



**VISAKHAPATNAM PORT AUTHORITY  
CIVIL ENGINEERING DEPARTMENT / ESTATE DIVISION**

**NOTICE INVITING FOR EXPRESSION OF INTEREST**

1. Organisation : VISAKHAPATNAM PORT AUTHORITY
2. Department : Chief Engineer / VPA, Civil Engineering
3. Notice Inviting for E.O.I. Number : IENG/AE(Estate)/Mulakuddu/2023 Dt. 02-08-2023
4. Name of Work : Expression of Interest (E.O.I) from the interested parties for "Development of 288.12 Acres of VPA's river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities(Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership".
5. Bid documents downloading start date : 03 - 08- 2023
6. Date of site inspection, if required by the interested parties : 09 - 08 - 2023
7. Pre- EOI Conference : 10 - 08 - 2023
8. Last date for Seeking clarification : 14 - 08 - 2023
9. Last date and Time for Submission of EOI : 25 - 08 - 2023  
at 14.00 Hours
10. For the complete EOI document, please visit : <http://www.vizagport.com>
11. Address : Chief Engineer,  
AOB 3<sup>rd</sup> Floor  
Visakhapatnam Port Authority  
Visakhapatnam -530 035  
E- mail: [cevizagport@gmail.com](mailto:cevizagport@gmail.com)  
[estatevpt@gmail.com](mailto:estatevpt@gmail.com)

**CHIEF ENGINEER (i/c)**

Copy to: Jt. Director (R&P) along with complete bid document in Soft copy form to display in the V.P.A. Web site on **03-08-2023** and kept up to **25-08-2023** up to 14.00 Hrs

Copy to: FA & CAO / T.M. / Nodal Officer, IT / C.V.O. - for information please.

Copy to: Dy. Director (EDP) for information.

Copy to: Notice Board / O.S. to arrange display the tender notice on the notice board.

Copy to: SE - III / DY. E.M / Sr. A.E.M - for information and necessary action.

Copy to: AE (Estate / planning)

Copy to: The Chief Engineer, All Major Ports, through Fax.

VISAKHAPATNAM PORT AUTHORITY  
ENGINEERING DEPARTMENT

## Invitation of

Expression of Interest (E.O.I) from the interested parties for “Development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities(Commercial /Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership”.

E.O.I No. IENG/AE(Estate)/Mulakuddu/2023 Dt. 02 – 08 – 2023

**VISAKHAPATNAM PORT AUTHORITY**  
**ENGINEERING DEPARTMENT**

Invitation of Expression of Interest (E.O.I) from the interested parties for “Development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities (Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership”.

**INSTRUCTIONS TO BIDDERS & GENERAL CONDITIONS**

**1.0 Background:**

Site for the proposed Satellite Port at Bheemunipatnam is in the estuary of River Gosthani, located around Latitude 17° 54' N and Longitude 83° 28' E, on the East Coast of India about 31 km North of the existing major Port of Visakhapatnam. The coastline is oriented towards NE-SW direction. The proposed site of the satellite port and fishery harbour falls near the island formed by the river Gosthani. VPT has the right to land area of approximate 290 acres for the port development out of which approximate 170 acres of land is allocated on the banks of River Gosthani while the rest 120 acres of appropriate land for development shall be identified. The site identified for port development is approximately 500 m away from the shoreline and 1600 m from 10 m contour in Bay of Bengal.

**2.0 Project Brief:**

As a part of Asset Monetization, Visakhapatnam Port Authority (VPA) intends to invite Expression of Interests (EOI) and to make use of the land measuring 288.12 Acres area by providing multiuse facilities including providing infrastructure facilities(Commercial/Tourism) and operation & maintenance for a period of 30 (Thirty) years on public private partnership basis

It is envisaged that the development of river bed area with above mentioned facilities in the land measuring 288.12 Acres in at Mulakuddu village, Bheemili mandal in Zone Z-10. VPA may organize a pre-EOI conference on **10-08-2023** on “Expression of Interest (E.O.I) from the interested parties for development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities including providing infrastructure facilities, operation & maintenance on Public Private Partnership”.

**3.0 Expression of Interest (EOI):**

Through this Expression of Interest (EOI), Visakhapatnam Port Authority intends to seek information from interested parties or entities or group of individuals and/ or entities (the “Application”) and power of attorney holder/s for the area situated at Mulakuddu village, in Zone Z-10 near Bheemili Mandal as how to develop the area by providing multiuse facilities including providing infrastructure facilities, operation & maintenance on Public Private Partnership.

#### 4.0 Conditions of Eligibility of Applicants:

4.1 VPA would welcome response to the EOI from:

- Real Estate Developers
- Logistics service provider
- Transport Agencies
- PPP Operators

#### 4.2 How to Respond:

(a) The response to EOI shall be enclosed in a separate sealed envelope and shall be marked as **“Expression of Interest (E.O.I) from the interested parties for Development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities (Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership”**.

(b) The EOI should be submitted in the format given at **Appendix-I**. The proposal should be accompanied with a statement of relevant financial information pertaining to the audited annual accounts of the respondent for the last three years.

(c) All the pages of the EOI and Annexure should be signed and the authorized signatory should countersign corrections and over writings.

(d) Any item of letter of response, which is not applicable to the respondent, should be written as Not Applicable.

(e) In case the respondent intends to give additional information for which specified space in the given format is not sufficient, it may be furnished in a separate sheet. Such information is to be given only if it is salient and directly pertinent to the EOI.

#### 5.0 Number of Applications

There is no restriction on the number of Applications. An Applicant as individuals or as an associate can submit applications. However, there shall be no overlap in the same Land through different Applications.

#### 6.0 Due diligence by Applicants

Applicants are encouraged to inform themselves fully about **Expression of Interest (E.O.I) from the interested parties for Development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities(Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership** before submitting the Application and may download from the VPA website from link <https://vizagport.com/tenders/civil-engineering-department/>

#### 7.0 How to download the EOI Document:

The EOI can be downloaded from VPA website <https://vizagport.com> from **03.08.2023** to **25.08.2023**.

**8.0 Pre-proposal Conference:**

A pre-proposal meeting shall be held on **10.08.2023** at 11.30 AM in the C.E's Conference Hall, 3<sup>rd</sup> floor, AOB, Visakhapatnam Port Authority, Visakhapatnam - 530 035, with the intending participants.

**9.0 Validity of the Application:**

The Application must remain valid for a period of not less than 120 days after the Application Due Date (the "ADD"). The Authority will endeavour to complete the scrutiny and evaluation of the received Applications and select the suitable(s) within this period.

