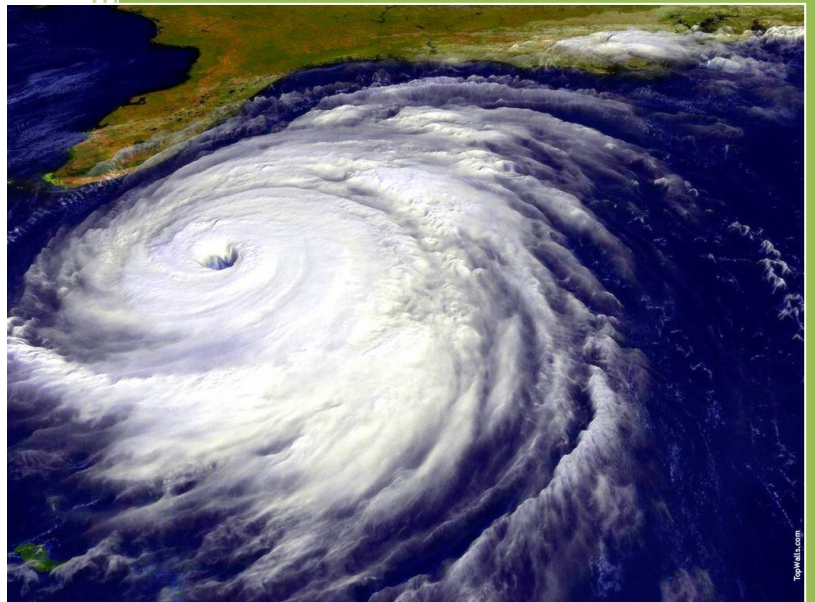


# **NATIONAL CYCLONE RISK MITIGATION PROJECT-PHASE II KERALA**

## **SITE SCREENING REPORT**



**District: Trivandrum**



## TABLE OF CONTENTS

Content	Page number
1.Introduction	4
1.1 Context	4
1.2 Objectives	4
1.3 Scope of work	4
2. Overview	5
3.Details of suitable sites	7
3.1 Identification number: NCRMP/KER/TVM/VAR/ OTTOOR-1	8
3.2 Identification number: NCRMP/KER/TVM/CHI/ CHIRAYINKEEZH-2	12
3.3 Identification number: NCRMP/KER/TVM/CHI/ AZHOOR-2	14
3.4 Identification number: NCRMP/KER/TVM/THI/ MUTTATHARA-1	17
3.5 Identification number: NCRMP/KER/TVM/THI/ MUTTATHARA-1	
4.Details of unsuitable site	20
4.1 Identification number: NCRMP/KER/TVM/CHI/ CHIRAYINKEEZH-2	21
4.2 Identification number: NCRMP/KER/TVM/CHI/ AZHOOR-1	22
4.3 Identification number: NCRMP/KER/TVM/NEY/ KULATHUR-1	23
4.4 Identification number: NCRMP/KER/TVM/NEY/ VIZHINJAM-1	24
4.5 Identification number: NCRMP/KER/TVM/NEY/ VIZHINJAM-2	25
5. Assessment	26
5.1 Assessment criteria	26
5.2 Ranking	27
5.3 Site Assessment	28

## 1. INTRODUCTION

### 1.1 Context

Preliminary assessment of suitable land (referred to as “sites” in this report) proposed from Thiruvananthapuram District administration, for construction of Multi-Purpose Cyclone Shelters (MPCS) under the National Cyclone Risk Mitigation Project-Phase II. The assessment was performed in sites proposed as per proforma submitted from Thiruvananthapuram District Administration.

### 1.2 Objectives

- Confirm site details such as titles description, site boundaries and area available for construction;
- Identify land use of the proposed site and the nearby areas;
- Assess the suitability of site for construction;
- Identify the environmental and social feature of the region;
- Document site history;
- Discuss with the officials and identify specific issues relevant to the site, if any;
- Mark the site using GPS for GIS based studies.

