Project Summary

ABZ Wharf Project

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Project Summary :

It’s proposed to build a dedicated wharf at Moleson Creek in Region 6 of Guyana, which will be used for receiving, storing and transshipping construction materials .

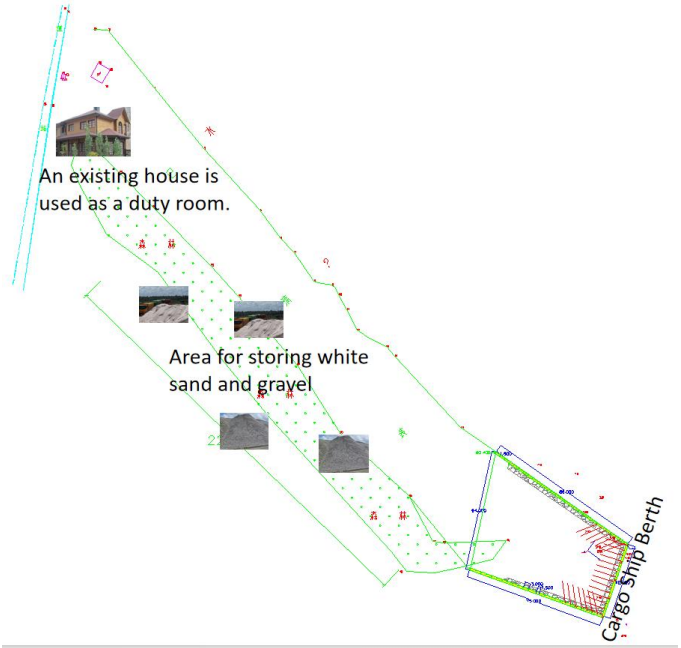
I. Site Selection Description

1.1 Project Location

It’s located nearby Moleson Creek in Region 6 of Guyana, between Vassen Islan and Long Island, on the north side of the Courantyne River.

Wharf operation area division:

1. The existing building is used as a duty room, daily with 1-2 people on duty.
2. The area shown indicates a storage area for white sand, gravel etc.
3. The extended line shown indicates the wharf embankment area and the cargo vessels berthing and unloading area.

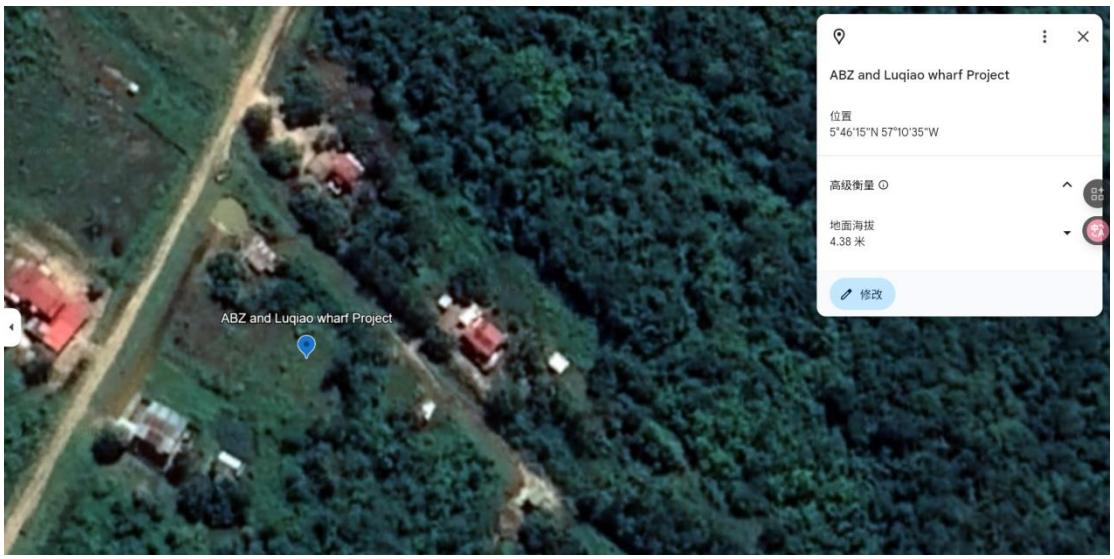


Operational area planning diagram

Surrounding land use details

	North	East	South	West
Residential	**50m**			
Commercial				
Institutional				
Recreational				
Industrial				
Mixed Use – State				**175m**