**10. Language:**

The Application with all accompanying documents (the "Documents") and all communications in relation to or concerning the Selection Process shall be in English or Assamese language and strictly on the forms provided in this EOI Document. No supporting document or printed literature shall be submitted with the Application unless specifically asked for and in case any of these Documents is in another language, it must be accompanied by an accurate translation of all the relevant passages in either Assamese or English, in which case, for all purposes of interpretation of the application, the translation in Assamese or English shall prevail.

**11. Brief Description of the Selection Process**

This is an expression of interest for demand assessment and not an invitation to bid.

**12. The short-listing:**

The EOI should be submitted in the format given at **Appendix-I**. The proposal should be accompanied with a statement of relevant financial information pertaining to the audited annual accounts of the respondent for the last three years.

**13. Role and responsibility of VPA:**

(a) VPA reserves the right to cross check and confirm the information/details furnished by the respondents in response to this EOI.

(b) VPA reserves the right to use information received in the replies to EOI for further development of the project. Mere fact of responding to the EOI, however, shall not confer any right on the parties to preferential treatment at the subsequent bid / development stage.

**14. Role and responsibility of participants in the EOI:** Fulfilling the eligibility criteria like Net worth, Turnover for the last 3 financial years.

**15. Final Role and responsibility VPA and PPP operator**

S.No	Description	Proposal	Role of the Party
------	-------------	----------	-------------------

1.	Periodicity	30 Years	
2.	Bidding parameters	<ul style="list-style-type: none"> <li>➤ Revenue share</li> <li>➤ Annual Cash payment(Land lease rentals)</li> </ul>	
3.	Proposed model PPP	<b>Visakhapatnam Port Authority</b>	<ul style="list-style-type: none"> <li>➤ VPA would be providing the land and would do basic development of land including clearing, levelling and would also provide basic infrastructure such as boundary wall, internal road connectivity etc.,</li> </ul>
		<b>PPP operator</b>	<ul style="list-style-type: none"> <li>➤ Receives land from VPA and pays annual lease rentals.</li> <li>➤ Receives Revenue for the operations the facilities and Share Revenue at certain %</li> <li>➤ Providing multiuse facilities including providing infrastructure facilities, Electrical and Electronic works, green belt etc.,</li> </ul>

#### 16. Confidentiality:

Information relating to the examination, clarification, evaluation, and recommendation for the selection of applicants shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional adviser advising the Authority in relation to matters arising out of, or concerning the Selection Process. The Authority shall treat all information, submitted as part of the Application, in confidence and shall require all those who have access to such material to treat the same in confidence. The Authority may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or to enforce or assert any right or privilege of the statutory entity and/or the Authority or as may be required by law or in connection with any legal process.

#### 17. Schedule of Selection Process:

Download of EOI Document Start Date	<b>02.08.2023</b>
Last Date for Receiving Queries/Clarifications	<b>14.08.2023</b>
Pre-EOI Conference	<b>10.08.2023 at 11.30 hrs. at the C.E's Conference Hall, 3<sup>rd</sup> floor, AOB, Visakhapatnam Port Authority, Visakhapatnam-530 035</b>
Last Date of submission	<b>25.08.2023 till 14.00 hrs.</b>
Validity of Applications	<b>120 days</b>

**18. Communications:**

Interested parties should send the proposal to:

**Chief Engineer,**

**AOB 3<sup>rd</sup> Floor,**

**Visakhapatnam Port Authority**

**Visakhapatnam – 530 035**

**e-mail: [cevizagport@gmail.com](mailto:cevizagport@gmail.com) or [estatevpt@gmail.com](mailto:estatevpt@gmail.com)**

**19. Amendment:**

VPA may modify the EOI by issuing an addendum before last date of submission of the Application. Any addendum thus issued shall be part of EOI and shall be posted on the website. Participants desirous of getting notified of such corrigendum/addendum through email may send such request through email to [cevizagport@gmail.com](mailto:cevizagport@gmail.com) or [estatevpt@gmail.com](mailto:estatevpt@gmail.com).

To give respondents reasonable time in which to take addendum into account in preparing their Applications, VPA may extend the last date of submission of response.

**20. Governing Law:**

The governing law for the purpose of the process is the laws of India and courts of Visakhapatnam shall have full jurisdiction considering any matter arising out of this EOI and the process.

**21.** Interested parties are urged to visit the VPA's web site on regular basis for any updates related to schedule or corrigendum with respect to the above EOI.

**22.** Notwithstanding anything contained above, VPA reserves the right to reject any or all EOI offers and give consideration to properties other than those offered in response to this advertisement.

**CHIEF ENGINEER (i/c)**

## LETTER OF RESPONSE

Appendix - I

Chief Engineer,  
AOB, 3<sup>rd</sup> Floor,  
Visakhapatnam Port Authority,  
Visakhapatnam - 530 035  
(India)

(Respondent to provide date and reference)

Dear Sir,

**RESPONSE TO** – “Expression of Interest (E.O.I) from the interested parties for Development of 288.12 Acres of VPA’s river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities(Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership”.

We, the undersigned, offer the following information in response to the Expression of Interest sought by you vide your Notification No. \_\_, dated \_.

- (a) We are duly authorized to represent and act on behalf of \_\_\_\_\_(hereinafter the “respondent”)
- (b) We have examined and have no reservations to the EOI Document including Addenda No(s) \_\_\_\_.
- (c) We are attaching with this letter, the copies of original documents defining: -
  - i) the Respondent’s legal status.
  - ii) its principal place of business.
  - iii) its place of incorporation (if respondents are corporations); or its place of registration (if respondents are cooperative institutions, partnerships or individually owned firms).
  - iv) Self certified financial statements of Last three years (2020-21, 2021-22, 2022-23), clearly indicating the financial turn over and net worth.
  - v) A brief statement on the broad strategic intent and anticipated transport/logistics requirements. (Annexure-1)
  - vi) Copies of any market research, business studies, feasibility reports and the like sponsored by the respondent, relevant to the project under consideration.
- (d) We shall assist VPA and/or its authorized representatives to obtain further clarification from us, if needed.
- (e) VPA and/or its authorized representatives may contact the following nodal persons for further information on any aspects of the Response:

Contact 1	Name	Telephone 1	E Mail
	Address		

(f) This application is made in the full understanding that:

- i) Information furnished in response to EOI shall be used confidentially by VPA for the purpose of Development of 288.12 Acres of VPA's river bed area situated at Mulakuddu village on PPP mode.
- ii) VPA reserves the right to reject or accept any or all applications, cancel the EOI and subsequent bidding process without any obligation to inform the respondent about the grounds of same, and
- iii) We confirm that we are interested in participating in development of 288.12 Acres of VPA's river bed area situated at Mulakuddu village as per the locations wise details provided in the Statement annexed with this form as Annexure-I.