### 1.3 Scope of Works

- Review of documents with the District administration held on the land (Toposket ch, Field Map Plan, Basic Tax Register);
- Document locally obtained information about the site;
- Document photographs of the site;
- Assessment of the data and preparation of a draft report;
- Review of site screening report by SPIU.

## 2. SITE LOCATION AND DESCRIPTION

The District Administration suggested a total 10 site, in the prescribed proforma, for construction of Multi Purpose Cyclone shelters at various locations in Trivandrum District. The officers from State Project Implementation unit of NCRMP, Deputy Collector, Disaster Management, Tahsildars and Village Officers of concerned Taluk and Village Offices visited the sites. The details of the sites visited are as follows:

Sl no	Site Identification number	Taluk, Village, Place	Ownership
1	NCRMP/KER/TVM/THI/ MUTTATHARA-2	Thiruvananthapuram, Muttathara, Revenue land near sewage farm, Muttathara	Revenue
2	NCRMP/KER/TVM/CHI/ CHIRAYINKEEZH-2	Chirayinkeezh, Chirayinkeezh, Government School, Padanilom	Education
3	NCRMP/KER/TVM/THI/ MUTTATHARA-1	Thiruvananthapuram, Muttathara, Revenue land near sewage farm, Muttathara	Revenue
4	NCRMP/KER/TVM/CHI/ AZHOOR-2	Chirayinkeezh, Azhoor, Gandhi Smarakam land	Revenue*
5	NCRMP/KER/TVM/VAR/ OTTOOR-1	Varkala, Ottoor, Revenue land near Primary Health centre	Revenue
6	NCRMP/KER/TVM/CHI/ AZHOOR-1	Chirayinkeezh, Azhoor, Revenue land near clay mine	Revenue*
7	NCRMP/KER/TVM/NEY/ VIZHINJAM-1	Neyyatinkara, Vizhinjam, Land of Harbour	Harbour Engineering department

		Engineering Department	
8	NCRMP/KER/TVM/CHI/ CHIRAYINKEEZH-2	Chirayinkeezh, Chirayinkeezh, Revenue land near Tsunami Colony	Revenue
9	NCRMP/KER/TVM/NEY/ VIZHINJAM-2	Neyyatinkara, Vizhinjam, Revenue land near Police station	Revenue
10	NCRMP/KER/TVM/NEY/ KULATHUR-1	Neyyatinkara, Kulathur, Revenue land near Tsunami Colony	Revenue

