or structures is expected to have similar effects and considerations as construction and will be conducted in accordance with regulatory requirements applicable at the time of removal.

2.4 Project Schedule

The Project is currently in the preliminary design phase. The preliminary design phase of the Project which is anticipated to take approximately nine months to complete, will result in detailed engineering specifications and procurement details. One of the first phases of the Project will involve the construction of the CDF(s) which must be in place prior to the commencement of any dredging activities. Dredging is expected to take three months to complete and is tentatively scheduled for Q4 2009/Q1 2010. The Terminal is expected to be operational by the end of 2010.

Normal operating hours are 24 hours per day, 365 days per year, as required by cargo volumes.

2.5 Effluent Discharges and Waste Management

The Project will meet or improve upon applicable regulations or standards with respect to effluent discharges and waste management.

2.5.1 Dewatering and Sediment Resuspension

Existing suspended sediment data indicates that background levels are generally below 10 mg/l. A coupled three-dimensional hydrodynamic and sediment transport model was used to assess the dispersion of the turbidity plume during and after dredging operations. In the channel, settling time for a plume generated during one cycle is estimated from 8 to 10 hours, *i.e.,* a few hours longer than a complete cycle time (dredging, sailing, dumping) so the cumulative impacts of several cycles would be fairly limited. The model suggests that the plume would stay in the centre of the Arm within a 1.5 km-wide track and not reach the shoreline. At the proposed container terminal, results indicate that the plume and its subsequent re-deposition would be confined to the South Arm, due to the mean up-harbour bottom currents. The infrequent flow reversals are not sustained enough to cause much turbidity outside the South Arm. Above-background turbidity levels from a 24-hour continuous dredging period would last about four to five days.

The model was also used to obtain order-of-magnitude estimates of natural, wave and current-induced turbidity peaks during storms. Results suggest that a 1-year return storm would have a greater turbidity footprint than that generated during dredging in the Seaward Arm, except along the narrow centerline of the channel where turbidity may be up to 10 times higher during dredging. However, a storm would cause a much greater spreading of suspended sediment with peak concentrations occurring along the shorelines. For the marine organisms whose habitat spans both the shallow and deeper waters of the harbour, turbidity from the dredging operations in the channel (depending on their duration) may be comparable to that from an extended period of back-to-back storms with the exception of much lower turbidity close to the shoreline during dredging.

2.5.2 Stormwater

During construction, grubbing and clearing activities may result in increased sediment-laden runoff to adjacent water bodies. A Stormwater Management Plan will be developed in accordance with all provincial requirements. To prevent sediment run-off, the amount of exposed soil, the time of soil exposure and location of the soil exposure (*e.g.,* steep slopes and proximity to watercourses and sensitive habitats will be avoided) will be managed in accordance with the latest edition of the Provincial Sediment and Erosion Control Manual. Applicable controls include silt fencing, vegetation cover, erosion control blankets (geotextiles, straw blankets, *etc.*), straw bales, check dams, siltation ponds and rock riprap. Controls would be put in place prior to any land disturbance and would be inspected during precipitation events or at minimum every two weeks during construction to ensure proper function.

When in operation, stormwater at the Project site will be managed using catch basins, piping, manholes and retention ponds in accordance with provincial stormwater management requirements.

2.5.3 Sanitary Sewer

The Project site is currently not serviced with sanitary sewer services. Properties within the Sydport Industrial Park and adjacent residential areas are serviced by a central sanitary sewer system and wastewater treatment plant located just west of the proposed terminal site. CBRM owns the treatment facility and is currently reviewing options to replace it. If the required upgrades to the sanitary system are not in place prior to Project initiation, wastewater from the Project site will alternatively be handled by a small packaged treatment facility installed exclusively to service the Project site. There is also the potential that the proponent and CBRM could partner to facilitate the upgrading on the existing sanitary sewage treatment system.

2.5.4 Solid and Hazardous Waste

Potential sources of solid waste generated by Project activities may include scrap metals, insulation waste, packing/crating metals and domestic wastes. Efforts will be made to reduce waste where applicable and to recycle as required under the provincial Waste-Resource Management Regulations and good industrial hygiene practices. Waste materials will be hauled by qualified waste management companies to approved disposal or recycling facilities.

Hazardous waste that is expected to be generated from Project construction and operation sources will be minimal and includes small quantities of waste oils, paint wastes and solvent wastes. Hazardous wastes will be stored onsite in a separate temporary hazardous waste storage area provided with full secondary containment. Hazardous wastes will be removed from the site by a licensed contractor and disposed at an approved facility. Other control measures for hazardous waste include developing and implementing an emergency spill prevention and response (contingency) plan to avoid impacts from release of potentially hazardous materials.