(g) We certify that our 3 years average annual turnover is tabulated as under:

Financial Year	Turnover	Networth
2020-21		
2021-22		
2022-23		

(h) The undersigned declare that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail. We also understand that in the event of any information furnished by us being found later on to be incorrect or any material information having been suppressed, VPA may delete our name from the list of Respondents. We further understand that VPA will give first preference to the Investors considered relevant for the purpose. Our response is valid till (date in figures and words).

NAME.....  
 In the Capacity of.....Signed  
 ..... Duly  
 authorized to sign the response for and on behalf of .....  
 Date  
 .....

## 1. Details of proposal of the applicant:

S. No.	Location	Purpose / intended
1.	Expression of Interest (E.O.I) from the interested parties for Development of 288.12 Acres of VPA's river bed area situated at Mulakuddu village, Bheemili mandal in Visakhapatnam, by providing multiuse facilities (Commercial/Tourism) including providing infrastructure facilities, operation & maintenance on Public Private Partnership.	

## 2. Brief statement of Strategic Intent:

## **1. Project site environment**

### **• 1.1 Meteorological conditions**

Generally the climate of the region is tropical wet and dry. The region is governed by two seasonal monsoons i.e., from June to September and from October to December. The temperature of the region varies from 40° C to 15° C. Humidity in the region varies from 72% to 76%. Average rainfall is around 974mm per annum, of which most rainfall is received through south-west monsoons. East Coast is prone to cyclonic storms mostly occurring prior to South-West monsoon i.e. in May and Post South-West monsoon.

### **• Oceanographic conditions**

Predominant Wind direction is from southwest from March to September and from northeast during the rest of year. The wind speeds exceed 50km/hr (13.89 m/s) during cyclonic days. During southwest monsoon period, south westerly winds prevail and in northeast monsoon north easterly winds are predominant. As per the earlier studies carried out the average wind speed in the area is 12km/hr (3.33 m/s) prevailing from February to August. The offshore wave climate for the East coast of India is seasonal and is driven by the annual southwest and northeast monsoons. Predominant waves are from south-south east.

The tides in the region are of the semi-diurnal type. The mean high water spring (MHWS) is (+) 1.80m CD while the lowest water spring is (+) 0.5m CD, the mean sea level (MSL) is (+) 1.1m CD as depicted from NHO Chart No 308.

The currents are of monsoon origin and follow the trend of the coast. During North-East monsoon, current speed varies from 0.5kn to 2kn while during the rest of the year varies from 0.5kn to 1.5kn. The littoral transport on the East coast is predominantly from south to north. The reported net annual littoral drift is towards north with approximate quantity varies from 0.7Mcum to 0.9Mcum.

The bathymetry of the region generally shows a sloping trend towards the offshore with an approximate gradient of 1 in 200, indicating very gentle slope due to the sediment discharge from the river. The seabed is relative steeper to the north and south between 5m and 10m contour with a slope of up to 1:50. The bed slope is comparatively gentle between 10 m and 15 m depth contours and these contours run approximately parallel to the shoreline.

The sea bed samples collected at various locations suggest that the area consist of medium to coarse sand with shell fragments.

### **1.2 Topographic Information**

The GTS benchmark was referenced to the existing Bheemunipatnam lighthouse with an elevation of +4.40m. The maximum contour in the surveyed area is +3.0m on the ground in the northeast corner of the site and the minimum contour is -4.6m which is in the River Gosthani at the southeast corner of the site. The slope is from North to South and West to East. The land on the sand bund formed between River Gosthani and Bay of Bengal varies from +1.5m contour to +2.7m contour.

### **1.3 Geotechnical investigations**

The bore logs from surveyed geotechnical investigations suggest that the project area consists of the grey marine clay or yellow/gray silty sand. The clay layer varied from very soft to very stiff while the granular layer varied from medium to dense.

This was followed by Completely Weathered Rock to granite bedrock where the borehole was terminated.

#### • **1.4 Hinterland connectivity**

This National Highway 5 (NH 5) connects Kolkata in the North and Chennai in the South. The highway passes through Thagarapavalasa junction which is at a distance of approximately 8km from the proposed port site. The proposed port site is connected by two major district roads leading to NH5 and one road directly linked to Visakhapatnam along the beach adjacent to the shore. The proposed Bheemunipatnam port is along the 'East Coast Railway Line'. This East Coast railway line is at a distance of approximately 22km from the port site location.

#### • **1.5 Available support facilities**

The 132KVA line is approximately 1.5km from the port site which provides the supply to the Diva Labs at Bheemunipatnam. The power requirement can be tapped from this line to meet the power requirements of the port. The water is being supplied by Municipal Corporation to Bheemunipatnam and surrounding villages. The main source of this supply of water is the Tatipudi reservoir built across the Gosthani River.

#### **1.6 Port Limits**

The port limits for the Bheemunipatnam Port development as notified by the state government is shown in the drawing **Error! Reference source not found.** The layout of the port should be such that the complete development lies within port limits allocated to VPT. However, VPT has indicated that the port limits can be altered based on the suitability of the port development and functional requirements.

#### **1.7 Facilities at Bheemunipatnam**

At Bheemunipatnam, there is an old wharf alongside the Gosthani river for which it has been observed that there is no water even during high tides. An administrative office and approximate 170 acres of land is presently owned by the Port. A light house operated by Directorate General of Lighthouses and Lightships (DGLL) is situated in the Port area for guiding ships.

#### **1.8 Meteorological and Oceanographic Data**

#### **1.9 Meteorological Data**

#### **2. General**

This information has been extracted from the West Coast of India Pilot (WCIP) climatological table applicable for the Visakhapatnam area and the project site.

#### **2.1 Climate**

The climate of the region is characterised by two seasonal monsoons viz. South-West and North-East.

- South-West monsoon extends from June up to August and is characterised by occurrence of rain, with predominantly south westerly winds.
- North-East monsoon occurs between September and November and is characterised by predominant north-easterly winds. During this period the risk of a tropical storm or cyclones is highest in the year.

#### **2.2 Temperature**

The mean maximum daily temperature varies from 27°C to 37°C. April, May, June are considered to be the hottest months of the year with the mean highest temperature of

40°C. Mean minimum daily temperature varies between 18°C to 28°C, with the mean lowest of temperature 15°C occurring in January.