1. There is a residence on the north side of the proposed wharf, about 50 meters away from the wharf duty room, and another residence is 175 meters to the west. There is no any other building in any other directions.
2. The duty room spares drummed water for daily use, the existing toilet to be repaired, and domestic wastewater to be discharged into the drain ditch by roadside.
3. The area consists of mixed fill soil, with an elevation of about 5 meters. generally higher in the west and lower in the east, and it's covered with herbaceous plants and sparse trees.



1.2 Scope of Work

The main tasks include clearing, leveling, filling, and dredging the wharf site; construction of the revetment structure and platform foundation; erection of the superstructure; and construction of wharf operation and management auxiliary facility and buildings.

1.3 Main construction items and work schedule

1.3.1 The proposed new wharf shoreline is approximately 67 meters long, which forming a parallelogram-shaped dock area. The wharf fenders and revetments are to be made of standard greenheart wood (single piece diameter not less than 40 cm and length not less than 65 feet), combined with used tires as auxiliary anti-collision materials.

1.3.2 The proposed new wharf needs to be extended approximately 60-80 meters along the existing bank towards the river channel to meet the design requirements for vessel draft and berthing, with a draft of not less than 3.5 meters.

1.3.3 The soft soil foundation of the extended area and existing land area to be filled and leveled (rubble or other adaptable materials, to be determined in consultation with CRBC) to the proposed elevation of the wharf, so as to meet the requirements for the wharf on loading and unloading and storage yard load.

1.3.4 The existing land area is approximately 17,634 square meters (see plan for details), and all vegetation, topsoil and obstacles have been cleared.