### **3. DETAILS OF SELECTED SITE**

### 3.1 Identification number: NCRMP/KER/TVM/VAR/ OTTOOR-1

#### Site: Revenue land, Njekkad

Taluk: Varkala

Village: Ottoor

Block 19, Survey number: 4/1

Survey number: Block: 10, 582/11

Panchayth: Ottoor

Ownership: Revenue Department

#### Observations

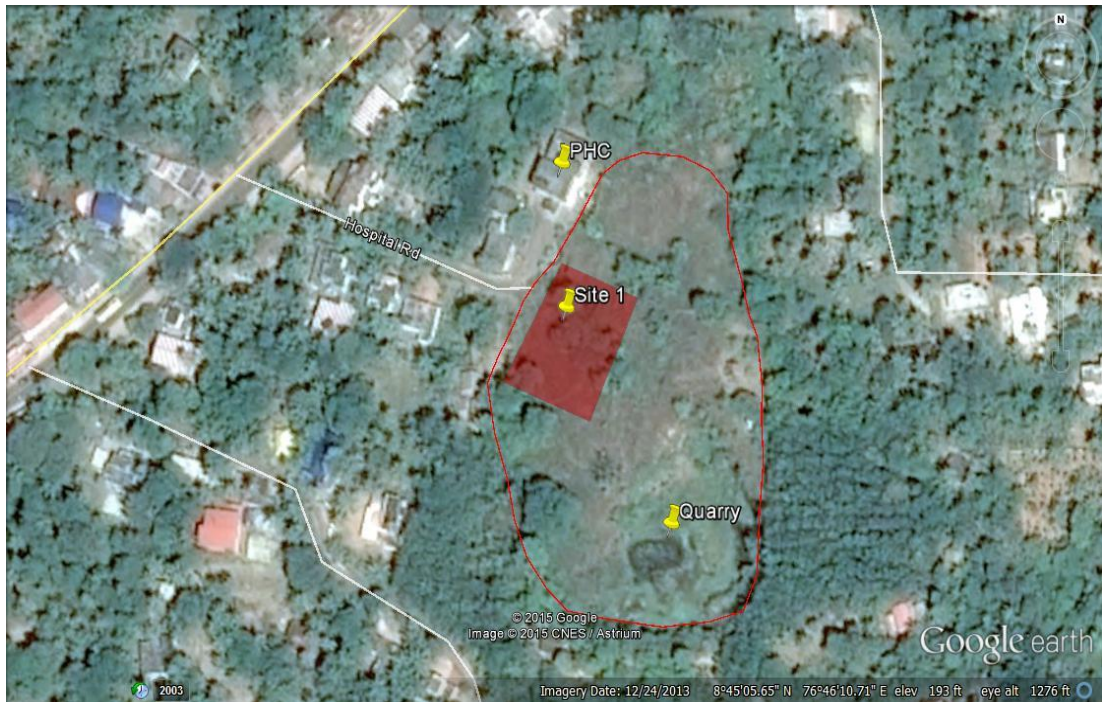
- The site is located near to Primary Health Centre, Ottoor and is accessible from Varkala-Kallambalam main road. A tarred approach road of 100m length and 4m ROW connects the site to main road.
- The proposed site is an uneven hill structure extending to a height of x m above the access road and surrounding terrain. A total area of 1 Ha 88 are and 15 sq.m is available as Revenue land. Some portion of this land was transferred to PHC. The remaining area that approximates to 1.47 Ha which is available for construction is not demarcated with definite boundary stones.
- To the south west of the total proposed area encroachment were observed and to the west of the site a public well was noted.
- Presence of rocks and boulders can be seen in the site. Large trees, shrubs and tall grasses can be seen. A full-fledged transect walk could not be performed as presence of extensive vegetation cover 2 m height made it inaccessible in most of the areas.
- At the topmost part of the hilly site, one encroachment was observed. The house is inhabited by an old lady currently.



- Towards the South side of the site, Njekkad Quarry which was operational about 20 years back can be seen. The quarry is presently is inactive and has become waterfilled over time.
- Towards the east of the site and near to the quarry, rubber plantations were seen. The Rubber plantations are of private ownership of inhabitants settled adjacent to the quarry.
- Relief camps have been operated in nearby villages of Vetoor, Varkala, Cheruniyoor villages in recent years. Tsunami Warning system exists in these villages.
- The site is 6.5km away from the coastline and 3.5km and 6 km from Anchuthengu lake and Varkala-Hariharapuram lake.

### Assessment

- The site has to be demarcated showing the exact boundaries of the site. Taluk Surveyor may be addressed to demarcate the exact boundaries and properties in the proposed site and demarcated a plot for MPCS.
- A plot of 30-60 cents may be demarcated for construction of MPCS. An ideal plot would be that near to the already existing encroachment area and PHC. The plot has to be selected in such a manner to make provision for future road developments and with minimum land development costs avoiding blasting of rocks.
- The proposed site is an irregular hilly area, hence the land will have to be prepared and brought to the level of the existing road to facilitate construction and accessibility to the site. However, the presence of Quarry and small rocks/boulders in the site indicate the presence of rocks beneath the land, which may have to be blasted for making the land suitable for construction. In such case, the possibility and risks involved in blasting has to be considered. A contour map of the site has to be prepared prior to planning site preparation activities.
- The settlement in the site will have to be relocated with the involvement of District administration.
- Only after earmarking the exact area for construction can the need and number of trees to be felled be accessed.
- **The site is suitable for construction of MPCS**



