Early Works Construction Activities

COMPONENTS OF EARLY WORKS

1. MARINE FACILITIES
2. AIRFIELD
3. PIONEER CAMP
4. EARTHWORKS
5. IMPROVED ROADS
6. WATER SUPPLY
7. WASTEWATER PLANT AND WASTE TREATMENT
8. DREDGING
   Ship channels and dock fill
   Shore approach
9. WASTEWATER INJECTION WELL FIELD STUDY
10. GENERAL FACILITIES
    Customs/Immigration offices and bonded area
EARLY WORKS

WHAT IS THE “EARLY WORKS” CONSTRUCTION PHASE?

The initial phase of the Project is referred to as “Early Works”. During Early Works, site preparation activities will be undertaken to ensure necessary infrastructure is in place to enable the Project’s Construction Phase to commence.

Early Works will include the improvement of existing infrastructure such as roads, as well as the construction of early infrastructure required to support the commencement of construction on the LNG Park.

Early Works will expand on the activities started in the Afungi Site Improvement Phase and will consist of activities onshore and in Palma Bay.

EARLY WORKS TIMELINE

Early Works will commence only once the Environmental Impact Assessment (EIA) has been approved and the Ministry of Coordination of Environmental Affairs (MICOA) has granted the Project an Environmental Permit.

Early Works is anticipated to start in early 2014 and is likely to last 12-18 months.

MANAGING EARLY WORKS

The Engineering Procurement Construction Manager (EPCM) for the Early Works Phase of the Project will be responsible for the execution of the Early Works activities, under the guidance and oversight of the Project.

The EPCM will be responsible for the design of the various Early Works facilities (e.g. roads, Pioneer Camp, and marine facilities) as well as the management of contractors appointed to construct these facilities. The EPCM will also be responsible to ensure the Project’s Health, Safety, Security, Social and Environmental (HSSSE) requirements are adhered to by all the contractors and sub-contractors.

JOB OPPORTUNITIES DURING EARLY WORKS

The Project aims to maximize local content during Early Works by contracting Mozambican companies to undertake the works, and by encouraging and prioritizing local recruitment.

The Project has developed an Early Training Program in Afungi to assist local people to develop the basic skills required to be considered for employment during Early Works.

Through the Early Training Program, the Project has commenced the development of a pool of local people that are suitable and competent to qualify for labor opportunities arising during the Early Works Phase.

PIONEER CAMP

The Pioneer Camp will provide accommodation to Early Works construction and management personnel until the main permanent construction camp becomes operational. The Pioneer Camp is currently already operational and accommodates 100 people. It is expected that, by the end of 2013, it will have capacity to accommodate 260 people. During Early Works, the camp will be expanded in phases to eventually accommodate 850 people.

The camp will consist of accommodation, offices and administration facilities, a kitchen, a dining area and laundry, recreation facilities and a clinic.

The camp will also include all necessary support utilities such as electricity supply, telecommunications facilities, water treatment, sewage treatment and waste management facilities. The majority of the infrastructure will be modular, consisting of standardized units that can easily be assembled.

Local workforce at work

Recreational facility

Communication satellite

Installing modular unit

Radio mast
EARLY WORKS

MARINE FACILITIES

Due to poor road access to the Afungi site, delivery of consumables, equipment and materials necessary for the construction and operation of the LNG facility will primarily be by sea. Offshore natural gas development and marine operations will be supported from the Afungi site. To meet these logistics requirements, two marine facilities will be constructed during Early Works: A Pioneer Dock and a Multi-Purpose Dock.

These facilities will be located to utilize existing deep water channels in Palma Bay or the proximity to deeper water. The natural channels will likely need to be deepened and widened during Early Works to accommodate Project vessels.

MULTI-PURPOSE DOCK

The Multi-Purpose Dock (MPD) will be established to support the primary construction phase of the Project and will avoid transporting heavy, large or unwieldy loads by road. The MPD is anticipated to be approximately 600m wide, and extend 800m to 1,500m from the shoreline. It will be a multi-user port facility comprising areas with specific functions:

**Materials Offloading Facility (MOF)**

The MOF will be constructed first to allow ships and vessels to berth and offload materials and equipment.

**The Subsea Construction Areas and Docks**

These areas will take up most of the footprint of the MPD and will be used by the subsea contractor(s) developing the offshore natural gas fields to offload subsea infrastructure and as a port to support associated vessels.

**Marine Services Facility (MSF)**

The MSF will be located on the eastern side of the MPD and will be sheltered by a breakwater. This area will accommodate the marine harbour fleet consisting of escort tugs, line handlers, pilot boats and response boats and equipment. Refuelling of support vessels will occur within the protected breakwater area of the marine services facility.

PIONEER DOCK

The Pioneer Dock will be constructed to allow the import of heavy construction equipment and materials to the Afungi site via the sea. The equipment and materials are required for LNG site preparation as well as construction of the Multi-Purpose Dock.

The Pioneer Dock will be a solid-fill causeway. It will be located to the northwest of the Multi-Purpose Dock, and will extend approximately 1,000m from the northern shore of the Afungi Peninsula into the deeper waters of Palma Bay.

EARLY WORKS

EARTHWORKS

The areas proposed for Early Works facilities need to be demined of unexploded ordnance, and then cleared of vegetation and grubbed (roots and stumps removed). Vegetation clearance will comprise the clear cutting and removal of trees and plants (wooded and non-wooded) using heavy mechanized equipment. Vegetation clearance will be limited to the areas where vegetation could interfere with site activities. Clearing and grubbing activities will be supported by proper drainage and erosion control measures.

Grubbing will be undertaken to various depths below the ground surface as necessary.

Earthwork activities will serve to level and grade the site in the immediate area of Early Works facilities. Earthworks will include stockpiling of site topsoil and earthworks to achieve required site gradients.

Demining activities entail the detection and removal of landmines and other unexploded explosives from the ground.

How will the DUAT boundary be marked?

The 45km DUAT boundary will initially be marked by stakes and notices.

Fencing

All work and laydown areas will be securely fenced and gated. Large areas of earthworks will be temporarily fenced.
EARLY WORKS

AIRFIELD

The airfield will consist of two parallel runways: A pioneer airstrip known as the ‘aerodrome’ and a hard surface runway.

Pioneer Airstrip (Aerodrome)
An improved surface airstrip 1,600m long and 40m wide will be developed using material such as geocell.

The aerodrome will be used for fully loaded cargo planes as well as for the transfer of personnel to and from Afungi.

Infrastructure to support the airstrip will include a taxiway to a centrally located parking area on the eastern side of the airstrip, an operations building that will support the processing of passengers, and a maintenance building near the operations building. Helicopter operations will also be supported.

Hard Surface Runway
A hard surface runway 2,500m in length will be constructed parallel to the aerodrome. This runway will be designed to accommodate larger aircraft such as a Boeing 757.

EARLY WORKS

IMPROVED ROADS

A heavy-haul road will be constructed during Early Works to transport materials and equipment shipped into Palma Bay for construction activities. The heavy-haul road will connect the construction areas, such as the aerodrome and Pioneer Camp, to the marine facilities i.e. the Pioneer Dock and Multi-Purpose Dock. The road will be approximately 20km in length and will be able to handle two-way traffic.

Upgrades of existing roads will also be required during Early Works to improve access to the Project site as well as to improve transport networks within the site itself.

In addition, a new access road will be constructed outside of the DUAT from Palma – Afungi – Maganja to provide better access to the site, avoid impacts to populated areas, and provide better access to Maganja. This road will be approximately 40km and will be made available for use by the general public.
For more information, please visit www.mzlng.com.