### **2.3 Relative Humidity**

Humidity is high and rises to about 81% during the southwest monsoon in the month of September. The mean monthly average relative humidity varies between 72% to 76%.

### **2.4 Precipitation**

The average rainfall is around 974mm per annum. The region gets most of the rainfall from the South-West monsoon which lasts till August, while the northeast monsoon commences in September. July to October is the wettest months of the year with an average rainfall in excess of 170 mm per month, with a maximum of 259 mm rainfall in October.

Dry weather sets in by the end of December lasting up to May.

### **2.5 Cyclone**

East Coast is prone to cyclonic storms mostly occurring prior to south west monsoon i.e. in May and after South-West monsoon i.e. in September and October.

### **2.6 Visibility**

Throughout the year visibility is good as the fog is infrequent at sea in all seasons, except during southwest monsoon when reduced visibility is experienced due to heavy rainfall.

## **3.0 Oceanographic Data**

### **3.1 Wind**

The average wind speed in the area as per earlier studies carried out in this area is 12km/hr (3.33 m/s) prevailing from February to August. Wind is dominantly from southwest from March to September and from northeast during the rest of year. The wind speeds exceed 50km/hr (13.89 m/s) during cyclonic days. During southwest monsoon period, south westerly winds prevail and in northeast monsoon north easterly winds are predominant.

### **3.2 Waves**

The offshore wave climate for the east coast of India is seasonal and is driven by the annual southwest and northeast monsoons. The offshore wave rose was developed based on the data collected in the IMU studies.

### **3.3 Offshore Waves**

These waves occur mainly from the southwest and northeast indicating the influence of two monsoons. Predominant waves are from south-south east and north-east sectors. The wave model data collected from the UK Met Office (UKMO) Global Wave Model at a nearby deep water location is presented in the form of the wave rose diagram. It represents that majority of the waves (around 42% of waves) are coming from south direction.

### **3.4 Ground Water Levels**

Ground water levels monitored during and after drilling activities indicated that the level of water varied between 0.3 m to 1.05 m below ground surface in boreholes 1 to 5 whereas it was 1.20 m above ground surface in borehole 6 which was located in the intertidal zone. The fluctuation of ground water table was both seasonal and annual.

### **3.5 Foundation Recommendation**

The overlaying marine clay is not capable of providing adequate support for proposed structures and hence it is likely that the major structures have to be supported on piles socketed on underlying completely weathered rock or bedrock. Also the chemical analysis conducted on the soil and groundwater revealed that a very severe exposure condition has been set for the site which falls under Class II for Sulphates and Class V for Chlorides. Therefore suitable precautions have to be taken to protect subsurface concrete and reinforcement. The soil in the site is only suitable to be used as compacted fill.

#### **4.0 Topographic Information**

##### **Background**

A baseline topographic survey was conducted at the site by IMU in August, 2010 so as to obtain existing topography data of the 170 Acres of VPT owned land details including land profile with reference to the bench mark, river alignment, boundary pillar markings, and topographical details.

##### **5.0 Landscaping Details**

The GTS benchmark used was the existing Bheemunipatnam lighthouse with an elevation of +4.40 m. The proposed site of the satellite port and fishery harbour falls on the island formed by the river Gosthani.

The land boundaries of 170 acres parcel is as follows:

- Farm lands and salt pans to the North
- Bay of Bengal and River Gosthani in the South
- River Gosthani in the eastern side
- Private layouts and private property on the western side.

There is a sand bund formation from southeast to southwest between river Gosthani and Bay of Bengal. There is no habitation in the proposed site area except for a few hatchery ponds.

##### **6.0 Contour Details**

The maximum contour in the area is +3.0m on the ground in the northeast corner of the surveyed site and the minimum contour is -4.6m which is in the River Gosthani at the southeast corner of the site. The slope is from North to South and West to East. The land on the sand bund formed between River Gosthani and Bay of Bengal varied from +1.5m contour to +2.7m contour.

## **7.0 Site Logistics and Hinterland Linkages**

### **7.1 Road Link**

National Highway 5 (NH 5) is the main highway connecting Visakhapatnam to national road linkages. NH 5 passes along the East Coast through the states of West Bengal, Odisha, Andhra Pradesh and Tamil Nadu. This National Highway connects Kolkata in the North and Chennai in the South.

The highway passes through Thagarapualasa junction which is at a distance of approximately 8km from the proposed port site and is running almost parallel to the shoreline. The proposed port site is connected by two major district roads leading to NH5 of which one road directly is linked to Visakhapatnam along the beach adjacent to the shore.



provide the power supply up to the main receiving substation which would be located within the proposed port boundary.