2.6 Hazardous Materials

Hazardous materials will be in use at the Project facilities. All Project staff will be appropriately trained in the handling, storage, and disposal of hazardous materials. Chemical storage and handling will be done in accordance with the manufacturer's recommendations and federal and provincial regulations where applicable.

To minimize, contain and control any potential releases of hazardous materials, a site-specific Spill Prevention and Response Plan will be developed. Petroleum or hazardous materials will be stored according to provincial regulations including secondary containment.

Through good engineering design, the dredge materials will be incorporated into a confined disposal facility which will prevent leaching of any contaminated materials. In addition a Dredge Management Plan will be implemented to reduce the potential for contaminated sediments to escape from the containment area during dredging and dredge material transfer operations.

2.7 Noise

Noise generated during facility construction and operation will not exceed the provincial guidelines. Noise mitigation to provincial guidelines will be achieved through design and operational procedures. Additional details on noise emissions and mitigation is provided in Section 6.5.

2.8 Light Emissions

Lighting associated with the Project will be installed for three general purposes:

- to provide a safe and efficient level of lighting for work;
- to provide security; and
- to provide requisite navigational signals for vehicles on land and ships at berth.

In the past, low energy prices, old technology and a lack of design standards often led to an excess of inefficient lighting, resulting in a reduction in the visual quality of the entire area due to light pollution from a facility.

Light pollution can be categorized by three areas of impact:

- Light Spill – Light spill, also known as light trespass, results from the illumination of property outside of the facility by poorly designed and aimed lighting. It can be a nightmare nuisance to surrounding land uses such as residences and residential institutions.
- Sky Glow – Sky glow is the light in the sky due to wasted lighting misdirected upwards from luminaires (lighting assemblies). Light is reflected from clouds, particulate (*e.g.,* dust), and haze in the atmosphere causing the "dome of light" often observed above urban areas (*i.e.,* airbourne). As a result of sky glow, stars are difficult or impossible to see, and the night sky has an unnatural appearance.

- Glare – Glare is the same phenomenon that most persons associate with oncoming vehicles that refuse to dim their headlights. The extreme contrast between the light source and the surroundings makes it difficult for the observer to see things other than the light. Glare is both a nuisance, and a safety hazard. Glare can actually reduce the effetiveness of poorly designed security lighting by blinding observers and creating deep shadows.

Modern industrial lighting practices and available technologies provide the means to avoid these problems through design mitigation.

The Illuminating Engineering Society of North America (IESNA) publishes guidance on the level of lighting that is necessary for efficient and safe work in a variety of work environments, including port facilities. Lighting for the buildings on site is also guided by the criteria of LEED, the green building rating system of the Canada Green Building Council. Finally, the Commission Internationale de l'Eclairage has developed the Technical Report: Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations (CIE 150:2003). This document, which forms the basis for some of the LEED criteria, also includes substantial information on classifying and assessing impacts on the receiving environment.

Lighting that is designed to substantially comply with the guidance of these three documents will not cause significant emissions off-site. The important features of a lighting system that complies with this guidance are:

- All lighting fixtures should be full cut-off design; that is, the luminaries will shed light downwards, with no light emitted above the horizontal. This will minimize light trespass, and virtually eliminate glare.
- Security lighting will be as required, with full cut-off, and motion sensor technology as appropriate.
- Lighting power will be the minimum level, and an energy efficient technology to meet the required working levels.
- Lighting will be selected to take advantage of cost-effective technologies available during the detailed design stage of the Project.

Standards will be set back from the perimeter of the site, located so as to illuminate the perimeter, but no farther.

The Project proponent will strive to incorporate as many of the lighting design criteria as is technically and economically feasible to reduce the potential for adverse light impacts associated with the Project.

2.9 Air Emissions

Air quality impacts associated with construction activities are generally related to the generation of dust and routine emissions from the operation of construction equipment. Control measures such as dust suppression techniques and regular inspection and maintenance of construction vehicles will greatly diminish fugitive air emissions. Routine operation activities will result in air emissions from the operation of routine equipment including crane operation and from hotelling container vessels. On dock air emissions from hotelling and equipment (*e.g.,* refrigeration units) will be greatly reduced from cold dock/electrical plug-ins. Additional details on air emissions and mitigation is discussed in Section 6.5.