1.3.5 An office that can accommodate 2-3 people for daily office work to be constructed.

1.3.6 Planned working schedule: November 7, 2025 - January 27, 2026.

1.3.7 Building purpose: Wharf berthing service.

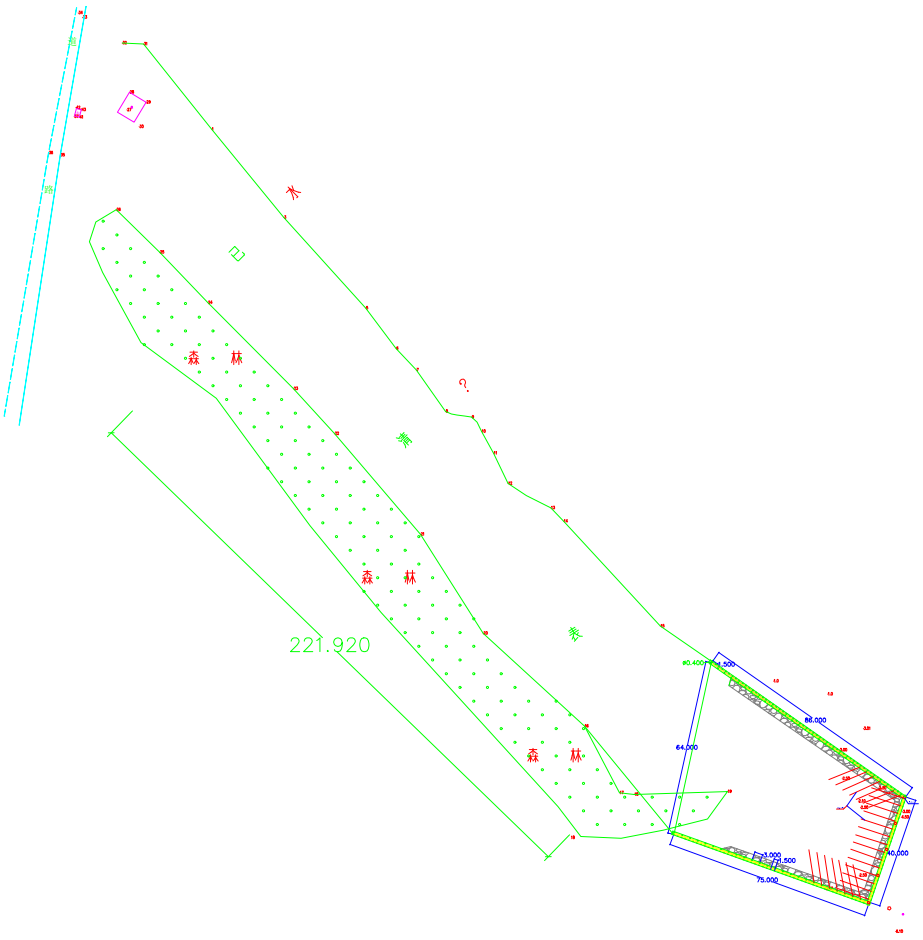
II. Hydrogeological Conditions

The climate in Berbice is relatively stable throughout the year. September is the hottest month, with an average high temperature of approximately 31.6°C and an average low temperature of approximately 24.5°C. January is the coldest month, with average temperatures between 22.9°C and 29.6°C. The average annual relative humidity is approximately 72%. The hot season lasts about 2.5 months, from mid-August to early November, during which the average daily high temperature exceeds 31°C. The cool season lasts about 3 months, from mid-December to mid-March, during which the average daily high temperature remains below 29°C. Berbice's average annual rainfall is approximately 2088 mm. June is typically the wettest month, with approximately 303 mm of rainfall, while October is the driest month, with only 69 mm of rainfall.

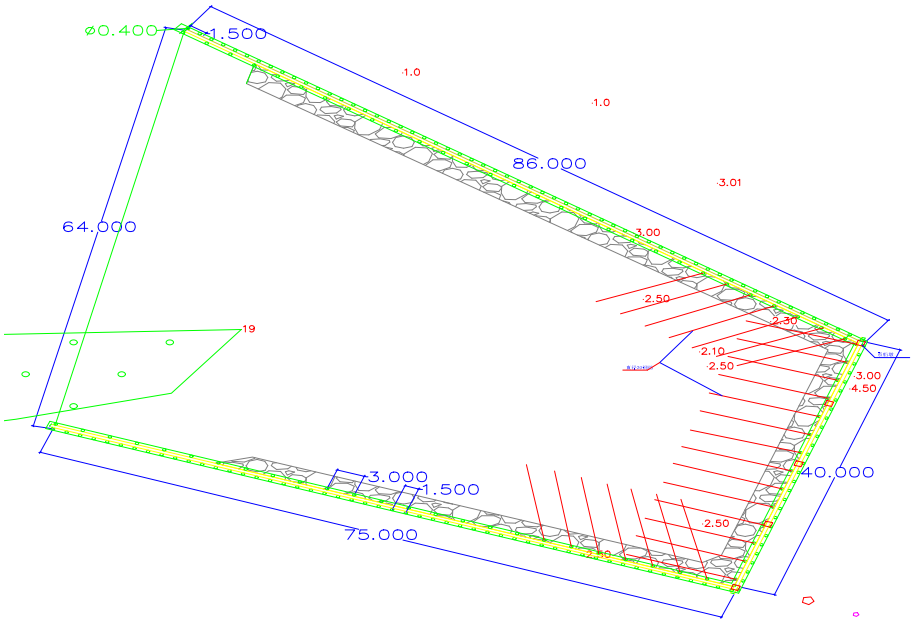
The proposed wharf is located on the Koby Rhine River, and is greatly affected by daily tidal changes, with a tidal range of 2-2.6 meters. Moreover, the water flow is faster and the waves are higher during high tide. The riverbank is covered with shrubs of varying heights year-round. During high tide, the coastline is flooded, and during low tide, the riverbed is exposed with deep silt.