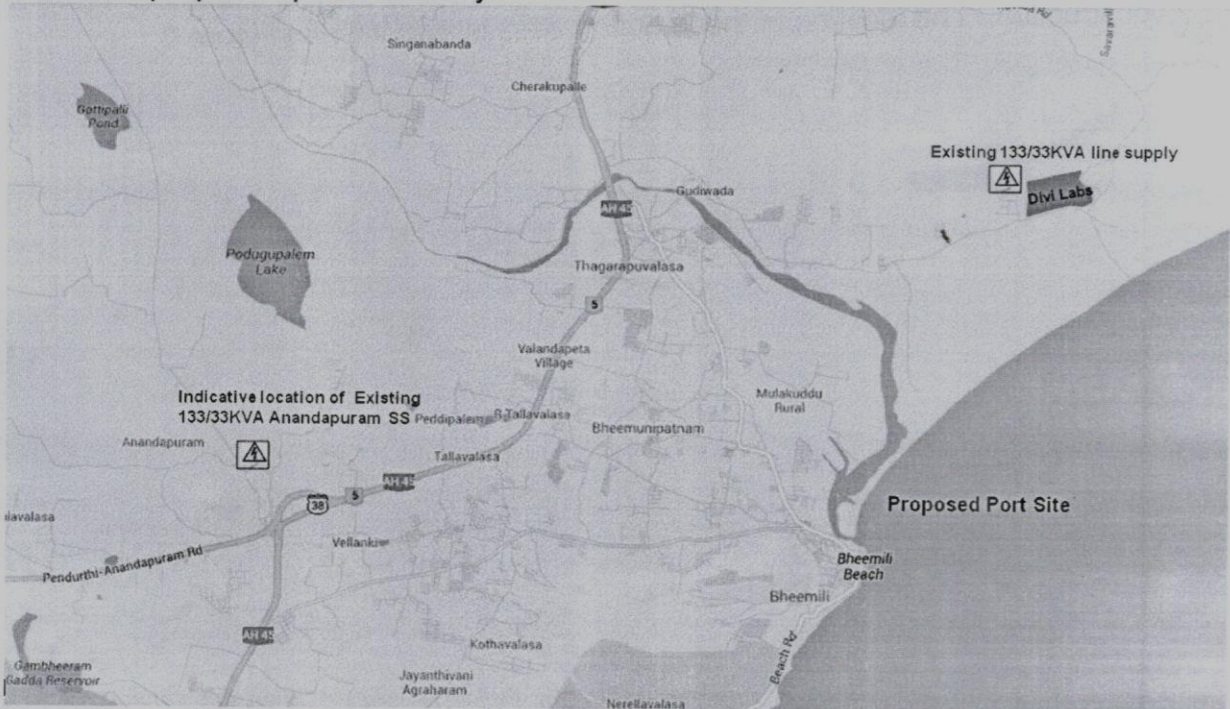


Figure.2 Indicative Location of existing 133/33KVA supply near the vicinity of proposed Port

#### 7.4 Water Source

The water is being supplied by Municipal Corporation to Bheemunipatnam and surrounding villages. The main source of this supply is the Tatipudi reservoir built across the Gosthani River.

The Bheemunipatnam Port site is situated on the Gosthani river mouth, this water is not potable due to salt water intrusion. To meet the water demand in the port, depending on the water requirement to service the proposed port needs, the source of water supply will have to be identified. One of the options is to source water from the river Gosthani (about 7 km upstream) where infiltration wells may be provided with pumping facilities and pipeline connections to meet the water requirements of the proposed port.

#### 7.5 Quarry Material

Port construction will require large quantities of materials to be imported to the site. A dedicated site access road will need to be constructed in order to link the port site to the national highway.

#### 7.6 Rock for Breakwaters

The breakwaters are likely to require large volumes of rock to be sourced and imported to the site. From the available information it is understood that the rock for construction of breakwater can be sourced from quarries located at Bheemunipatnam itself and Gambhiram, which are at a distance of approximately 4km and 12km from the proposed port site respectively.

The quarry site at Gambhiram and Bheemunipatnam are found to consist of khondolite and the quarry will supply the filter, core material and armour stones of up to 4T for construction. The location of these quarry sites is as shown in Figure 3.

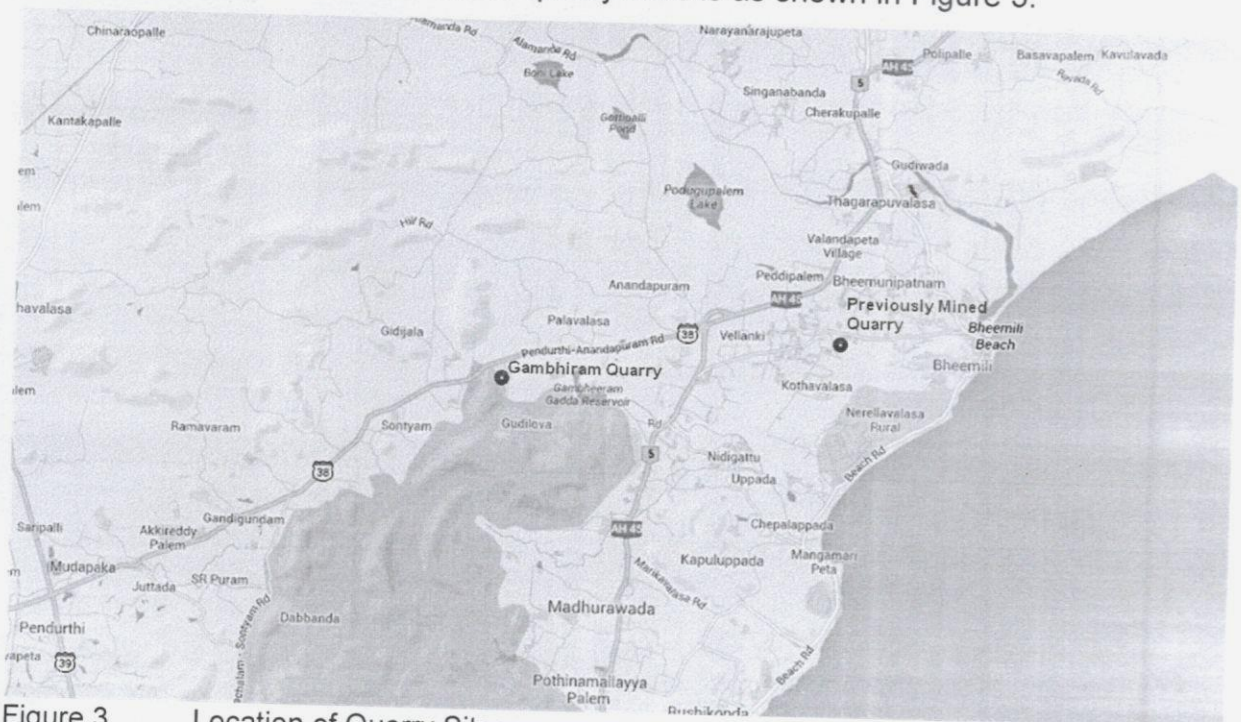


Figure 3 Location of Quarry Sites

If rock for the breakwaters were to be transported by road, this would entail very heavy truck traffic. Truck numbers could be in the order of one truck every minute, depending upon construction programme. The existing access to the quarries is via minor village roads which often have houses on either side and these existing roads would not be suitable for the transport of the large volumes of rock that would be required for breakwater construction, either from a health and safety perspective, or in terms of truck loading and road deterioration. Road transport would therefore be likely to require construction of a dedicated access road to the quarries.

## 8.0 Bheemunipatnam Opportunities and Constraints Summary

AECOM has identified certain Opportunities and Constraints based on the site investigations, and understanding of project site.

The Opportunity & Constraints (O&C) Map graphically summarizes future development constraints and opportunities, proximity to nearby landmark areas, possible road access to the site and geophysical information important for understanding the long-term possibilities for the port development at Bheemunipatnam.

The O&C map is prepared based on the physical attributes of the site such as shape, size and topography of the existing VPT land, bathymetry and deep water access, adjacent property usage, possible road and rail connectivity options and proximity to the reserved forest area, etc.

It incorporates the land ownership details of the land parcels already procured by VPT, land parcels that can be considered for procurement and land that cannot be procured due to private ownership or environmental constraints.

This map will be updated during the course of the project, as and when the new information becomes available.

Identified opportunities are marked with Green colour and constraints in Red colour.