2.10 Accidental Events/Contingency Planning

A Project-specific contingency plan for unplanned discharges or spills or other accidental events will be prepared. In the event of an accidental release of materials from the facility, the Canadian Coast Guard will be contacted at 1-800-565-1633 for guidance on reporting, and clean up procedures. Lubricants and other petroleum products will be stored and waste oils will be disposed of in accordance with provincial regulations. Small spills will be contained by on site personnel using spill kits kept at the site.

Typical elements of a site contingency plan will include the following information:

- purpose and scope of plan coverage;
- general facility identification information (*e.g.,* name, owner, address, key contacts, phone number);
- facility and locality information (*e.g.,* maps, drawings, description, layout);
- discovery/initial response;
- sustained action;
- termination and follow-up actions/prevention of recurrence;
- notification (internal, external, and agencies);
- response management system (*e.g.,* incident commander, safety, liaison, evacuation plan);
- assessment/monitoring, discharge or release control, containment, recovery, and decontamination;
- logistics – medical needs, site security, communications, transportation, personnel support, equipment maintenance and support, emergency response equipment (*e.g.,* PPE, respiratory, fire extinguishers, first aid);
- incident documentation (accident investigation and history);
- training and exercises/drills;
- plan review and modification; and
- prevention and regulatory compliance. The capacity of local fire and/or ambulance services to respond to incidents will be evaluated. All staff will complete Workplace Hazardous Material Information System (WHMIS) training. LEC will develop a comprehensive Environment, Health and Safety (EHS) system that encompasses internal requirements for employee safety and environmental reporting.

Further information on accidental events and malfunctions is contained in Section 7.0.

2.11 Project Costs and Employment

2.11.1 Expenditures

Preliminary estimates for the cost of dredging and disposal of the estimated 3.5 to 4 million cubic meters of marine sediment, is approximately $29 million. The estimated cost for constructing the CDFs is approximately $13 million. Therefore, the preliminary total estimated cost of dredging, disposal and dredge material management for the channel deepening, including contingencies and engineering, is $44 million. The estimated cost to build the terminal is $302 million for both Phase I and Phase II of the Project.

2.11.2 Employment

Construction jobs at peak are estimated to be 100**.** According to the Ports of Sydney Master Plan (TEC 2007), during operation it is estimated that 3,500 direct, indirect and induced full time equivalent positions will result from the Project including channel deepening.

During an average day, 132 dock workers will cover two 12 hour shifts at the terminal during operation of Phase I, and in Phase II the number of dock employees per day would increase to 245. Approximately 181 administrative staff will also be employed throughout both Phases on 8-hour shifts.

LEC will undertake to enhance local economic benefits for qualified local suppliers and local skilled labourers; these measures may include contractor open houses, tendering processes that allow for participation by local contractors and local hiring preferences for qualified workers. Currently, LEC employs 27 people in the operation of the industrial park and steel fabrication business, all of which are from the local community. LEC is committed to using, to the greatest extent possible, the local workforce at the container terminal site.

2.12 Environmental Management Design and Features

The Proponent has considered the environmental implications of the Project in all aspects of design and planning; this is expressed in a number of key environmental design elements and Project plans. The primary environmental management objective for the Sydport Project is to prevent adverse environmental effects from occurring where technically and economically feasible through good Project design and planning. Where adverse effects cannot feasibly be prevented, mitigation programs are proposed to reduce the potential for significant adverse environmental effects. Monitoring and adaptive management are often recommended to confirm the validity of impact predictions and effectiveness of mitigation including habitat compensation measures. These are the fundamental components for development of an environmentally and economically sustainable project in Sydney Harbour.

2.12.1 Key Environmental Design Features

LEC has considered key environmental design features during the Project planning and design phases. The following is a brief summary of key environmental design features:

- development on currently underutilized lands zoned specifically to permit marine terminal development and consistent with Port of Sydney Master Plan;
- cold dock/electric plug-ins will reduce emissions from ship hotelling and other equipment (*e.g.,* refrigeration);
- Trailing Suction Hopper Dredge is the state of the art dredging method which minimizes overdredging, does not increase turbidity substantially, and will limit the resuspension of contaminated sediments. The use of the suction dredge also limits the amount of time that dredging will occur, thus limiting impacts;
- CDF(s) - designed to prevent re-entry of sediments to the marine environment;
- Commitment to use electric plug-ins to reduce or eliminate the use of diesel power;
- lighting design - terminal lighting will be designed to minimize light pollution; and
- set backs and landscaping buffers for area residents – creating a more aesthetically pleasing viewshed where feasible.