III. Design Scheme

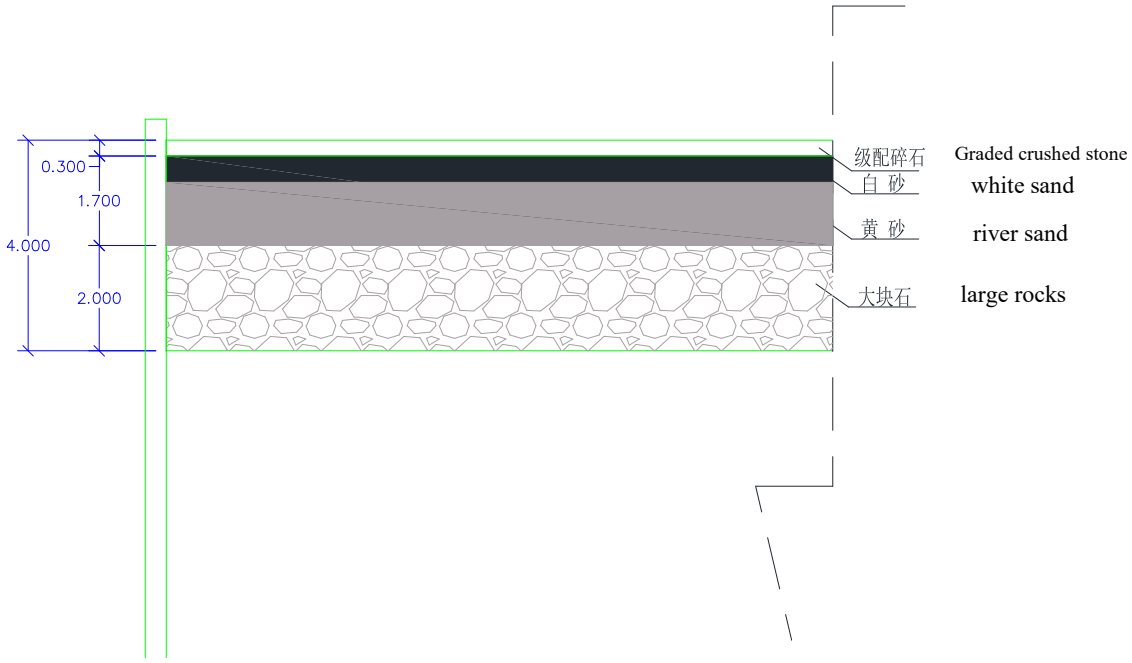
3.1 General Layout Plan of Construction Site



3.1-1 General Layout Plan of the Wharf



3.1-2 Wharf Plan



3.2-3 Proposed wharf cross-section drawing

3.2 Structural Design

Enclosure Structure: The new wharf building is designed as a parallelogram, with a berthing width of 40m and a length of 75-86m. The wharf is surrounded by double rows of wooden piles. 40cm green-heart wood are driven into the riverbed at 1.5m intervals on the outer side, and at 3m intervals on the inner side. The green-heart wood are then laid horizontally between the two rows, densely packed from bottom to top at the wharf's design elevation, forming a retaining structure.

Backfill material: Large stones with a height of 2m are filled within a 3-4m range inside the retaining structure. Geotextile for gravel and sand to be applied within behind some of the wooden piles. Adaptable materials are used for backfilling inside the wharf to ensure that the compaction degree meets the requirement of more than 95%.

Crown beam: A 120cm*50cm thick C25 reinforced concrete crown beam is installed on the top slab of the enclosure structure.

Dock platform: The top layer uses graded crushed stone, with a recommended thickness of 200mm-250mm.

Supporting facilities: Guardrails with a height of 1.2 meters are installed along both sides of the dock. The materials can be steel pipes or wood.

Mooring bollards: A mooring bollard is set per every 10 meters to secure the vessel.

Lighting facilities: Solar-powered lights will be installed along the edge of the wharf to ensure safety during nighttime use.

Access road construction: Applying 30cm of graded crushed stone pavement to the existing road.

Long-arm excavators were used to clear silt with a thickness of 2-3 meters within an extended range of 75-86 meters.