**1. Aerial view of the site (The outlined area is the proposed site)**

1. View of the site. Approach road to site and PHC can be seen



2. Top portion of the site. Rocks and hilly terrain of the plot seen



3 and 4. View of the sit. Thick cover of vegetation and scattered trees can be seen



### **3.2 Identification number: NCRMP/KER/TVM/CHI/CHIRAYINKEEZH-2**

**Site: Government School, Padanilom**

Taluk: Chirayinkeezh

Village: Sarkara-Chirayinkeezh

Block: 12, Survey number: 322/13, Survey number: Block: 10, 582/11

Ownership: Education Department

#### **Observations**

- The proposed site is within the premises of Government LP school, Padanilam. A dilapidated disaster shelter and separate toilet exists in the proposed site. Demolition of the dilapidated shelter and toilet will have to be done to facilitate construction. Approximately 15 cents of land will be available for construction after demolition
- The proposed site is accessible from the roads on the east and west side of the site. The school and allied buildings exist on the west side of the proposed site.
- The school premises and site is separated from adjacent private land holdings by boundary walls.
- The school is 107 yrs old and currently has 55 students.
- The site is 1km away from the coastline
- The site was reported to be in the ownership of GOVT LP school, Padanilom but upon verification of the Basic Tax Register, it was observed that the Thandaper no 4864 is of private ownership. (Rajeev, Son of Surendran, Padanilom veddu, Chirayinkeezh Desom)

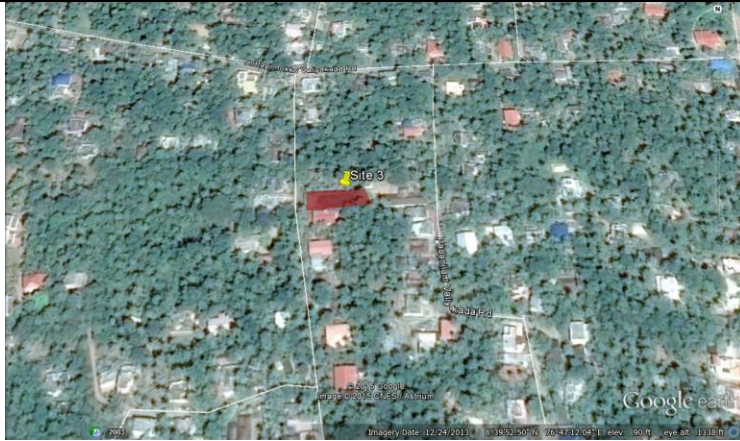
#### **Assessment**

- The dilapidated shelter and toilet has to be demolished to facilitate new construction. Sanction for demolition has to be obtained. The dilapidated structure constructed during 1980s is unsafe
- Necessary procedures to change the status of ownership of land have to be done. The village authorities are of the opinion that it can be easily done.

- **The site is suitable for construction of MPCs**

*State Project Implementation Unit*

1. View of the dilapidated shelter in the site



2. View of dilapidated shelter and Toilet



3. View of the school campus



4. View of site from access road



### 3.3 Identification number: NCRMP/KER/TVM/CHI/AZHOOR-2

#### Site: Gandhi Smarakom land

Taluk: Chirayinkeezh

Village: Azhoor

Block: Survey number: 214/5,6,7,9,

Ownership: Revenue Department

#### Observations

- The proposed site falls in the land under the ownership of Gandhi Smarakam and Government. Exact dimensions of site for MPCs are not demarcated.
- Block no 14, Survey no: 214/5,6,7,9 was proposed. On verification of the Basic Tax Register and Field Map Plan, the status of the land is as follows:
  1. 214/5: Ownership with Gandhi Smaraka Nidhi
  2. 214/6: Ownership with Government
  3. 214/7- Road
  4. 214/9: Leased to Gandhi Smarakam
- Gandhi Smarakam reading room, dilapidated buildings were seen in the land
- A transect walk could not be done in the proposed site as it was inaccessible at many points.
- The site is accessible from Azhoor-Sastahvattom road
- It is understood that a court case regarding possession of land is prevalent in the High Court
- The site is 5 km away from coastline.