2.12.2 Environmental Management Planning

Environmental protection is fundamental to LEC's operations and forms an integral part of the Company's EHS Management System. LEC is committed to the implementation of the requirements of an EHS system that is consistent with national EHS standards for terminal facilities.

The following is an outline of LEC's corporate commitment to health, safety and environmental management, for this Project. These plans will be developed and revised as necessary as the Project moves through the phases of design, construction, installation, production, and decommissioning. Inherent in this management system is the provision for continual environmental improvement, ongoing consideration of stakeholders, and adaptability of these documents to respond to environmental concerns. Environmental protection plans developed for the Project will minimize potential environmental impacts throughout the Project lifecycle and include specific commitments made in this EA as well as measures stipulated by government as conditions of approval; these include:

- Environmental Management Plan (EMP) – this is typically an "umbrella" document that summarizes a number of corporate commitments to environmental management including: environmental policy; objectives; legal requirements; programs and procedures; training; communication; record keeping; and reporting. The EMP could take the form of an environmental management system (EMS) document that is updated as necessary. The EMP may also include specific environmental protection plans (EPPs) to identify and implement specific mitigative measures in the environmental assessment and other regulatory conditions.
- Dredge Management Plan- addresses dredging activities and controls in place to minimize turbidly and resuspension of sediments.
- Waste Management Plan – addresses waste minimization and disposal procedures.
- Spill Management Plan – addresses prevention and response with regard to small and medium size spills of potentially hazardous materials on site.
- Stormwater Management Plan – addresses management of site stormwater runoff during operation to prevent erosion and sedimentation of receiving waters and other sensitive areas and to prevent contamination of stormwater and receiving waters due to spills.
- Archaeological Contingency Plan – outlines procedures to follow in the event that archaeological resources are unexpectedly discovered at the site.
- Environmental Effects Monitoring Plan (EEM) – outlines guidelines for monitoring project impacts and gauging the effectiveness of prescribed mitigation.
- Public Consultation Plan – outlines ongoing outreach with the public including a complaint resolution strategy.
- Emergency Response Plan – outlines contingency and response plans to address large fires, explosions, vessel collisions and large hazardous materials spill. Coordination with local emergency responders is highlighted.
- Terminal Security Plan - outlines the security procedures required by Transport Canada under the Marine Transportation Security Regulations (MTSR).
- Information Book -The Port Information Book from the Harbour Authority will be modified during the construction stages of the Project and approved by Transport Canada and other relevant authorities before a vessel will berth. The Port Information Book will contain information relating to the authority

of the port and other agencies having responsibilities for the port waters, the regulations that apply to port operations, the safety of operation in the Ports of Sydney, the location of terminals, aids to navigation on the operational directions and practices of all users of the port waters.

- Terminal Operations Manual -The purpose of the Terminal Operations Manual is to provide the necessary information to all whose employment brings them into contact with the terminal and the vessels using the terminal. In the Terminal Operations Manual the following information is provided: *Canada Labour Code, Marine Occupational Safety and Health Regulations (CSA 2001) Safe Working Practices Regulations (CSA 2001), Marine Transportation Security Act, Port Authorities Operations Regulations (CMA)*, ILO Safety and Health in Ports and other standards and guidelines referring to container operations in port areas.

The above noted plans are typically finalized once the Project design is completed and will be developed in consultation with various regulators as applicable to ensure their concerns are addressed in the planning process.

3.0 PUBLIC ENGAGEMENT PROGRAM

3.1 Overview of Consultation/Engagement Plan

A public consultation program has been undertaken in support of the Sydport Project lead by LEC in close collaboration with other major Port users collectively known as the Sydney Marine Group. The Sydport Marine Group is comprised of Logistec Stevedoring, Marine Atlantic, Sydport Ports Corporation, Provincial Energy Ventures, Nova Scotia Lands, Nova Scotia Power, and Laurentian Energy Corporation.

The purpose of the public consultation program is to:

- ensure early public notification of the Project;
- communicate the process for consultation and completion of the environmental assessment;
- provide accurate information to the public; and
- receive information on public and stakeholder comments and concerns about the proposed Project.

The public consultation program has focused on area residents, First Nations, businesses, and users of the Sydport Industrial Park, South Arm and Sydney Harbour, as well as other individuals or groups that have expressed a specific interest in the Project, including fishers. The Project proponent is committed to effective and open consultation to ensure that potentially affected members of the public are fully aware of the Project and have the opportunity to make their views known. The receipt of information on public and stakeholder comments and concerns will help ensure that all important issues are considered in the environmental assessment.

The public consultation program has included:

- public open houses;
- community meetings;
- sector-specific presentations; and
- meetings with stakeholders.