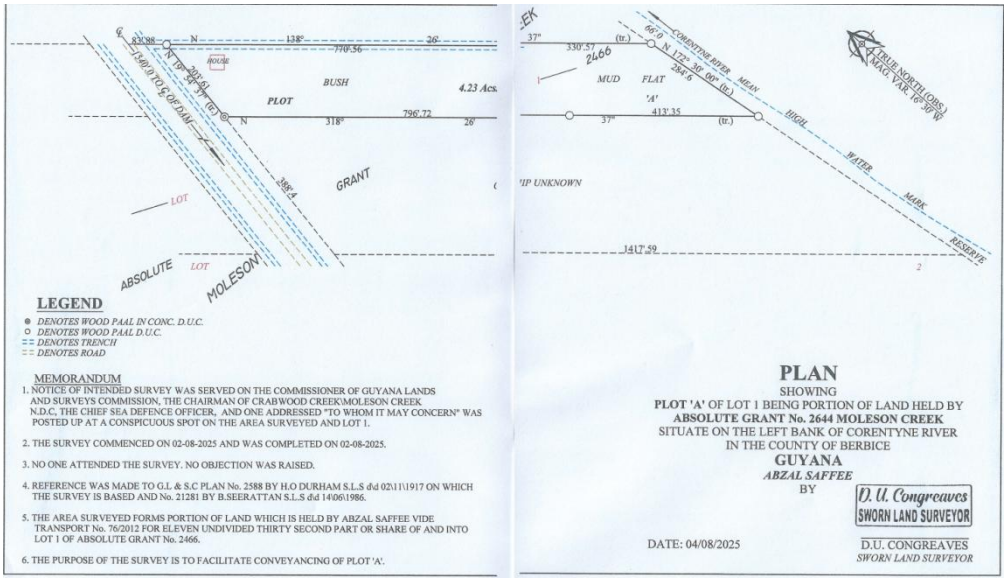
3.3 Main Engineering Materials

Serial Number	Material Name	Specifications and Models	unit	quantity	Unit price (in Guyana dollar)	Total price (Guyana dollar)	Remark
1	Green Heart Wood Stakes	φ400, length 65ft	No	315			
2	Geotextile		㎡	600			
3	Stone		t	1800			
4	white sand		t	3200			
5	gravel		t	1536			
6	Mooring pier		No	4			
7	Reinforcing steel		t	4			
8	concrete		m³	120			
9	Backfill (yellow sand)		m³	7680			
10	Solar lights	1000w	No	16	50000		
11	Graded crushed stone for access road		m³	600			
total							

IV. Construction Phase

4.1. Technical Preparation

Establish engineering survey control networks and leveling networks, and carry out topographic surveying and construction setting out work.



Surveying map

Prior to construction, a Guyana-registered surveyor was invited to survey and set out the terrain according to the landowner's land title map, and a survey control network and leveling network have been established .

4.2. Resource Preparation

Equipment preparation; determine the required quantities of main materials, precast components, etc., and select qualified suppliers for procurement; rent large-scale equipment required for construction, such as piling boats, 50-ton crawler cranes , and dump trucks , commissioning and maintaining the equipment.

4.2-1 List of Mechanical Equipment to be Used in this Project

Serial Number	mechanical equipment	Specifications and Models	unit	quantity	Remark
1	excavator	330	tower	1	Internal Price
2	crawler crane	50t	tower	1	hoisting piles
3	Long-arm excavator	245	tower	1	Cleaning up silt
4	Dump truck	rear eight wheels	tower	3	Internal Price, for transporting white sand and stones
5	Loader	Type 50	tower	1	Internal Price
6	pickup truck		tower	1	Internal Price
7	Vibratory roller	18 tons	tower	1	Internal Price
8	lifeboat	It can seat 6 people	tower	1	Purchase as per needs
total					

4.2-2 Small tools to be deployed

Serial Number	mechanical equipment	Specifications and Models	unit	quantity	Remark
1	electric welding machine	Type 400	tower	1	purchase
2	water pump	100mm	indivual	1	purchase
3	dynamo	15KW	tower	1	purchase
4	vibrator	Type 50	set	1	purchase
5	Rebar pliers		indivual	1	purchase
6	hammer	4 pounds	indivual	2	purchase
7	chainsaw		indivual	1	purchase
9	electric drill	With 90cm long drill rod	indivual	1	purchase
10	electric wire	20 square meters	rice	80	purchase
11	Safety Investment	15.%			
total					

4.3. On-site preparation

Temporary facilities such as temporary docks, construction platforms, and material storage areas shall be set up at the construction site; temporary office and living facilities shall be built; and relevant procedures such as waterway construction permits, waterway passage permits , and environmental impact assessments shall be processed .