#### Assessment

- The exact extent of the land available for construction of MPCs is not known. Taluk survey may be addressed to demarcate the extent of total land and demarcate 30-50 cents of land near to existing road may be demarcated.

*State Project Implementation Unit*

- Clarification on the legal status of ownership of land has to be made from District administration
- Only after demarcating the plot for MPCS, can the need for demolition and felling trees be accessed.
- **The site is suitable for construction of MPCS**

**1. Aerial view of the site 2 View of the site (Dilapidated buildings can be seen)**



**3.View of access roads**



**5. View from access road**





### 3.4 Identification number: NCRMP/KER/TVM/THI/ MUTTATHARA-1

#### Site: Revenue land near Sewage farm

Taluk: Thiruvananthapuram

Village: Muttathara

Block 3, Survey number 2798

Ownership: Revenue Department

#### Observations

- The proposed site is near to densely populated the fisherman area in Bheemappally, Valiyatura area
- The site is bordered as follows:
  - North: by-road to fishermen area of Valiyathura
  - East: Sewage farm road
  - South: Sewage farm employee quarters
  - West: Private house
- The site has boundary wall and a gate. A transformer is situated near to the gate.
- A dilapidated vehicle parking shed and water tank exists in the site.
- Coconut trees and Acacia needs to be felled for site clearance
- Air force area, Airport, Sewage farm and Sewage treatment plant are all to the north of the site and within 5km distance from the site.
- Mosques are at 2km radius of the site.
- The site falls in CRZ and is subject to Town Planning regulations existing in Corporation area
- Approximately 35 cents of land is also available at a distance of 350 m from the site which is under the ownership of Revenue department. This land is used by Sewage Authority.