## 9.0 Opportunities

### 1) Favourable Bathymetry

Bathymetry at Bheemunipatnam is very favourable for deep draft port development. The port site is endowed with natural depths of approximately 15m contour within a distance of approximately 1600m from the shore. Depending on the size of the design vessel and port development plan adopted, this may result in a minimum need for capital dredging to meet the berthing and navigational requirements of the port.

### 2) Availability of Waterfront

A water front area of approximately 3000m within the port limit is available for the proposed port development, which can be utilized for handling various cargoes and building a new fishing harbour. Currently, the fishing activity is segregated to the north and south of the proposed site and there is very little or no active fishing activity along the proposed waterfront.

### 3) Shore side procured Land Parcels

VPT currently owns a land parcel of approximately 170 acres behind the shoreline at the proposed site, which is shown in green colour in the O&C map. The prospective land parcels which may need to be acquired by VPT for Phase 1 and future development are shown in pink colour in the O&C map.

### 4) Gosthani River

The presence of river Gosthani would act as a favourable waterfront for development of inner harbour. This may also help in segregating the operations of fishing and the commercial port activities if required to be planned as different components of development activity. However, the flow conditions of the river throughout the year and its impact on the future port development is required to be studied in more detail during the subsequent tasks.

### 5) Road Connectivity

The port can be connected to the existing National Highway 5 (NH5) through major district road. The proposed road connectivity has been shown in the O&C map. Figure.4 shows pictures of the existing temporary road connecting to the waterfront.



Figure.4 Approach Road to Bheemunipatnam Port Site

**6) Greenfield Port**

The port being a Greenfield project, away from dense urban/city area, and thus can be master planned and shaped as per the future needs of VPT into a very efficient, modern and highly productive port.

**7) Environmental Advantage**

During the site visit, it was observed that there are no visual evidence at the proposed port site having a presence of environmentally protected mangroves vegetation and or any sea-turtle nesting grounds surrounding the site.

**10.0 Constraints**

**1) Habitation**

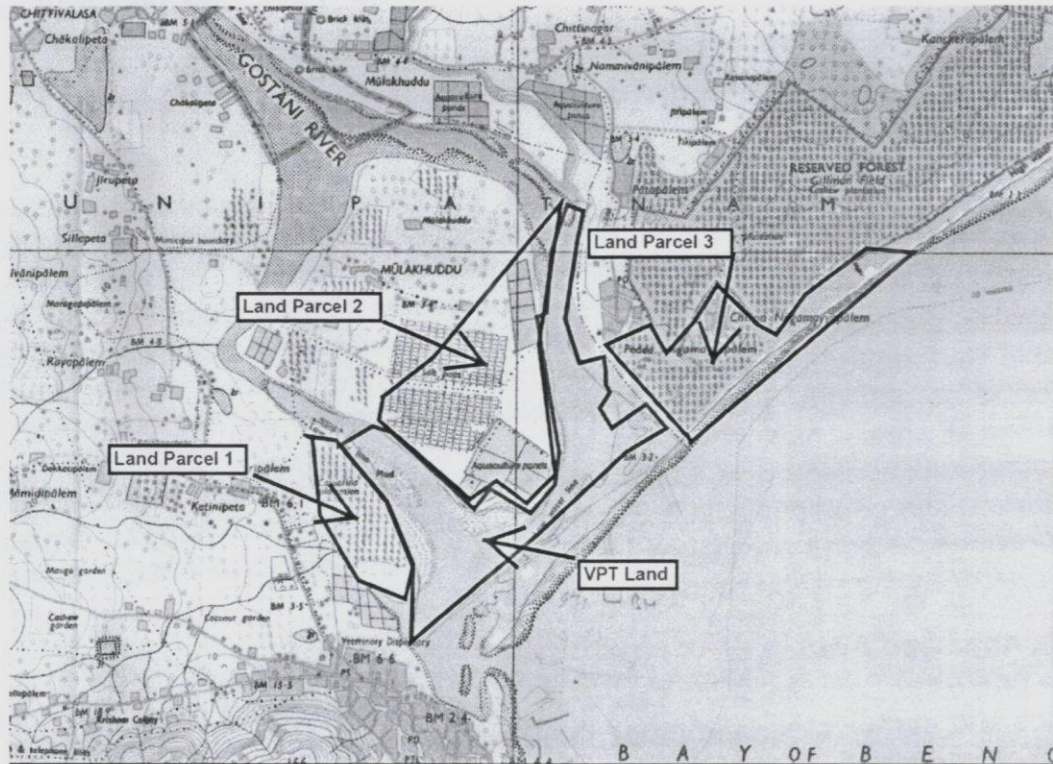
The villages (Mulakuddu and Chainagayya Palam) in the area of the development of port are as shown in the O&C map in to the south and north of the river mouth. The port development has to be carried out in such a way that it has a minimum impact to the people living around and rather creates a positive impact on these settlements in terms of jobs, economic growth and social benefits.

**2) Available Land Parcel and Land Limitations**

Development of a Greenfield port requires a large amount of land for the seamless growth of the port as demand arises for new onshore facilities. The land parcel available with VPT is of a very irregular shape and majority of land is submerged under the River Gosthani for most of the year.

Development of a modern Greenfield port with the given amount land parcel that VPT has is very difficult and will not synchronize with the port activities. This land parcel is marshy land with very poor soil properties for considering building any type of structural foundation.

At the outset, it is foreseen that a combination of land parcels 1, 2 and 3 as shown in **Error! Reference source not found.** may be required to accommodate required on-shore facilities of the proposed port. Some of this land is owned by the state and some by private owners.



VPT Land Parcel Details

**3) Presence of Reserved Forest**

Land area north of river Gosthani within the port limits is identified as a national reserved forest area, which may pose constraint to future port development activities. An equal or larger area may be required to offset and developed as an forest, in order to develop the proposed port.

**4) Gosthani River Mouth**

The port planning will need to account for capturing the sediments from the Gosthani River. The dumping of sediments and the littoral drift effect combined creates a year-around sand bund at the river mouth. The sand bund opening is not stable during the whole year and the opening keeps on shifting its place due to the quantum of sediments bought in and dumped by the river as well as the impact of littoral drift which is a predominant factor along this coast.

**5) Feasibility/Technical issues in Rail Connectivity**

The rail connectivity from the port site to the nearest rail station is approximately 25km away to the west. The rail access options to the proposed port site are limited and may pose a hindrance in development of the port due to added burden of need for a significant capital cost and land acquisition.