Preliminary preparations include land acquisition, site clearing, and resource preparation (personnel, materials, and machinery).

Construction process;

Hydroacoustic measurement: Detailed measurements of the water area and bank slope are conducted to determine the pile driving depth and construction difficulty.

Material procurement: Procure wooden piles, geotextiles, large stones and other supporting materials according to design requirements.

Equipment arrival: Excavators, cranes, and other construction equipment. In cases of soft soil, some piles can be constructed using static pressure piling.

Installation of supporting facilities : installation of guardrails, mooring bollards, lighting facilities, etc.

V. Operational Phase Management

1. Each day, 1,500 tons load of gravel or white sand will arrive at wharf to unload.
2. Excavators and loaders to be used for unloading the materials in the storage area.
3. After the crushed stone or white sand stored for more than 15 days, 3-5 dump

trucks will transport the crushed stone or white sand to the construction area at irregular intervals.

4. The actual length of the extension line is 75-86 meters.

Public utility service sources: power is supplied by a 15KW diesel generator set, and drummed water is supplied for domestic use.

六、Wharf construction and operation caused Environmental impacts and mitigation measure

Environmental risks: Small cargo terminals mainly face issues such as construction dust, noise, and wastewater discharge during the construction phase; during the operation phase, they involve ship exhaust, dock equipment noise, and wastewater and solid waste treatment. Mitigation measures include dust and noise reduction and centralized wastewater treatment during construction, and the application of clean energy, improved wastewater treatment systems, and green transportation management during operation.

Environmental factors and mitigation measures during construction

- **Air pollution** : construction dust and vehicle exhaust.

  Mitigation measures : Sprinkle water to reduce dust, cover materials, and seal transport vehicles; prioritize the use of low-emission machinery.

- **Noise pollution** : pile driving, mechanical construction.

  Mitigation measures : Arrange construction time reasonably, set up sound barriers, and select low-noise equipment.

- **Water environment impact** : Construction wastewater and mud discharge may enter water bodies.

  Mitigation measures : Set up sedimentation tanks and treat wastewater centrally before discharging it into the sea to prevent it from flowing directly into the sea.

- **Solid waste** : construction waste, packaging materials.

  Mitigation measures : Collect by category, remove promptly, and recycle some items.

- **Ecological impact** : Shoreline modification may damage wetlands or aquatic ecosystems.

  Mitigation measures : Avoid sensitive areas and carry out ecological restoration and greening after construction.

⚓ Environmental factors and mitigation measures during operation

Air pollution : emissions from ship fuel exhaust (SO_2, NOx) and loading/unloading equipment.

Mitigation measures : Promote shore power facilities to reduce ship fuel consumption at port; adopt new energy sources or low-sulfur fuel oil equipment.

During construction, water should be sprayed on the construction area 2-3 times a day to reduce dust and manage air quality.

Water pollution : Ship sewage and rainwater runoff carrying oil pollution.

Mitigation measures : Construct a comprehensive sewage collection and treatment system, install grease traps, and separate rainwater and sewage.

Noise pollution : loading and unloading machinery and transport vehicles.

Mitigation measures : On-site dredgers and transport vehicles will undergo regular maintenance and repairs in the repair workshop. Low-noise transport vehicles will be used, and air filters, diesel filters, and oil filters of the machinery will be updated promptly. Construction hours are from 7:30 AM to 6:00 PM; no construction will be carried out outside these hours.

Solid waste management : packaging waste, ship debris.

Mitigation measures : Establish designated waste disposal areas and arrange for community waste collection vehicles to collect waste regularly.

Carbon emissions and energy consumption : Port operations have high energy consumption.

Mitigation measures : Adopt energy-saving lighting and intelligent dispatching systems, and promote carbon emission accounting and reduction measures.

Comprehensive measures

Green design : Incorporating environmental protection concepts during the planning stage to reduce the cost of later renovations.

Monitoring system : An environmental monitoring system must be established during both the construction and operation phases to track air, water quality, and noise levels in real time.

Policy and Management : Strictly enforce port environmental protection regulations, establish emergency response plans, and ensure that sudden pollution incidents are under control.

Public participation : Strengthen communication with the community, increase transparency, and reduce social resistance.