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Bhasan Char

‘The Beacon of Hope’

Sustainable Eco-Friendly Development



Ashrayan-3 Project
Implemented by:
BANGLADESH NAVY



Bhasan Char

‘The Beacon of Hope’

Following the brutal atrocities faced at the hand of the Myanmar Military, nearly 1 million Myanmar Nationals fled to Bangladesh in 2017.

The Honourable Prime Minister Sheikh Hasina stood by the oppressed and assured them of a temporary living space until their return to Myanmar.

Thus, the island of Bhasan Char was chosen to be developed and provide a safe and transient accommodation for the Forcibly Displaced Myanmar Nationals (FDMNs).

Vision

The Government of Bangladesh (GoB) entrusted Bangladesh Navy to implement the Ashrayan-3 project.

MDM Architects was engaged as the onshore works consultant, with the aim of developing the island in a sustainable and eco-friendly manner.

HR Wallingford was tasked with designing the flood defence embankment and the offshore coastal protection measures.



Information

on Bhasan Char

Location: Hatia Upazila, Noakhali District

Area: 13,000 Acres (approx.)

The island measures approximately 7.5 km (North-South) and 6.5 km (East-West)

Navigational distances

- From Patenga Point Chattogram: 28 NM
- From Hatia: 13.2 NM
- From Sandwip: 4.5 NM
- From Noakhali: 21 NM
- From Jahajir Char: 11 NM



Infrastructure

In order to realise the Government's vision, MDM Architects took charge of planning the vast infrastructure work at Bhasan Char. As well as the overall master planning and project management, MDM Architects undertook the detailed design of the following elements.

- 1,440 cluster houses
- 120 cyclone shelters
- Administration buildings
- Accommodation and offices for UN, NGO's, INGO's & District Administration
- 2 x twenty-bed hospitals and 4 x community clinics
- 4 x warehouses for relief storage
- Bazaars
- Multi-faith prayer spaces
- Fire station
- Police station
- Road and Drainage networks
- 2 x helipads
- 2 MW power plant (1 MW solar PV plant and 1MW diesel generator)
- 500 MT fuel tank
- Lighthouse
- Bangladesh Navy forward base infrastructure
- Flood protection embankment and shore protection (designed by HR Wallingford)



Embankment

Flood protection embankment and coastal protection

The inhabitants and onshore infrastructure at Bhasan Char are protected by a 12.1 km long, 3m high embankment with integrated embankment drainage. Shore protection measures are also in place to protect against the short term environmental impacts. This includes a wave screen comprising a floating boom structure and gravel surcharge. The flood protection embankment and shore protection measures were designed by HR Wallingford.

A Flood Warning Monitoring Station (FWMS) monitors, stores and telemeters water levels, directional waves and current data, to the Bangladesh Navy Hydrographic & Oceanographic Centre (BNHOC). Real time tidal water levels are sent to five different stations, to initiate and manage relocation of inhabitants to the cyclone shelters.



Eco-friendly design features

- Each house and shelter station is powered predominantly by their individual solar PV systems and from the 1 MW solar plant
- Solar powered street lighting
- Solar powered submersible pumps used to draw groundwater
- Rainwater harvesting systems in each cluster house and shelter station
- 120 ponds serving as an alternate water source
- Biogas plants for waste management, fuel generation and natural fertiliser production
- Separate food waste collection bins in every cluster



SINGLE CLUSTER

MULTI-PURPOSE CYCLONE SHELTER:

- Total number of shelter per cluster = 1 nos
- Total families per shelter = 23 families
- Total persons per family = 4 persons
- Total persons for shelter per cluster = (1x23x4) persons = 92 persons

- FACILITIES:**
- OVERHEAD WATER TANK, RAIN WATER COLLECTION FILTRATION UNIT AND UNDERGROUND WATER TANK
 - SOLAR SUBMERSIBLE PUMP
 - SOLAR PANEL
 - RAIN WATER HARVESTING
 - CATTLE SHELTER

- NORMAL USAGES:**
- SCHOOLS
 - HOSPITAL/ HEALTH CLINICS
 - POLICE STATIONS &
 - GOVT. OFFICES



Cluster House

- Accommodation for 16 families
- Segregated male-female wash facilities:
4 bathrooms and 6 toilets
- Two communal kitchens per house with
burners powered by onsite generated biogas,
charcoal and LPG
- RCC frame construction with hollow blocks
- Roof made of steel truss and profile sheet
- Rainwater harvesting system
- Standalone solar system for lighting

Comfortable living

Hollow blocks have been purposely used for the masonry wall construction, instead of traditional bricks, to reduce heat gain inside the houses. A natural ventilation system was incorporated in the design, to minimise the effect of heat due to the use of profile sheets, thereby ensuring greater levels of comfort for the occupants.



Multipurpose Cyclone Shelters

- Four storied composite structure (RCC and structural steel)
- Floor area is 324.42 sqm
- Designed to withstand wind speeds up to 260 km/hr
- First floor plinth level elevated 4.3 metres from ground level
- Accommodation for 23 families and 1,000 people during emergencies
- Lightning protection system installed
- Rainwater harvesting and centralised water system
- Building powered by standalone solar system

The building is designed with a structural steel frame to achieve quicker construction. The cyclone shelter design includes an open air ground floor where community members can gather to socialise and host community events. They also contain an animal ramp to allow livestock access to the ground floor during emergencies.



Lighthouse

The lighthouse at Bhasan Char acts as a navigational marking point for all cargo and commercial vessels in the areas surrounding Chattogram, especially the inland routes from Chattogram to Dhaka, Khulna, Barishal etc.

The lighthouse is also a symbol of humanity and characterises the Honourable Prime Minister Sheikh Hasina's compassion shown towards the Forcibly Displaced Myanmar Nationals.

The steel tower designed is built to withstand high wind forces. Steel anchor bolts connect the tower to the reinforced concrete piles and the exterior is brick clad. The inward sloping octagonal tower tapers from nine metres diameter at its base to three metres at the top. A lightning arrester attached on top of a dome makes up the highest point of the lighthouse. Internal steel ladders provide access between floors and a walkway to the top, where a long range marine lantern visible from 14 NM is situated. The lighthouse beacon is powered by eight 100W solar PV panels.

The Bangladesh Navy Hydrographic and Oceanographic Centre (BNHOC) commissioned the lighthouse in November 2018, by issuing a 'Notice to Mariners' to marine communities.



Livelihood

One of the objectives of the Ashrayan-3 project is to develop an appropriate strategy for generating sustainable livelihoods and incomes for the Forcibly Displaced Myanmar Nationals.

The following livelihood measures and economic development opportunities are available at Bhasan Char:

- Agriculture (rice cultivation, vegetation etc.)
- Fish farming
- Poultry farming
- Cattle rearing
- Dairy production
- Production of handicrafts