**6) Existing Trestle**

Divi Lab has its water intake on north of the proposed port site at a distance approx 3000m from the designated Bheemunipatnam Port Limit. Water intake is

connected with 400m long trestle. It would restrict the port expansion on the northern side.

## **Ground Conditions**

### **Background**

One of the key objectives of the master planning is to achieve an optimum balance between dredging required to create navigational facilities as well as utilization of existing/reclaimed land for creation of landside port facilities. The reclamation needs to be consistent with the overall economics of the site development and the physical restraints placed by navigation. This filling will need to be carefully treated to provide a stable platform for future development, and in turn the layout of development areas will need to be configured wherever possible to accommodate the characteristics of the existing fill area.

Another critical element is to plan the port such that minimum or no rock dredging is required. The geotechnical information available at the site has been explained briefly in previous sections and based on the limited information available, it is assumed that no rock dredging will be required.

### **Swampy Land Area**

The proposed port site is located at the mouth and banks of River Gosthani with flat plains and demarcated land areas through bund (manmade) which are predominantly used as salt pans. These plains occupy a vast area with its elevation a few meters above sea level. As a result, large portion of the plain are occupied by swamps and used for salt generation by utilizing the influence of tidal movements from the shore.

### **Rock Levels**

Rock levels across the proposed port site have been inferred from underwater seismic refraction (USR) profiles conducted by IMU. Based on the USR profiles medium to coarse sand with shell fragments were observed in the survey area. Results of onshore geotechnical investigations at the port site indicate presence of rock beyond the depth of 11.10 to 28.50m below ground level.

### **Need for Reclamation and Ground Improvements**

The development will need to include a strategy for reclamation of land behind the berths to create the storage yard and other terminal facilities, including following considerations:

- Foundation for cargo storage and other onshore facilities in view of weak ground conditions;
- Rock levels if any in critical areas, particularly the navigational channel and the harbour basin;
- Potential long term settlement issues on reclaimed land;
- The stability of any reclamation and raised height bunds, particularly when future dredging occurs;
- Dredge soil quality and suitability for reclamation.

The development will need to include a strategy for reclamation of land behind the berths to create the storage yard and other terminal facilities.

Sourcing of fill material for reclamations has always been a major issue, not only for the proposed Satellite Port of Bheemunipatnam, but for the other port developments throughout Andhra Pradesh. It is likely that sufficient amount of fill material for full development would be available from dredging within Bheemunipatnam Port with the location being blessed with good quality sand which can be used for reclamation.

### **Environmental Considerations**

A separate section has been provided in this report on Initial Environmental considerations as part of this assignment.

A desktop review of the available environmental information was carried out in order to identify key environmental constraints that may affect land reclamation, river hydrology and configuration of the proposed port development.

It is anticipated that proposed port construction will involve a combination of reclamation and dredging. Depending on the method of dredging, sedimentation and turbidity of the water column may get affected. It may also result in the suspension of chemicals, such as tri-butylene, sulphates, chlorides, heavy metals and other pollutants that may be contained within the sediments. Cost of dredge material disposal will be dependent on the waste classification of the material, which could be expensive.

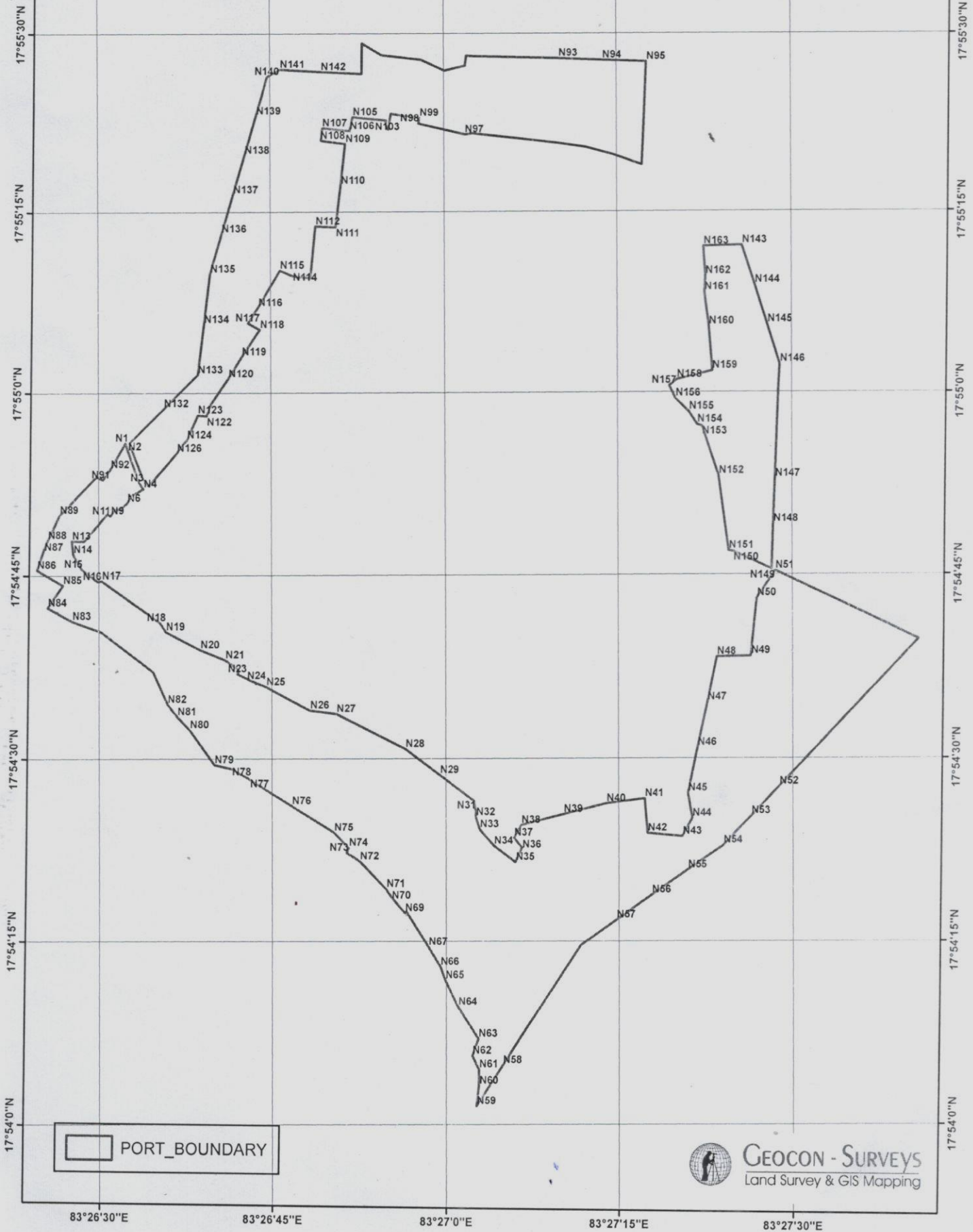
It is understood that the estuarine materials within the harbour are potential acid sulphate soils. The iron sulphides contained in acid sulphate soils do not cause any problems when waterlogged. When the iron sulphides are exposed to air they form sulphuric acid which can leach from the sediment and degrade the surrounding environment. Exposure to air should be minimized and material must be placed/ disposed in locations beneath the water.