Further consultations are ongoing. The following section provides an overview of activities undertaken and planned; supplementary information is provided in Appendix B.

3.2 Summary of Public Engagement Activities

3.2.1 Public Consultation

The Master Port Plans for the Ports of Sydney

There is significant understanding of the Project within the community by virtue of:

- the LEC shareholder structure including LEC's leadership role within the Sydney Marine Group (comprising the major owners and operators of terminals in the Ports);

- presentations that highlighted the Project along with other Ports of Sydney opportunities at the May 2006 and May 2007 Sydney Ports Days' conferences (attended by approximately 200 and 250 people, respectively);
- the Ports of Sydney Master Plan (www.portofsydney.ca) launched January 14, 2008 to an audience of 350 people;
- a Sydney Ports Advocacy Council (Sydney and Area Chamber of Commerce, JCI Cape Breton and the Cape Breton Partnership), formed in December, 2007 (later to include New Dawn Enterprises and Membertou First Nations) that is actively promoting port development;
- significant local media coverage (summary provided in Table 3.1 below) related to the proposed container terminal and ancillary dredging activity;
- a Project specific presentation made on May 14, 2008 at the Ports Days conference with approximately 150 in attendance; and
- in August 2008, one of the world leads in trailing suction hopper dredging, Jan de Nul, was brought to town by the proponent to meet with Project stakeholders; including local businessmen, government agencies, fishers and media.

TABLE 3.1 Summary Media Coverage

Date	Number of Media Articles
November-07	1
December-07	5
January-08	7
February-08	0
March-08	2
April-08	4
May-08	17
June-08	4
July-08	3
August-08	8
September-08	8
October-08	18
November-08	1

Public Open Houses and Presentations

June and July, 2008

Four open house public meetings on the Sydney Harbour Access Channel Deepening and the Proposed Sydport Container Terminal were held at Whitney Pier, Westmount, Sydney Mines, and Edwardsville, Nova Scotia on June 17, June 18, June 19 and July 8, 2008 respectively; the first three open houses were held from 4:00 pm to 8:00 pm with the final open house from 4:00pm to 7:00pm. The first three open houses were announced in the Cape Breton Post newspaper on Saturday, June 14 and Monday, June 16, 2008 (refer to Appendix B) and public service announcements were made on radio. The final open house, which targeted the residences in the immediate vicinity of the Project was advertized through the distribution of 200 invitation flyers delivered to residences.

Members of the Project Team were in attendance to provide information to the public and to receive comments. Using storyboards (Appendix B), the open house meetings presented information on:

- Project design and location;
- the environmental assessment process;
- studies undertaken for the environmental assessment; and
- the preliminary list of key environmental and socio-economic aspects to be addressed by the environmental assessment.

Members of the public were encouraged to register upon entering the open house. The first three open houses were attended by approximately 85 people in total. The fourth open house, which included a brief Project presentation by LEC along with a short question and answer session, was attended by approximately 62 people. All individuals in attendance who signed the registration logs were placed in the stakeholder database to be provided with further Project updates. Attendees were also provided with a questionnaire which they could complete and leave with the Project Team during the open house or return at a later date.

A Project planning session on April 17, 2008 with community stakeholders and a Project presentation on September 9, 2008, to the Sydney and Area Chamber of Commerce, each drew almost 80 individuals.

October 2008

With a view to optimizing community stakeholder involvement, reaffirming the currency of planned mitigative measures, confirming the relevancy of issues and matters under review as part of the EA process, the project team held four open houses again in October 2008. Venues were Edwardsville, Whitney Pier, Sydney Mines and Westmount in the period October 20th -23rd respectively. The format involved a formal 30-minute presentation or project update (Appendix B) and informal storyboard review followed by a question and answer period. The project team comprised a senior executive and director of the proponent companies, engineering and technical expertise from Jacques Whitford and CBCL Limited and a communications professional. Attendees numbered 54 in total and were advised on the proponent's treatment of questions and concerns raised at earlier public houses and communicated directly, in writing and via email. Attendees were requested to complete a questionnaire upon exiting each session (see Appendix B).

The open house format enabled:

- contextualization of the project;
- use of a multi-media to facilitate information transfer;
- an enriched environment for questions and answers; and
- participation by attendees.

Advertisements for the October open houses were placed in the Cape Breton Post newspaper on Thursday, October 16 and Saturday October 18 (see Appendix B) and public service announcements were made on local radio. As well, 150 flyers were distributed to homes in the Edwardsville area providing notice of the open house.