#### Assessment

- **The land is suitable for construction of MPCS**

*State Project Implementation Unit*



1. View of the site from Approach road



2. View of approach road

### 3.4 Identification number: NCRMP/KER/TVM/THI/ MUTTATHARA-2

#### Site: Site for survey school, Muttathara

Taluk: Thiruvananthapuram

Village: Muttathara

Survey number: not available

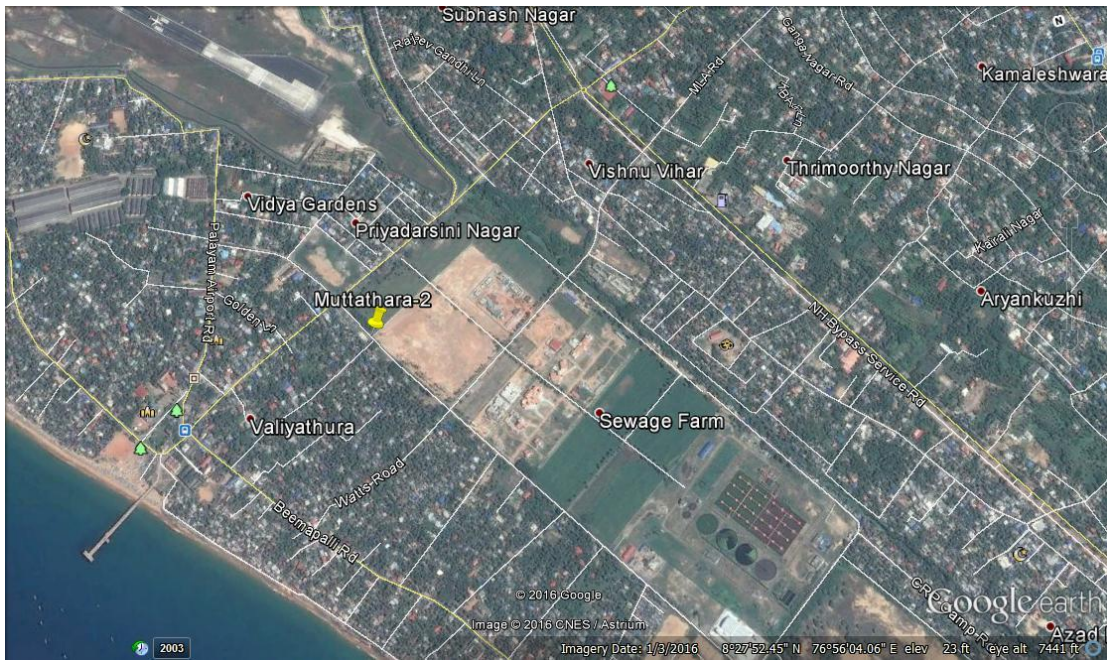
Ownership: Revenue Department

#### Observations

- The proposed site is near to densely populated the fisherman area in Bheemappally, Valiyatura area
- The site is bordered as follows:
  - The site has boundary wall and an entry gate.
  - A dilapidated vehicle parking shed and water tank exists in the site.
  - Marshy area and wetland area.
  - Sotes gets water logged during monsoon.
  - Public objection in carrying out construction works of any nature was noticed.
  - Air force area, Airport, Sewage farm and Sewage treatment plant are all to the east of the site and within 10km distance from the site.
  - Mosques are at 4km radius of the site.
  - Another site (Identification number: NCRMP/KER/TVM/THI/ MUTTATHARA-1) proposed from district administration is located with 1 km from this site

#### Assessment

- **The land may be recommended for construction of MPCS .**



Aerial view of the site

#### **4. DETAILS OF UNSUITABLE SITE**

#### 4.1 Identification number: NCRMP/KER/TVM/CHI/CHIRAYINKEEZH-2

**Site:** Revenue land near Tsunami Colony, AP Thope

Taluk: Chirayinkeezh

Village: Sarkara-Chirayinkeezh

Block 12, Survey no: 726/7 and 10

Ownership: Revenue Department **Observations**

- The proposed site is located on the backwater island of Chirayinkeezh taluk and is within the premises of Tsunami Rehabilitation Colony.
- Approximately 30 cents of land is available for construction.
- A shelter built under TRP already exists in the colony. This shelter is located within 10m distance from the proposed site. The shelter was built recently and is in good condition. At present it appears that there is no arrangement to maintain this. This aspect may be looked into otherwise this structure will have the same fate of disaster shelters constructed during the early 80s.
- Backwaters border the proposed site on the north.
- It was informed that the site gets inundated to a distance of approximately 30m during monsoon. The houses to the immediate south of the proposed site get flooded to a height of 1-1.5m.
- The proposed site is in the 50m setback area of backwaters and is in CRZ III category.
- The roads leading to the site is narrow and is flood prone.

#### **Assessment**

- The proposed site gets naturally flooded by the backwaters during monsoon. Any structure in this site would be at risk to flooding from backwaters and would obstruct the tidal action towards landward side of the backwaters island.
- Since the site is within 50m from the backwaters the site is highly flood prone. Such extreme proximity of the site to the backwaters makes it unsuitable for construction.
- The existing shelter near to the proposed site is in good condition. Hence construction of a new shelter in close proximity to the existing shelter cannot be justified.
- **The site may not be considered for construction of MPCS**

#### 4.2 Identification number: NCRMP/KER/TVM/CHI/AZHOOR-1

Site: Clay mine land, Azhoor

Taluk: Chirayinkeezh

Village: Azhoor

Block:14, Survey number: 439/1

Ownership: Revenue Department

#### Observations

- The proposed site is located in 6 Ha 48 ares extent land. The exact plot for construction of MPCS was not demarcated in the proposal.
- The site is away from main road and has limited access.
- The land was leased for Standard Clay Mines for mining clay. The quarry remains inactive at present. The quarry has become water filled over time.
- This land was also proposed for : Bhavanam Foundation, (Govt undertaking, TC 13/287/1), Mulavang Jn, Kunnukuzhi, Trivandrum-3, tel; 04712446632) , RTO , Chirayinkeezh and Zero landless project. However, information on the extent of land proposed and status of these proposals is not known to the Village authorities.
- Clay mines of private ownership are functioning near to the proposed land.
- Relief camps have been operated in various places of the village in recent past.