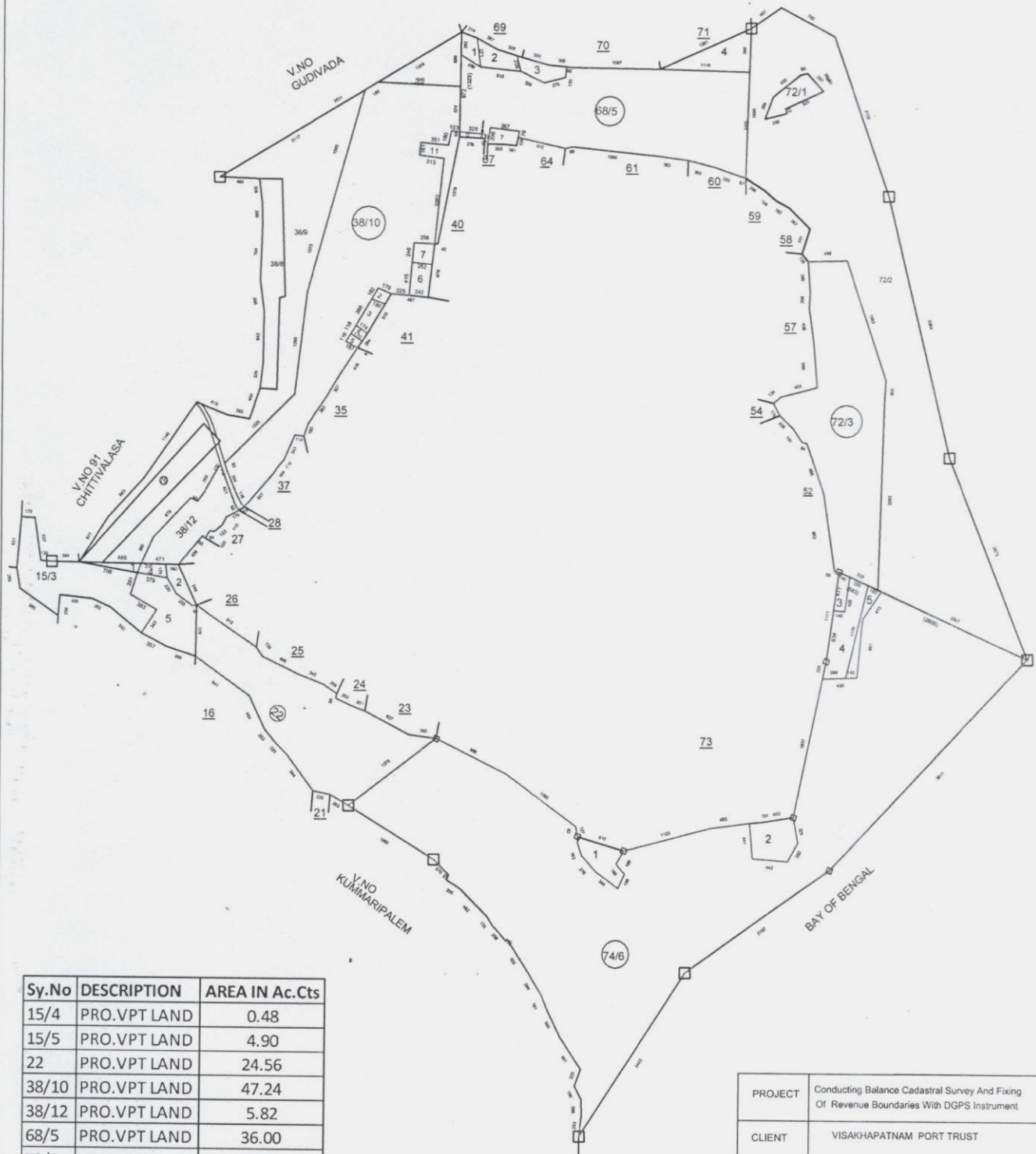
Dredging also has the ability to disturb anaerobic sediments and lead to anoxic conditions, such as the release of hydrogen sulphide. Anoxic conditions result in reduced dissolved oxygen available for marine organisms.

Reclamation associated with several of the options may also have an impact on the discharge capacity of Gosthani River into the sea. Options for the management of River Gosthani water may include re-channelizing the river flow or diverting the flow to discharge at a new location.


83°26'30"E 83°26'45"E 83°27'0"E 83°27'15"E 83°27'30"E

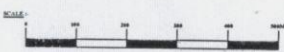
# MAP FOR SHOWING THE BOUNDARY COORDINATE OF VPT AT MULAKUDDU





Sy.No	DESCRIPTION	AREA IN Ac.Cts
15/4	PRO.VPT LAND	0.48
15/5	PRO.VPT LAND	4.90
22	PRO.VPT LAND	24.56
38/10	PRO.VPT LAND	47.24
38/12	PRO.VPT LAND	5.82
68/5	PRO.VPT LAND	36.00
72/3	VPT LAND	30.80
74/6	VPT LAND	138.32
<b>TOTAL</b>		<b>288.12</b>

PROJECT	Conducting Balance Cadastral Survey And Fixing Of Revenue Boundaries With DGPS Instrument		
CLIENT	VISAKHAPATNAM PORT TRUST		
SURVEY AGENCY	 <b>GEOCON-SURVEYS</b> LAND SURVEY & GIS MAPPING Plot No. 52,2nd Floor,Anjan Nivas, Upside of SBI Bank,Muralinagar Jr.,Visakhapatnam-07. Ph: 0891-2789499,8096336677 e-mail: gecon@wp@gmail.com Web: www.gecon-surveys.com Lat: 17°44'36.6168", Long: 83°15'33.0120"		
SCALE = 1 : 10000	TITLE : VECTOR MAP		
SURVEYED BY	DRAWN BY	CHECKED BY	DWG. No.
	MYTHRI	CHANDAN	GEO/DGPS/VPT/Min- 31



NOTE: ALL DIMENSIONS IN METRIC LINKS