#### Assessment

- The exact plot for construction of MPCS is not demarcated. Taluk Surveyor will have to be addressed to survey the proposed land and demarcate 30-50 cents of land for construction of MPCS, which will have road access from main road.
- Since many proposals stands in the proposed site, the extent of land actually available for construction has to be demarcated. A shelter in this area will remain isolated due to poor road connectivity.
- **The site is not suitable for construction of MPCS**

#### **4.3 Identification number: NCRMP/KER/TVM/NEY/ KULATHUR-1**

Site: Neyyatinkara, Kulathur, Revenue land near Tsunami Colony

Taluk: Neyyatinkara

Village: Kulathoor

Block 46, Survey number: 286/26,53

Ownership: Revenue Department

#### **Observations**

- The proposed site is within the tsunami colony
- Only 5 cents of land is available for construction
- Site is 700m from the coastline. Not CRZ area

#### **Assessment**

- The area available for construction of MPCS is not adequate
- **The site is not suitable for construction of MPCS**



**4.4 Identification number: NCRMP/KER/TVM/NEY/ VIZHINJAM-1**

**Site:** Land of Harbour Engineering Department

Taluk: Neyattinkara

Village: Vizhinjam

Block: 12, Survey number: 77/12, 77/11

Ownership: Harbour Engineering department

**Observations**

- The proposed site is near Vizhinjam Harbour and to the backside of Coastal police station
- The site is barren land and has boundary on three sides
- Infrastructure that borders site:
  - North: Road, Private houses
  - East: road, water storage tank residential area, church
  - South: Coastal police station, Harbour, Arabian sea
  - West: Road, Harbour premises, Mosques, Residential area
- The site is proximate to the vulnerable fisherman population
- The site falls in CRZ II category and is subject to town planning regulations existing in Corporation area
- There is a probability that the land acquisition for Vizhinjam International seaport project is prevailing on the site. Consent from Harbour Engineering Department is required to confirm the availability of site. The district administration has officially requested Harbour Engineering department for consent and availability of site

**Assessment**

- The site is not suitable for construction of MPCS

**4.5 Identification number:** NCRMP/KER/TVM/NEY/VIZHINJAM-2

**Site 5: Opposite Vizhinjam Police station**

**Taluk:** Neyyatinkara

**Village:** Vizhinjam

Block 14, Survey number: 169

Ownership: Government [Corporation]

#### **Observations**

- The proposed site is on the premises on old Government school
- Two buildings already exists in the site where trainings are conducted
- Site boundaries
  
- North: Buildings, Residential area
- East : Buildings, Residential area
- South: Road, Police station across the road
- West : Buildings, Vizhinjam Junction
- No more space available for construction

#### **Assessment**

- **The site is not suitable for construction of MPCS**

## 5. ASSESSMENT

### 5.1 Assessment criteria

The following criteria were considered in assessing the suitability of proposed site for construction of MPCs:

1. **Necessity for MPCs:** Aspects such as vulnerable population near to the proposed site, Availability of shelters within 1km radius of the site, Capacity and condition of such shelters, Population that will have access to the MPCs during an event of emergency, History of relief camps in the area etc were considered.
2. **Area available for construction:** Sites which have atleast 15 cents of land were considered. The effective area available for construction after provision for setbacks applicable as per Building rules was only taken into consideration.
3. **Proximity to sea:** Sites within 10km distance from coastline were only considered. Those sites which fall beyond 500m from High Tide Line were preferred. The sites within 200m from the coastline were not preferred and sites that do not require CRZ clearance were given priority.
4. **Accessibility to basic amenities:** The accessibility of site from nearby main roads, proximity of site to water supply, power, sewer etc were considered in selecting the site.
5. **Ownership of land:** Land in possession with Revenue Department was preferred to that in possession with Education Department, Fisheries Department, Local Self Government Department and others.
6. **Foundation cost:** Terrain of land, bearing capacity of soil on visual observation, drainage pattern in the region, maximum flood line etc was considered.
7. **Requirement for demolition:** Sites that did not require any demolition to facilitate construction of MPCs were given priority. However, in sites that required demolition, the state of existing building, ownership of the building etc were taken into account.
8. **Clearances required for social/archaeological/environmental issues:** Sites adjacent to archaeologically, religiously important structures were avoided. Sites with issues of Illegal

tenants and any social concerns particular to the region were also avoided. Sites close to water bodies/Environmentally sensitive regions were not preferred.

- 9. Legal issues:** Sites with legal issues regarding ownership, extent and boundaries of land and sites committed and finalized for other project etc were given less priority in the assessment.

## **5.2: Ranking**

Each criterion was given a score depending on the importance of the criteria in screening the sites. Depending on the scores, the sites were categorized into three categories:

1. Rank 1: Score: 71-100: Highly recommended for construction of MPCS
2. Rank 2: Score: 41-70: Recommended for construction of MPCS
3. Rank 3: Score: below 40: May not be considered for construction of MPCS

## 5.3 Site assessment

Site Details			Assessment criteria										
			Necessity for MPCs	Area available for construction	Proximity to sea/Water bodies	Foundation cost	Accessibility to transportation and basic amenities	Ownership of land	Clearances required for social/archaeological/environmental issues	Requirement for demolition	Legal issues	TOTAL SCORE	RANK
Site Identification number	Place	Score	15	15	15	15	10	10	10	5	5	100	
1	NCRMP/KER/TVM/THI/MUTTATHARA-2 Revenue land near sewage farm, Muttathara	13	10	8	5	8	8	7	3	3	65	2	
2	NCRMP/KER/TVM/CHI/CHIRAYINKEEZH-2 Government School, Padanilom	10	8	10	9	8	5	8	3	3	64	2	
3	NCRMP/KER/TVM/THI/MUTTATHARA-1 Revenue land near sewage farm, Muttathara	13	7	8	5	8	9	8	3	3	64	2	

4	NCRMP/KER/TVM/CHI/ AZHOOR-2	Gandhi Smarakam land	8	10	10	9	7	4	4	3	0	55	2
5	NCRMP/KER/TVM/VAR/ OTTOOR-1	Revenue land near Primary Health centre	10	6	8	7	6	7	2	3	4	53	2
6	NCRMP/KER/TVM/CHI/ AZHOOR-1	Revenue land near clay mine	5	7	5	4	4	5	5	3	2	40	3
7	NCRMP/KER/TVM/NEY/ VIZHINJAM-1	Land of Harbour Engineering Department	4	6	2	2	5	4	2	3	3	31	3
8	NCRMP/KER/TVM/CHI/ CHIRAYINKEEZH-2	Revenue land near Tsunami Colony	2	2	0	1	4	7	2	3	4	25	3
9	NCRMP/KER/TVM/NEY/ VIZHINJAM-2	Revenue land near Police station	4	2	2	2	5	4	2	1	2	24	3
10	NCRMP/KER/TVM/NEY/ KULATHUR-1	Revenue land near Tsunami Colony	1	0	-	4	4	6	2	3	3	23	3

---

<b>Total score</b>	<b>Rank</b>	<b>Status of recommendation</b>
Between 71-100	1	Highly Recommended
Between 41-70	2	Recommended
Below 40	3	May not be recommended